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SPECIFICATION FOR QUALITY CONTROL

110. 1 SCOPE

This Specification governs the Contractor's Quality Control activities as identified in the Contractor's Quality Management Plan or elsewhere in the Contract.

110. 2 DEFINITIONS

CCIL: Canadian Council of Independent Laboratories

Certified Technician: CCIL Certified Technician

Qualified Technician: Combination of training and experience

110. 3 QUALITY MANAGEMENT

3.1 General

The inspections and tests required to support conformance with the Contract shall be performed by the Contractor (or his designated agent) and made available to the Contract Administrator at any time.

Standard equipment, certified and qualified personnel shall be used by the Contractor to perform the Quality Control inspection, sampling and testing required by the Contract.

The Contractor shall assign the responsibilities for specific Quality Control functions.

The Contractor shall ensure that materials and the constructed Work meet Contract requirements and perform test and inspections in accordance the procedures defined in the Contract.

The Contractor shall maintain a document management system to store and record all documents generated under the Contract.

3.2 Quality Management Plan

A Quality Management Plan (QMP), prepared in accordance with the requirements of the Contract shall be submitted to the Contract Administrator at least two (2) business days prior to the pre-construction meeting.

The QMP shall be in a format acceptable to the Contract Administrator, with all the required information included.

The Contractor will not be permitted to begin Work on items covered by the QMP until a QMP has been submitted to the Contract Administrator and accepted.

The QMP shall include the following, but not limited to:

3.2.1 Materials

- Sources for each component used in each material produced.

3.2.2 Communication

- How and when the test results, worksheets and summaries will be reported to the Contract Administrator.
- Process to notify the Contract Administrator before Work begins.
- How and when the Contract Administrator will be notified of non-conformance.

3.2.3 Non-Conformance Materials

- Actions to be taken if test results indicate that non-conformance material has been incorporated into the Work.
- Detailed provisions for disposal or rework of materials that do not meet the Specification.

3.2.4 Production Facility

- Equipment Type.
- Make/Model.
- Physical location during construction.
- Frequency of equipment inspection.
- Verification of calibration.

3.2.5 Personnel

- Name, CCIL certification and telephone number of:
 - Employee responsible for Quality Control.
 - Sampling and testing technician.
- Name, qualifications/Certified Technician certification and telephone number of:
 - Employee responsible for making production facility changes when necessary as a result of Quality Control data.
 - Employee directing field operations.
 - Employee ensuring compliance with Specification.
 - Employee responsible to notify the Contract Administrator when material is ready for Acceptance.

3.2.6 Laboratory and Certification

- Canadian Council of Independent Laboratories (CCIL) Certification of testing laboratories and technicians is required for laboratory Quality Control testing.
- The laboratory(s) to be used, physical location and its proof of CCIL Certifications.

3.2.7 Testing Frequency and Test Methods

- The QMP must include a proposed sampling and testing plan with sampling and testing frequencies to be accepted by the Contract Administrator.
- Recommended frequencies are listed in Tables 3.1 through 3.5, except for frequency stated for density in Table 3.4, which is mandatory frequency.

Table 3.1: Aggregate for Granular Course

Test or Action	Frequency	Test Method
Gradation	1 per 500 tonnes	ASTM C136 ASTM C117
Fractured Faces	1 per 500 tonnes (Note 1)	ASTM D5821
Plasticity Index	1 per 500 tonnes (Note 1)	ASTM D4318
Lightweight Particles	1 per 500 tonnes (Note 1)	ASTM C123
Clay Lumps and Friable Particles	1 per 500 tonnes (Note 1)	ASTM C142
Los Angeles Abrasion	3 per Product	ASTM C131 ASTM C535
Proctor	1 per 20,000 tonnes, minimum two per product	ASTM D698 ASTM D1557

Note 1: Testing frequency can be reduced if the results are consistent.

Table 3.2: Aggregate for Bituminous Pavement

Test or Action	Frequency	Test Method
Gradation - Course	1 per 200 tonnes	ASTM C136 ASTM C117
Gradation - Fines	1 per 400 tonnes	
Gradation - Additive	1 per 300 tonnes	
Gradation - RAP	1 per 2000 tonnes	
Fractured Faces	1 per 400 tonnes (Note 1)	ASTM D5821
Flat and Elongated (Superpave Only)	1 per 5,000 tonnes (Note 1)	ASTM D4791
Uncompacted Void Content of Fine Aggregate (Superpave Only)	1 per 10,000 tonnes (Note 1)	AASHTO T304
Sand Equivalent (Superpave Only)	1 per 10,000 tonnes (Note 1)	ASTM D2419
Lightweight Particle Content	1 per 400 tonnes (Note 1)	ASTM C123
Ironstone Content	1 per 500 tonnes (Note 1)	MEB C221
Clay Lump and Friable Particle	1 per 500 tonnes (Note 1)	ASTM C142
Los Angeles Abrasion	3 per product	ASTM C131
Specific Gravity - Coarse	1 per 10,000 tonnes	ASTM C127 ASTM C128
Specific Gravity - Fines		
Specific Gravity - Additive		
Specific Gravity - RAP		

Note 1: Testing frequency can be reduced if the results are consistent.

Table 3.3 Aggregate Stockpiles

Test or Action	Frequency
Site Preparation	Once
Positive drainage of stockpile site	Once
Layer Thickness	Continual Inspection
Stockpile Contamination	Continual Inspection
Stockpile Segregation	Continual Inspection

Table 3.4: Construction of Granular Course

Test or Action	Frequency	Test Method
Thickness	Continual Inspection	N/A
Cross-Fall	Continual Inspection	N/A
Density	Every 100 m	MEB P050 MEB P051 MEB P052
Surface Defects and Segregation	Continual Inspection	N/A

Table 3.5: Construction of Bituminous Pavement

Test or Action	Frequency	Test Method
Asphalt Cement Storage Temperature	1 per 3 hours of production	N/A
Asphalt Mix Temperature at the mixer discharge	1 per 3 hours of production	N/A
Asphalt Mix Temperature behind the paver	1 per 3 hours of production	N/A
Hot Mix Bituminous Properties	1 per 3 hours of production	MEB P039
Density	Every 100 m	MEB P051
Thickness	Continuous	N/A
Cross-Fall	Continuous	N/A
Surface Defects	Continuous	N/A
Segregation	Continuous	MEB P048

110. 4 LABORATORY CORRELATION

4.1 General

The Contractor shall participate in an inter-laboratory proficiency sample testing program prior to the placement of Bituminous Mix.

The Contract Administrator will supply a standard material similar to that used on the project. Test results from the Quality Control, Quality Assurance and Appeal laboratories shall be compared to ensure laboratories are testing within the inter-laboratory tolerances in Table 4.1.

The QC laboratory shall provide test results to the Contract Administrator within 48 hours of receiving the samples.

Table 4.1 Inter-Laboratory Tolerances

Properties	Permissible Tolerance
MTD	+/- 0.007
Density (kg/m ³)	+/- 10
% Air Voids	+/- 0.25
% AC	+/- 0.25
% VMA	+/- 0.25
Gradation % passing 25.0, 19.0, 16.0 mm sieves	+/- 1.5
Gradation % passing 12.5 & 9.5 mm sieves	+/- 1.5
Gradation % passing 4.75, 2.36, 2.0, 1.18 mm sieves	+/- 1.0
Gradation % passing 600, 425, 300, 180, 150 μm sieves	+/- 0.3
Gradation % passing 75μm sieves	+/- 0.2