VERMONT AGENCY OF TRANSPORTATION

QUALIFIED LABORATORY PROGRAM

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VTrans Qualified Laboratory Program

1.0 APPLICABILITY

The Qualified Laboratory Program does not apply to the Agency's Central Laboratory, located in Berlin, VT, which is accredited by AASHTO Re:source (formerly AMRL).

This program does apply to all other Agency, Consultant, Producer, or Contractor laboratories in which acceptance and quality control sampling and testing activities are performed.

2.0 PURPOSE

The purpose of the Qualified Laboratory Program (QLP) is to ensure that all laboratory equipment utilized for acceptance sampling and testing is adequate, and maintained in accordance with appropriate standards.

3.0 DEFINITION OF A QUALIFIED LABORATORY

A laboratory is considered to be a qualified laboratory if it complies with the requirements contained herein. In addition, the laboratory must comply with all pertinent facility and equipment requirements detailed in the current edition of the Vermont Agency of Transportation's Standard Specifications for Construction **and** must meet at least one of the following criteria:

1. The laboratory is an AASHTO accredited laboratory, **or**

2. The laboratory agrees to be inspected by the Agency. The laboratory must maintain compliance with Section 6 of AASHTO R-18 'Standard Recommended Practice for Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories'. There are two exceptions to this requirement; 1) calibration requirements for HMA and Concrete Producers equipment is limited to only those pieces of equipment included in the Appendices and 2) the calibration interval for HMA and Concrete Producers equipment is 12 months.

AASHTO accredited laboratories are not subject to any of the following requirements.

4.0 GENERAL REQUIREMENTS

In order to avoid an appearance of a conflict of interest, any qualified non-SHA laboratory shall perform only one of the following types of testing on the same project: Verification testing, quality control testing, IA testing, or dispute resolution testing.

Only qualified laboratories may be utilized for acceptance sampling and testing. In addition, contractor or material production facilities that are required to maintain a qualified laboratory may not be permitted to produce material for VTrans projects until their laboratory has obtained Qualified Laboratory status.

If providing acceptance test results to the Vermont Agency of Transportation, then all acceptance test results shall be recorded and reported using forms acceptable to the Vermont Agency of Transportation.

A qualified laboratory shall have one individual designated as the Laboratory Manager. The Laboratory Manager is someone who has overall responsibility for the technical operations of the laboratory. An alternate Laboratory Manager should be designated as well to serve in the Laboratory Manager's

absence. For the Agency's Regional Materials Laboratories, the Laboratory Manager has been determined to be the Geotechnical Engineering Manager.

4.1 Facility Requirements

A qualified laboratory must comply with all facility requirements as detailed in the current edition of the Vermont Agency of Transportation's Standard Specifications for Construction. The laboratory facility must provide for the safe and proper operation of all required testing equipment.

4.2 Equipment Calibrations

All testing equipment used to conduct acceptance testing shall be maintained and calibrated in accordance with the applicable AASHTO, ASTM, or AOT-MRD standard. Any equipment calibrations that cannot be performed by laboratory personnel shall be performed by an external calibration service. All calibrations shall be completed using standards traceable to the National Institute of Standards and Technology (NIST). Qualified laboratories must maintain compliance with Section 6 of AASHTO R-18

The laboratory shall also maintain, and make available for review, a current equipment list documenting the frequency of their equipment calibrations, similar to Appendix A and Appendix B.

4.3 Reference Material and Record Management

Each qualified laboratory must maintain current AASHTO, ASTM, and AOT-MRD standards for each acceptance test performed. VTrans policies for the handling, identification, conditioning, storage, retention, and disposal of test samples must also be available for reference.

Qualified laboratories shall maintain records of equipment calibrations and verifications in accordance with AASHTO R-18 Section 6.0. Calibration records shall be maintained for a minimum of 5 years. See Appendix C for an example of an acceptable calibration/verification record.

The laboratory shall maintain a record of all laboratory evaluations performed by VTrans, including appropriate follow-up corrective actions taken to resolve any deficiencies.

5.0 AGENCY INSPECTIONS

5.1 Laboratory Inspection Request

It is the responsibility of each Laboratory Manager to know when their laboratory is in need of inspection. The laboratory inspection will be scheduled by the Agency within 10 working days of receipt of the laboratory inspection request. The laboratory inspection will be conducted within 30 days of the receipt of the laboratory inspection request. Inspection requests must be received in writing or via email.

The inspection request shall include a current equipment inventory. The request must also include a completed 'pre-inspection checklist' and applicable lab verification forms available on the Agency website. This request shall include the name of the person who will fill in for the Laboratory Manager if absent during the date of the inspection.

5.2 Frequency of Agency Inspections

The Agency will perform an annual initial inspection to determine that the laboratory is in compliance with the Agency's Qualified Laboratory Program.

In addition, the Agency will perform a minimum of one unannounced, random Independent Assurance review of each active laboratory every year.

5.3 Distribution of the Inspection Report

Laboratory inspection reports will be sent directly to the Laboratory Manager within 10 working days after the date of the inspection. Copies will also be distributed to the Agency Technician performing the inspection and the Agency's Independent Assurance Unit.

6.0 CORRECTIVE ACTIONS

Any deficiencies identified during the laboratory inspection(s) will be documented in the Laboratory Inspection Report. The Laboratory Manager will have 5 working days to propose a schedule for correction in writing via email. Unless otherwise approved by the Materials Manager, the Laboratory Manager will have no more than 10 working days from the date of the receipt of the report to correct the deficiencies.

If the deficiencies documented in the Laboratory Inspection Report are such that the validity of test results obtained using the deficient equipment could reasonably be questioned, qualification of the laboratory may be suspended until satisfactory corrections have been made.

The Laboratory Manager must issue a single, summative written response that documents the correction of each deficiency noted in the Laboratory Inspection Report.

7.0 NON-COMPLIANCE

If any deficiencies identified in the laboratory inspection report are not corrected to the satisfaction of the Agency, the laboratory's qualification status will be revoked. In addition, contractor or material production facilities that are required to maintain a qualified laboratory **will not** be permitted to produce material for VTrans projects until their laboratory has regained Qualified Laboratory status.

APPENDIX A

Calibration Checklist for HMA Laboratory Equipment

Vermont Agency of Transportation - Materials Testing Section **Sheet 1 of 2**

Hot Mix Asphalt Laboratory Equipment Verification

Company:	
Location:	
Date Inspected:	
Inspected By:	

Title	AASHTO SPEC.	Equipment Manufacturer	Serial Number	Date last Calibrated	Calibration(C)/ Verification(V) Frequency	Next Calibration/ Verification Due Date
General Purpose Drying Oven	T 245, T 176				Max. 12 Months (V)	
Temperature Measuring Devices (Thermometers)	T 209, T 166				Max. 6 Months (C)	
Marshall Compaction Hammer (Mechanically Operated)	T 245				Max. 36 Months (C)	
Marshall Molds	T 245				Max. 12 Months (V)	
Marshall Stability and Flow	T245				Max. 12 Months (C)	
Vacuum Pump	T 209				Max. 12 Months (V)	
Balance (scale)	T 209, T 245, T 166				Max. 12 Months (V)	
SHRP Gyratory Compactor	T 312				Max. 6 Months (V) or if moved.	
Vacuum Bowl	T 209				Max. 12 Months (V)	
2 Liter Flask	T 209				Max. 3 Months (C)	
4 Liter Flask	T 209				Max. 3 Months (C)	
Mechanical Sieve Shaker (Gilson Type)	T-27				Max. 12 Months (V)	
Mechanical Sieve Shaker For 8" or 12" Sieves	T-27				Max. 12 Months (V)	

Note: The Calibration/Verification requirement is referenced from **AASHTO R-18.**

Comments:

Vermont Agency of Transportation - Materials Testing Section					Sheet 2 of 2
Hot Mix Asphalt Laboratory Equipment Verification					
Company:					
Location:					
Date Inspected:					
Inspected By:					
Title	**Equipment Manufacturer**	**Serial Number**	**Date last Calibrated**	**Calibration(C)/ Verification(V) Frequency**	**Next C-V Due Date**
Sieves 8" or 12"					
37.5 mm (1 ¼ inch)				Max. 6 Months (V)	
25 mm (1 inch)				Max. 6 Months (V)	
19 mm (¾ inch)				Max. 6 Months (V)	
12.5 mm (½ inch)				Max. 6 Months (V)	
9.5 mm (⅜ inch)				Max. 6 Months (V)	
4.75 mm (No. 4)				Max. 6 Months (V)	
2.36 mm (No.8)				Max. 6 Months (V)	
1.18 mm (No. 16)				Max. 6 Months (V)	
600µm (No. 30)				Max. 6 Months (V)	
300µm (No. 50)				Max. 6 Months (V)	
150µm (No. 100)				Max. 6 Months (V)	
75µm (No. 200)				Max. 6 Months (V)	
Pan and cover				N/A	
Sieves (Gilson)					
37.5 mm (1 ¼ inch)				Max. 6 Months (V)	
25 mm (1 inch)				Max. 6 Months (V)	
19 mm (¾ inch)				Max. 6 Months (V)	
12.5 mm (½ inch)				Max. 6 Months (V)	
9.5 mm (⅜ inch)				Max. 6 Months (V)	
4.75 mm (No. 4)				Max. 6 Months (V)	
Pan				N/A	
Note: The Calibration/Verification requirement is referenced from **AASHTO R-18.**.					
Comments:					

APPENDIX B

Calibration Checklist for Concrete Laboratory Equipment

Vermont Agency of Transportation - Materials Testing Section **Sheet 1 of 2**

Concrete Laboratory Equipment Verification

Company:	
Location:	
Date Inspected:	
Inspected By:	

Title	Equipment Manufacturer	Serial Number	Date last Calibrated	Calibration(C)/ Verification(V) Frequency	Next Calibration/ Verification Due Date
8” or 12” Sieves				Max. 6 Months (V)	
9.5 mm (⅜ inch)				Max. 6 Months (V)	
4.75 mm (No. 4)				Max. 6 Months (V)	
2.36 mm (No.8)				Max. 6 Months (V)	
1.18 mm (No. 16)				Max. 6 Months (V)	
600µm (No. 30)				Max. 6 Months (V)	
300µm (No. 50)				Max. 6 Months (V)	
150µm (No. 100)				Max. 6 Months (V)	
Mechanical Sieve Shaker For 8" or 12" Sieves with adjustable timer				Max. 12 Months (V)	
Balance (scale)				Max. 12 Months (V)	

Vermont Agency of Transportation - Materials Testing Section **Sheet 2 of 2**

Concrete Laboratory Equipment Verification

Company:	
Location:	
Date Inspected:	
Inspected By:	

Title	Equipment Manufacturer	Serial Number.	Date last Calibrated	Calibration(C)/ Verification(V) Frequency	Next Calibration/ Verification Due Date
Sieves (Gilson Type)				Max. 6 Months (V)	
45 mm (1 ¾ inch)				Max. 6 Months (V)	
37.5 mm (1 ½ inch)				Max. 6 Months (V)	
25 mm (1 inch)				Max. 6 Months (V)	
19 mm (¾ inch)				Max. 6 Months (V)	
12.5 mm (½ inch)				Max. 6 Months (V)	
9.5 mm (⅜ inch)				Max. 6 Months (V)	
6.3 mm (¼ inch)				Max. 6 Months (V)	
4.75 mm (No. 4)				Max. 6 Months (V)	
2.36 mm (No. 8)				Max. 6 Months (V)	
1.18 mm (No. 16)				Max. 6 Months (V)	
Pan				N/A	
Mechanical Sieve Shaker (Gilson) with adjustable timer				Max. 12 Months (V)	

Note: The Calibration/Verification requirement is referenced from **AASHTO R-18.**

Comments:

APPENDIX C

Sample Calibration/Verification Report

EQUIPMENT CALIBRATION/VERIFICATION REPORT

For: General Purpose Drying Oven - Reference: AOT In-House Procedure #4

Manufacturer: _____

Model: _____ Serial Number: _____

VAOT Identification Number: _____ AMRL Number:_____

Date Purchased/Placed in Service: _____ Location (Lab): _____

Calibration/Verification Record

Checked By: _____ Date: _____

Previous Date Checked: _____ Next Due Date (6 months max.):

Verification Equipment Used: _____

_____

1. Temperature setting: _____ °C Time oven closed: _____

Reading #1 Time: _____ Temperature: _____ °C
Reading #2 Time: _____ Temperature: _____ °C
Reading #3 Time: _____ Temperature: _____ °C

2. Temperature setting: _____ °C Time temperature reset: _____

Reading #1 Time: _____ Temperature: _____ °C
Reading #2 Time: _____ Temperature: _____ °C
Reading #3 Time: _____ Temperature: _____ °C

3. Temperature setting: _____ °C Time temperature reset: _____

Reading #1 Time: _____ Temperature: _____ °C
Reading #2 Time: _____ Temperature: _____ °C
Reading #3 Time: _____ Temperature: _____ °C

4. Is temperature within the range(s) required in the appropriate test method(s)?

Remarks: _____

_____