

Appendix A-4 REQUIREMENTS FOR ASPHALT MIX DESIGN LABORATORIES MARSHALL METHODS (TYPE A)

A Marshall Asphalt Mix Design Asphalt Laboratory is involved in designing (Marshall Method) and testing of HMA.

Staff

A Marshall Asphalt Mix Design 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 asphalt laboratory and have at least five years experience in the inspection and testing of construction materials. All Marshall mix designs submitted to clients shall be approved by this person.

The direct testing services of a Marshall Mix Design Asphalt Laboratory shall be supervised 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 the manner stipulated under governing procedures, keep up with developments in asphalt technology and have C.E.T. designation (or equivalent as approved by CPAC).

Technicians employed in a Marshall Mix Design Asphalt Laboratory shall have the necessary experience to complete the required tests for Mix Design laboratories under the direct supervision of the supervisory laboratory technician. There shall be at least one laboratory technician who has met the requirements of the CCIL Asphalt Technician Certification Program working in the laboratory while that laboratory is in operation.

Equipment, Manuals and Reporting Procedures

A Marshall Mix Design Asphalt Laboratory must have the necessary equipment, manuals and reporting procedures in accordance with current Ministry of Transportation of Ontario Laboratory Testing Manual /ASTM Methods:

LS-261/D6926 Preparation of Marshall Specimens, Method for

LS-262/D2726 Bulk Relative Density of Compacted Bituminous Mixes, Method of Test for

OR

LS-306/D1188 Bulk Relative Density of Compacted Bituminous Mixtures using Paraffin Coated Specimens

OR

D6752 Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Equipment

- LS-263/D6927 Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus, Method of Test for
- LS-264/D2041 Theoretical Maximum Relative Density of Bituminous Paving Mixtures, Method of Test for
- LS-265/D3203 Percent Air Voids in Compacted Dense Bituminous Pavement Mixtures, Determination of
- LS-266 V.M.A. in Compacted Bituminous Mixtures, Determination of
- LS-281 Percent Compaction of Compacted Bituminous Pavement Mixtures, Determination of
- OR**
- LS-287/D3549 Determination of Percent Compaction of Compacted Bituminous Paving Mixture (MRD Method), Method of Test for the
- LS-282/D2172 Quantitative Extraction of Asphalt Cement and Analysis of Extracted Aggregate from Bituminous Paving Mixtures, Method of Test for and/or alternative test procedure
- OR**
- LS-292/D6307 Quantitative Determination of Asphalt Cement Content by Ignition and Analysis of the Remaining Aggregate from the Bituminous Paving, Mixtures, Method of Test for the
- LS-600/C702 Dry Preparation of Aggregates for Determination of Physical Constants, Method of
- LS-601/C117 Material Finer than 75 μm Sieve in Mineral Aggregates by Washing, Method of Test for
- LS-602/C136 Sieve Analysis of Aggregates, Method of Test for
- LS-604/C127 Relative Density and Absorption of Coarse Aggregate, Method of Test for
- LS-605/C128 Relative Density and Absorption of Fine Aggregate, Method of Test for
- LS-607/D5821 Determination of Percent Crushed Particles in Processed Coarse Aggregate, Method of Test for the
- LS-608/D4791 Percent Flat and Elongated Particles in Coarse Aggregate, Determination of

In addition to the foregoing tests, a Mix Design Asphalt Laboratory must be able to complete, or have documented access to a CCIL certified laboratory able to complete the following Marshall mix design related work in accordance with current MTO Laboratory Testing Manual Methods (LS):

- LS-200/D5 Penetration of Bituminous Materials, Method of test for
- LS-202/D2170 Kinematic Viscosity of Asphalt, Method of Test for
- LS-283/D1074 Resistance to Stripping of Asphalt Cement in Bituminous Mixtures by Immersion Marshall, Method of Test for
- LS-285 Stripping by Static Immersion, Method of Test for
- LS-606/C88 Soundness of Aggregate by Use of Magnesium Sulphate, Method of Test for
- LS-609/C294 Petrographic Analysis of Coarse Aggregate, Procedure for
- LS-618/D6928 Resistance of Coarse Aggregate to the Degradation by Abrasion in the Micro-Deval Apparatus, Method of Test for
- LS-619/D7428 Resistance of Fine Aggregate to the Degradation by Abrasion in the Micro-Deval Apparatus, Method of Test for

A Marshall Mix Design Asphalt Laboratory must keep up with any changes to the MTO methods and procedures, and only complete Marshall designs to other methods as requested (ASTM, Transport Canada, etc.) if the laboratory has the necessary additional and/or modified equipment, manuals and reporting procedures.