

SUPERPAVE QC/QA CERTIFICATION

PROFICIENCY EXAMINATION

Revised 11-10-04

12-17-04

1-5-05

3-16-05

3-24-05

10-3-05

12-7-05

3-21-06

12-10-06

12-10-07

12-12-08

3-20-09

11-18-09

12-15-09

12-9-10

3-19-12

3-19-13

3-12-14

1-14-19

2-27-19

4-24-19

1-14-20

APPLICANT'S NAME : _____

EMPLOYER: _____

AASHTO T 312 / AASHTO T 344 / PINE MANUAL

Gyratory Compactor Verification of Calibration

	Trial#	1	2	R
Pre-Verification Checklist:				
State required frequency of verification & calibration:				
1. Verify on a cold (powered up for 10-15 minutes) and clean machine 1) monthly during use, or 2) if gyro is moved	✓			
2. Calibrate 1) annually, or 2) if verification fails	✓			
Verification Procedure:				
3. Press SELECT until OTHER OPTIONS flashes: Press ENTER	✓			
4. Press SELECT until VERIFY CALIBRATION flashes: Press ENTER	✓			
<i>Verify Speed of Gyration:</i>				
5. Press START: Omit 1 st rotation: Time 10 rotations: In spec?	✓			
6. Press ROTATE to park machine (i.e. stop rotation)	✓			
<i>Verify Ram Force:</i>				
7. Center proving ring under the ram, place small stainless-steel plate on top proving ring post to minimize wear from ram plate	✓			
8. Press START to flex ring	✓			
9. Zero dial indicator	✓			
10. Press START	✓			
11. Verify load at 3500 N by looking at chart: In spec? Comments?	✓			
12. Press ENTER	✓			
13. Verify load at 14500 N by looking at chart: In spec? Comments?	✓			
14. Press ENTER to park machine	✓			
<i>Verify Height (Ram Position):</i>				
15. Place gage blocks such that height = 6.000" and they are centered under the ram	✓			
16. Press START	✓			
17. Verify height: In spec? Comments?	✓			
18. Press ENTER to park machine	✓			
19. Remove gage blocks; press ENTER	✓			
20. Are all parameters in spec? [choose YES: press Up arrow (↑)]	✓			
21. Press ENTER to complete menu driven portion of verification	✓			
<i>Verify Roller Clearances:</i>				
22. Carefully insert external angle (EA) verification device to measure fixed post (3 o'clock) and opposite post (9 o'clock) roller clearances (dial indicators at 3 and 9 o'clock and facing front of machine)	✓			
23. Zero dial indicators	✓			
24. Check clearance on fixed post (3 o'clock) roller set: In spec?	✓			

25. Check clearance on 9 o'clock roller set: In spec?	✓		
26. Rotate EA verification device 90° to measure rear post (12 o'clock) roller clearance	✓		
27. Zero dial indicator	✓		
28. Check clearance on rear roller set: In spec?	✓		
<i>Check Zero Degree Position:</i>			
29. Return EA verification device to 3 and 9 o'clock position	✓		
30. Zero dial indicators	✓		
31. Rotate EA verification device 180° and read dial indicators: In spec?	✓		
<i>External Angle (EA) Verification:</i>			
32. Return EA device to 3 and 9 o'clock position	✓		
33. Zero dial indicators	✓		
34. Press ANGLE and the up arrow (↑) simultaneously to induce angle	✓		
35. Read dial indicators and calculate difference (left – right): In spec?	✓		
36. Press ANGLE and the down arrow (↓) simultaneously to end verification	✓		
<i>Internal Angle (IA) Verification:</i>			
State the following:			
37. Verify IA device with static angle gauge	✓		
38. Set the gyratory for 10-20 gyrations for IA determination	✓		
39. Carefully place IA device inside a very clean or new mold, with the top plate in place (if required; i.e. big Pines)	✓		
40. Gyrate with the IA device right-side up, record the result. Repeat, record the result. If the 2 results are not within 0.02° of each other, discard results and repeat this step.	✓		
41. Carefully invert the IA device, gyrate with the IA device up-side down, record the result. Repeat, record the result. If the 2 results are not within 0.02° of each other, discard results and repeat this step.	✓		
42. Average all four acceptable IA readings. If the average is $1.16 \pm 0.02^\circ$, the gyratory is ready for testing. In spec?	✓		
43. If the average IA is not in spec, repeat the IA verification. If it fails a 2 nd time, contact the manufacturer for further instructions	✓		
PASS?	✓		
FAIL?			

AASHTO T 312: Specimen Compaction

	Trial#	1	2	R
Pre-Compaction Checklist:				
State & verify required parameters for compaction:				
1. Verify 150 mm specimen diameter	✓			
2. Verify compaction pressure = 600 kPa	✓			
State the following:				
3. For Volumetric pucks, SET GYRATIONS = N_{des} (from JMF)	✓			
4. For TSR pucks, set SPEC. HT. (specimen height) = 95.0 mm	✓			
Compaction Procedure:				
5. Assemble mold & bottom plate (if necessary) & insert paper disk	✓			
6. Place mix in mold and level off top surface of mix	✓			
7. Insert paper disk, then place top plate in mold, beveled side up	✓			
8. Place mold in machine so that rotational cog is at 6 o'clock, then rotate counter clockwise to at least 3 o'clock; close door	✓			
9. Press START and let compaction proceed	✓			
10. Once ram is parked and "MACHINE READY" light is ON, open door and move mold to puck extrusion station	✓			
11. Partially extrude puck so top plate clears mold rim; remove top plate and paper disk.	✓			
12. Depending on the type of mix, expose as much of the puck as possible (avoid collapse) through further extrusion and allow to cool	✓			
13. After minimum cooling period to assure puck stability, finish extruding puck, carefully set puck upside-down on cooling rack, and remove 2 nd paper disk ASAP	✓			
14. Mark the puck for identification purposes	✓			
PASS?	✓			
FAIL?				

AASHTO T 308: Asphalt Content by Ignition; Method A

	Trial#	1	2	R
Pre-Production Oven Parameters Checklist:				
Input required parameters for routine production of a particular mix:				
1. Enter TEMP setpoint [chamber temperature]		✓		
2. Enter CALIB. FACTOR [binder (aggregate) correction factor]		✓		
Routine Production Ignition Oven Procedure:				
3. Obtain weight of empty basket assembly		✓		
4. Place ~½ of hotmix sample in each basket; move mix ~¾" away from sides; re-assemble basket. Cool to room temperature.		✓		
5. Obtain total weight of sample plus basket then calculate initial weight of hotmix sample		✓		
6. Enter initial sample WEIGHT		✓		
7. Zero oven scale (push the number 0)		✓		
8. After putting on safety gloves, face shield, etc., carefully load sample into oven, making sure basket is not touching walls; close door		✓		
9. Check total weight: oven vs. exterior scale: No good if > 5 grams difference: Is it?		✓		
10. Initiate burnoff program by pressing START/STOP		✓		
11. After burnoff stops, remove and examine paper readout		✓		
12. Again with safety gear on, open oven door, remove basket & place on cooling rack. Cool to room temperature.		✓		
13. Determine and record basket + specimen weight, then calculate and record final specimen weight (for manual calculations and/or verification of %AC).		✓		
14. Obtain Calibrated %AC through calculations (NOTE: in the field, this value will automatically be on the printout tape)		✓		
15. Correct the Calibrated %AC for moisture		✓		
	PASS?	✓		
	FAIL?			

AASHTO T 209: Theoretical Maximum Specific Gravity (Rice Test): "Weigh In Water" Method

	Trial#	1	2	R
Pre-Procedure Checklist:				
State the following requirements for routine testing of a particular mix:				
1. Pycnometer calibration required daily	✓			
2. Sample moisture content must be <0.1%: Verify by a) oven drying until mass repeats within 0.1% OR b) use results of AASHTO T 329	✓			
3. Perform "dry-back" procedure if <u>ANY coarse aggregate fraction</u> has absorption > 2.0% (use surface-dry weight "A2" in place of "A" in the denominator of the non-dry-back Gmm equation	✓			
Routine Rice Test Procedure:				
4. Separate particles while cooling sample: 1) Don't break aggregate; 2) Reduce sand-binder clumps to $\leq \frac{1}{4}$ "; 3) Cool until mix is at room temperature	✓			
5. Determine and record empty weight of the pycnometer (without lid). Place and level sample in pycnometer. Record weight of sample + pycnometer. Calculate and record oven-dry weight of sample [A]	✓			
6. Cover sample with approximately 1" of bath water	✓			
7. Subject to specified vacuum while agitating for 15 ± 2 minutes	✓			
8. Very slowly release vacuum, then disassemble apparatus	✓			
9. Confirm that water bath temperature is in spec and water is at default level (are they?), then zero out the weigh-in-water system.	✓			
10. Being careful not to expose the mix to the air, suspend pycnometer (without lid) and contents in water bath	✓			
11. Determine and record combined mass of pycnometer and contents [C] after 10 ± 1 minutes of immersion	✓			
12. After recording C, remove pycnometer from water bath, completely remove the contents, reset the weigh-in-water system to its default condition, re-suspend empty pycnometer (without lid) in water bath, then determine and record mass [B] after steady-state has been achieved (tank stops overflowing).	✓			
13. Calculate non-dry-back Gmm = $A / (A + B - C)$: Nearest 0.001?	✓			
14. Calculate dry-back Gmm = $A / (A2 + B - C)$: Nearest 0.001?	✓			
PASS?	✓			
FAIL?				

AASHTO T 209: Theoretical Maximum Specific Gravity (Rice Test): "Weigh In Air" Method

	Trial#	1	2	R
Pre-Procedure Checklist:				
State the following requirements for routine testing of a particular mix:				
1. Pycnometer calibration required daily				
2. Sample moisture content must be <0.1%: Verify by a) oven drying until mass repeats within 0.1% OR b) use results of AASHTO T 329				
3. Perform "dry-back" procedure if <u>ANY</u> coarse aggregate fraction has absorption > 2.0% (use surface-dry weight "A2" in place of "A" in the denominator of the non-dry-back Gmm equation				
Routine Rice Test Procedure:				
4. Separate particles while cooling sample: 1) Don't break aggregate; 2) Reduce sand-binder clumps to $\leq \frac{1}{4}$ "; 3) Cool until mix is at room temperature				
5. Determine and record empty weight of the pycnometer (without lid). Place and level sample in pycnometer. Record weight of sample + pycnometer. Calculate oven-dry weight of sample [A]				
6. Cover sample with approximately 1" of bath water				
7. Subject to specified vacuum while agitating for 15 ± 2 minutes				
8. Immediately after the 15 ± 2 minute time period (i.e. the vacuum application stops), very slowly release vacuum.				
9. Start 10 ± 1 minute time period in which the final weight must be obtained (i.e. finish the test). Disassemble apparatus.				
10. Being careful not to expose the mix to the air, slowly submerge pycnometer in water bath at the specified temperature (is it?) and carefully place capillary lid on pycnometer				
11. Just prior to end of 10 ± 1 minute time period, remove pycnometer, dry off the exterior, then determine and record total weight [E]				
12. After recording E, completely remove contents, re-submerge empty pycnometer in water bath, place capillary lid on pycnometer, wait 10 ± 1 minutes for temperature to stabilize, remove pycnometer, dry off the exterior, then determine and record total weight [D]				
13. Calculate non-dry-back Gmm = $A / (A + D - E)$: Nearest 0.001?				
14. Calculate dry-back Gmm = $A / (A2 + D - E)$: Nearest 0.001?				
PASS?				
FAIL?				

Proctor _____ Date _____

Reviewer _____ Date _____