

CCIL 2019 Laboratory Proficiency and Correlation Results

Nabil Kamel, M.A.Sc, P.Eng.
CCIL Certification Programs Manager

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CCIL 2019 Laboratory Proficiency and Correlation Results

Overview

- Background/introduction – who is CCIL? what do we do?
- Components of CCIL certification programs
- 2019 CCIL certification programs overview
- Results of inter-laboratory correlation test results
- Automation of our programs
- Summary of laboratory certification benefits



Who is CCIL? What do we do?

- Federally incorporated, not-for-profit organization.
- In operation for over 25 years. Started asphalt laboratory certification in Ontario in the late 80's and evolved to be a well respected Canadian national organization with CCIL certified laboratories in almost all provinces.
- Safeguarding the public and the environment.
- Help protect quality, reliability, and integrity of our road network, transportation system, and our buildings.



Who is CCIL? What do we do?

- Provide laboratory and technician certification programs for the infrastructure construction industry involved in asphalt, concrete, aggregate, and soils materials testing.
- CCIL provides an independent third party assessment with no interest in the ramification of the results .
- We have over 950 laboratory certifications, nation-wide.



Who is CCIL? What do we do?

- Sole Canadian provider of laboratory and technician certifications for testing highway construction materials in Canada.
- A record number in 2019 of CCIL Certified laboratories outside ON, total 480: 145 Aggregate, 124 Asphalt plus 211 Concrete certifications.



Components of CCIL Proficiency Programs Asphalt and Aggregate Materials

- The cornerstones of the program are integrity and confidentiality as per ISO 17025.
- CCIL directive for a distinct effort of the CCIL staff to work with the laboratories to improve results/raise standards of testing.



Components of CCIL Proficiency Programs Asphalt and Aggregate Materials

- CCIL certification programs are administered by **LOCAL** administration committees entrusted with establishing, reviewing, and revising, as necessary, the technical criteria for the core elements of the program in accordance with overall CCIL criteria.
- Participation in the local administration committees by *all local stakeholders*: testing laboratories, contractor laboratories, provincial and municipal government authorities.



Components of CCIL Proficiency Programs Asphalt and Aggregate Materials

In general, CCIL certification programs are in compliance with ISO 17025, with five main components:

- Laboratory inspections,
- Proficiency sample testing on annual basis,
- Proficiency samples program follow-up,
- Quality manual and internal audits, and
- Technician certification.



Components of CCIL Proficiency Programs Asphalt and Aggregate Materials

	<u>CCIL</u>	<u>Canadian Mix Exchange</u>	<u>ISO 17025</u>	<u>AASHTO/AMRL</u>
Interlab Correlation	√	√	-	√
Correlation Follow up	√	-	-	?
Laboratory Audits	√	-	√	√
Quality System	√	-	√	√
Technician Certificate	√	-	-	√



CCIL Certification Programs Overview, 2019

- Asphalt and aggregate certified laboratories in AB, BC, MB, NB, NL, NS, ON, SK, and NW Territories.
- Total number of asphalt laboratories.....245
- Total number of aggregate laboratories..... 374
- Concrete certified laboratories nation-wide, in all provinces, except PE, as well as in NW Territories.
- Total number of concrete laboratories..... 341
- Over 5,000 certified technicians in all programs.



Asphalt and Aggregate Laboratory Certification in Canada

- ON requires all QA testing on Ministry of Transportation projects must be done by certified laboratories.
- In BC, all mix design, referee testing, and QA testing on Ministry of Transportation projects must be done by a certified laboratory.
- BC Hydro require certification on all major projects
- BC Master Municipal Construction Documents



Asphalt and Aggregate Laboratory Certification in Canada

- In AB, SK, NS and NL all mix designs for provincial transportation projects must be done by a CCIL certified laboratory.
- In SK all QC testing on Ministry's projects must be done by certified laboratories.
- In NS CCIL Certification replaced NS Transportn. requirements for AASHTO certification
- In NS and NB CCIL laboratory certification has been introduced and is being widely embraced.



Inter-Lab Correlation Test Results

Number of test observations:

Test	Other Provinces		ON
Extraction	10	17	115
Ignition Oven	39	70	55
Marshall MC	18	27	56
Marshall MD	19	32	66
SuperPave MD	09	12	58
SuperPave MC	05	02	36



Proficiency Correlation Results

% Asphalt Cement – Ignition Oven

	2008	2012	2016	2019
Mean, ON (n=55)	5.03	5.10	5.08	5.06
Mean, National (n=164)	5.05	5.11	5.08	5.08
SD, ON	0.10	0.10	0.11	0.16
SD, National	0.13	0.12	0.12	0.17



Proficiency Correlation Results

% Asphalt Cement – Ignition Oven

<u>2019 Results</u>	<u>ON</u>	<u>Group II</u>	<u>Group III</u>
Number of participants	52	34	57
Mean, Sample 1	5.06	5.06	5.09
SD, Sample 1	0.157	0.222	0.158
Mean, Sample 2	5.33	5.24	5.28
SD, Sample 2	0.157	0.235	0.172



Proficiency Correlation Results

% Asphalt Cement – Extraction

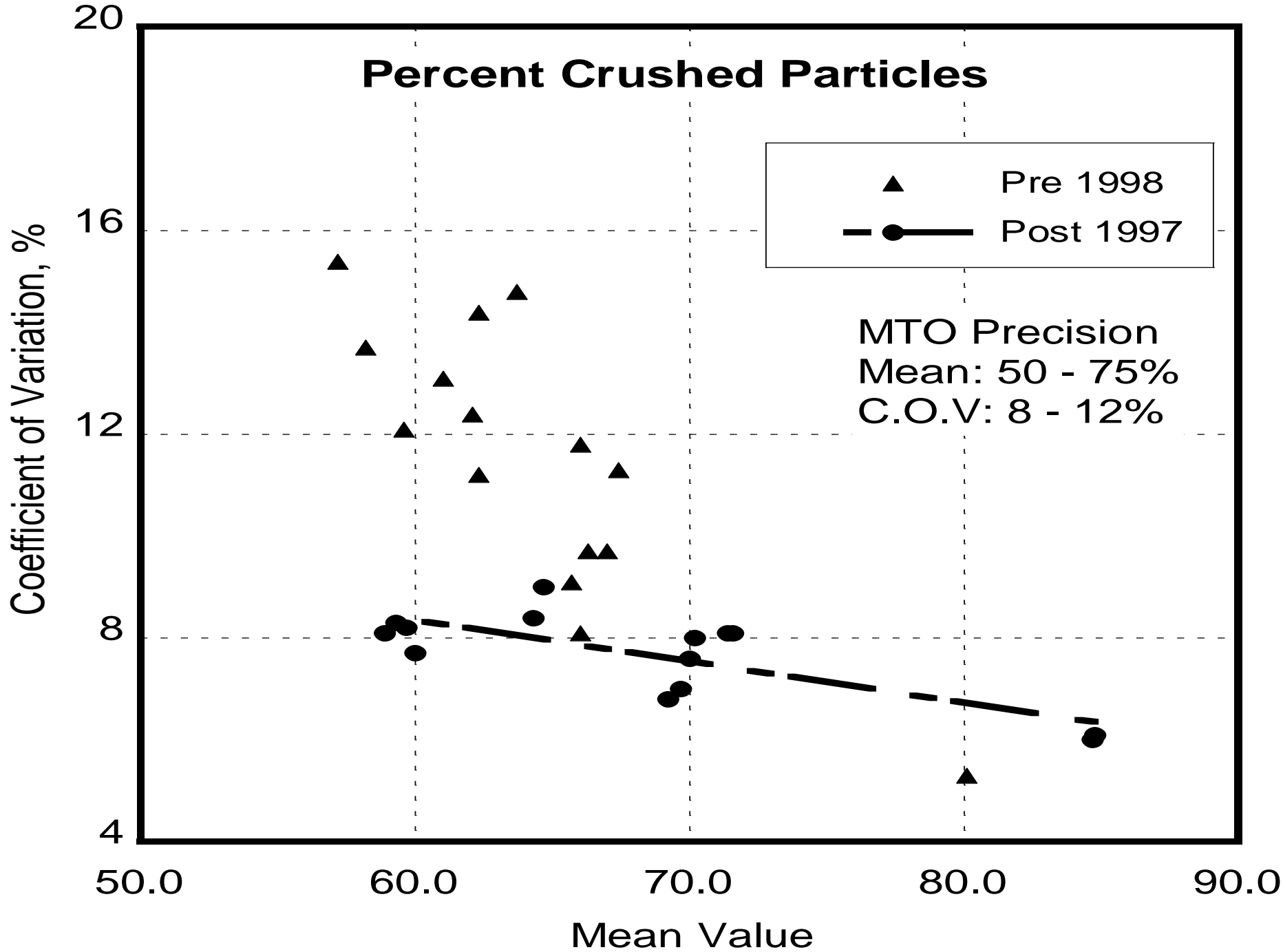
<u>2019 Results</u>	<u>ON</u>	<u>Group II</u>	<u>Group III</u>
Number of observations	44	10	15
Mean, Sample 1	5.23	5.13	5.00
SD, Sample 1	0.154	0.119	0.271
Mean, Sample 2	5.12	5.06	5.23
SD, Sample 2	0.094	0.140	0.305



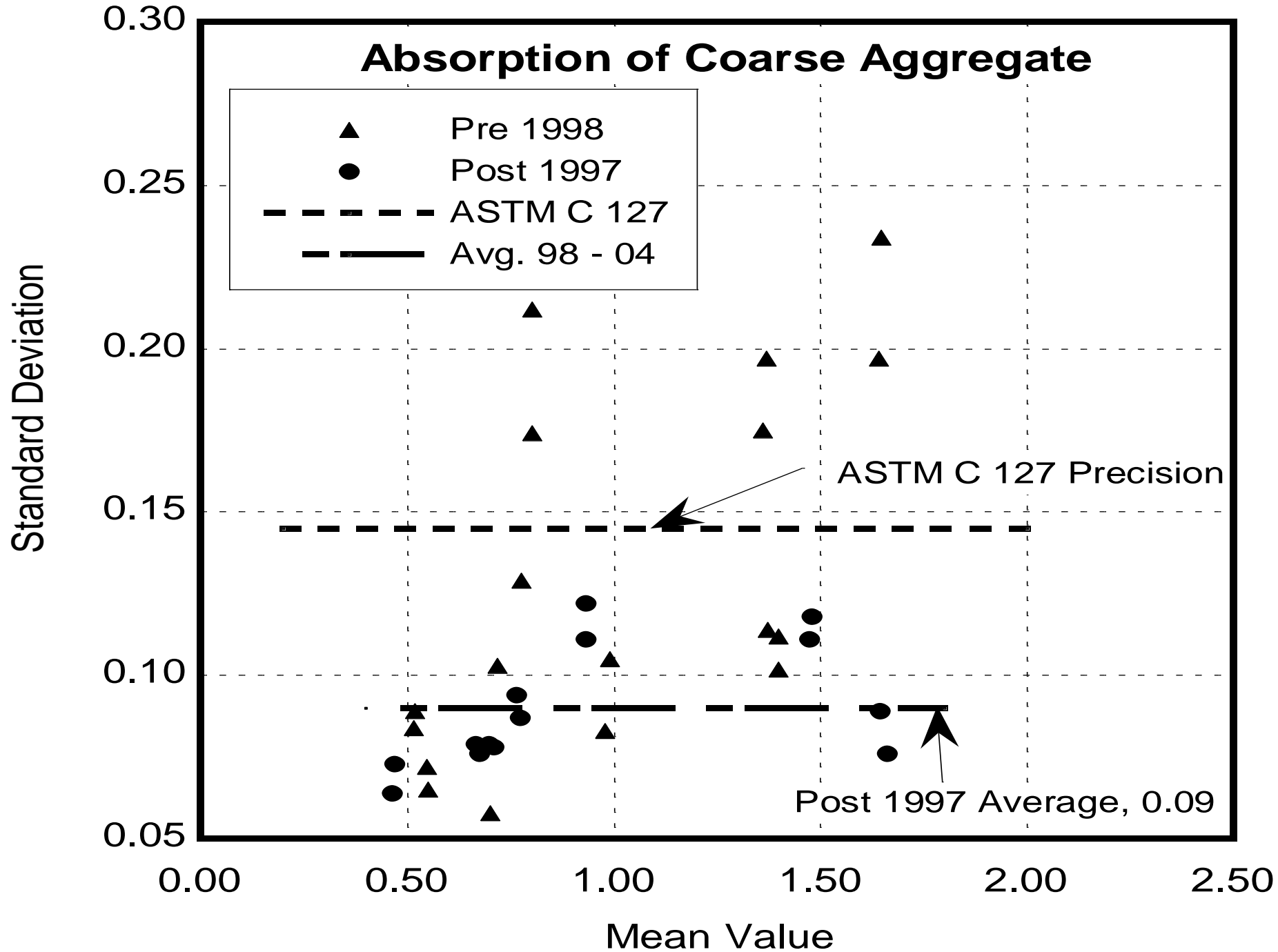
CCIL Certification Program Results

- Results from AB, BC, and ON confirm significant improvements in test result variations after laboratory certification.
- AB, BC, and ON reported significant reductions in the number of contract disputes after introduction of laboratory certification.

Percent Crushed Particles



Absorption of Coarse Aggregate





Proficiency Correlation Results

% Asphalt Cement – Ignition Oven

	2008	2012	2016	2019
Mean, ON	5.03	5.10	5.08	5.06
Mean, BC	5.11	5.11	5.08	5.09
SD, ON	0.10	0.10	0.11	0.16
SD, BC	0.17	0.12	0.12	0.16



CCIL Certification Program Results

- Laboratory Certification results in significant improvements in test result variations and this yields significant reductions in the number of contract disputes.



Laboratory Certification is a Win-Win for All

- Regulators: the assurance that regulation is supported by valid test data.
- Owners: the assurance that the project is built in accordance with the specified test requirements.
- Contractors, producers, consultants, and testing laboratories: improved confidence in testing results and reduced potential for job interruptions, construction delays, and contract disputes.



What is new for 2016-19?

- Reduction in certification fees in all programs.
- Updating laboratory certification documents LC 101 and LC 102.
- Development and implementing procedures for suspension, withdrawal, appeals, disputes and handling complaints for the aggregate and asphalt programs.
- Online laboratory certification application.



What is new for 2016-19?

- Online laboratory inspection and reply documents.
- Online access to ASTM standards eliminates copying and provides laboratories with timely up to date standards.
- Developing concrete technician data base and automatic technician re-certification reminders.



Summary of Laboratory Certification Benefits

Regular laboratory auditing and participation in proficiency tests:

- Ensures up-to-date and uniform test procedures,
- Ensures testing is by qualified and trained staff,
- Ensures equipment is calibrated and maintained,
- Encourages technician training/certification,
- Improves standard of excellence in testing,
- Increases confidence in test results,
- Reduces test variations, and
- Reduces potential for job interruptions and disputes.



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Questions?

Thank You!

nkamel@ccil.com