

**APPENDIX A-9**  
**REQUIREMENTS FOR AGGREGATE PHYSICAL PROPERTY**  
**LABORATORIES (TYPE D)**

This class of aggregate laboratory carries out some or all of the aggregate physical property test procedures listed below. The laboratory must have the necessary general equipment for sampling, transportation, testing and storage of samples for each of the tests for which it wishes to be certified. The laboratory must have the capability to support the specific testing involved at the location for which it is requesting certification. The certification is specific for only those tests that meet the requirements of the inspection process.

**Staff**

The general testing services of an Aggregate Physical Property Laboratory will be under the direction and control of a person charged with engineering-management responsibility. This designated person shall be a Professional Engineer (or equivalent as approved by CPAC) and a full-time employee of the aggregate laboratory, and have at least five years experience in the inspection and testing of construction materials.

The direct testing services of an Aggregate Physical Property laboratory will be supervised and reported by a supervisory laboratory technician with at least five years experience performing tests on construction materials. This designated person shall be able to demonstrate the ability to perform all tests required in a Type D Aggregate Laboratory, in the manner stipulated under various procedures. This person shall keep up with developments in aggregate technology and have CET designation or equivalent training and experience.

Technicians employed in a Aggregate Physical Property Laboratory shall be CCIL Type C certified and have the necessary experience and training to complete the required tests under the direct supervision of the supervisory laboratory technician.

**Equipment, Manuals and Reporting Procedures**

In addition to the requirements for Aggregate Quality Control certification the laboratory must have the necessary equipment, manuals and reporting procedures to perform aggregate testing, in accordance with current Ministry of Transportation of Ontario Laboratory Manual (LS), AASHTO (T), ASTM (C, D) or Canadian Standards Association, CSA (CSA 23) Methods, for some or all of the following tests:

LS412/C672	Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals
LS-603/C131 & 535	Resistance to Degradation of Coarse Aggregate by Abrasion and Impaction in the Los Angeles Abrasion Machine
LS-604/C127	Relative Density and Absorption of Coarse Aggregate
LS-605/C128	Relative Density and Absorption of Fine Aggregate

LS-606/C88	Soundness of Aggregate by Use of Magnesium Sulphate
LS-610/C40	Organic Impurities in Sands for Concrete
LS-613/D3042	Determination of Insoluble Residue of Carbonate Aggregates
LS-614/ CSA A23.2-24A	Freezing and Thawing of Coarse Aggregate
LS-615/ CSA A23.2-26A	Determination of Potential Alkali-carbonate Reactivity of Carbonate Rocks by Chemical Composition
LS-617	Determination of Percent Particles with Two or More Crushed Faces and Uncrushed Particles in Processed Coarse Aggregate
LS-618/D6928	Micro-Deval Abrasion Testing of Coarse Aggregate
LS-619/ D7428	Resistance of Fine Aggregate to Degradation by Abrasion in the Micro-Deval
LS-704/D4318	Plastic Limit and Plasticity Index
LS-709/D2434	Determination of Permeability of Granular Soils

#### Superpave Consensus Properties

D5821	Determination of the Percentage of Fractured Particles in Coarse Aggregate, Standard Test Method for
T304/C1252	Uncompacted Void Content of Fine Aggregate
D4791	Flat and Elongated Particles in Coarse Aggregate
T-176/D2419	Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test

**The following tests DO NOT require certification as an aggregate quality control laboratory :**

LS-609/C294, 5	Petrographic Analysis of Coarse Aggregate
LS-616/C294, 5	Petrographic Analysis of Fine Aggregate
LS-620/A23.2 25A/C511	Accelerated Mortar Bar Test
ASTM C666/A23.2-24A	Resistance of Concrete to Rapid Freezing and Thawing

The Aggregate Physical Property Laboratory must keep up with any changes to these test methods and procedures.

#### Proficiency Sample Testing

The laboratory must participate and attain CCIL approved satisfactory ratings in the tests for which it wishes to be certified, annually, in the MTO Aggregate Proficiency Sample Testing Program. Proficiency testing must be carried out using equipment installed in the permanent, temporary or mobile laboratory facility for which certification is being sought.