Test Procedure for

COMPACTING SPECIMENS USING THE TEXAS GYRATORY COMPACTOR (TGC)

TxDOT Designation: Tex-206-F

Effective Date: July 2021

1. SCOPE

1.1 Use Part I of this test method to compact specimens of bituminous mixtures using a TGC or replicate model type.

1.2 Use Part II to determine the correlation factor between two or more TGCs or Superpave Gyratory Compactors (SGCs) or replicate model types.

1.3 The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

PART I—COMPACTING SPECIMENS USING THE TGC

2. SCOPE

2.1 Use this procedure to properly compact specimens of bituminous mixtures using the TGC or a replicate model type.

3. APPARATUS

3.1 *Motorized gyratory-shear molding press,* calibrated in accordance with Tex-914-K. (See Figure 1.)

3.2 *Molding assembly*, consisting of gyratory-shear mold, base plate, and wide-mouthed funnel.

3.3 *Balance,* Class G2 in accordance with Tex-901-K, with a minimum capacity of 10,000 g.

3.4 *Oven,* capable of attaining a temperature of at least 325 ± 5°F (163 ± 3°C).

3.5 *Mercury thermometer*, marked in 5°F (3°C) divisions or less, or digital thermometer, capable of measuring the temperature specified in the test procedure.

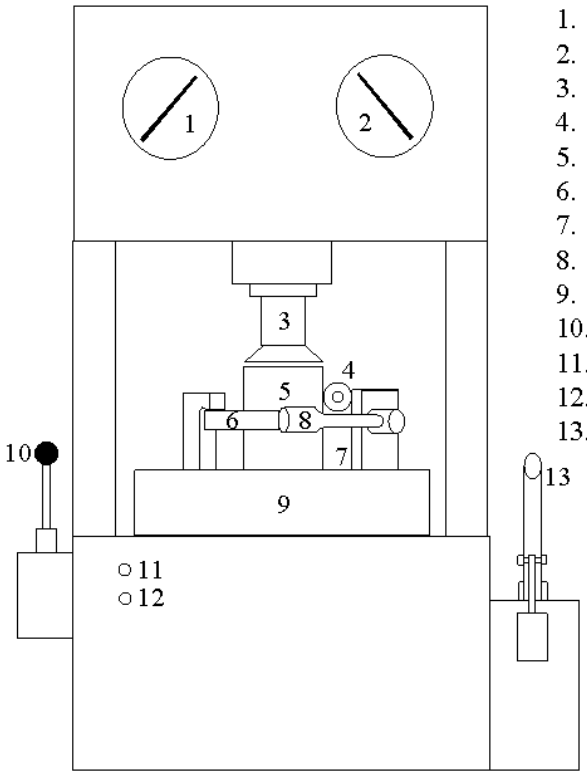
3.6 *Sieve*, 3/4 in. (19.0 mm), when required.

3.7 *Flexible spatula*, with a blade 4 in. (100 mm) long and 0.75 in. (20 mm) wide.

3.8 *Large bent spoon.*

3.9 *Micrometer dial assembly or calipers*, capable of measuring a height of at least 2 ± 0.06 in. (50.8 ± 1.5 mm).

3.10 *Non-porous paper gaskets,* 4 in. (100 mm) in diameter.



1. High Pressure Gauge
2. Low Pressure Gauge
3. Ram
4. Upper Bearing
5. Mold
6. Hardened Steel Ring
7. Lower Bearing
8. Cam Lever
9. Platen
10. Control Valve Lever
11. Reset Button
12. Start Button
13. Pump

Figure 1—Gyratory Shear Molding Press

4. MIXTURE PREPARATION

4.1 For laboratory-produced mixtures, proceed to Section 4.2. For plant-produced mixtures, proceed to Section 4.3. For mixtures requiring re-heating, proceed to Section 4.4. For hot-mix cold-laid and limestone rock asphalt (LRA) mixtures, proceed to Section 4.5.

Note 1—Mixtures requiring re-heating are defined as laboratory or plant produced mixtures that will be cooled to ambient temperature and be transported to another laboratory for testing.

4.2 *Laboratory-Produced Mixtures:*

4.2.1 Combine aggregates and prepare the laboratory mixture in accordance with Tex-205-F.

4.2.2 Split the mixture into the appropriate sample size.

4.2.3 Select the compaction temperature from Table 1 based on the asphalt binder specified on the plans. Only use the target discharge temperature as the compaction temperature when it is less than the temperature shown in Table 1. Set the oven temperature to the selected temperature.

Note 2—If using reclaimed asphalt pavement (RAP) or recycled asphalt shingles (RAS) and a substitute PG binder instead of the PG binder originally specified, defer to the originally specified binder grade when selecting the compaction temperature.

4.2.4 Place the mixture in an oven at the selected compaction temperature and spread the material in a metal pan at a uniform thickness of 2.25 in. ± 0.5 in. Cure the mix in the oven for 2 hr. ± 5 min. at the selected curing temperature. Monitor the internal temperature of the mix by inserting a calibrated thermometer or temperature probe into the loose material and leaving in the oven. If the internal temperature of the mixture has not reached the specified compaction temperature after the 2-hr. cure, continue to monitor the sample every 15 min. until the compaction temperature has been reached. Once the sample mixture has reached the specified compaction temperature and the curing period is complete, proceed to Section 6 to mold the specimen.

Note 3—When molding samples, a circular pan with the following dimensions will meet the required curing thickness: top diameter of 7.75 in. and a bottom diameter of 6.0 in.

4.2.5 Proceed to Section 4.6.

4.3 *Plant-Produced Mixtures:*

4.3.1 Sample the plant-produced mixture in accordance with Tex-222-F.

4.3.2 Select the compaction temperature from Table 1 based on the asphalt binder specified on the plans. Only use the target discharge temperature as the compaction temperature when it is less than the temperature shown in Table 1. Set the oven temperature to the selected temperature.

Note 4—If using RAP or RAS and a substitute PG binder instead of the PG binder originally specified, defer to the originally specified binder grade when selecting the compaction temperature.

4.3.3 Place the mixture in an oven at the selected compaction temperature and spread the material in a metal pan at a uniform thickness of 2.25 in. ± 0.5 in. Cure the mix in the oven for 2 hr. ± 5 min. at the selected curing temperature. Monitor the internal temperature of the mix by inserting a calibrated thermometer or temperature probe into the loose material and leaving in the oven. If the internal temperature of the mixture has not reached the specified compaction temperature after the 2-hr. cure, continue to monitor the sample every 15 min. until the compaction temperature has been reached. Once the sample mixture has reached the specified compaction temperature and the curing period is complete, proceed to Section 6 to mold the specimen.

Note 5—When molding samples, a circular pan with the following dimensions will meet the required curing thickness: top diameter of 7.75 in. and a bottom diameter of 6.0 in.

4.3.4 Proceed to Section 4.6.

4.4 *Plant-Produced or Lab-Produced Mixtures Requiring Re-Heating:*

4.4.1 For plant-produced mixtures, sample the mixture in accordance with Tex-222-F. For lab-produced mixtures, combine aggregates and prepare the laboratory mixture as described in Tex-205-F.

4.4.2 If transferring the material to a different lab for testing, place the material in a paper bag or cardboard box for shipping and labeling. The sample thickness in the container must not exceed 3 in.

Note 6—Do not use canvas sacks as shipping containers.

4.4.3 Select the compaction temperature from Table 1 based on the asphalt binder specified on the plans. Only use the target discharge temperature as the compaction temperature when it is less than the temperature shown in Table 1. Set the oven temperature to the selected temperature.

Note 7—If using reclaimed asphalt pavement (RAP) or recycled asphalt shingles (RAS) and a substitute PG binder instead of the PG binder originally specified, defer to the originally specified binder grade when selecting the compaction temperature.

4.4.4 Place the sealed sample container into the oven at the selected compaction temperature until the material can be easily broken apart. Remove the sampled material from the container and place it into a large pan. Thoroughly mix the sample and split into the appropriate sample size and place into a metal pan. Spread the material in the metal pan at a uniform thickness of 2.25 in. ± 0.5 in. and place the split samples back into the oven. Cure the mix in the oven for 1.5 hr. ± 5 min. at the selected curing temperature. Monitor the internal temperature of the mix by inserting a calibrated thermometer or temperature probe into the loose material and leaving in the oven. If the internal temperature of the mixture has not reached the specified compaction temperature after the 1.5 hr. cure, continue to monitor the sample every 15 min. until the compaction temperature has been reached. Once the sample mixture has reached the specified compaction temperature and the curing period is complete, proceed to Section 6 to mold the specimen.

Note 8 —When molding samples, a circular pan with the following dimensions will meet the required curing thickness: top diameter of 7.75 in. and a bottom diameter of 6.0 in.

4.4.5 Proceed to Section 4.6.

4.5 *Hot-Mix Cold-Laid and LRA Mixtures:*

4.5.1 Place hot-mix cold-laid mixtures in an oven and cure to constant weight at a minimum temperature of 140°F (60°C) to remove moisture and hydrocarbon volatiles.

Note 9—Constant weight is the weight at which further oven drying does not alter the weight by more than 0.05% in a 2-hr. or longer drying interval in accordance with Section 9.1.

4.5.2 Place LRA mixtures in an oven and cure to constant weight at 190 ± 10°F (88 ± 5°C) with frequent stirring.

4.5.2.1 Remove LRA mixtures from the oven and let them cool down to 100 ± 5°F (38 ± 3°C) before compaction.

4.5.3 Proceed to Section 4.6.

4.6 Select a mixture weight that will yield a 2 ± 0.06 in. (50.8 ± 1.5 mm) high specimen when molded.

4.7 If the mixture contains aggregate larger than 3/4 in. (19.0 mm), remove the large aggregate using a 19 mm (3/4 in.) sieve.

Note 10—Use the trowel to rub the material through the sieve and scrape off as much of the fines clinging to oversize particles as possible.

4.8 For HMA mixtures, place the compaction mold and base plate in an oven at the compaction temperature selected in Table 1 for a minimum of 60 min. before compaction.

4.9 For hot-mix cold-laid mixtures, place the compaction mold and base plate in an oven at 140°F (60°C) for a minimum of 60 min. before compaction.

4.10 For LRA mixtures, place the compaction mold and base plate in an oven at 140°F (60°C) for a minimum of 60 min. before compaction.

5. COMPACTION TEMPERATURES

5.1 Use the compaction temperatures in Table 1 when molding samples. Use the same temperature for both curing and compaction of HMA mixtures.

Compaction temperatures not listed in Table 1 may be used when approved by the Engineer. For guidance on materials not listed in Table 1 or materials containing modifying additives, reclaimed asphalt pavement (RAP), or recycled asphalt shingles (RAS), consult the Flexible Pavements Section of the Materials and Tests Division.

Table 1
Curing and Compaction Temperatures

Binder[1]	Temperature, °F (°C)[2,3]
PG 76-16, PG 76-22, PG 70-28	300 (149)
PG 70-22, PG 64-28	275 (135)
PG 64-16, PG 64-22, PG 58-22, PG 58-28	250 (121)
Asphalt-Rubber (A-R) Binder	300 (149)
Asphalt for Hot-Mix Cold-Laid mixtures	140 (60)
Asphalt for LRA mixtures[4]	100 (38)

Note: Mixtures must be compacted at the selected compaction temperature within a tolerance of ± 5°F (± 3°C).

1. If using RAP or RAS and a substitute PG binder instead of the PG binder originally specified on the plans, defer to the originally specified binder grade when selecting the compaction temperature.
2. Only use the target discharge temperature when it is less than the compaction temperature shown.
3. When using mixtures defined as WMA, use the target discharge temperature only when it is less than the compaction temperature shown in Table 1.
4. The curing temperature for LRA is 190°F.

6. PREPARATION OF THE TGC

6.1 Make certain that the platen is free to turn.

6.2 Connect the motorized TGC to an appropriate AC outlet, and push the reset and start buttons.

6.3 Allow the TGC to go through one set of gyrations.

6.4 Place a small amount of lightweight oil in the center of the motorized platen and a drop or two on the surface of the lower bearing.

Note 11—This is the bearing that "cocks" the mold and creates the gyratory action.

6.5 Squirt a small ring of oil around the periphery of the mold on the top surface of the hardened steel ring. This ring of oil must be in the path that the upper bearing will follow during gyration. Do not use an excessive amount of oil in making this ring.

6.6 When molding a large number of specimens, repeat Sections 6.4 and 6.5 every ten to fifteen specimens, or as appears necessary when wearing surfaces become dry.

7. COMPACTION PROCEDURE

7.1 Remove the mold from the oven and wipe the inside lightly with a damp rag moistened with kerosene or light lube oil.

7.2 Insert the base plate into the mold with the large diameter side up, and place a paper gasket over the base plate.

7.3 Place the mixture into the mold in one lift. Take care to avoid loss of material and segregation in the mold. After placing all of the mixture in the mold, level the mix with a bent spoon and place another paper disk on top of the leveled material.

Note 12—For LRA material, place the mixture into the mold in three equal lifts, taking care not to segregate the mixture. Use the bent spoon and wide-mouthed funnel to transfer the mixture into the mold.

7.4 Slide the hot mold and contents to the edge of the worktable, and with a gloved hand holding the base plate in place; transport the mold to the platen of the TGC.

7.5 Slide the mold onto the platen and center it beneath the ram of the TGC.

7.6 Move the lever on the control valve to the forward or positive position, and pump the ram down into the center of the mold.

7.7 Continue pumping until the low-pressure gauge first registers 50 psi (345 kPa). It is normal for the pressure to immediately fall below 50 psi (345 kPa). Do not continue to apply pressure after the gauge has first registered 50 psi (345 kPa). No more than three min. should pass from the time the mixture is removed from the oven to the time the initial 50 psi (345 kPa) is placed on the mixture.

7.8 Immediately pull the handle of the cam-lever down to the horizontal position, cocking the mold to the proper angle of gyration. Be certain that the cam-lever is pulled all the way down. The pump handle must be all the way up.

7.9 Push the reset button, then press and hold the start button. The mold will gyrate three times and stop. Hold the start button with the left hand while holding the pump handle in the uppermost position with the right hand. Should the start button be disengaged, molding press gyrations will cease. Press the start button again to complete the three-gyration cycle. Keep hands away from the gyrating platen while in motion.

7.10 As soon as the mold stops gyrating, immediately level the mold by raising the cam-lever handle to the vertical position with the left hand while making one full stroke of the pump handle with the right hand. These must be two smooth, consecutive motions. The speed of the full stroke of the pump is important, for it serves as an endpoint for the procedure. The proper speed of pump stroke is one stroke per second.

7.11 Once again, apply pressure using the pump until the low-pressure gauge first registers 50 psi (345 kPa), lower the cam-lever to the horizontal position, push the reset button, and then push and hold the start button.

7.12 During molding, when one stroke of the pump handle causes the gauge to come to rest between 50 to 150 psi (345 to 1,034 kPa), drop the pressure below 50 psi (345 kPa) by shifting the lever on the control valve to the unloading position and immediately returning it to the loading position.

7.13 Pump the pressure back to 50 psi (345 kPa). Experience reveals that the smoothest operating procedure, and certainly the safest, is for the operator to keep the right hand on the pump handle at all times. Use the left hand to operate the cam-level, the reset button, the start button, and the control valve.

7.14 Repeat Sections 7.9 through 7.13 until one smooth stroke of the pump handle, as described above, will cause the low-pressure gauge to indicate a pressure of 150 psi (1,034 kPa) or more.

7.15 When one full stroke of the pump causes the low-pressure gauge to indicate to 150 psi (1,034 kPa) or more, the gyrating portion of the molding procedure is complete.

7.16 At this endpoint of 150 psi (1,034 kPa), bring the pump handle down slowly until the automatic gauge protector valve cuts the low-pressure gauge out of the system.

7.17 At approximately one stroke per second, pump the pressure up to 2,500 psi (17,238 kPa), as measured on the high-pressure gauge.

7.18 As soon as the gauge registers 2,500 psi (17,238 kPa), stop pumping with the right hand, and with the left hand, very carefully release the pressure by slowly reversing the lever on the control valve to the backward position. Watch the large capacity gauge when releasing pressure to the low-pressure gauge due to sudden, violent release of pressure.

7.19 Pump the ram up and out of the mold.

7.20 Slide the mold out of the TGC, remembering to place a gloved hand beneath the mold to keep the base plate from falling out.

7.21 Allow the base plate to drop out of the mold onto the worktable. Invert the mold and remove the specimen from the mold with a converted arbor press or similar device.

7.22 Remove the paper gasket from the top side of the specimen. Carefully rotate the specimen and remove the second paper disk from the bottom side.

Note 13—If the paper is stuck to the specimen, use a spatula to carefully peel the paper disk off without damaging the surface of the specimen.

7.23 Measure the height of the specimen. If testing the specimen for Hveem Stability, the height must be 2 ± 0.06 in. (50.8 ± 1.5 mm). If the height is not within this tolerance, discard the specimen and mold another specimen using the weight calculated from the formula in Section 9.2.

7.24 Clean the inside of the mold with a rag lightly moistened with kerosene or light lube oil before molding another specimen. It is critical to keep the TGC clean. If dirt or grit collects on the platen or hardened steel ring, wipe it off and re-oil it before molding the next specimen.

7.25 When all the molding is complete, disconnect the TGC from the electric outlet. Clean the unpainted parts of the TGC, the mold, and the base plate with a lightly moistened kerosene rag and coat with a thin coating of lightweight oil. This cleaning and oiling is an absolute necessity if the TGC is to continue functioning properly. Wipe the painted parts of the TGC with a clean, dry rag.

8. TGC LUBRICATION

8.1 Remove the setscrew from the center of the platen spindle top every three mo. and fill the reservoir with high-quality S.A.E. 30 wt. hydraulic oil.

8.2 Periodically put several drops of high-quality S.A.E. 30 wt. hydraulic oil in the two oil holes of the elevating roller.

8.3 Follow the lubrication instructions on the plate attached to the end of the electric motor.

9. CALCULATIONS

9.1 Calculate the percent difference in weight:

$$PercentDifference = \left(\frac{InitialWeight - FinalWeight}{InitialWeight} \right) * 100$$

9.2 Calculate height adjustment:

$$\text{Required Weight } (grams) = \frac{DW}{H}$$

Where:

D = desired height of specimen, 2.0 in. or 50.8 mm

W = weight of existing molded specimen, g

H = height of existing molded specimen, in. or mm

PART II—CORRELATING GYRATORY COMPACTORS

10. SCOPE

10.1 Use this procedure to minimize the variability of the bulk specific gravity (G_a) of compacted bituminous specimens between two different Texas Gyratory Compactors (TGCs) or Superpave Gyratory Compactors (SGCs).

11. APPARATUS

11.1 *Motorized gyratory-shear molding press,* calibrated in accordance with Tex-914-K or per manufacturer's recommendations.

11.2 *Molding assembly*, consisting of gyratory-shear mold, base plate, and wide-mouthed funnel.

11.3 *Balance*, Class G2 in accordance with Tex-901-K, with a minimum capacity of 10,000 g.

11.4 *Mercury thermometer*, marked in 5°F (3°C) divisions or less, or digital thermometer, capable of measuring the temperature specified in the test procedure.

11.5 *Sieve*, 3/4 in. (19.0 mm), when required.

11.6 *Flexible spatula*, with a blade 4 in. (100 mm) long and 0.75 in. (20 mm) wide.

11.7 *Large bent spoon.*

11.8 *Micrometer dial assembly or calipers,* capable of measuring a height of at least 2 ± 0.06 in. (50.8 ± 1.5 mm).

11.9 *Oven*, capable of attaining a temperature of at least 325 ± 5°F (163 ± 3°C).

12. PROCEDURE

12.1 *TGC—Two-Press Correlation:*

12.1.1 Obtain a representative sample of bituminous mixture from the plant in accordance with Tex-222-F or prepare a laboratory sample in accordance with Tex-205-F.

12.1.2 Use a minimum of 20,000 g for a two-press TGC correlation and a minimum of 30,000 g for a three-press TGC correlation.

Note 14—Refer to Section 12.2 for information on a three-press TGC correlation.

12.1.3 Thoroughly blend the material and take small portions from several places throughout the entire area of the pan. Use sample weights that are 1,000 ± 1 g or allow a specimen height of 2 ± 0.06 in. (50.8 ± 1.5 mm). Prepare a minimum of nine samples for each press to correlate.

12.1.4 Provide the mixture to the operator of each gyratory compactor to correlate. The same operator on the given gyratory compactor must mold all the samples in accordance with Tex-206-F, Part I.

12.1.5 Cure the samples in accordance with Tex-206-F, Part I. Handle all samples identically. This will require coordination between the operators of all gyratory compactors to be correlated. Stagger placement of samples into the oven so that they will all receive the same amount of cure time. If not molding all samples immediately, allow all samples to cool to room temperature before placing in the oven to cure.

12.1.6 Determine the G_a of the molded specimens in accordance with Tex-207-F, Part I.

12.1.7 Calculate the average G_a of the samples molded on each gyratory compactor in accordance with Section 13.1.

12.1.8 Subtract the average G_a of the samples molded on the Contractor's gyratory compactor from the average G_a of the samples molded on the Department's gyratory compactor. This is the correlation factor for the Contractor's gyratory compactor.

- Proceed to Section 12.2.4 if the factor determined from the two-press correlation is 0 ± 0.050.
- Perform a three-press correlation if the factor determined from the two-press correlation is greater than 0 ± 0.050.

12.2 *TGC—Three Press Correlation:*

12.2.1 Perform Sections 12.1.1 through12.1.7 and 12.2.2 through12.2.6 to correlate the Contractor and Department's gyratory compactors to the Referee gyratory compactor of MTD's Flexible Pavements Section.

12.2.2 Establish the Department's correlation factor by subtracting the average G_a of the samples molded on the Department's gyratory compactor from the average G_a of the samples molded on the Referee gyratory compactor.

12.2.3 Establish the Contractor's correlation factory by subtracting the average G_a of the samples molded on the Contractor's gyratory compactor from the average G_a of the samples molded on the Referee gyratory compactor.

12.2.4 Add this factor to the average G_a for each set of specimens molded on the gyratory compactor if it is positive. Subtract this factor from the average G_a for each set of specimens molded on the gyratory compactor if it is negative.

Note 15—Use of the correlation factor is optional if the factor is 0 ± 0.010.

12.2.5 Record the following information:

- correlation factor,
- date of correlation,
- type of mix used for correlation, and
- serial number of gyratory compactors used in correlation.

12.2.6 Determine a new correlation factor if the Contractor's or Department's gyratory compactor has to be repaired or replaced.

12.3 *SGC—Two-Press Correlation:*

12.3.1 Obtain a representative sample of bituminous mixture from the plant in accordance with Tex-222-F or prepare a laboratory sample in accordance with Tex-205-F.

12.3.2 Use a minimum of 60,000 g for a two-press SGC correlation and a minimum 90,000 g for a three-press SGC correlation.

Note 16—Refer to Section 12.4 for information on a three-press SGC correlation.

12.3.3 Thoroughly blend the material and take small portions from several places throughout the entire area of the pan. Use sample weights that are 4,500 ± 10 g or allow a specimen height of 115 ± 5 mm (4.5 ± 0.2 in.). Prepare a minimum of six samples for each press to correlate.

12.3.4 Provide the mixture to the operator of each gyratory compactor to correlate. The same operator on the given gyratory compactor must mold all the samples in accordance with Tex-241-F.

12.3.5 Cure the samples in accordance with Tex-241-F. Handle all samples identically. This will require coordination between the operators of all gyratory compactors to be correlated. Stagger placement of samples into the oven so that they will all receive the same amount of cure time. If not molding all samples immediately, allow all samples to cool to room temperature before placing in the oven to cure.

12.3.6 Determine the G_a of the molded specimens in accordance with Tex-207-F, Part I.

12.3.7 Calculate the average G_a of the samples molded on each gyratory compactor in accordance with Section 13.1.

12.3.8 Subtract the average G_a of the samples molded on the Contractor's gyratory compactor from the average G_a of the samples molded on the Department's gyratory compactor. This is the correlation factor for the Contractor's gyratory compactor.

- Proceed to Section 12.4.4 if the factor determined from the two-press correlation is 0 ± 0.050.
- Perform a three-press correlation if the factor determined from the two-press correlation is greater than 0 ± 0.050.

12.4 *SGC—Three-Press Correlation:*

12.4.1 Perform Sections 12.3.1 through 12.3.7 and 12.4.2 through 12.4.6 to correlate the Contractor and Department's gyratory compactors to the Referee gyratory compactor of MTD's Flexible Pavements Section.

12.4.2 Establish the Department's correlation factor by subtracting the average G_a of the samples molded on the Department's gyratory compactor from the average G_a of the samples molded on the Referee gyratory compactor.

12.4.3 Establish the Contractor's correlation factory by subtracting the average G_a of the samples molded on the Contractor's gyratory compactor from the average G_a of the samples molded on the Referee gyratory compactor.

12.4.4 Add this factor to the average G_a for each set of specimens molded on the gyratory compactor if it is positive. Subtract this factor from the average G_a for each set of specimens molded on the gyratory compactor if it is negative.

Note 17—Use of the correlation factor is optional if the factor is 0 ± 0.010.

12.4.5 Record the following information:

- correlation factor,
- date of correlation,
- type of mix used for correlation, and
- serial number of gyratory compactors used in correlation.

12.4.6 Determine a new correlation factor if the Contractor's or Department's gyratory compactor has to be repaired or replaced.

13. CALCULATIONS

13.1 Calculate the average G_a for each TGC:

$$Avg = \frac{\sum G_a}{N}$$

Where:

N = number of trial samples.

13.1.1 The reported results should represent the average number of samples for each TGC. Report results to the nearest 0.001.

14. EXAMPLE

14.1 Use the following example to correctly calculate and apply the TGC correlation factor for a two-press correlation. The following example may be referenced for correlating SGCs as well; however, only six specimens are required.

14.2 Results from Department TGC and Contractor TGC are shown in Tables 2 and 3.

Table 2
Results from Department TGC

Mixture Property	Trial Specimen								
	1	2	3	4	5	6	7	8	9
Dry Wt.	999.3	998.2	999.7	998.7	999.1	999.5	998.4	998.8	997.8
SSD Wt.	999.7	998.9	1000.4	999.5	999.9	1000.4	999.3	999.7	998.8
Wt. in Water	574.6	575.3	575.6	576	576.2	577.2	574.9	576.1	575.9
G_a	2.351	2.356	2.353	2.358	2.358	2.362	2.352	2.358	2.359

Table 3
Results from Contractor TGC

Mixture Property	Trial Specimen								
	1	2	3	4	5	6	7	8	9
Dry Wt.	996.4	998.2	999.5	998.9	999.7	998.2	997.6	998.7	999.1
SSD Wt.	997.6	999.5	1000.7	999.8	1000.9	999.6	998.8	999.6	1000.2
Wt. in Water	573.1	574.1	573.9	573.4	574.1	572.9	571.7	572.9	573.8
G_a	2.347	2.346	2.342	2.343	2.342	2.339	2.336	2.341	2.343

14.3 The calculated average G_a is:

- Department = 2.356 and
- Contractor = 2.342.

14.4 Subtract the Contractor average from the Department average:

- 2.356 – 2.342 = 0.014, which is greater than 0.010.

14.5 Add the 0.014 to the average G_a for each set of specimens molded on the Contractor's TGC.

15. ARCHIVED VERIONS

15.1 Archived versions are available.