Calibration Worksheet: Pine Gyratory Compactor

Equipment ID: Pine Compactor
Manufacturer: Pine Instruments
Model #: AFGC125X
Serial #: 15
UofA ID: 229874
Location: HM (225)

Date: 3/29/07
Performed by: SJW
Next Calibration Due: Sept. 2007
Last Calibration: Sept. 2006

Calibration Items: Speed, Pressure, Height, Angle
Calibration Procedure: Follow Manufacturer's Instructions (summarized below)
Calibration Equipment: Calibration kit supplied by manufacturer

SPEED

Press ENTER and SELECT at the same time.
Scroll to enter code (125)
Select VERIFY from menu and press ENTER. Press START.
Record stopwatch reading for 10 gyrations

Target Time: 20 seconds
Actual Time: 19.96
Tolerance: +/- 0.3 sec
Pass / Fail: Pass

RAM PRESSURE

Place proving ring and 1/8" block in compactor.
Select VERIFY from ram force calibration menu.
Follow screen prompts.

Load (N)	Target Dial Rdg.	Actual Dial Rdg.
1500	34.0	34.0
3500	79.7	79.6
5500	124.6	124.4
7500	169.9	170.0
9500	215.0	214.9
11500	261.8	261.8
13500	307.9	308.0
15500	354.4	354.3
17500	400.1	400.1

Tolerance: ±1% or ±3%
Pass / Fail: Pass

HEIGHT

Select VERIFY from ram position calibration menu.
Place blocks under ram as directed.
Follow screen prompts.

Target (mm)	Actual (mm)
254.00	254.01
228.60	228.60
203.20	203.19
177.80	177.80
152.40	152.38
127.00	127.01
101.60	101.59
76.20	76.21

Tolerance: ± 0.05 mm
Pass / Fail: Pass

ANGLE

1) CHECK ROLLER CLEARANCE.
Set dials to zero. Lift gauge at each roller.

	Tolerance:	Actual:
Right	0.0015 - 0.002	.0016
Left	0.002 - 0.004	.002
Back	0.002 - 0.004	.003

Pass / Fail : Pass

2) CHECK ZERO POSITION.
Set dials to 0.3500. Spin to 180° and read.
Tolerance: 0.3500 ± 0.001
Pass / Fail: .3505

Initial by: SJW

3) VERIFY ANGLE.
Zero dials. Place hot mold / sample in compactor.
Clamp jig to mold. Record dial readings (A1, B1)
Remove jig. Press START. Press ANGLE before ram applies pressure to sample.
Clamp jig to mold. Record dial readings (A2, B2)
Remove jig. Press START. Press ANGLE after 40-50 gyrations.
Clamp jig to mold. Record dial readings (A3, B3)
Use angle calculator to figure angle.

A1 = **B1 =**
A2 = **B2 =**
A3 = **B3 =**

Internal Angle (RAM) = 1.15

ANGLE =

Tolerance: 1.25 ± 0.02°
Pass / Fail: Pass

Gyratory Compactor Certificate of Standardization

and Traceability to the United States National Institute of Standards and Technology

Gyratory Compactor Information

AFGC125X	015	UNIVERSITY OF ARKANSAS FAYETTEVILLE AR	72
Manufacturer and Model	Serial Number	SGC Owner (Company Name) and Location	Temperature

Rate of Gyration

- ☐ Standardization service for the rate of gyration **was not** performed.
- ☒ The rate of gyration was standardized to 30.0 ± 0.5 gyrations per minute using a digital stopwatch.

Consolidation Pressure

- ☐ Standardization service for the consolidation pressure **was not** performed.
- ☒ The pressure measurement system was standardized to within ± 1.0% at the following pressures:
  - ☒ from 200 kPa to 1000 kPa (100 mm or 150 mm diameter specimens)
  - ☐ at 600 kPa (for 100 mm or 150 mm diameter specimens)
  - ☐ at 600 kPa (for 150 mm diameter specimens only)
- ☒ The applied force was measured with an accuracy traceable to NIST using the following apparatus:

☒	Pine AFGCLR05C load ring (5000 lbf)	SN: 1280	Ring Calibration Date:	12-6-06
☐	Interface 1210BDE-5K load cell (5000 lbf)	SN: _____	Cell Calibration Date:	_____
	with Newport INFCS-000 A/E meter	SN: _____	Meter Calibration Date:	_____

Specimen Height Measurement

- ☐ Standardization service for the specimen height measurement system **was not** performed.
- ☒ The specimen height measurement system was standardized to within ± 0.05 mm (± 0.002 in) using ☐ a single gage block or ☒ multiple gage blocks with accuracy traceable to NIST.

Angle of Gyration (only one of the four boxes below should be checked)

- ☐ Standardization service for the angle of gyration **was not** performed.
- ☐ The **external angle of gyration** was standardized under loaded conditions to achieve an angle of 1.25° ± 0.02° while compacting a standard sized asphalt specimen (150 mm OD x 115 ± 5 mm H). The external angle of gyration is a calculated value derived from a set of linear displacement measurements. The linear displacement measurement apparatus has an accuracy traceable to NIST.
- ☐ The **internal angle of gyration** was standardized to an internal angle of 1.16° ± 0.02° while compacting a standard sized asphalt specimen (150 mm OD x 115 ± 5 mm H). The measurement was performed as per the AASHTO PP 48 specification, Evaluation of the Superpave Gyratory Compactor (SGC) Internal Angle of Gyration. The apparatus was standardized (prior to use) by means of an angle gage block with an accuracy traceable to NIST.

  TestQuip DAV1 Dynamic Angle Validation Kit SN: _____ DAV1 Calibration Date: _____

- ☒ The **internal angle of gyration** was standardized under simulated conditions to achieve an internal angle of 1.16° ± 0.02° using the procedure outlined in ASTM D7115 Standard Test Method for Measurement of Superpave Gyratory Compactor (SGC) Internal Angle of Gyration Using Simulated Loading. The apparatus was standardized (prior to use) by means of an angle verification plate with an accuracy traceable to NIST.

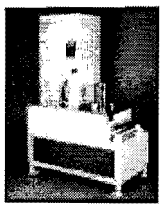
  Pine AFLS1 Rapid Angle Measurement Device SN: 005 AFLS1 Calibration Date: 4-19-07

Service Provider

I hereby certify the standardization services have been performed properly, and that I am an authorized representative of a service organization authorized by Pine Instrument Company.

Mark Downing	9-25-07	Pine Certified Service, Grove City, PA, 724-458-6391
Technician (sign here)	Date	Certified Service Organization (name and location)

Pine AFGC125X Gyratory Compactor Calibration Change Record



☑ Pine AFGC125X (115 V 60 Hz)
☒ Pine AFGC125XA (220 V 60 Hz)
☐ Pine AFGC125XE (220 V 50 Hz)
Model

015
Serial Number

Mark Downing
Technician (sign and date)

UNIVERSITY OF ARKANSAS
SGC Owner (Company Name)

FAYETTEVILLE AR
SGC Location (City and State)

Status of Compactor Prior to Calibration Change

.4	7-26-07	7-26-07	
Machine Hours	Previous SGC Calibration Date	Previous SGC Verification Date	Previous Calibration Service Provider (if known)

External Angle of Gyration

Pine ACGCA001
Angle Sensor Apparatus

☐ Owned by Customer
☒ Owned by Calibrator

Parameter	"As Found"	"As Left"
Unloaded Angle		1.255
Loaded Angle		1.22
Adjustable Link Gap (0.002" to 0.004")	.0035	.0035
Intermediate Link Gap (0.002" to 0.004")	.0035	.0035
Fixed Link Gap (0.0015" to 0.002")	.0015	.0015
Zero Plane (0.001" tolerance)	ø	ø
Dial Difference	.1111	1109

Internal Angle of Gyration

☐ TestQuip (DAV1)
☒ Pine AFLS1 (RAM)
Internal Angle Device

005
Serial Number

☐ Owned by Customer
☒ Owned by Calibrator

4-19-07
Device Calibration Date

Parameter	"As Found"	"As Left"
Internal Angle	1.15	1.155

Consolidation Pressure (Force Measurement)

Pine AFGCLR05C
Load Ring Model

1280
Serial Number

☐ Owned by Customer
☒ Owned by Calibrator

12-6-06
Ring Calibration Date

Force (newtons)	Dial (actual)	"As Found"	"As Left"
1500	32.8		32.2
2500	55.8		56.1
3500	78.6		79.1
4500	101.3		102
5500	123.7		124
6500	146.1		146.2
7500	168.8		169
8500	191.5	Default	191.5
9500	213.9		213.5
10500	236.2	Default	236
11500	259.1		259
12500	282.1		281.9
13500	305		305
14500	327.7		327.5
15500	350.9		351
16500	374.1		374.1
17500	397		397
18000	4084		4084

Specimen Height (Position Measurement)

Pine AFG123C
Gage Block Model

Serial Number

☐ Owned by Customer
☒ Owned by Calibrator

12-6-06
Block Calibration Date

Height (inches)	"As Found"	"As Left"
10		10.000
9		9.000
8	Default	8.000
7		7.000
6		6.000
5		5.000
4		4.000
3		3.000

Notes: