

# ***Laboratory Proficiency***

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

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# *CCIL Laboratory and Technician Certification Programs*

## Overview

- Background/introduction – who is CCIL? what do we do?
- Components of CCIL certification programs
- 2019 CCIL certification programs overview
- AB CCIL certification program - History and update
- Results of inter-laboratory correlation test results
- 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.
- Sole Canadian provider of laboratory and technician certifications for testing highway construction materials in Canada.



## *Components of CCIL Certification 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 Certification 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 Certification 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 Certification 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, 2018*

- 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..... 370
- Concrete certified laboratories nation-wide, in all provinces, except PE, as well as in NW Territories.
- Total number of concrete laboratories..... 345
- 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, and NS all mix designs for provincial transportation projects must be done by certified laboratories.
- In SK all QC testing on Ministry's projects must be done by certified laboratories.
- In NS and NB CCIL laboratory certification has been introduced and is being widely embraced.
- In NS CCIL Certification replaced NS Transportation requirements for AASHTO certification



## *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.



# *AB Certification Programs Overview, 2018*

- The AB certification program grew over 300% since inception in 2010
  - 2010 ..... 24
  - 2011 .....29
  - 2013 .....36
  - 2015..... 49
  - 2019 ..... 88
- A record number of 2019 CCIL Certified laboratories in Western Canada 403; 120 Aggregate and 103 Asphalt certifications plus 180 in Concrete



## *Inter-Lab Correlation Test Results*

Number of test observations:

Test	AB	BC	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

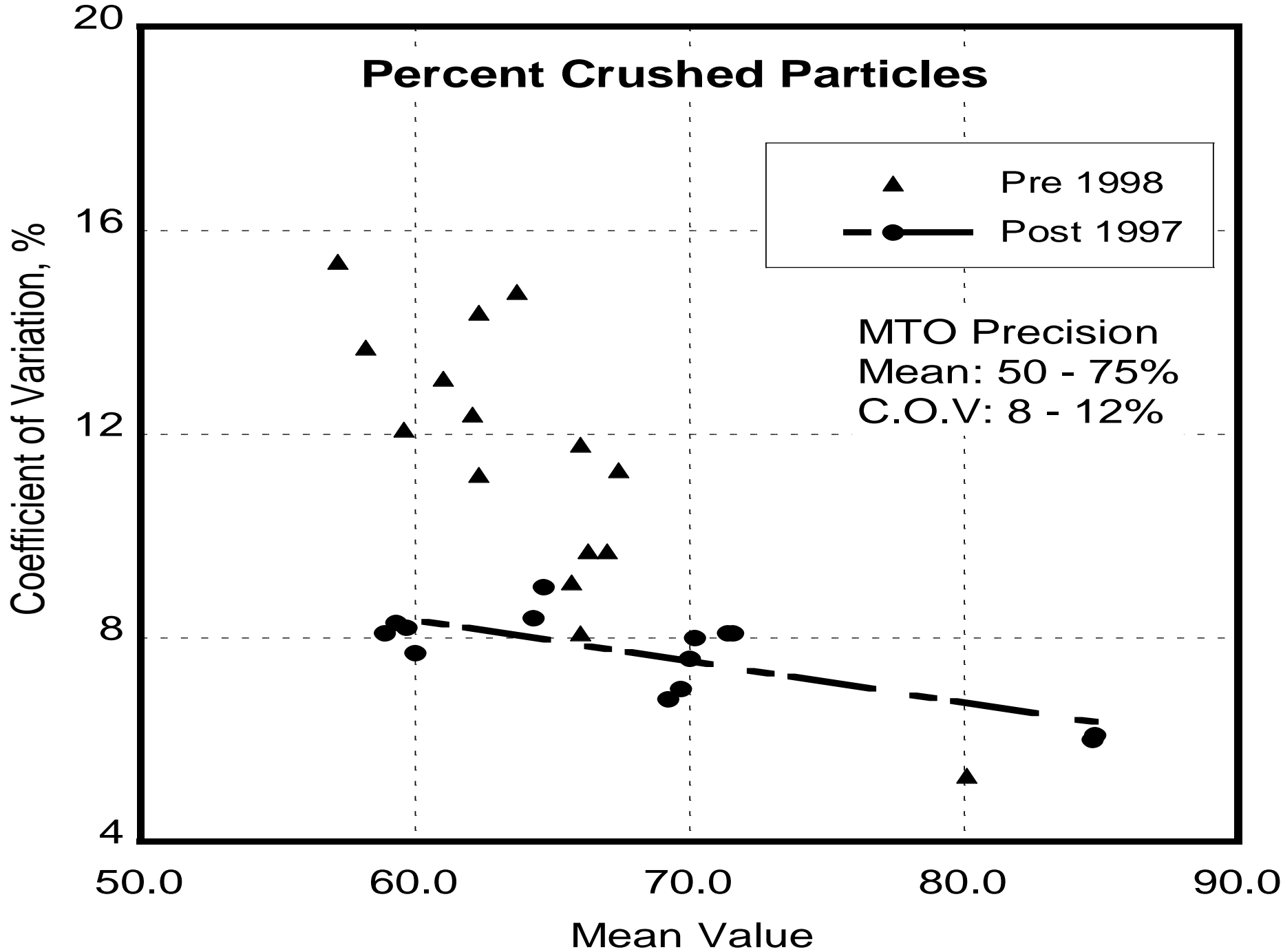


# Proficiency Correlation Results

## Percent Asphalt Cement – Ignition Oven

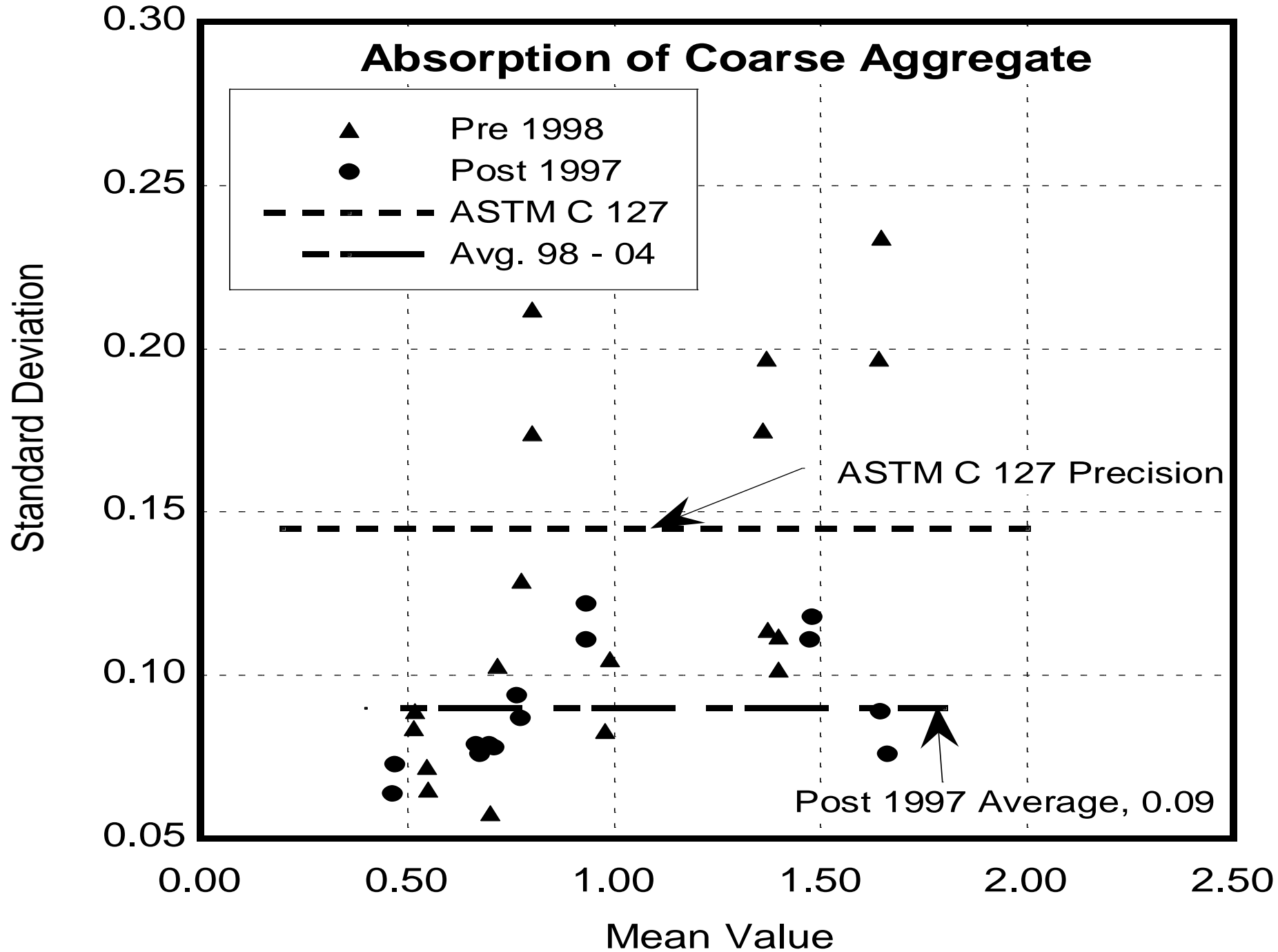
	2011	2014	2016	2018
Mean, AB	5.11	5.06	4.96	5.06
Mean, ON	5.10	5.09	5.08	5.06
Mean, ON	5.11	5.11	5.08	5.09
SD, AB	0.255	0.140	0.110	0.220
SD, ON	0.104	0.150	0.110	0.157
SD, BC	0.120	0.160	0.120	0.158
BRD, AB	0.042	0.010	0.016	0.010
BRD, ON	0.010	0.012	0.014	0.009
BRD, BC	0.050	0.010	0.024	0.028

# Percent Crushed Particles





# Absorption of Coarse Aggregate





## *CCIL Certification Program*

- Technician certifications are done during the laboratory audit visit at a minimal charge.
- When introducing the program in new jurisdictions, full requirements are implemented in stages.
- Experienced asphalt technicians are grandfathered, i.e. exempt from the practical performance exams.



## *Automation of Our Certification Systems*

- Developed automated application and asphalt and aggregate laboratory inspection systems. Introduced in 2015 and fully implemented in all regions.
- Developed an automated technician data base for asphalt and aggregate certifications.



## *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 2017-19?*

- 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 concrete laboratory certification application.



## *What is new for 2018-19?*

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



## *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.



# *CCIL Laboratory and Technician Certification Programs*

***Questions?***

***Thank You!***

***nkamel@ccil.com***