



Canadian Council of Independent Laboratories
Conseil canadien des laboratoires indépendants

CCIL ASPHALT TESTING LABORATORY - ON & QC

DATE:

Inspection Type:

CCIL Lab ID:

FACILITIES AND PERSONNEL		Y	N	Notes
Y/V = 100% Satisfactory, N/X = Not Satisfactory, I = Incomplete, M = Missing, R = Re-occurring Deficiency, N/A = Not Applicable		(I/M/R)		
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 LS-282/D2172 Extraction & LS-292/D6307 Ignition, 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 thru the portal?</i>				
<i>Did you notify Alan at schaubel@ccil.com & Gigi at gkermath@ccil.com of the change or discrepancy & include it as a deficiency?</i>				
<i>Was the previous compliance report reviewed and responses confirmed?</i>				
	Technician Certification Requested?			
	Certificate posted?			
Did the lab submit an application for Regular Audit thru the portal?				
INSPECTION DOCUMENTS TO BE UPLOADED TO THE PORTAL BY INSPECTOR				
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.				
Technician Certification Documents to be Uploaded to the Portal, (if applicable):				
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	(I/M/R)	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, CI. 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. Repeated Non-Conformances 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	(I/M/R)
			Notes
T	Thermometers	<p>a. Reference Temperature Measuring Device (For all app. test meth.) SN:</p> <ul style="list-style-type: none"> - Subdivisions of 0.1 or 0.2°C Accurate to ± 0.1 or 0.2°C (D6927 Cl 5.8 ref E2251 Table 1); traceable to NIST - Liquid in Glass/Calibration once prior to use (E77 Cl 5.5.2.1) - Digital/Calibration annually (D3666 Table 2) - A certificate or report of calibration available for review. Traceable to NIST <p>b. Thermometers / Temperature Probes (For all applicable test methods)</p> <ul style="list-style-type: none"> - Calibration of temperature measuring devices performed yearly (D3666 Table 2) - In a range of 10 to 204°C with sensitivity of +/-1°C Cl 3.15 - Shall meet the req. of 339M/M 339 with a temp range of at least 10 to 230°C, and an accuracy of ±2.5°C T312 Cl 4.4 - Having a temperature range between 50 to 260°C and readable to 1°C Cl 5.2 - Suitable range with subdivisions and accurate to 0.1°C Cl 6.7.1 - Suitable thermometers ASTM 17C, 63C, 64C Cl 6.7.1.1 	
S	Scales	<p>Balances & Scales (For all applicable test methods)</p> <ul style="list-style-type: none"> - Calibration performed annually, if applicable, std weights must be calibrated every 5 yrs. - In addition, periodic scale checks with a known mass – min annually or when moved (based on QMS) (see records) 	
O	Ovens	<p>Ovens (For all applicable test methods)</p> <ul style="list-style-type: none"> - Ovens (on file - Equipment List) - Thermostat calibration (setting vs. actual) - performed annually 	
TYPE B - MARSHALL METHOD - ASPHALT MIX COMPLIANCE LABORATORY			
BM1	LS-261 Preparation of Bituminous Specimens Using Marshall	<p>a. Demonstrate and/or Explain the Procedure LC-101 Cl 6.9.2</p> <p>b. LS-261 R27 Copy of current standards LC-101, Cl 6.4, A-2 Cl 3.2</p> <p>c. Length Measuring Devices (For all applicable test methods) LC-101 A-2 Cl 3.1</p> <p>e.g., Digital Calipers calibrated/verified yearly</p> <p>d. Splitter (if used) Recommended width of the chutes is approx. 38 mm for all types. (Cl 3.27)</p> <ul style="list-style-type: none"> - Dimensional verification - checks performed annually <p>e. Hot Plate (on file - Equipment List)</p> <ul style="list-style-type: none"> - Thermostat cali. (setting vs. actual) Cl 5.6, +/-3°C required mixing & compaction temperatures - performed annually <p>f. Metal Trough See Clauses 3.6, 4.3, 4.10, 5.6, Note 7, 6.1</p> <p>g. Metal or Wooden Bar (Cl 3.22)</p> <p>h. Mechanical and Manual Compaction Hammers</p> <ul style="list-style-type: none"> - Dimensional verification required annually, Table 1 and Fig. 2 - Total mass 7853+16g, falling mass 4536+9 g, drop distance 457+1.5mm - Comparison of manual to Mechanical Hammer annually, if used <p>j. Specimen Mold Assembly</p> <ul style="list-style-type: none"> - Mold cylinders, base plates, and extension collars shall conform to the details shown in Fig. 1. Verification required annually (ID 101.5-101.8mm) <p>k. Compaction Pedestal</p> <ul style="list-style-type: none"> - Compaction Pedestal is level - Regularly checked for being level - recorded at least annually - Dimensional verification required once <p>l. Briquette Extruder</p> <ul style="list-style-type: none"> - Briquette extruder has a steel disk that will enter the mold without binding, min. 100 mm in diameter and 13 mm thick. <p>m. Preparation of Mix Design Samples (Section 4)</p> <p>.8 Report any mixing problems such as coating of agg. or balling of mix.</p>	
BM2	LS-262/D2726 Bulk Relative Density of Compacted Bit. Mixtures (See BS2)	<p>a. Demonstrate and/or Explain the Procedure LC-101 Cl 6.9.2</p> <p>b. LS-262 R34, D2726M-21 Copy of current standards LC-101, Cl 6.4, A-2 Cl 3.2</p> <p>c. Water Bath</p> <ul style="list-style-type: none"> - Capable of maintaining a temperature of 25 ± 1 °C (recorded Cl 4.1.2) with overflow (ASTM Cl 6.2) <p>d. D2726 Report (Section 12)</p> <p>.1 Report the following: .1.1 Bulk SG of the mixture to the 3rd decimal place as: bulk SG at 25 °C [77 °F], .1.2 Den. of the mixture with 4 significant figures in kg/m3 or lb/ft3 as: den. at 25 °C [77 °F], .1.3 Type of mixture, .1.4 Size of sample, .1.5 Water absorption, to the nearest 0.1 %.</p> <p>LS-262 Exceptions (Section 4)</p> <p>.1.2 Record the temperature of the water</p>	
BM3	LS-306 BRD of Compac. Bit. Mixtures Using Paraffin Coated Specimens (See BS3)	<p>a. This Test is Performed Only if Required</p> <p>Does this lab perform this test? - If Yes, complete the below requirements. If No, move to the next test below.</p> <p>b. Demonstrate and/or Explain the Procedure LC-101 Cl 6.9.2</p> <p>c. LS-306 R26 Copy of current standards LC-101, Cl 6.4, A-2 Cl 3.2</p> <p>d. Reporting of Results (Section 7)</p> <p>.1 Report the sample #, .2 Report the bulk rel. den. to 3 decimal places with a 3rd decimal place having been "rounded off", .3 Report the moisture content determined from LS-291 (withdrawn)</p>	
BM4	D6752 Bulk Spec. Grav. & Den. of Comp. Bit. Mix Using Auto Vacuum Sealing Method (See BS4)	<p>a. This Test is Performed Only if Required</p> <p>Does this lab perform this test? - If Yes, complete the below requirements. If No, move to the next test below.</p> <p>b. Demonstrate and/or Explain the Procedure LC-101 Cl 6.9.2</p> <p>c. D6752M-23 copy of current standards</p> <p>d. Report (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>	

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
BM5	D6927 Marshall Stability and Flow of Asphalt Mixtures LS-263 R33 has been withdrawn. D6927 should replace LS-263 depending on the agency	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. D6927-22 Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p>c. Breaking Head - as per Clause 5.1 dimensional verification required annually</p> <p>d. Compression Loading Machine Constant loading rate of 50±5mm (CI 5.2) annually</p> <p>e. Load Measuring Device CI 5.3 - As a minimum, a calibrated nominal 20 kN ring dynamometer Calibration annually</p> <p>f. Method A or B are options (CI 4.1.1)</p> <p>g. Method A - Using a loading frame with a load ring and a dial gauge for deformation or flow meter</p> <p>h. Flow Meter - 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>i. Method 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>j. Water Bath (CI 5.5) - Capable of maintaining a temperature of 60 ± 1°C Documented annually - Perforated false bottom or shelf for specimens 50 mm above the bottom of the bath - A mechanical water circulator</p> <p>k. Report (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 & grading, binder grade, & 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 & ave. values of Marshall stability (uncorrected and corrected if required) to the nearest 10 lbf (50N), .1.6 Individual & 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>		
BM6	LS-264 Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures (See BS5)	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-264 R37 Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p>c. Vacuum Beakers or Flasks - Verification of flask masses in air and water annually</p> <p>d. Vacuum Pump - Capable of evacuating air from the vacuum container to a residual pressure of 30 mm Hg or less. (CI 3.7)</p> <p>e. Manometer - 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 annually. If Hg, the lab should have a Hg spill kit</p> <p>f. Mechanical Agitation Device (optional) - 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>g. Water Bath - Capable of maintaining a temperature of 25 ± 1°C (CI 8.3 record if diff. from 25°C)</p> <p>h. Set Up of Equipment As per Figures 2 or 3 (CI 8.1)</p> <p>i. Report Section 10 .1 All results are entered on a Bituminous Mix Form Sheet (Fig. 4), .2 For duplicate testing, the results are considered acceptable if their range is less than 0.011</p>		
BM7	LS-265/D3203 Percent Air Voids	<p>a. LS-265 R16, D3203-22 Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p>b. Calculated Properly % air voids = ((MRD-BRD)/MRD)*100 (CI 4.1)</p> <p>c. Exceptions (Section 4) .2 Report results to 1 decimal place</p>		
BM8	LS-266 Percent VMA (See BS7)	<p>a. LS-266 R29 Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p>b. Calculated Properly (Section 4) e.g. 100-(Db(100-%AC))/Gb (CI 4.1)</p> <p>c. Report Section 5 .1 Unless specified otherwise by the Owner, report VMA in % to nearest 0.1% on the Bituminous Mix Form (Fig. 2)</p>		

TYPE B - MARSHALL METHOD - ASPHALT MIX COMPLIANCE LABORATORY			Lab ID:		
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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	(I/M/R)		Notes
BM9	LS-287 % Compaction (MRD Method) (See BS8)	a. Demonstrate And/Or Explain The Procedure b. LS-287 R37 Copy of current standards c. Chisel and hammer or saw, etc. for separating lifts d. Calculated Properly ((BRD/MRD)*100) + C (CI 4.1) e. Report Section 5 .1 Calc. the results to 1 decimal place			
AC Determination and Gradation of Extracted Aggregate - Select at least one of the two methods					
BM10	LS-282/D2172 Qualitative Extraction of Bitumen (See BS9)	a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2 CI 6.4, A-2 CI 3.2 b. LS-282 R33, D2172M-24, E11-24 Copy of current standards c. Extraction Apparatus - Extraction - RPM and dial setting verification required annually 1800 RPM (CI 9.6) d. High Speed Centrifuge Verification annually , example RPM 9000 for the SMM Type (ASTM CI 13.3.3) e. Flow Rate Calibration annually 100-150 ml per min (ASTM CI 13.3.4) f. Sieve Shaker: - Coarse Aggregate Shakers (On file e.g. 26.5mm-4.75mm - Equipment List) - Fine Aggregate Shakers (On file e.g. 4.75mm-75µm - Equipment List) - CA & FA Mechanical Efficiency Check performed annually g. Sieves - Complete set as per LS requirements - Coarse sieves check as per E11 Table 1 (openings and wire diameter) - Recorded at least annually - All sieves checked for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed ongoing during use - Recorded at least annually h. Report Section 14 .1 The results will be based on a single test & shall be reported as follows:; .1.1 The AC content (W8) shall be reported as a %age of the total mass of the mix to 2 decimal places, .1.2 The cumulative mass & the cumulative %ages passing for each sieve shall be reported to 1 decimal place. As well, the cumulative %age may be recorded as a graph on the appropriate semi-log grading chart, .1.3 The swing back gradings, if required, shall be recorded as %age retained or passing for each sieve, accurate to 1 decimal place, & shall be reported as described in S 13.4, .2 Where the test sample requires splitting to satisfy min. mass requirements & 2 tests are carried out, results will be based on the sums of the values from the 2 test portions or increments, using 2 bowls. Results shall be reported with the following change in calc., .2.1 The AC content shall be expressed as the cumulative %age content for the 2 test increments, to 2 decimal places, .2.2 See Example in std., .2.3 The cumulative mass & the cumulative %ages passing each sieve shall be calc. to 1 decimal place, .2.4 See Example in std.,			
And/Or					

TYPE B - MARSHALL METHOD - ASPHALT MIX COMPLIANCE LABORATORY			Lab ID:	
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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	(I/M/R)	Notes
BM11	LS-292/D6307	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-292 R34, D6307-19, E11-24 Copy of current standards LC-101, CI 6.4, A-2 CI 3.2</p> <p>c. Ignition furnace</p> <p>- As per Clause 8.1.1 or 11.1.1 complete with printout</p> <p>d. Internal Weighing System</p> <p>- Calibration at least annually, if applicable, std weights must be calibrated every 5 yrs.</p> <p>e. Manufacturer's Instruction Manual followed CI 6.1, such as, safety, maintenance, cleaning, lift test, ect. record</p> <p>f. Other Equipment e.g. catch pan/sample trays & handling apparatus, safety cage, etc.</p> <p>g. Calibration factor</p> <p>h. Sieve Shaker:</p> <p>- Coarse Aggregate Shakers (On file e.g. 26.5mm-4.75mm - Equipment List)</p> <p>- Fine Aggregate Shakers (On file e.g. 4.75mm-75µm - Equipment List)</p> <p>- CA & FA Mechanical Efficiency Check performed annually</p> <p>i. Sieves</p> <p>- Complete set as per LS requirements</p> <p>- Coarse sieves check as per E11 Table 1 (openings and wire diameter) - Recorded at least annually</p> <p>- All sieves checked for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed ongoing during use - Recorded at least annually</p> <p>j. D6307 Report Section 14</p> <p>.1 Report the following info; .1.1 Date, .1.2 ID of agg. & mix type, .1.3 Test #, .1.4 Calibration data, .1.5 Mass of the asp. mix. sample before & after ignition (nearest 0.1 g), .1.6 Measured asp. content (nearest 0.01 %), .1.7 Agg. gradation, if performed.</p> <p>LS-292 Report Section 6</p> <p>.1 The report shall include the following; .1.1 Completed excel Form PH-CC-248 "Ignition Oven Reporting Form" needs to be submitted, The Form PH-CC-248 can be found on MTO's RAQS, .1.2 ID of agg & mix type & JMF, .1.3 Calibration temp for a convection furnace, or burn profile setting for a direct irradiation furnace & data using original materials & including mean calibration factors, .1.4 Testing date, lab log test # & physical condition of test sample, .1.5 The % moisture determination, if used, .1.6 Internal mass of test sample (nearest 0.1 g) before & after testing (via tape), .1.7 ignition furnace end point setting of tests (1.0 g or 0.2% by mass @ 500 g sample size; 1.0 g or 0.07% @ 1500 g; 1.0 g or 0.05% @ 2000 g), .1.8 1 test sample result measuring asp. content (nearest 0.01%) along with test data, .1.9 The cumulative mass & cumulative %ages passing for each sieve shall be reported to 1 decimal place. As well, the cumulative %age may be recorded as a graph on the appropriate semi-log grading chart, .1.10 All calibration factors & moisture correction factor, .2 Where the residual agg. Sample requires splitting after ignition to determine gradation & 2 tests are carried out, the cumulative mass & the cumulative %ages passing each sieve shall be calculated, similar to the example in the std.</p>		

TYPE B - SUPERPAVE METHOD - ASPHALT MIX COMPLIANCE LABORATORY			Lab ID:	
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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	(I/M/R)	Notes
BS1	LS-313/T312	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-313 R28, T312-22 Copy of current standards CI 6.4, A-3 CI 3.2</p> <p>c. Length Measuring Devices (For all applicable test methods) LC-101 A-3 CI 3.1 e.g., Digital Calipers calibrated/verified yearly</p> <p>d. Splitter (if used) Recom. width of the chutes is approx. 38 mm for all types. (CI 3.27) - dimensional verification - checks performed annually</p> <p>e. Superpave Gyrotory Compactor - As per Clause 4.1 - Calibration as per T344/T312/D7115 required annually - Axis of ram shall be perpendicular to the platen of compactor</p> <p>Preparing Hot-Mix Asphalt (HMA) - 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 record completed as per the manufacture's instructions, available</p> <p>f. Specimen Mold Assembly - As per Clause 4.2 - dimensional verification - Thickness: minimum of 7.5 mm - required annually - Inside diameter: 149.90 to 150.00 mm - required annually as per Annex A - Length: Minimum of 250 mm - required annually as per Annex A - Rockwell hardness: Minimum of C48 - record can be from initial manufacturer - Initial inside finish: root mean square (rms) of 1.60µm or smoother - record can be from initial manufac</p> <p>Specimens by Means of the Superpave Gyrotory Compactor</p> <p>g. Ram Head and Mold Bottoms - As per Clause 4.3 dimensional verification required annually - 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>h. Metal Trough See Clause 3.5.5, Note 6</p> <p>i. T312 Report 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), & the method used to determine or verify the gyration angle.</p>		
BS2	LS-262/D2726	Bulk Relative Density of Compacted Bit. Mixtures See BM2		
BS3	LS-306	BRD of Compac. Bit. Mixtures Using Paraffin Coated Specimens See BM3		
BS4	D6752	Bulk Specific Grav. & Den. of Comp. Bit. Mix Using Auto Vacuum Sealing Method See BM4		
BS5	LS-264	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures See BM6		
BS6	LS-265/D3203	Percent Air Voids See BM7		
BS7	LS-266	Percent VMA See BM8		
BS8	LS-287	% Compaction (MRD Method) See BM9		
AC Determination and Gradation of Extracted Aggregate - Select at least one of the two methods				
BS9	LS-282/D2172	Qualitative Extraction of Bitumen See BM10		
And/Or				
BS10	LS-292/D6307	Asphalt Content by Ignition Oven See BM11		
BS11	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			

TYPE A - MARSHALL METHOD - ASPHALT MIX DESIGN LABORATORY - MUST INCLUDE TYPE B MARSHALL			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
AM1	LS-600 Splitting of Sample Coarse and Fine Aggregate (See AS5)	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-600 R36 Copy of current standards CI 6.4, A-4 CI 3.2</p> <p>c. Coarse Sample Splitter Number of Chutes, not less than 8 for coarse Aggregate</p> <p>d. Fine Sample Splitter Number of Chutes, not less than 12 for fine aggregate</p> <p>c. and d.</p> <ul style="list-style-type: none"> - Cleaned after splitting - A minimum of three pans - Hopper or feeder pan <p>- dimensional verification - checks performed annually</p> <p>e. Sample Information and Identification (Section 4)</p> <p>.1 Lab Sample # for each sample. This # shall accompany each portion of the sample throughout the processing & testing procedures, .2 The following info shall be noted, .2.1 The # of bags of material in the sample, .2.2 The type of material, .2.3 Any peculiarities e.g. coatings, conglomerates, cementations, contaminants, etc.</p>		
AM2	LS-601/C117 Washing of Sample (See AS6)	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-601 R37, C117-23 Copy of current standards CI 6.4, A-4 CI 3.2</p> <p>c. Sieves</p> <ul style="list-style-type: none"> -75µm sieve with protective 1.18mm cover screen - Sieve checks for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed ongoing during use <p>d. C117 Report Section 11</p> <p>.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.</p> <p>.1.2 Include a statement as to which procedure was used.</p>		
AM3	LS-602 Sieve analysis of CA and FA (See AS7)	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-602 R33, E11-24 Copy of current standards CI 6.4, A-4 CI 3.2</p> <p>c. Sieve Shaker</p> <ul style="list-style-type: none"> - Coarse Aggregate Shakers (on file e.g. 26.5mm-4.75mm - Equipment List) - Fine Aggregate Shakers (on file e.g. 4.75mm-75µm- Equipment List) <p>- CA & FA Mechanical Efficiency Check performed annually</p> <p>d. Sieves (for all applicable test methods)</p> <ul style="list-style-type: none"> - Complete set as per LS requirements - Coarse sieves check as per E11 Table 1 (openings and wire diameter) - Recorded at least annually - All sieves checked for embedded particles, slackness of fabric and damaged frames and/or sieve cloth - performed ongoing during use - Recorded at least annually <p>e. Report Section 7</p> <p>.1 The report shall include the following, .1.1 Total %ages of CA & FA, .1.2 Total %age of material retained on or passing each CA sieve based on the total mass of the oven-dry CA portion, .1.3 Total %age of material retained on or passing each FA sieve based on the total mass of the oven-dry test sample of the FA before washing, .1.4 Total %age of material retained on or passing each sieve based on the total mass of the oven-dry total sample, .1.5 When 2 sub-samples of FA are tested, the mean of the results shall be reported as the final result, .1.6 The difference between the initial dry mass of the sample & the sum of the individual masses retained on each sieve as a %age of the initial dry mass, .1.7 Cumulative mass retained on each sieve</p>		

TYPE A - MARSHALL METHOD - ASPHALT MIX DESIGN LABORATORY - MUST INCLUDE TYPE B MARSHALL			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
AM4	LS-604/T85 Relative Density & Absorption of CA (See AS8)	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-604 R36, T85-22 Copy of current standards CI 6.4, A-4 CI 3.2</p> <p>c. Wire Basket or Bucket with < 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>d. Control Sample Run as per LS Requirements for Mean Absorption & Relative Density</p> <ul style="list-style-type: none"> - At least every week in which a sample is tested (CI 6.1) - The relative density & absorption of the last 20 samples shall be plotted on a control chart (CI 6.2) - (Drain & CA2) Mean Abs (%) 0.39, Range 0.29–0.49 Mean Rel. Density 2.690, Range 2.681–2.699 <p>e. C127 Report Section 10</p> <ul style="list-style-type: none"> .1 Report rel. den. (SG) results to the nearest 0.01 & indicate the basis for rel. den. (SG) as either (OD), (SSD), or apparent, .2 Report the absorption result to the nearest 0.1 %, .3 If the rel. den. (SG) & abs. values were determined without first drying the aggregate, as permitted in 8.2, note that fact in the report. <p>LS 604 Report (Section 7) - The report shall also include the following:</p> <ul style="list-style-type: none"> .1 If duplicate test of abs. & rel. den. are made the mean of the results shall be reported as the final "test result", .2 If more than 1 agg. is tested, report the den. & abs. of each & the weighted ave. of the combination, .3 The % abs. to the nearest 0.01% & rel. den. to the nearest 0.001 of the ref. sample, tested closest to the time at which the agg. sample was tested, .4 The % abs. & rel. den. of the last 20 samples of reference material on control charts. 		
AM5	LS-605/T84 Relative Density & Absorption of Fine Aggregate (See AS9)	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-605 R38, T84-22 Copy of current standards CI 6.4, A-4 CI 3.2</p> <p>c. Mould Dimensional verifications documented yearly</p> <ul style="list-style-type: none"> - 40 ± 3mm top (inside) 90 ± 3mm bottom (inside), 75 ± 3mm in height and 0.8 thick metal <p>d. Tamper Dimensional verifications documented yearly</p> <ul style="list-style-type: none"> - non-corroding metal; 325 g to 355g - Face 25 ± 3mm diameter <p>e. Pycnometer 500 ml capacity, accurate to ± 0.1 mL, 50% > sample volume</p> <p>f. Control Sample Completed as per LS Requirements for Mean Absorption & Bulk Density</p> <ul style="list-style-type: none"> - At least every week in which a sample is tested (CI 7.1) - The last 20 samples shall be plotted on a control chart (CI 7.2) - (FA3) Mean Abs (%) 1.39, Range 1.12–1.59, Mean Rel. Density 2.631, Range 2.610–2.651 - (Sutherland Sand), Abs Range (%) 1.58–2.12, Bulk Density Range 2.593–2.629 <p>g. T84 Report Section 13</p> <ul style="list-style-type: none"> .1. interrelationships among the three types of SG & abs. These may be useful in checking the consistency of reported data or calculating a value that was not reported by using other reported data, .2 If the fine aggregate was tested in a naturally moist condition other than the oven-dried & 15-h soaked condition, report the source of the sample and the procedures used to prevent drying prior to testing. <p>LS 605 Report (Section 8) - The report shall also include the following:</p> <ul style="list-style-type: none"> .1 Rel. den. Values shall be reported to the nearest 0.001 & indicate the basis for rel den. as either oven-dry (OD), saturated-surface dry (SSD) or apparent, .2 Report the abs. result to the nearest 0.01%, .3 When 2 determinations are made on a fine agg., the mean of the results shall be reported as the final "test result", .4 When a sample has been separated on the 2.36 mm sieve & the den. & abs. of the retained 2.36 mm material determined separately from the pass 2.36 mm material, this shall be noted & the individual & weighted mean den. & abs. reported together with the calc. .5 When fine agg. extracted from RAP has been tested & the den. combined with that of the virgin fine agg., the individual den. & abs. of the extracted RAP agg. & virgin fine agg. shall be reported. The weighted mean den. & abs. shall also be reported together with the calculation, .6 The % abs. & rel. den. of the last 20 samples of reference material on control charts. 		
AM6	LS-608 Flat & Elongated Particles (See AS11)	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-608 R38 Copy of current standards CI 6.4, A-4 CI 3.2</p> <p>c. Caliper or Other Suitable Equipment Dimensions verified annually - Ratio shall be 4:1 (CI 4.2)</p> <p>d. Report Section 8</p> <ul style="list-style-type: none"> .1 Report the % F&E of each fraction of the test sample to the nearest whole %, .2 Report the weighted average % F&E of the test sample to the nearest whole % 		

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Item	Reference	Documentation/Equipment Calibration/verification requirements LC-101, CI 6.5.1., 6.7.1.	I/M/R	Notes
AM7	LS-607 % of Crushed Particles in CA (See AS10)	a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2 b. LS-607 R33 Copy of current standards CI 6.4, A-4 CI 3.2 c. Report Section 8 .1 Report the method used for sample preparation & testing (Method A or Method B), .2 Report the % crushed particles (Method A) or weighted average % crushed particles (Method B) to the nearest whole %		
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			

TYPE A - SUPERPAVE METHOD - ASPHALT MIX DESIGN LABORATORY - MUST INCLUDE TYPE B SUPERPAVE			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
AS1	R30 Mix. Conditioning of HMA	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. R30-22 Copy of current standards CI 6.4, A-5 CI 3.4</p> <p>Miscellaneous 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>c. Report (Section 8)</p> <p>.1 Report the binder grade, binder content (nearest 0.1 %), & the agg. type & 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	LS-309/R35 SP Mix Design	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. LS-309 R35, R35-22 Copy of current standards CI 6.4, A-3 CI 3.2</p>		
AS3	D4867 Resistance of Compacted Asphalt Mixes to Moisture Induced Damage	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. D4867-22 Copy of current standards CI 6.4, A-5 CI 3.4</p> <p>c. Vacuum Container For Saturating Specimens</p> <p>d. Water Bath - capable of maintaining a temperature of 60 ± 1°C Documented annually</p> <p>e. Freezer (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>f. Thermometer (applicable if this test is performed by the laboratory) - Calibrated/verified and capable of reading the freezer temp. -18 ± 2°C</p> <p>g. Loading Jack and Force Measuring Device - As a minimum, a calibrated nominal 20 kN ring dynamometer Calibration required annually</p> <p>h. Loading Strips Steel loading strips, with a curved face to match the size of the specimen (CI 5.8)</p> <p>i. Report Section 10 .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 & after moisture conditioning, .1.4 Ave. swell after partial saturation & 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	LS-310/T305 Determination of Draindown Characteristics in Uncompacted Asphalt Mixtures	<p>a. This Test is Performed Only if Required - Does this lab perform this test? If No, then move to the next test below. If Yes, complete the below requirements</p> <p>b. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>c. LS-310 R35, T305-22 Copy of current standards CI 6.4, A-5 CI 3.4</p> <p>d. T305 Report Section 10 .1 Report the ave. % draindown (ave. % of mixture that drained) at each of the test temps.</p>		
AS5	LS-600	Splitting of Sample Coarse and Fine Aggregate See AM1		
AS6	LS-601/C117	Washing of Sample See AM2		
AS7	LS-602	Sieve Analysis of CA and FA See AM3		
AS8	LS-604/T85	Relative Density & Absorption of CA See AM4		
AS9	LS-605/T84	Relative Density & Absorption of Fine Aggregate See AM5		
AS10	D4791 Flat & Elongated Particles (See AM6)	<p>a. Demonstrate and/or Explain the Procedure LC-101 CI 6.9.2</p> <p>b. D4791-19(2023) Copy of current standards CI 6.4, A-5 CI 3.4</p> <p>c. Caliper or Other Suitable Equipment - dimensions verified annually (Ratio shall be 5:1)</p> <p>e. Report 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 Method A: .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 & Gr2 & (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 Method B; .1.4.1 # of particles in each sieve size tested, .1.4.2 %ages, calc by # or by mass, or both, for flat & 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>		

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Item	Reference	Documentation/Equipment Calibration/verification requirements	(I/M/R)	Notes
AS11	D5821 % of Fractured Particles in CA (Seem AM7)	<p>a. Demonstrate and/or Explain the Procedure LC-101 Cl 6.9.2</p> <p>b. D5821-13(2017) Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p>c. Report 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: $P = [F/(F+N)] * 100$, .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>		
AS12	D2419 Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test	<p>a. Demonstrate and/or Explain the Procedure Including Sample Preparation LC-101 Cl 6.9.2</p> <p>b. D2419-22 Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p>c. Apparatus (Section 7)</p> <p>Graduated transparent acrylic plastic cylinder, stopper, irrigator tube, weighted foot assembly & siphon all conforming to Fig.1</p> <p>Tin (85 + 5ml), funnel, bottles (3.8L), flat pan, filter paper (Waterman No. 2V or equivalent)</p> <p>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) (Cl 11.6.3.2)</p> <p>Reagents & Materials (Section 8)</p> <p>Stock solution with formaldehyde or glutaraldehyde or Kathon</p> <p>Calcium Chloride solution (85 + 5 ml plus 3.8 L water Cl 8.2)</p> <p>Working solution which is more than 2 weeks old shall be discarded. (Cl 6.6)</p> <p>e. Calculation & Report Section 12</p> <p>.1 Calculate the sand equivalent to the nearest 0.1 % as: $SE = (\text{sand reading}/\text{clay reading}) * 100$, .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 & 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 number 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 #, & the SE value is reported as 43.</p>		
AS13	C1252 Uncompacted Void Content of Fine Aggregate	<p>a. Demonstrate and/or Explain the Procedure LC-101 Cl 6.9.2</p> <p>b. C1252-23 Copy of current standards Cl 6.4, A-5 Cl 3.4</p> <p>c. Apparatus Section 6</p> <p>Cylindrical Measure - approx. 100 ml, inside dia 39 mm, inside height approx. 86 mm metal with seamless smooth wall, base > 6 mm (recorded annually) (Fig. 1 & Cl 6)</p> <p>Funnel Cone slope 60 ± 4°, opening of 12.7 ± 0.6 mm dia. smooth, seamless metal</p> <p>> 38mm high, volume of 200 ml (Fig. 2 & Cl 6)</p> <p>Funnel Stand 3 or 4 legs, with axis of funnel colinear with axis of measure, funnel opening 115 + 2 mm above cylinder when in the stand (Fig. 2)</p> <p>Glass Plate (approx. 60 x 60 x > 4 mm), pan, metal spatula, scale see BM1.</p> <p>Control Testing Optional - Sutherland Sand % Voids 40.3 - 42.3, RM FA3 % Voids 42.4, Range 41.5 - 43.4</p> <p>e. C1252 Report Section 12</p> <p>.1 Report the following info. for the std. graded sample (Test Method A); .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 to the nearest 1/10th of a % (0.1 %) for the individual size fractions (Method 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); & (c) 600 µm (No. 30) to 300 µm (No. 50) (U3), .2.2 Mean uncompacted voids (Um), & .2.3 Rel. den. (SG) value(s) used in the calc, & 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>		
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 - LEAST TYPE B		MUST HAVE AT	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	LS-200/D5 Penetration of Bituminous Material	<p>a. Demonstrate and/or Explain the Procedure LC-101 Cl 6.9.2</p> <p>b. LS-200 R16, DSM-20 Copy of current standards Cl 6.4</p> <p>c. Penetration Apparatus (Cl 6.1)</p> <ul style="list-style-type: none"> - 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 annually <p>d. Penetration Needle (Cl 6.2 - Cl 6.2.1. Needles shall be checked every 12 months.)</p> <ul style="list-style-type: none"> - 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) <p>e. Water Bath</p> <ul style="list-style-type: none"> - 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 annually <p>f. Stop Watch</p> <p>g. D5 Report Section 10</p> <p>.1 Report to nearest whole unit the ave. of 3 penetrations whose values do not differ by more than the following;</p> <table style="margin-left: 40px; border-collapse: collapse;"> <tr> <td style="padding-right: 20px;">Penetration</td> <td style="padding-right: 20px;">0-49</td> <td style="padding-right: 20px;">50-149</td> <td style="padding-right: 20px;">150-249</td> <td>250-500</td> </tr> <tr> <td>Max. diff. between hi & low pen</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> <td style="text-align: center;">12</td> <td style="text-align: center;">20</td> </tr> </table>	Penetration	0-49	50-149	150-249	250-500	Max. diff. between hi & low pen	2	4	12	20		
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 Absorption	<p>a. This test is performed only if required</p> <p>Does this lab perform this test? - If Yes, complete the below requirements. If No, move to the next test below.</p> <p>b. D1856-21, D8078-24 Copy of current standards Cl 6.4</p> <p>c. Extraction Equipment, (See BM 10)</p> <p>d. Absorption Equipment, D1856 (Heating mantle, flask, condenser, gas (CO₂) & flowmeter, etc.)</p> <p>e. Ashing Equipment, D8078 (Muffle furnace, desiccator, crucible & tongs, etc.)</p>												
E3	LS-284/D8078 Recovery of Asphalt from Solution by Rotary Evaporator	<p>a. Demonstrate and/or Explain the Procedure LC-101 Cl 6.9.2</p> <p>b. LS-284 R38, D8078-24 copy of current standards Cl 6.4</p> <p>c. Extraction Equipment, LS-284 (See BM 10)</p> <p>d. Rotavapor Equipment, LS-284 (Rotavapor, flask, gas (N₂) & flowmeter, etc.)</p> <p>e. Ashing Equipment, D8078 (Muffle furnace, desiccator, crucible & tongs, etc.)</p> <p>f. Reporting And Further Testing (Section 5)</p> <p>.1 DO NOT PROCEED TO FURTHER TESTING IF THE ASH CONTENT IS HIGHER THAN 1.00%, .2 If ash content is < 1.00%, report ash content & # of centrifuge passes used, & proceed to further testing.</p>												