



Canadian Council of Independent Laboratories  
Conseil canadien des laboratoires indépendants

CCIL ASPHALT TESTING LABORATORY - AB, BC, MB, NB, NL, NS, PE, SK & YT

DATE:

Inspection Type:

CCIL Lab ID:

FACILITIES AND PERSONNEL		Y N (I/M/R)	Notes
Y/V = 100% Satisfactory, N/X = Not Satisfactory, I = Incomplete, M = Missing, R = Re-occurring Deficiency, N/A = Not Applicable			
Company Name:			
Location of Lab:	Relocation since last inspection?		
Engineering Manager:			
Lab Supervisor:	Change of Engineering Manager and/or Supervisor since last inspection?		
Type of Certification:	Asphalt Mix Comp. Marshall (Type B), AC D2172 Extraction + D6307 Ignition + D5444 Grad/Wash, Asphalt Mix Comp. Superpave Method (Type B), Asphalt Mix Design Marshall Method (Type A), Asphalt Mix Design Superpave Method (Type A), Penetration (Type E),		
Tests to be added:			
Tests to be removed:	Change in Test Methods Requested?		
	New Laboratory?		
<i>Do the laboratory records match the portal profile and the website?</i>			
<i>If there are any changes or discrepancies, was an application submitted?</i>			
<i>Did you notify Alan at schaubel@ccil.com &amp; Gigi at gkermath@ccil.com of the change or discrepancy &amp; include it as a deficiency?</i>			
<i>Was the previous compliance report reviewed and responses confirmed?</i>			
	Technician Certification Requested?		
	Certificate posted?		
<b>INSPECTION DOCUMENTS TO BE UPLOADED TO THE PORTAL BY INSPECTOR</b>			
Organization Chart (hierarchy chart as listed in the portal, dated with lab name & address)			
List of Certified Technicians (using the portal)			
Logo Use Agreement (if applicable - Lab to send Gigi new updated form for lab move, company name change, new EM)			
Current Equipment List (dated, ID for equipment, all equipment according to cert. type, including individual sieves)			
Quality Manual (for all new laboratories, existing labs optional)			
Signed CCIL Asphalt Compliance Report			
Directed lab to email all attachments to inspector as part of response. Preventative actions: responses shall address the noted deficiencies and provide a description of corrective action(s) to be taken, including the means of preventing each deficiency from reoccurring, in accordance with LC-101 cl. 6.4.			
<b>Technician Certification Documents to be Uploaded to the Portal, (if applicable):</b>			
File Names: lab #, lab name, location, date and abbreviation e.g. ON00 WSP Burlington 2024 Jul 3 HEC			
Did the lab submit an application for Technician Certification thru the portal?			
HEC HMA Exam Cover			
HPER HMA Practical Exam Cover Record (if applicable)			
Submit the technician certification(s) to lab through the portal			

COMMENTS: (\*Note at least 3 items you observed that were positive & detail what you observed as deficient. Refer to the Guide for writing deficiencies.)

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Audit Conducted By: \_\_\_\_\_

Signature: \_\_\_\_\_

ASPHALT LABORATORIES			Lab ID:
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Item	Reference	Documentation in accordance with LC-101	Notes
1	LC-101, CI 6.4	Laboratory has QMS available for review - <i>upload a copy to portal for all new laboratories, existing labs optional</i>	
2	LC-101, CI 6.4 Control of Test Samples	Laboratory has established procedures to trace history & condition of a samples unique sample ID, unbroken records	
3	LC-101, CI 6.4, 6.9, 8.3  Training, Lab. Personnel	List of Active Certified Technicians updated prior to audit LC-101, CI 6.3.3 Laboratory has procedures for training in the QMS, CI 6.4. Asphalt testing on CCIL cert performed under direct supervision of supervisory lab tech., App. A-2 to A-7 CI 2.3 - All Labs must have at least one certified HMA tech to the level of the lab certification. - New techs (uncertified and previously certified with expired cards) must be preapproved prior to certification. - New techs (uncertified and previously certified with expired cards) must be certified to the level of the lab cert. - Existing certified techs and loaned or transferred certified techs may hold their current certification level, providing the lab has one or more HMA technicians certified to the lab certification.	
4	LC-101, CI 6.4  Organization Structure, Management Personnel	Organization Chart updated prior to audit, identifying key personnel, LC-101, Cl. 6.3.3 Engineering manager and laboratory supervisor resumes correspond to personnel identified by management and are up-to-date, CI 6.3.2. Laboratory Supervisor able to demonstrate the tests in the stipulated manner CI 2.2 in A-2 to A-7) CCIL advised of Management or testing personnel change LC-101 CI 6.3.2 (e.g. ≤ 30 d) Management review laboratory and QMS annually, performed by a person not responsible for original results. Management Policy and Commitment statement in QMS	
5	LC-101, CI 6.4 Equipment and facility	Equipment list with current date and name and address of laboratory available Procedures for Maintenance and Calibration of Equipment in QMS Facility has adequate space, lighting, heating, ventilation, power source and good housekeeping, LC-101 CI 6.6	
6	LC-101, CI 6.4  Control of non-conformance, Corrective and preventative action	Processes included in QMS Copies of NCR/CAR available for review Any deficiency found during a CCIL laboratory audit is a deficiency against the Quality Manual. Create an NCR & CAR related to your inspection, which can state something like "Refer to the CCIL audit deficiencies on XX date." This NCR & CAR should be sent to your inspector and a copy kept a copy in the quality manual (if printed copy of QMS) and be available for review at your next audit. <b>Repeated Non-Conformances</b> CI 4.2.4 Failure on an ongoing or repeated basis to comply with the requirements? <i>(R = This non-conformance was noted in the last inspection and approved as resolved, however this resolution does not appear effective as the deficiency continues. Repeated non-compliances are very serious. Therefore, these deficiencies have also been referred to the CCIL Program office for further investigation and action.)</i>	
7	LC-101, CI 6.4 Control of documents and data	Laboratory has the necessary manuals and reporting procedures, LC-101 A-2 to A-7 CI 3.1 Current testing standards accessible to staff performing tests QMS accessible to staff performing tests	
8	LC-101, CI 6.4 Lab. Cert. Doc.	Laboratory certificate is available and referred to in QMS or included in QMS	
9	LC-101  Reporting	Reports be complete and factual, citing methods used, providing specified and obtained values, CI 6.9.2. Any irregularity or deficiency known on any samples reported, (tested, handled, or stored), CI 6.9.2. Laboratory supervisor or engineering manager signed report, CI 2.4 of A-2 to A-7 During training, test reports include the name of the certified technician responsible for the testing, and the name of the trainee, CI 2.3 A-2, A-3, A-4, A-5, A-6, A-7	
10	LC-101, CI 6.8  Sub-contracting	Does the laboratory sub-contract any tests? If so, indicate test method(s) in compliance report. QMS must demonstrate how the quality of the subcontracted laboratory testing will be maintained and verified. Work shall be performed by a lab certified for those specific tests. The laboratory shall demonstrate that the sub-contractor is competent to perform the tests in question and uses appropriate test methods and procedures.	
11	LC-101, CI 6.7.2 Traceability	Laboratory measurements traceable to national standards, where applicable. Ref. thermometer, weights, etc. <i>Where no such standard exists, lab. Is to provide satisfactory inter-laboratory correlation results.</i>	
12	LC-101, CI 10.0 CCIL Logo MoU	MoU with current lab name, address & EM name & signature provided, required by CCIL to authorize use of Logo. <i>Confirm proper use of Logo if used. Report issues to the program office.</i>	

BASIC ASPHALT EQUIPMENT			Lab ID:
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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	Y N (I/M/R)
T	Thermometers	<p><b>a. Reference Temperature Measuring Device</b> (For all app. test meth.) <b>SN:</b></p> <ul style="list-style-type: none"> <li>- Readability of 0.1 °C Accurate to ± 0.5°C (D2041 CI 6.6); traceable to NIST</li> <li>- Liquid in Glass/Calibration <b>once prior to use</b> (E77 CI 5.5.2.1) - Digital/Calibration <b>annually</b> (D3666 Table 2)</li> <li>- A certificate or report of calibration available for review. Traceable to NIST</li> </ul> <p><b>b. Thermometers / Temperature Probes</b> (For all applicable test methods)</p> <ul style="list-style-type: none"> <li>- Calibration of temperature measuring devices performed yearly (D3666 Table 2)</li> </ul> <p><b>ASTM D6926</b></p> <ul style="list-style-type: none"> <li>- Of suitable range with subdivisions and maximum scale error of 0.5 °C CI 5.8.4</li> </ul> <p><b>AASHTO T312</b></p> <ul style="list-style-type: none"> <li>- Shall meet the req. of 339M/M 339 with a temp range of at least 10 to 230°C, and accuracy of ±2.5°C T312 CI 4.4</li> </ul> <p><b>AASHTO R30</b></p> <ul style="list-style-type: none"> <li>- Having a temperature range between 50 to 260°C and readable to 1°C CI 5.2</li> </ul> <p><b>ASTM D5</b></p> <ul style="list-style-type: none"> <li>- Suitable range with subdivisions and accurate to 0.1°C CI 6.7.1</li> <li>- Suitable thermometers ASTM 17C, 63C, 64C CI 6.7.1.1</li> </ul> <p><b>ASTM D1856</b></p> <ul style="list-style-type: none"> <li>- ASTM 7E (C) or 7F having a range -2 to 300°C readable and accurate to 1°C (E1 Table 1)</li> </ul>	
S	Scales	<p><b>Balances &amp; Scales</b> (For all applicable test methods)</p> <ul style="list-style-type: none"> <li>- Calibration performed <b>annually</b>, if applicable, std weights must be calibrated every 5 yrs.</li> <li>- <i>In addition, periodic scale checks with known mass – min annually or when moved (based on QMS) ( see records )</i></li> </ul>	
O	Ovens	<p><b>Ovens</b> (For all applicable test methods)</p> <ul style="list-style-type: none"> <li>- Ovens (on file - Equipment List)</li> <li>- Thermostat calibration (setting vs. actual) - performed <b>annually</b></li> </ul>	
<b>TYPE B - MARSHALL METHOD - ASPHALT MIX COMPLIANCE LABORATORY</b>			
BM1	D6926  Preparation of Bituminous Specimens Using Marshall Apparatus	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D6926-20</b> Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p><b>c. Length Measuring Devices</b> (For all applicable test methods) LC-101 A-2 CI 3.1 e.g., Digital Calipers calibrated/verified <b>yearly</b></p> <p><b>d. Splitter (if used)</b> Suggested width of the chutes is approx. 38 mm for all types. - dimensional verification - checks performed <b>annually</b></p> <p><b>e. Hot Plate</b> (on file - Equipment List) - Thermostat cali. (setting vs. actual) CI 5.6, +/- 3°C required mixing &amp; compaction temperatures - performed <b>annually</b></p> <p><b>f. Mechanical and Manual Compaction Hammers</b> - Dimensional verification required <b>annually</b> Fig. 3 - e.g., Weight mass 4.527 to 4.545 kg, drop distance 455.7 to 458.7 mm - Comparison of manual to Mechanical Hammer <b>annually</b>, if used Mechanical Hammer verification base rotation (18-30rpm) and blows per minute (55 to 68), if used, CI 5.3.3</p> <p><b>g. Specimen Mold Assembly</b> - Mold cylinders, base plates, and extension collars shall conform to the details shown in Fig. 1. Verification required <b>annually</b> (ID 101.3-101.7mm)</p> <p><b>h. Compaction Pedestal</b> - Compaction Pedestal is level - Regularly checked for being level - recorded at least <b>annually</b> - Dimensional verification required <b>once</b></p> <p><b>i. Specimen Extractor</b> CI 5.2 - The specimen extractor has a steel disk that will enter the mold without binding and not be less than 100.3 mm in diameter and 12.7 mm thick. Dimensional verification required <b>once</b></p> <p><b>j. Report</b> Section 7 .1 The report shall include at least the following info: .1.1 Sample ID (#, lab mix lab compacted (LMLC), plant mix laboratory compacted (PMLC), or reheated plant mix lab compacted (RPMLC)), .1.2 Type of asp. binder, source, &amp; content, .1.3 Type(s) of agg., source &amp; grading, .1.4 Type &amp; time of curing prior to compaction, .1.5 Type of hammer (that is, manually held or fixed &amp; mech. or man operated hammer &amp; flat or slanted foot), .1.6 # of blows/side, .1.7 Mixing temp., .1.8 Compaction temp, .1.9 Type &amp; time of cooling.</p>	
BM2	D2726  Bulk Relative Density of Compacted Bit. Mixtures  (See B52)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D2726M-21</b> Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p><b>c. Water Bath</b> - Capable of maintaining a temperature of 25 ± 1 °C complete with overflow ASTM c 6.2 - Temperature recorded</p> <p><b>d. Report</b> Section 12 .1 Report the following: .1.1 Bulk SG of the mix. to the 3rd decimal place as: bulk SG at 25 °C [77 °F], .1.2 Den. of the mix. with 4 significant figures in kg/m3 or lb/ft3 as: den. at 25 °C [77 °F], .1.3 Type, of mix., .1.4 Size of sample, .1.5 Water abs., to the nearest 0.1 %.</p>	

TYPE B - MARSHALL METHOD - ASPHALT MIX COMPLIANCE LABORATORY			Lab ID:	
Y/V = 100% Satisfactory, N/X = Not Satisfactory, I = Incomplete, M = Missing, R = Re-occurring Deficiency, N/A = Not Applicable			Y	N
Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	I/M/R	Notes
BM3	D1188  BRD of Compac. Bit. Mixtures Using Paraffin Coated Spec.  (See BS3)	<p><b>a. This Test is Performed Only if Required</b> Does this lab perform this test? - If Yes, complete the below requirements. If No, move to the next test below.</p> <p><b>b. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>c. D1188-22</b> Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p><b>d. Report</b> (Section 11) .1 Report the following information: .1.1 Test method used to determine bulk SG, .1.2 % water abs. .1.3 SG of Parafilm to 3 decimal places, .1.4 Moisture correction to 4 significant figures .1.5 Bulk SG at 25°C (77°F) +/- 1°C (1.8°F) to 4 significant figures, .1.6 Den. to 4 significant figures.</p>		
BM4	D6752  Bulk Spec. Grav. & Den. of Comp. Bit. Mix Using Auto Vacuum Sealing Method (See BS4)	<p><b>a. This Test is Performed Only if Required</b> Does this lab perform this test? - If Yes, complete the below requirements. If No, move to the next test below.</p> <p><b>b. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>c. D6752M-23</b> copy of current standards</p> <p><b>d. Report</b> Section 11 .1 Report the following info: .1.1 Apparent SG of plastic bag to 3 decimal places, .1.2 Bulk SG at 25 +/- 1 °C [77 +/- 2 °F] to 4 significant figures, .1.3 Den. to 4 significant figures.</p>		
BM5	D6927  (AB & YT labs must have this test for full Mix Compliance) (If the AB & YT lab is Partial, this test is n/a)  (Test is n/a in MB if the lab is Partial)  (If the lab is Type A Marshall, the lab must have this test)  Marshall Stability and Flow of Asphalt Mixtures	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D6927-22</b> Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p><b>c. Breaking Head</b> - as per Clause 5.1, <b>Fig. 2</b> dimensional verification required <b>annually</b></p> <p><b>d. Compression Loading Machine</b> Constant loading rate of 50±5mm CI 5.2 <b>annually</b></p> <p><b>e. Load Measuring Device</b> - As a minimum, a calibrated nominal 20 kN ring dynamometer Calibration <b>annually</b></p> <p><b>f. Method A or B</b> are options CI 4.1.1</p> <p><b>g. Method A</b> - Using a loading frame with a load ring and a dial gauge for deformation or flow meter</p> <p><b>h. Flow Meter</b> - Graduations of the flowmeter gauge shall be increments of 0.25 mm or finer - Other devices such as an indicator dial or LVDT connected to a load deformation recorder or computer may be used.</p> <p><b>i. Method B</b> - Using a load-deformation recorder in conjunction with a load cell and linear variable differential transducer (LVDT) or other automatic recording device (Automated Method)</p> <p><b>j. Water Bath</b> CI 5.5 - Capable of maintaining a temperature of 60 ± 1°C, Documented <b>annually</b> - Perforated false bottom or shelf for specimens 50 mm above the bottom of the bath - A mechanical water circulator</p> <p><b>k. Report</b> Section 8 .1 The report shall include the following info: .1.1 Type of sample tested (laboratory mixed sample, plant mixed sample, or pavement core specimen), .1.2 If available, the nature of asp. mix, including agg. type &amp; grading, binder grade, &amp; binder content, .1.3 Individual and ave. specimen bulk SG, .1.4 Height of each test specimen in inches (millimetres) to the nearest 0.01 in. (0.25 mm) .1.5 Individual &amp; ave. values of Marshall stability (uncorrected and corrected if required) to the nearest 10 lbf (50N), .1.6 Individual &amp; ave. value of Marshall flow in units of 0.01 in. (0.25 mm) or in units of mm directly, where Flow (0.01 in.) = 4 x Flow (mm), as well as the method used for determining flow (peak or tangent offset), .1.7 Test temp. to the nearest 0.4°F (0.2°C).</p>		

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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	Notes
BM6	<b>D2041</b> <i>(AB &amp; YT labs must have this test for full Mix Compliance)</i> <i>(If the AB or YT lab is Partial, this test is n/a)</i>  <i>(If the lab is Type A Marshall, the lab must have this test)</i>  <b>Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures</b>  (See BS5)	<b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2 As per Clause 9.5.1, Weighing in water As per Clause 9.5.2, Weighing in air (Bowl) As per Clause 9.5.3, Weighing in air (Flask) <b>b. D2041M-19</b> Copy of current standards LC-101, CI 6.4, A-2 CI 3.2 <b>c. Vacuum Bowl or Flasks</b> - Verification of bowl masses in air and water <b>annually</b> CI 8.1 & 9.5.1 - Verification of bowl masses CI 8.2 & 9.5.2 - Verification of flask masses CI 8.3 & 9.5.3 <b>d. Vacuum Pump</b> - Capable of evacuating air from the vacuum container to a residual pressure of 30 mm Hg (4.0 kPa) or less. CI 6.3 <b>e. Residual Pressure Manometer or Calibrated Absolute Pressure Gauge</b> CI. 6.4 - to confirm the specified pressure applied to the container, and capable of measuring residual pressure of 30 mm Hg (4.0 kPa) or less <b>f. Manometer or Vacuum Gauge</b> CI. 6.5 - Suitable for measuring the vacuum being applied at the source of the vacuum. - The device should be connected directly to the vacuum source or be in the vacuum line close to the source. If digital, calibrated <b>annually</b> . If Hg, the lab should have a <b>Hg spill kit</b> <b>g. Bleeder Valve</b> - Attached to the vacuum line to facilitate adjustment and slow release of the vacuum. <b>h. Mechanical Agitation Device</b> - Capable of applying a gentle but consistent agitation of the sample. - This device shall be equipped with a means of firmly anchoring the container so that it does not move on the surface of the device. <b>i. Water Bath</b> - Capable of maintaining a temperature of 25 ± 1°C <b>j. Calibrated Thermometers</b> , of suitable range and readable to 0.1°C, max error 0.5°C <b>k. Report</b> Section 12 .1 Report the following information: .1.1 Max. SG, Gmm, to the 3rd decimal place, .1.2 Type of asp. mix., .1.3 Size of sample, .1.4 # of samples, .1.5 Type of container, .1.6 Type of procedure.	
BM7	<b>D3203</b> <i>(AB &amp; YT labs req. test for Full Mix Comp.) n/a if Partial</i> <b>Percent Air Voids</b> (See BS6)	<b>a. D3203-22</b> Copy of current standards LC-101, CI 6.4, A-2 CI 3.2  <b>b. Calculated Properly</b> % air voids = 100*(1 - (BRD/MTD)) (CI 7.1)	
BM8	<b>MS-2</b> <b>Percent VMA</b> (See BS7)	<b>a. MS-2</b> Copy of current standards LC-101, CI 6.4, A-2 CI 3.2 <b>b. Calculated Properly</b> such as, VMA = 100 - ((Gmb*Ps)/Gsb) Eq. 5.20	
BM9	<b>ATT-67(AB YT only)</b> <b>% compaction</b> (See BS8)	<b>a. ATT-67/2022</b> Copy of current standard LC-101, CI 6.4, A-2 CI 3.2 <b>b. Calculated Properly</b> See Section 3	

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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	Notes
BM10	D2172	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D2172M-24</b> Copy of current standards CI 6.4, A-2 CI 3.2</p> <p><b>c. Extraction Apparatus</b> (One of the following)</p> <p><b>Method A - Centrifuge</b> (S9) with variable speed up to 3600 r/min, filter ring - felt or paper (Fig. 2) - verify <b>annually</b></p> <p><b>Method B - Reflux Extractor</b> (S10) Glass jar with filter paper in 1 or 2 metal frames &amp; condenser on hot plate (Fig. 3)</p> <p><b>Method C - Vacuum Extractor</b> (S11) with vacuum pump, rubber tubing, filter paper, support plate &amp; funnel (Fig. 5)</p> <p><b>Method D - Extraction Kettle</b> (S12) with cloth filter sacks (Fig. 6)</p> <p><b>d. Determination of Mineral Matter</b> (Section 13 - one of the following)</p> <p><b>Ashing Method (13.2)</b> Ignition dish, ashing oven, ammonium carbonate solution, desiccator, calculate properly</p> <p><b>Centrifuge Method (13.3)</b></p> <p>High Speed Centrifuge Verification <b>annually</b> example RPM 9000 for the SMM Type (CI 13.3.3)</p> <p>Flow Rate Calibration <b>annually</b> 100-150 ml per min (CI 13.3.4)</p> <p><b>Volumetric Method (13.4)</b> Flask, controlled-temperature bath (if used, CI 13.4.2), calculate properly</p> <p><b>e. Calculated Properly</b> <math>AC\% = [(w1-w2)-(w3-w4)/(w1-w2)] * 100</math> (CI 14.1)</p>	
<b>And/Or</b>			
BM11	D6307	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D6307-19</b> Copy of current standard LC-101, CI 6.4, A-2 CI 3.2</p> <p><b>c. Ignition furnace</b></p> <p>- (CI 8.1.1 or 11.1.1) complete with printout</p> <p><b>d. Internal Weighing System</b></p> <p>- Calibration at least <b>annually</b> (CI 8.1.1), if applicable (CI 11.1.1), std weights calibrated every 5 yrs.</p> <p><b>e. Manufacturer's instruction manual</b> followed CI 6.1, such as, safety, maintenance, cleaning, lift test, ect. <b>record</b></p> <p><b>f. Report</b> Section 14</p> <p>.1 Report the following info: .1.1 Date, .1.2 ID of agg. &amp; mix type, .1.3 Test #, .1.4 Calibration data, .1.5 Mass of the asp. mix. sample before &amp; after ignition (nearest 0.1 g), .1.6 Measured asp. content (nearest 0.01 %), .1.7 Agg. gradation, if performed.</p>	
<b>And</b>			
BM12	D5444	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D5444-24 and E11-24</b>, Copy of current standards CI 6.4, A-2 CI 3.2</p> <p><b>c. Sieve Shaker:</b></p> <p>- Coarse Aggregate Shakers (on file - Equipment List)</p> <p>- Fine Aggregate Shakers (on file - Equipment List)</p> <p>- CA &amp; FA Mechanical Efficiency Check performed <b>annually</b> (0.5% ME CI 6.8 &amp; 0.2% difference CI 6.5)</p> <p><b>d. Sieves:</b></p> <p>- Coarse sieves check as per E11 Table 1 (openings and wire diameter) - <b>Recorded at least annually</b></p> <p>- All sieves checked for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed ongoing during use - <b>Recorded at least annually</b></p> <p><b>e. Report</b> Section 8</p> <p>.1 Depending on the form of the spec. for use of the material under test, report the following info:</p> <p>.1.1 Total %age of material passing each sieve, or, .1.2 Total %age of material retained on each sieve, or, .1.3 %age of material retained between consecutive sieves, .2 Report %ages to the nearest whole # except for the %age passing the 75-µm (No. 200) sieve, which shall be reported to the nearest 0.1 %.</p>	

TYPE B - SUPERPAVE METHOD - ASPHALT MIX COMPLIANCE LABORATORY		Lab ID:	
Y/V = 100% Satisfactory, N/X = Not Satisfactory, I = Incomplete, M = Missing, R = Re-occurring Deficiency, N/A = Not Applicable		Y N (I/M/R)	
Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	Notes
BS1	T312 <i>(MB, NB, NS &amp; PE Labs can be Type B Superpave Only)</i>  Preparing Hot-Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. T312-22</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>c. Length Measuring Devices</b> (For all applicable test methods) LC-101 A-3 CI 3.1 e.g., Digital Calipers calibrated/verified yearly</p> <p><b>d. Splitter (if used)</b> Suggested width of the chutes is approx. 38 mm for all types. - dimensional verification - checks performed <b>annually</b></p> <p><b>e. Superpave Gyrotory Compactor</b> - As per Clause 4.1 - Calibration as per T312 required per manufacturer's instructions <b>Annually</b> - Axis of ram shall be perpendicular to the platen of compactor - Apply and maintain a pressure of 600 ± 18kPa - Specimen mold titled at an average internal angle of 1.16 ± 0.02 degrees - Apply a gyration rate to molds of 30.0 ± 0.5 gyrations per minute - Maintenance <b>record</b> completed as per the manufacture's instructions, available</p> <p><b>f. Specimen Mold Assembly</b> - As per Clause 4.2 - dimensional verification required <b>annually</b> as per Annex A - Thickness: minimum of 7.5 mm - Inside diameter: 149.90 to 150.00 mm - Height: Minimum of 250 mm - Rockwell hardness: Minimum of C48 - Initial inside finish: root mean square (rms) of 1.60µm or smoother</p> <p><b>g. Ram Head and Mold Bottoms</b> - As per Clause 4.3 dimensional verification required <b>annually</b> - Diameter: 149.50 to 149.75 mm - Flat / initial inside finish = root mean square (rms) of 1.60µm or smoother - Rockwell hardness: Minimum of C48</p> <p><b>h. Report</b> Section 12 .1. Report the following info. in the compaction report, if applicable; .1.1. Project name; .1.2. Date of the test; .1.3. Start time of the test; .1.4. Specimen ID; .1.5. % binder in specimen, nearest 0.1 %; .1.6. Ave. dia. of the mold used (d), nearest 1.0 mm; .1.7. Mass of the specimen (Wm), nearest 0.1 g; .1.8. Max. SG (Gmm) of the specimen by T 209, nearest 0.001; .1.9. Bulk SG (Gmb) of the specimen by T 166 or T 275, nearest 0.001; .1.10. Height of the specimen after each gyration (hx), nearest 0.1 mm; .1.11. Rel. den. (%Gmm) expressed as a % of the theoretical max. SG (Gmm), nearest 0.1 %; .1.12. Gyration angle, nearest 0.2 mrad (0.01 degrees), &amp; the method used to determine or verify the gyration angle.</p>	
BS2	D2726  Bulk Relative Density of Compacted Bit. Mixtures  (See BM2)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D2726M-21</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>c. Water Bath</b> - Capable of maintaining a temperature of 25 ± 1 °C complete with overflow ASTM CI 6.2 - <i>Temperature recorded</i></p> <p><b>d. Report</b> Section 12 .1 Report the following; .1.1 Bulk SG of the mix. to the 3rd decimal place as: bulk SG at 25 °C [77 °F], .1.2 Den. of the mix. with 4 significant figures in kg/m<sup>3</sup> or lb/ft<sup>3</sup> as: den. at 25 °C [77 °F], .1.3 Type, of mix., .1.4 Size of sample, .1.5 Water abs., to the nearest 0.1 %.</p>	

TYPE B - SUPERPAVE METHOD - ASPHALT MIX COMPLIANCE LABORATORY			Lab ID:	
Y/V = 100% Satisfactory, N/X = Not Satisfactory, I = Incomplete, M = Missing, R = Re-occurring Deficiency, N/A = Not Applicable			Y	N
Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	(I/M/R)	Notes
BS3	D1188 BRD of Compac. Bit. Mixtures Using Paraffin Coated Spec.  (See BM3)	<p><b>a. This Test is Performed Only if Required</b> Does this lab perform this test? - If Yes, complete the below requirements. If No, move to the next test below.</p> <p><b>b. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>c. D1188M-22</b> copy of current standards</p> <p><b>d. Report</b> Section 11</p> <p>.1 Report the following information: ., .1.1 Test method used to determine bulk SG, ., .1.2 % water abs. .1.3 SG of Parafilm to 3 decimal places, .1.4 Moisture correction to 4 significant figures .1.5 Bulk SG at 25°C (77°F) +/- 1°C (1.8°F) to 4 significant figures, .1.6 Den. to 4 significant figures.</p>		
BS4	D6752 Bulk Spec. Grav. & Den. of Comp. Bit. Mix Using Auto Vacuum Sealing Method (See BM4)	<p><b>a. This Test is Performed Only if Required</b> Does this lab perform this test? - If Yes, complete the below requirements. If No, move to the next test below.</p> <p><b>b. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>c. D6752M-23</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>d. Report</b> Section 11</p> <p>.1 Report the following info: ., .1.1 Apparent SG of plastic bag to 3 decimal places, .1.2 Bulk SG at 25 +/- 1 °C [77 +/- 2 °F] to 4 significant figures, .1.3 Den. to 4 significant figures.</p>		
BS5	D2041  Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures  (See BM6)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p>As per Clause 9.5.1, Weighing in water As per Clause 9.5.2, Weighing in air (Bowl) As per Clause 9.5.3, Weighing in air (Flask)</p> <p><b>b. D2041M-19</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>c. Vacuum Bowl or Flasks</b></p> <p>- Verification of bowl masses in air and water <b>annually</b> CI 8.1 &amp; 9.5.1 - Verification of bowl masses CI 8.2 &amp; 9.5.2 - Verification of flask masses CI 8.3 &amp; 9.5.3</p> <p><b>d. Vacuum Pump</b></p> <p>- Capable of evacuating air from the vacuum container to a residual pressure of 30 mm Hg (4.0 kPa) or less. CI 6.3</p> <p><b>e. Residual Pressure Manometer or Calibrated Absolute Pressure Gauge</b> CI 6.4</p> <p>- to confirm the specified pressure applied to the container, and capable of measuring residual pressure of 30 mm Hg (4.0 kPa) or less</p> <p><b>f. Manometer or Vacuum Gauge</b> CI 6.5</p> <p>- Suitable for measuring the vacuum being applied at the source of the vacuum. - The device should be connected directly to the vacuum source or be in the vacuum line close to the source. If digital, calibrated <b>annually</b>. If Hg, the lab should have a <b>Hg spill kit</b></p> <p><b>g. Bleeder Valve</b></p> <p>- Attached to the vacuum line to facilitate adjustment and slow release of the vacuum.</p> <p><b>h. Mechanical Agitation Device</b></p> <p>- Capable of applying a gentle but consistent agitation of the sample. - This device shall be equipped with a means of firmly anchoring the container so that it does not move on the surface of the device.</p> <p><b>i. Water Bath</b></p> <p>- Capable of maintaining a temperature of 25 ± 1°C</p> <p><b>j. Calibrated Thermometers</b>, of suitable range and readable to 0.1°C, max error 0.5°C</p> <p><b>k. Report</b> Section 12</p> <p>.1 Report the following information: ., .1.1 Max. SG, Gmm, to the 3rd decimal place, .1.2 Type of asp. mix, .1.3 Size of sample, .1.4 # of samples, .1.5 Type of container, .1.6 Type of procedure.</p>		
BS6	D3203 Percent Air Voids (See BM7)	<p><b>a. D3203M-22</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>b. Calculated Properly</b> % air voids = 100*(1 - (BRD/MTD)) CI 7.1</p>		
BS7	MS-2 Percent VMA (See BM8)	<p><b>a. MS-2</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>b. Calculated Properly</b> such as, VMA = 100 - ((Gmb*Ps)/Gsb) Eq. 5.20</p>		
BS8	ATT-67( AB YT only) % compaction (See BM9)	<p><b>a. ATT-67/2022</b> Copy of current standard CI 6.4, A-3 CI 3.2</p> <p><b>b. Calculated Properly</b> See Section 3</p>		



TYPE B - SUPERPAVE METHOD - ASPHALT MIX COMPLIANCE LABORATORY		Lab ID:
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Item	Reference	(I/M/R)
Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.		
AC Determination and Gradation of Extracted Aggregate - Select at least one of the two AC determination methods		
BS9	D2172	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D2172M-24</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>c. Extraction Apparatus</b> (One of the following)</p> <p><b>Method A - Centrifuge</b> (S9) with variable speed up to 3600 r/min, filter ring - felt or paper (Fig 2) - verify <b>annually</b></p> <p><b>Method B - Reflux Extractor</b> (S10) Glass jar with filter paper in 1 or 2 metal frames &amp; condenser on hot plate (Fig. 3)</p> <p><b>Method C - Vacuum Extractor</b> (S11) with vacuum pump, rubber tubing, filter paper, support plate &amp; funnel (Fig. 5)</p> <p><b>Method D - Extraction Kettle</b> (S12) with cloth filter sacks (Fig. 6)</p> <p><b>d. Determination of Mineral Matter</b> (Section 13 - one of the following)</p> <p><b>Ashing Method (13.2)</b> Ignition dish, ashing oven, ammonium carbonate solution, desiccator, calculate properly</p> <p><b>Centrifuge Method (13.3)</b></p> <p>High Speed Centrifuge Verification <b>annually</b> example RPM 9000 for the SMM Type (CI 13.3.3)</p> <p>Flow Rate Calibration <b>annually</b> 100-150 ml per min (CI 13.3.4)</p> <p><b>Volumetric Method (13.4)</b> Flask, controlled-temperature bath (if used, CI 13.4.2), calculate properly</p> <p><b>e. Calculated Properly</b> <math>AC\% = [(w1-w2)-(w3-w4)/(w1-w2)]*100</math> (CI 14.1)</p>
<b>And/Or</b>		
BS10	D6307	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D6307-19</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>c. Ignition furnace</b></p> <p>- As per Clause 8.1.1 or 11.1.1 complete with printout</p> <p><b>d. Internal Weighing System</b></p> <p>- Calibration at least <b>annually</b> CI 8.1.1, if applicable CI 11.1.1, std weights calibrated every 5 yrs.</p> <p><b>e. Manufacturer's instruction manual</b> must be followed CI 6.1, such as, maintenance, cleaning, lift test, ect. <b>record</b></p> <p><b>f. Report</b> Section 14</p> <p>.1 Report the following info: .1.1 Date, .1.2 ID of agg. &amp; mix type, .1.3 Test #, .1.4 Calibration data, .1.5 Mass of the asp. mix. sample before &amp; after ignition (nearest 0.1 g), .1.6 Measured asp. content (nearest 0.01 %), .1.7 Agg. gradation, if performed.</p>
<b>And</b>		
BS11	D5444	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D5444-24 and E11-24</b> Copy of current standards CI 6.4, A-3 CI 3.2</p> <p><b>c. Sieve Shaker</b></p> <p>- Coarse Aggregate Shakers (on file - Equipment List)</p> <p>- Fine Aggregate Shakers (on file - Equipment List)</p> <p>- CA &amp; FA Mechanical Efficiency Check performed <b>annually</b> (0.5% ME CI 6.8 &amp; 0.2% difference CI 6.5)</p> <p><b>d. Sieves</b></p> <p>- Coarse sieves check as per E11 Table 1 (openings and wire diameter) - <b>Recorded at least annually</b></p> <p>- All sieves checked for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed ongoing during use - <b>Recorded at least annually</b></p> <p><b>e. Report</b> Section 8</p> <p>.1 Depending on the form of the spec. for use of the material under test, report the following info:</p> <p>.1.1 Total %age of material passing each sieve, or, .1.2 Total %age of material retained on each sieve, or, .1.3 %age of material retained between consecutive sieves, .2 Report %ages to the nearest whole # except for the %age passing the 75-µm (No. 200) sieve, which shall be reported to the nearest 0.1 %.</p>
BS12	LC-101, A3, CI 3.3, Table 2, Asphalt Mix Compliance Laboratory using Superpave methods shall be able to complete or have documented access to a CCIL certified laboratory able to complete, any additional tests required by the provincial jurisdiction/owner that are part of their Mix Compliance protocol. Examples of such tests are:	
	a. D5/LS-200, D2170/LS-202, D4867, T240, R28, T313, T315, T316	

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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	Notes
<b>Note:</b>		<b>Marshall Stability and Flow of Asphalt Mixtures See BM5</b>	
Type AM labs must be Full Mix Compliance		<b>Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures See BM6</b>	
		<b>Percent Air Voids See BM7</b>	
AM1	C702	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. C702-18</b> Copy of current standards CI 6.4, A-4 CI 3.2</p> <p><b>c. Coarse Sample Splitter</b> Number of Chutes, not less than 8 for coarse Aggregate</p> <p><b>d. Fine Sample Splitter</b> Number of Chutes, not less than 12 for fine aggregate</p> <p><b>c. and d.</b></p> <ul style="list-style-type: none"> <li>- Cleaned after splitting</li> <li>- A minimum of three pans</li> <li>- Hopper or feeder pan</li> <li>- dimensional verification - checks performed <b>annually</b></li> </ul> <p><b>e. Sample Information and Identification</b></p>	
AM2	C117	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. C117-23</b> Copy of current standards CI 6.4, A-4 CI 3.2</p> <p><b>c. Sieves</b></p> <ul style="list-style-type: none"> <li>-75µm sieve with protective 1.18mm cover screen (CI 5.2)</li> <li>- Sieve checks for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed <b>ongoing during use</b></li> </ul> <p><b>d. Report</b> Section 11</p> <ul style="list-style-type: none"> <li>.1.1 Report the percentage of material finer than the 75-µm (No. 200) sieve by washing to the nearest 0.1 %, except if the result is 10 % or more, report the %age to the nearest whole number.</li> <li>.1.2 Include a statement as to which procedure was used.</li> </ul>	
AM3	C136	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. C136M-19, E11-24</b> Copy of current standards CI 6.4, A-4 CI 3.2</p> <p><b>c. Sieve Shaker:</b></p> <ul style="list-style-type: none"> <li>- Coarse Aggregate Shakers (on file e.g. 26.5mm-4.75mm - Equipment List)</li> <li>- Fine Aggregate Shakers (on file e.g. 4.75mm-75µm- Equipment List)</li> <li>- CA &amp; FA Mechanical Efficiency Check performed <b>annually</b></li> </ul> <p><b>d. Sieves</b> (for all applicable test methods)</p> <ul style="list-style-type: none"> <li>- Complete set as per LS requirements</li> <li>- Coarse sieves check as per E11 Table 1 (openings and wire diameter) - <b>Recorded at least annually</b></li> <li>- All sieves checked for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed ongoing during use - <b>Recorded at least annually</b></li> </ul> <p><b>e. Report</b> Section 10</p> <ul style="list-style-type: none"> <li>.1 Depending upon the form of the specifications for use of the material under test, the report shall include the following:; .1.1 Total %age of material passing each sieve, or, .1.2 Total percentage of material retained on each sieve, or, .1.3 Percentage of material retained between consecutive sieves</li> <li>.2 Report %ages to the nearest whole #, except if the %age passing the 75-µm (No. 200) sieve is less than 10 %, it shall be reported to the nearest 0.1 %, .3 Report the fineness modulus, when required, to the nearest 0.01.</li> </ul>	
AM4	C127	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. C127-15</b> Copy of current standards CI 6.4, A-4 CI 3.2</p> <p><b>c. Wire Basket or Bucket:</b> with &lt; 3.35 mm mesh, Equal height and breadth with capacity of 4-7L (maximum 37.5 mm aggregate) and larger container for larger size aggregate)</p> <p><b>d. Report</b> Section 10</p> <ul style="list-style-type: none"> <li>.1 Report rel. den. (SG) results to the nearest 0.01 &amp; indicate the basis for rel. den. (SG) as either (OD), (SSD), or apparent, .2 Report the abs. result to the nearest 0.1 %, .3 If the relative den. (SG) &amp; abs. values were determined without first drying the agg., as permitted in 8.2, note that fact in the report.</li> </ul>	

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Y/V = 100% Satisfactory, N/X = Not Satisfactory, I = Incomplete, M = Missing, R = Re-occurring Deficiency, N/A = Not Applicable			Y	N
Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	I/M/R	Notes
AM5	C128  Relative Density & Absorption of Fine Aggregate  (See AS9)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. C128-22</b> Copy of current standards CI 6.4, A-4 CI 3.2</p> <p><b>c. Mould:</b> Dimensional verifications documented <b>yearly</b> - 40 ± 3mm top (inside) 90 ± 3mm bottom (inside), 75 ± 3mm in height and 0.8 thick metal</p> <p><b>d. Tamper:</b> Dimensional verifications documented <b>yearly</b> - non-corroding metal; 325 g to 355g - Face 25 ± 3mm diameter</p> <p><b>e. Pycnometer</b> 500 ml capacity, accurate to ± 0.1 mL, 50% &gt; sample volume - Cali at least <b>annually</b></p> <p><b>f. Report</b> Section 11 .1 Report rel. den. (SG) results to the nearest 0.01 and indicate the basis for rel. den. (SG), as either oven-dry (OD), saturated-surface-dry (SSD), or apparent, .2 Report the abs. result to the nearest 0.1% .3 If the rel. den. (SG) values were determined without first drying the agg., as permitted in 8.2, note that fact in the report.</p>		
AM6	D4791  Flat & Elongated Particles  (See AS6)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D4791-19(2023)</b> Copy of current standards CI 6.4, A-4 CI 3.2</p> <p><b>c. Caliper or Other Suitable Equipment</b> - dimensions verified <b>annually</b></p> <p><b>e. Report</b> Section 10 .1 Include the following info. in the report:; .1.1 Identification of the coarse aggregate tested, .1.2 Grading of the original agg. sample, showing %age retained on each sieve, .1.3 For <u>Method A</u>: .1.3.1 # of particles in each sieve size tested, .1.3.2 %ages, calc by # or by mass, or both, for each group: (1) flat particles (2) elongated particles (3) particles that meet the criteria of both Gr1 &amp; Gr2 &amp; (4) particles that do not meet the criteria of either Gr 1 or Gr 2, .1.3.3 The dimensional ratios used in the tests, .1.4 For <u>Method B</u>: .1.4.1 # of particles in each sieve size tested, .1.4.2 %ages, calc by # or by mass, or both, for flat &amp; elongated particles for each sieve size tested, .1.4.3 The dimensional ratio used in the tests, .1.5 When required, weighted ave. %ages based on the actual or assumed proportions of the various sieve sizes tested. Report the grading used for the weighted ave. if different from that in .1.2.</p>		
AM7	D5821  % of Fractured Particles in CA  (See AS7)	<p><b>a. Demonstrate and/or explain the procedure</b></p> <p><b>b. D5821-13(2017)</b> copy of current standards</p> <p><b>c. Report</b> Section 9 .1 Report the mass %age or count %age of particles with the specified #(s) of fractured faces to the nearest 1 % in accordance with the following: <math>P = [F/(F+N)] * 100</math>, .2 Report the specified fracture criteria against which the sample was evaluated, .3 Report the total mass in grams of the CA sample tested, .4 Report the sieve on which the test sample was retained at the start of the test, .5 Report whether the % of fractured was determined by mass or by particle count.</p>		
AM8	LC-101, A4, CI 3.3, Table 2, Asphalt Mix Design Laboratory designing and testing Hot Mix Asphalt (HMA) using the Marshall Method must be able to complete or have documented access to a CCIL certified laboratory able to complete, any additional tests required by the provincial jurisdiction/owner that are part of their Marshall Mix Design protocol. Examples of such tests are:			
	a. D5/LS-200, D2170/LS-202, D4867, LS-285, C88/ LS-606, LS-609, D6928/LS-618, D7428/LS-619, T240, R28, T313, T315, T316			

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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	Notes
AS1	R30  Mix. Conditioning of HMA	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. R30-22</b> Copy of current standards CI 6.4, A-5 CI 3.4</p> <p><b>c. Oven</b> A forced-draft oven, capable of maintaining any desired temp. from room temp. to 176°C within ±3°C (CI5.1) <b>Miscellaneous</b> A metal pan for heating aggregates, a shallow metal pan for heating uncompacted asphalt mixtures, a metal spatula or spoon, timer, and gloves for handling hot equipment (CI5.3)</p> <p><b>d. Report</b> Section 8</p> <p>.1 Report the binder grade, binder content (nearest 0.1 %), &amp; the agg. type &amp; gradation, if applicable, .2 Report the following mix. conditioning info. for the volumetric mixture design conditions, if applicable; .2.1 Mix. conditioning temp. in lab (compaction temp. nearest 1°C); .2.2 Mix. conditioning duration in lab (nearest minute); .2.3 Lab compaction temp. (nearest 1°C). .3 Report the following short-term conditioning info. for the mix. mechanical property testing conditions, if applicable; .3.1 Short-term mix. conditioning temp. in lab (nearest 1°C); .3.2 Short-term mix. Conditioning duration in lab (nearest minute); .3.3 Lab compaction temp (nearest 1°C). .4 Report the following long-term conditioning info. for the mix. mechanical property testing conditions, if applicable; .4.1 Lab compaction temp (nearest 1°C); .4.2 Long-term mixt. conditioning temp. in lab (nearest 1°C); .4.3 Long-term mixt. conditioning duration in lab (nearest 5 min).</p>	
AS2	R35 SP Mix Design	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. R35-22</b> Copy of current standards CI 6.4, A-5 CI 3.4</p>	
AS3	D4867  Resistance of Compacted Asphalt Mixes to Moisture Induced Damage	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 CI 6.9.2</p> <p><b>b. D4867M-22</b> Copy of current standards CI 6.4, A-5 CI 3.4</p> <p><b>c. Vacuum Container For Saturating Specimens</b></p> <p><b>d. Water Bath</b> - capable of maintaining a temperature of 60 ± 1°C Documented annually</p> <p><b>e. Freezer</b> (Note 6 - If a freeze-thaw conditioning cycle is desired) - capable of maintaining a temperature of -18 ± 2°C temp monitored and doc annually Note 6</p> <p><b>f. Thermometer</b> (applicable if this test is performed by the laboratory) - Calibrated/verified and capable of reading the freezer temp. -18 ± 2°C</p> <p><b>g. Loading Jack and Force Measuring Device</b> - As a minimum, a calibrated nominal 20 kN ring dynamometer Calibration required annually</p> <p><b>h. Loading Strips</b> Steel loading strips, with a curved face to match the size of the specimen (CI 5.8)</p> <p><b>i. Report</b> Section 10</p> <p>.1 Report the following info;. .1.1 # of specimens in each subset, .1.2 Ave. air voids of each subset, .1.3 Ave. degree of saturation after partial saturation &amp; after moisture conditioning, .1.4 Ave. swell after partial saturation &amp; after moisture conditioning, .1.5 Tensile strength of each specimen in each subset, .1.6 Tensile strength ratio, .1.7 Results of visually-estimated moisture damage observed when the specimen fractures, .1.8 Results of observations of fractured or crushed agg.</p>	
AS4	D2419  Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test	<p><b>a. Demonstrate and/or Explain the Procedure Including Sample Preparation</b> LC-101 CI 6.9.2</p> <p><b>b. D2419-22</b> Copy of current standards CI 6.4, A-5 CI 3.4</p> <p><b>c. Apparatus</b> Section 7 Graduated transparent acrylic plastic cylinder, stopper, irrigator tube, weighted foot assembly &amp; siphon all conforming to Fig.1 Tin (85 + 5ml), funnel, bottles (3.8L), flat pan, filter paper (Waterman No. 2V or equivalent) Mechanical Sand Equivalent Shaker, 203.2 ± 1.0 mm operating at 175 cpm (Fig. 2) Verify yearly OR Man. Op. Sand Equiv. Shaker, 100 cyc. in 45 ± 5 sec. 1/2 stroke 12.7 ± 0.5 cm (Fig. 3) Verify yearly OR Hand Method 90 cyc. in approx. 30 sec. throw 23 ± 3 cm (Fig. 7) (CI 11.6.3.2)</p> <p><b>d. Reagents &amp; Materials</b> Section 8 Stock solution with formaldehyde or glutaraldehyde or Kathon Calcium Chloride solution (85 ± 5 ml plus 3.8 L water)</p> <p><b>e. Calculation &amp; Report</b> Section 12</p> <p>.1 Calculate the sand equivalent to the nearest 0.1 % as: SE = (sand reading/clay reading)*100, .2 If the calc SE is not a whole #, report it as the next higher whole #. E.g., if the clay level were 8.0 &amp; the sand level were 3.3, the calc SE would be: (3.3/8.0)*100 = 41.2. Since this calc SE is not a whole # it would be reported as the next higher whole # which is 42. .3 If it is desired to ave. a series of SE values, ave. the whole # values determined as described in .2. If the ave. of these values is not a whole #, raise it to the next higher whole # as shown in the following e.g.; .3.1 Calc SE values: 41.2, 43.8, 40.9., .3.2 After raising each to the next higher whole # they become 42, 44, 41., .3.3 Determine the ave. of these values as follows: (42+44+41)/3 = 42.3, .3.4 Since the ave. value is not a whole #, it is raised to the next higher whole #, &amp; the SE value is reported as 43.</p>	

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Item	Reference	Documentation/Equipment Calibration/verification requirements	Notes
AS5	C1252  Uncompacted Void Content of Fine Aggregate	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2</p> <p><b>b. C1252-23</b> Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p><b>c. Apparatus</b> (Section 6)</p> <p><b>Cylindrical Measure</b> - approx. 100 ml, inside dia 39 mm, inside height approx. 86 mm metal with seamless smooth wall, base ≥ 6 mm (<b>recorded annually</b>) (see C1252 Fig. 1 &amp; Cl 6)</p> <p><b>Funnel Cone</b> slope 60 ± 4°, opening of 12.7 ± 0.6 mm dia. smooth, seamless metal ≥ 38mm high, volume of 200 ml (see C1252 Fig. 2 &amp; Cl 6)</p> <p><b>Funnel Stand</b> 3 or 4 legs, with axis of funnel colinear with axis of measure, funnel opening 115 ± 2 mm above cylinder when in the stand (see C1252 Fig. 2)</p> <p><b>Glass Plate</b> (approx. 60 x 60 x ≥ 4 mm), pan, metal spatula, scale see Cl 6</p> <p><b>e. Report</b> Section 12</p> <p>.1 Report the following info. for the std. graded sample (<b>Test Method A</b>); .1.1 Uncompacted voids (Us), % to the nearest 1/10th of a % (0.1 %), .1.2 Rel. den. (SG) value used in the calc., .2 Report the following % voids following % voids to the nearest 1/10th of a % (0.1 %) for the individual size fractions (<b>Test B</b>). 2.1 Uncompacted voids for size fractions (a) 2.36 mm (No. 8) to 1.18 mm (No. 16) (U1); (b) 1.18 mm (No. 16) to 600 μm (No. 30) (U2); &amp; (c) 600 μm (No. 30) to 300 μm (No. 50) (U3), .2.2 Mean uncompacted voids (Um), &amp; .2.3 Rel. den. (SG) value(s) used in the calc, &amp; whether the rel. den. (SG) value(s) were determined on a graded sample or the individual-sized fractions used in the test, .3 Report the following information for the as-received sample (Test Method C); .3.1 Uncompacted voids (UR), % to the nearest 1/10th of a % (0.1 %). .3.2 Rel. den. (SG) value used in the calc.</p>	
AS6	D4791  Flat & Elongated Particles  (See AM6)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2</p> <p><b>b. D4791-19(2023)</b> Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p><b>c. Caliper or Other Suitable Equipment</b> - dimensions verified <b>annually</b> (Ratio shall be 5:1)</p> <p><b>e. Report</b> Section 10</p> <p>.1 Include the following info. in the report; .1.1 Identification of the coarse aggregate tested, .1.2 Grading of the original agg. sample, showing %age retained on each sieve, .1.3 For <b>Method A</b>: .1.3.1 # of particles in each sieve size tested, .1.3.2 %ages, calc by # or by mass, or both, for each group: (1) flat particles (2) elongated particles (3) particles that meet the criteria of both Gr1 &amp; Gr2 &amp; (4) particles that do not meet the criteria of either Gr 1 or Gr 2, .1.3.3 The dimensional ratios used in the tests, .1.4 For <b>Method B</b>: .1.4.1 # of particles in each sieve size tested, .1.4.2 %ages, calc by # or by mass, or both, for flat &amp; elongated particles for each sieve size tested, .1.4.3 The dimensional ratio used in the tests, .1.5 When required, weighted ave. %ages based on the actual or assumed proportions of the various sieve sizes tested. Report the grading used for the weighted ave. if different from that in .1.2.</p>	
AS7	D5821  % of Fractured Particles in CA  (See AM7)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2</p> <p><b>b. D5821-13(2017)</b> Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p><b>c. Report</b> Section 9</p> <p>.1 Report the mass %age or count %age of particles with the specified #(s) of fractured faces to the nearest 1 % in accordance with the following: <math>P = [F/(F+N)] * 100</math>, .2 Report the specified fracture criteria against which the sample was evaluated, .3 Report the total mass in grams of the CA sample tested, .4 Report the sieve on which the test sample was retained at the start of the test, .5 Report whether the % of fractured was determined by mass or by particle count.</p>	
AS8	T305  Determination of Draindown Characteristics in Uncompacted Asphalt Mixtures	<p><b>a. This Test is Performed Only if Required</b> - Does this lab perform this test? If No, then move to the next test below. If Yes, complete the below requirements</p> <p><b>b. Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2</p> <p><b>c. T305-22</b> Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p><b>d. Report</b> Section 10</p> <p>.1 Report the ave. % draindown (ave. % of mixture that drained) at each of the test temps.</p>	

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Item	Reference	Documentation/Equipment Calibration/verification requirements	Notes
AS9	C702  Splitting of Sample Coarse and Fine Aggregate  (See AM1)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2</p> <p><b>b. C702M-18</b> Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p><b>c. Coarse Sample Splitter</b> Number of Chutes, not less than 8 for coarse Aggregate</p> <p><b>d. Fine Sample Splitter</b> Number of Chutes, not less than 12 for fine aggregate</p> <p><b>c. and d.</b></p> <ul style="list-style-type: none"> <li>- Cleaned after splitting</li> <li>- A minimum of three pans</li> <li>- Hopper or feeder pan</li> <li>- dimensional verification - checks performed <b>annually</b></li> </ul> <p><b>e. Sample Information and Identification</b></p>	
AS10	C117  Washing of Sample  (See AM2)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2</p> <p><b>b. C117-23</b> Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p><b>c. Sieves:</b></p> <ul style="list-style-type: none"> <li>- 75µm sieve with protective 1.18mm cover screen (Cl 5.2)</li> <li>- Sieve checks for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed <b>ongoing during use</b></li> </ul> <p><b>d. Report</b> Section 11</p> <ul style="list-style-type: none"> <li>.1.1 Report the percentage of material finer than the 75-µm (No. 200) sieve by washing to the nearest 0.1 %, except if the result is 10 % or more, report the %age to the nearest whole number.</li> <li>.1.2 Include a statement as to which procedure was used.</li> </ul>	
AS11	C136  Sieve Analysis of CA and FA  (See AM3)	<p><b>a. Demonstrate And/Or Explain The Procedure</b></p> <p><b>b. C136M-19, E11-24</b> Copy of current standards</p> <p><b>c. Sieve Shaker</b></p> <ul style="list-style-type: none"> <li>- Coarse Aggregate Shakers (on file e.g. 26.5mm-4.75mm - Equipment List)</li> <li>- Fine Aggregate Shakers (on file e.g. 4.75mm-75µm- Equipment List)</li> <li>- CA &amp; FA Mechanical Efficiency Check performed <b>annually</b></li> </ul> <p><b>d. Sieves</b> (for all applicable test methods)</p> <ul style="list-style-type: none"> <li>- Complete set as per LS requirements</li> <li>- Coarse sieves check as per E11 Table 1 (openings and wire diameter) - <b>Recorded at least annually</b></li> <li>- All sieves checked for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed ongoing during use - <b>Recorded at least annually</b></li> </ul> <p><b>e. Report</b> Section 10</p> <ul style="list-style-type: none"> <li>.1 Depending upon the form of the specifications for use of the material under test, the report shall include the following; .1.1 Total %age of material passing each sieve, or, .1.2 Total percentage of material retained on each sieve, or, .1.3 Percentage of material retained between consecutive sieves .2 Report %ages to the nearest whole #, except if the %age passing the 75-µm (No. 200) sieve is less than 10 %, it shall be reported to the nearest 0.1 %, .3 Report the fineness modulus, when required, to the nearest 0.01.</li> </ul>	
AS12	C127  Relative Density & Absorption of Coarse Agg.  (See AM4)	<p><b>a. Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2</p> <p><b>b. C127-15</b> Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p><b>c. Wire Basket or Bucket</b> with &lt; 3.35 mm mesh, Equal height and breadth with capacity of 4-7L (maximum 37.5 mm aggregate) and larger container for larger size aggregate)</p> <p><b>d. Report</b> Section 10</p> <ul style="list-style-type: none"> <li>.1 Report rel. den. (SG) results to the nearest 0.01 &amp; indicate the basis for rel. den. (SG) as either (OD), (SSD), or apparent, .2 Report the abs. result to the nearest 0.1 %, .3 If the relative den. (SG) &amp; abs. values were determined without first drying the agg., as permitted in 8.2, note that fact in the report.</li> </ul>	

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Item	Reference	Documentation/Equipment Calibration/verification requirements	I/M/R	Notes
AS13	C128  Relative Density & Absorption of Fine Aggregate  (See AM5)	a. <b>Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2		
		b. <b>C128-22</b> Copy of current standards Cl 6.4, A-5 Cl 3.4		
		c. <b>Mould</b> dimensional verifications documented <b>yearly</b> - 40 ± 3mm top (inside) 90 ± 3mm bottom (inside)		
		- 75 ± 3mm in height and 0.8 thick metal		
		d. <b>Tamper</b> dimensional verifications documented <b>yearly</b>		
		- non-corroding metal; 325 g to 355g		
		- Face 25 ± 3mm diameter		
		e. <b>Pycnometer</b> 500 ml capacity, accurate to ± 0.1 mL, 50% > sample volume - Cali at least <b>annually</b>		
		f. <b>Report</b> Section 11 .1 Report rel. den. (SG) results to the nearest 0.01 and indicate the basis for rel. den. (SG), as either oven-dry (OD), saturated-surface-dry (SSD), or apparent, .2 Report the abs. result to the nearest 0.1%, .3 If the rel. den. (SG) values were determined without first drying the agg., as permitted in 8.2, note that fact in the report.		
AS14	LC-101, A5, Cl 3.3, Table 2, An Asphalt Mix Design Laboratory using the Superpave method must be able to complete or have documented access to a CCIL certified laboratory able to complete any additional tests, required by the provincial jurisdiction/owner that are part of their Superpave Mix Design protocol. Examples of such tests are:			
	a. C88/ LS-606, LS-609, D6928/LS-618, D7428/LS-619, T240, R28, T313, T315, T316			

TYPE E - LABORATORIES CARRYING OUT PENETRATION TESTING OF RECOVERED ASPHALT CEMENT			Lab ID:	
Y/V = 100% Satisfactory, N/X = Not Satisfactory, I = Incomplete, M = Missing, R = Re-occurring Deficiency, N/A = Not Applicable			Y	N
Item	Reference	Documentation/Equipment Calibration/verification requirements	I	M/R
			Notes	
E1	D5  Penetration of Bituminous Material	a. <b>Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2		
		b. <b>D5M-20</b> Copy of current standards Cl 6.4		
		c. <b>Penetration Apparatus</b> Cl 6.1		
		- The weight of the spindle shall be 47.5 ± 0.05 g.		
		- The total weight of the needle spindle assembly shall be 50.0 ± 0.05 g.		
		- Weights of 50 + 0.05 g and 100 ± 0.05 g shall also be provided for total loads of 100 g and 200 g, as required for some conditions of the test. Calibrated <b>annually</b>		
		d. <b>Penetration Needle</b> Cl 6.2 (Cl 6.2.1. Needles shall be <b>checked every 12 months.</b> )		
		- AS per the ASTM such as, ID (label matches stamped number on ferrule)		
		- Exposed standard needle length (straight and 40.0 mm to 45.0 mm in length)		
		- Exposed long needle length straight and 50.0 mm to 55.0 mm in length)		
		- Needle diameter (1.00 mm to 1.02 mm)		
		- Tip surface (cut sharply, free of burrs)		
		- Ferrule diameter (3.2 mm ±/ 0.05 mm)		
- Ferrule length (38.0 mm +/- 1.0 mm)				
- Weight/adjust via drilled shank (2.50g+ 0.05g)				
e. <b>Water Bath</b>				
- A bath capable of maintaining a temperature of 25 ± 0.1°C (77 ± 0.2°F) or any other temperature of test within 0.1°C. documentation required <b>annually</b>				
f. <b>Stop Watch</b>				
g. <b>Report</b> Section 10				
.1 Report to nearest whole unit the ave. of 3 penetrations whose values do not differ by more than the following:				
Penetration	0-49	50-149	150-249	250-500
Max. diff. between hi & low pen	2	4	12	20
E2	D1856  Recovery of Asphalt from Solution by Abson	a. <b>Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2		
		b. <b>D1856-21</b> Copy of current standards Cl 6.4		
		c. <b>Extraction Equipment, ASTM D2172</b> (See BM10, BS9)		
		d. <b>Abson Equipment, D1856</b> (Heating mantle, flask, condenser, gas (CO <sub>2</sub> ) & flowmeter, etc.)		
<b>And/Or</b>				
E3	D5404  Recovery of Asphalt from Solution by Rotary Evap.	a. <b>Demonstrate and/or Explain the Procedure</b> LC-101 Cl 6.9.2		
		b. <b>D5404M-21</b> Copy of current standards Cl 6.4		
		c. <b>Extraction Equipment, ASTM D2172</b> (See BM10, BS9)		
		d. <b>Rotavapor Equipment, ASTM D5404</b> (Rotavapor, flask, gas (N <sub>2</sub> ) & flowmeter, etc.)		
		e. <b>Reagents and Material</b> (N <sub>2</sub> or CO <sub>2</sub> gas, Oil, Solvents)		