

Central Lab Equipment Fall List for Verification & Calibration

State of Hawaii DOT Highway Central Lab, 2530 Likelike Hwy, Honolulu HI. 96819
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Section Lab Bituminous (LB) Equipment List for Verifications & Calibrations.

Unit & No.	Equipment	Make	Model / Type	Ser. No. I.D. No.	Capacity	Calibration Requirements and Remarks
LB-01	Balance	Mettler	PB 303	1116232927 DL 102068	310 g	ASTM E 898 & AASHTO M 231 (per model).
LB-02	Balance	Mettler	PE 22	F45520 DL 1013249	22,000 g	ASTM E 898 & AASHTO M 231 (per model).
LB-03	Balance	Mettler	PG 5002-5	1116322399 DL 102069	5,100 g	ASTM E 898 & AASHTO M 231 (per model).
LB-04	Balance	Mettler	SR 16001	1120033641 DL 103643	16,100 g	ASTM E 898 & AASHTO M 231 (per model).
LB-05	Balance	Mettler	PM 16	J58833 D1 1014289	16,100 g	ASTM E 898 & AASHTO M 231 (per model).
LB-08	Ignition Furnace	Barnstead NCAT	Model F85930	10870010600 DL 103294		ASTM E 898 & AASHTO M 231, R 18 & T 308.
LB-09	Ignition Furnace	Thermo Scientific NCAT	Model F85930	01463197011 61003 DL 106138		ASTM E 898 & AASHTO M 231, R 18 & T 308. Added Fall 2023
LB-10	Manometer for Rice Apparatus (Digital)	Karol Warner	9210	DL 106039		AASHTO T 209.
LB-11	Pressure Aging Vessel	Prentex	Model 9300 PAV	95886 DL 106170		AASHTO R 18 & R 28. (6 month calibration period)
LB-13	Proving Ring	Soil Test	LC-2B	10953	10,000 lb	ASTM E 74.
LB-17a	Thermometer, Dial Pocket	Thermco	ACCG250C, 8 inch stem			(1 of 3) Added Fall 2023.
LB-17b	Thermometer, Dial Pocket	Thermco	ACCG250C, 8 inch stem			(2 of 3) Added Fall 2023.
LB-17c	Thermometer, Dial Pocket	Thermco	ACCG250C, 8 inch stem			(3 of 3) Added Fall 2023.
LB-18	Thermometer, Digital	Fluke	51 II	59212960MV		Added Fall 2023.

Section Lab Bituminous (LB) Equipment List for Verifications & Calibrations. (continued)

Unit & No.	Equipment	Make	Model / Type	Ser. No. I.D. No.	Capacity	Calibration Requirements and Remarks
LB-20a	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 62C	2448	-38°C to +2°C	(1 of 9) Added Fall 2023.
LB-20b	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 63C	4960	-8°C to +32°C	(2 of 9) Added Fall 2023.
LB-20c	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 64C	4322	25°C to 55°C	(3 of 9) Added Fall 2023.
LB-20d	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 65C	1923	50°C to 80°C	(4 of 9) Added Fall 2023.
LB-20e	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 66C	1898	75°C to 105°C	(5 of 9) Added Fall 2023.
LB-20f	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 67C	2410	95°C to 155°C	(6 of 9) Added Fall 2023.
LB-20g	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 68C	2128	145°C to 205°C	(7 of 9) Added Fall 2023.
LB-20h	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 69C	1725	195°C to 305°C	(8 of 9) Added Fall 2023.
LB-20i	Thermometer, Glass	Ertco 62-70C-FC (set of 9)	ASTM 70C	409	295°C to 405°C	(9 of 9) Added Fall 2023.
LB-21	Thermometer, Infrared	Humboldt	H3599	E1022028377		
LB-22	Marshall Load Cell	Humboldt		SN 613951		
LB-23	Marshall Load Frame	Humboldt		1709045		
LB-24	Marshall Transducers	Humboldt		P/N 023261		
LB-25	Digital Caliper	Mitutoya		A16072826 / DL106037		Added Fall 2023.
LB-F2	Dial Indicator	Humboldt	H14344.2	173192842	1.000 in.-0.001 in.	
LB-26	Vacuum Degassing Oven	ATS	VDO Touch			Added 2024.
LB-27	Thermocouple	Fluke	52-II	62660118MV Barcode # 10012VIV		Added 2024.

Section Lab Geotechnical (LG) Equipment List for Verifications & Calibrations (continued)

Unit & No.	Equipment	Make	Model / Type	Ser. No. I.D. No.	Capacity	Calibration Requirements
LG-03	Hveem Stabilometer	Soil Test	AP-490	LR31T D1-1013693		AASHTO T 246. Follow manufacturer's procedures.
LG-04	Balance	Mettler	PM 16	J58833 D1-1014289	16,000 g	ASTM E 898 & AASHTO M 231 (Class G2).
LG-07r	Digital Gauge Expansion Racks	Humboldt	BG2600-0-16	981803264		Standardize
LG-08	Expansion Pressure Device	Soil Test		7668-3		AASHTO T 190.
LG-09	Expansion Pressure Device	Soil Test		7668-4		AASHTO T 190.
LG-10	Expansion Pressure Device	Soil Test		7668-5		AASHTO T 190.
LG-11	Expansion Pressure Device	Soil Test		7668-6		AASHTO T 190.
LG-12	Expansion Pressure Device	Soil Test		7668-7		AASHTO T 190.
LG-13	Expansion Pressure Device	Soil Test		D1-7668		AASHTO T190
LG-14	Hveem-N-Beam Tester	Gilson, Inc.	MC-60	17404G	60,000 lbs	ASTM E 4 New
LG-16	Kneading Compactor	Cox & Son	CS-1000-B	153-02 DL 104240	2,000 lb	AASHTO R 18, T 190 & T 247.
LG-17	Hveem Stabilometer	Lucas		LR29P		AASHTO T 246. Follow manufacturer's procedures.

Section Lab Geotechnical (LG) Equipment List for Verifications & Calibrations (continued)

Unit & No.	Equipment	Make	Model / Type	Ser. No. I.D. No.	Capacity	Calibration Requirements
LG-20	Proving Ring, CBR	ELE	78-0760	DL 104731 1155-16- 20113C	6,000 lb	ASTM E 74. Check to one (1) division. See Table Below.
LG-20a	Proving Ring, CBR	ELE	78-0760	780760- 01638	6,295 lb	ASTM E 74. Check to one (1) division. See Table Below.
LG-20b	Proving Ring, CBR	ELE	78-0760	780760- 02053	6,295 lb	ASTM E 74. Check to one (1) division. See Table Below.
LG-21r	Balance	AND	GF-3000	T0312513 DL- 105289	3,100 g	ASTM E 898 & AASHTO M 231 (Class G1).
LG-22r	Balance	Mettler-Toledo	SB-16001	1123512419 DL 105276	16,100 g	ASTM E 898 & AASHTO M 231 (Class G2).
LG-27	Dial Indicator, CBR	ELE	88-4100	0613232		AASHTO T193, standardize.
LG-29	Balance	AND	GP-30K		31,000 g, 0.1g	ASTM E 898 & AASHTO M 231 (Class G1).
LG-30	Mechanical Compactor	Ploog Engineering	M100-2	M100- 208082122		ASTM D2168
LG-31	Mechanical Compactor	Ploog Engineering	M100-2	M100- 210011327		ASTM D2168
LG-32r	Motorized SE Shaker	Humboldt	H-4374			
LG-35	Resistivity Meter	Nilsson	400	Apr-49 DL-104975		Calibrate/check to Standard– Low End Out-of-Spec (Below 50)
LG-36d	Direct Shear	Humboldt	HM.2750.3F	1603102 DL-106019		Added 2022
LG-37	Master Loader	Humboldt	HM-1120 5030HC.3F	21076A008D Ser. 3924?? DL-106022		Test Method (AASHTO/ASTM) T236 / D3080 Includes digital indicator. 9 total plates, TSF 2.5" Cell. Verify information inscribed on plates: 1/8 (2 ea. plates), 1/4, 1/2, 1, 2, and 4 (3 ea. plates). Added 2022
LG-38	Load Cell	Interface	1020AF- 12.5K-B	119253A	12.5 Klbf	2.080 mV/V. Added 2022
LG-39	Displacement Transducer	Humboldt		18176		Added 2022

Section Lab Geotechnical (LG) Equipment List for Verifications & Calibrations (continued)

CBR Proving Ring Calibration Table

For LG-20, LG-20a and LG-20b, create and enter results in a table as shown below.

System Code No.	Verification Readings	Device Readings
		1
		2
		10
		25
		50
		100
		200
		300
		400
		500
		600
		700
		800
		900
		1000

Section Lab Structural (LS) Equipment List for Verifications & Calibrations (continued)

Unit & No.	Equipment	Make	Model / Type	Ser. No. I.D. No.	Capacity	Calibration Requirements / Remarks
LS-02 Chem	Balance	Denver	M-220D	P112365 DL 103828	200 g	ASTM E 898 & C 114.
LS-03	Balance, Field	TIF	9010A	01111110011 21	110 lb	ASTM E 898 & AASHTO M 231.
LS-04r Chem	Balance	Mettler Toledo	ML4002T	B613290421	4,200g	ASTM E 898 & C 1005
LS-05 Tech.	Universal Testing Machine	Satec	300HVL	3229 DL 103299	300,000 lb	ASTM E 4 and Special Notes 7 & 8 *Include test range 500 to 3000lb at 500lb. increments
LS-06r	Compression Machine	Forney	FHS-500B/LA-270-TP	Ser. 17057, 2017.	500,000 lb	ASTM E 4
LS-08a	Balance	AND, GP Series	GP-20K	Ser. 14729903 State ID Pend.	21 kg x 0.1g	ASTM E 898 & AASHTO M 231
LS-09	Digital Caliper	Mitutoyo	CD-18" C 500-505-10	0036313	18 inches	Verify by manufacturer's procedure using standard gauge blocks. Purchased Sep. 2020
LS-10	Digital Caliper	Mitutoyo	CD-S8" CT 500-475	10154489 DL No?	8 inches	Verify by manufacturer's procedure using standard gauge blocks.
LS-11	Digital Caliper	Mitutoyo	CD-S4" CT 500-473	B19339574	4 inches	Verify by manufacturer's procedure using standard gauge blocks. Purchased Sep. 2020
LS-12	Inside Hole Micrometer	SPI	MFG-14-326-3	MSC-PN 85199479	42 to 46 mm	Chem Lab. Micrometer used to measure inside diameter of cement cell. Every 2 yrs. Last checked Spring 2023
LS-14	Feeler Gauge	Starrett	LA-0492-04		0.00100 in.	
LS-15	Block, Planeness Gauge	Forney	384 0492-10	SE-001 DL102119	0.001 in.	
LS-16	Oven Furnace	Thermo Fisher Scientific	F47925	114560720122 0608	950 °C	Temperature check at Upper limit only Chemistry Lab
LS-17	Oven	UTEST	UTD-1305-N 250L	Ser. No. 21/001567 DL D1 1010874	200 °C	New. Purchased in 2023.

Section Lab Research (LR) Equipment List for Verifications & Calibrations (continued)

Unit & No.	Equipment	Make	Model / Type	Ser. No. I.D. No.	Capacity	Calibration Requirements / Remarks
LR-01	Digital Caliper	Mitutoyo	CD-8"CS	04241347 ID#500-197-0704	8 inches	Verify by manufacturer's procedure using standard gauge blocks. Returned to Service
LR-02	Digital Caliper	Mitutoyo	CD-8"ASX	A19114259 ID#500-197-30	8 inches	Verify by manufacturer's procedure using standard gauge blocks. Returned to Service
LR-03	Non-Contact Forehead Infrared Thermometer	CEM	DT8806H	SN 20055944	Body Mode: 32.0-42.4°C or 90-108°F	Measuring Range: 5 cm–15 cm or 2 in – 5.9 in. New 2020.

Notes for all Equipment:

- 1) Calibrating technician should be familiar with equipment and controls before operating the equipment.
- 2) Follow manufacturer's instructions.
- 3) Clean equipment.
- 4) Verify equipment according to calibration requirements.
- 5) Calibrate equipment as needed.
- 6) Deliver Report/Certificate of Calibration/Verification including:
 - a. Name of technician performing calibration/verification.
 - b. Date calibration/verification was performed.
 - c. Equipment and/or standards used to perform calibration/verification.
 - d. Procedures used in calibration/verification.
 - e. Test data from calibration/verification.
 - f. Description of any corrective measures performed.
- 7) Ovens - A minimum of two (2) temperature checks are required per AASHTO R-18 unless otherwise specified.

Special Note 8: For Satec test machine, create (Satec/Instron Nu Vision Partner Software) test procedure, or use a Satec/Instron approved program to operate the machine's closed loop controls during the verification. During the verification procedure, the spherical head shall be protected with a full plate to prevent any damage from the load-verifying device. Load verifications shall be performed throughout the digital output range.

Special Note 9: Provide document demonstrating calibration standard traceable to NIST.