

VERMONT AGENCY OF TRANSPORTATION

**QUALIFIED TECHNICIAN
PROGRAM**

Nicholas Van Den Berg, P.E.
Materials Manager



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1.0 INTRODUCTION

The Qualified Technician Program (QTP) establishes minimum training requirements necessary for Agency sampling and testing personnel to be considered “qualified” personnel as referenced in the Agency’s Quality Assurance Program (QAP).

2.0 APPLICABILITY

The QTP has been developed by the Materials Testing and Certification Section for use by the entire Construction and Materials Bureau (CMB). Other Bureaus may use this document to address their needs, but are responsible for administration of the QTP within their Bureau. Qualification requirements for Agency staff that are assigned as laboratory technicians within the Agency’s AASHTO accredited Central Laboratory will be governed by the Central Laboratory’s Quality Systems Manual (QSM).

3.0 PERSONNEL PROFICIENCY LEVELS

This program has four distinct proficiency levels; trainee, apprentice, qualified, and certified technician. The immediate supervisor of the Agency personnel in the training program shall determine when the employee has satisfactorily met the requirements for each level.

Only the Agency can deem personnel to be ‘qualified’. Likewise, only certification bodies can deem personnel to be ‘certified’.

3.1 TRAINEE

During this period, personnel would receive formal training including all applicable AASHTO and VTrans sampling and testing procedures with instruction on the importance of proper procedures and the significance of test results.

The responsibilities of the trainee would be to:

1. Observe proper testing techniques of a qualified technician.
2. Read and understand applicable AASHTO, ASTM, and MRD (specific Agency tests) procedures.
3. Learn calculations associated with the testing procedures.
4. Learn how to prepare appropriate paperwork.
5. Learn applicable computer programs associated with prompt and accurate testing and reporting.
6. Understand the importance of calibrating applicable test equipment and identifying out of tolerance equipment.

Trainees may not be assigned acceptance sampling or testing responsibilities.**3.2 APPRENTICE**

Upon successfully communicating an understanding of all the Trainee requirements, the employee can be considered an Apprentice. Documentation of this communication is the responsibility of the immediate Supervisor. During this period the employee would be given hands-on training with the opportunity to demonstrate proficiency of all assigned sampling & testing procedures.

An Apprentice Technician is expected to:

1. Perform applicable testing under the supervision of a Qualified Technician.
2. Demonstrate knowledge of mathematical calculations associated with testing procedures.
3. Be able to answer questions pertaining to applicable test procedures including calculations.
4. Prepare the appropriate paperwork for review by a Qualified Technician.
5. Demonstrate the ability to operate databases and complete test reports using established computer programs.
6. Be able to calibrate test equipment under the instruction of a Qualified Technician.

Apprentices may perform acceptance sampling or testing under the direct supervision of a qualified technician.**3.3 QUALIFIED TECHNICIAN**

For an Apprentice to become a Qualified Technician they must satisfactorily complete a Technician Proficiency for each of the sampling and testing procedures they will be qualified to perform. An example of a Technician Proficiency is shown in Appendix A. The Technician Proficiency will be conducted by a Qualified Technician and will be documented in the employee's Training and Evaluation Record, an example of which is included in Appendix B.

A Qualified Technician is expected to:

1. Perform testing procedures properly and independently with minimal supervision.
2. Demonstrate an ability to select proper mathematical techniques and calculate basic probabilities.
3. Maintain diaries and records and prepare clear, effective reports.

4. Communicate effectively and be able to translate technical material into layman's terms.
5. Coordinate work efforts with the general public, private contractors, and other federal, state and local Agencies.
6. Accurately report sampling and testing results and communicate them using Agency databases and computer programs.
7. Maintain and review equipment calibrations.

Qualified Technicians may perform acceptance sampling and testing as outlined in the QAP.

3.4 CERTIFIED TECHNICIAN

Any person determined “certified” by an appropriate certification program, as determined by the Agency. The Northeast Transportation Technician Certification Program (NETTCP) is one such program. Consultant staff performing acceptance sampling and testing for the Agency must possess appropriate certifications.

Certified Technicians may be assigned acceptance sampling and testing responsibilities as outlined in the QAP.

4.0 QUALIFICATION REQUIREMENTS

Re-qualification for a Qualified Technician is required every five years. Re-qualification will consist of the successful completion of technician proficiencies for each AASHTO, ASTM, or MRD test conducted as part of the Agency’s acceptance sampling and testing program for a given material. Technician Proficiencies conducted by the Agency’s Independent Assurance Program will be considered as a re-qualification for that particular test procedure.

A qualified technician may lose their qualification status for either of the following reasons:

1. Found to be falsifying test result records and/or reports or recommending acceptance of obviously defective material.

OR

2. Improper performance of acceptance sampling and testing.

A qualified technician that has lost their qualification status for any reason may be re-qualified following the procedure above.

APPENDIX A

Example Technician Proficiency

VERMONT AGENCY OF TRANSPORTATION
MATERIALS TESTING

TECHNICIAN PROFICIENCY EVALUATION
FOR
Test: Sieve Analysis of Fine and Coarse Aggregate- AASHTO T27

Technician being Evaluated: _____ Date: _____

Assessor: _____ Date: _____

PROCEDURE

Mixtures of Fine and Coarse Aggregate

Sample size the same as sample for coarse aggregates?..... _____

Fine Aggregate

Initial mass: _____ Final mass: _____

1. Sample obtained by T248 (*ASTM C702*)?..... _____
2. Minimum sample mass 300 g?..... _____
3. (Optional) If T11 (*ASTM C117*) is used, does the dry nest include a 75- μ m (No. 200) sieve?..... _____
4. Sample dried to constant mass at 110 \pm 5 $^{\circ}$ C (230 \pm 9 $^{\circ}$ F)?..... _____
5. AASHTO: Mass determined to nearest 0.1%? _____
Note: If specimen consists of material leftover after T11 (*ASTM C117*) then Step 5 does not apply because it is assumed that total specimen mass was determined as part of that test.
6. AASHTO: Sieving continued until not more than 0.5% by mass of the total specimen passes a given sieve during one minute of continuous hand sieving?* _____
ASTM: Sieving continued until not more than one mass % of the residue on any individual sieve passes that sieve during one minute of continuous hand sieving?* _____
Sieve size: _____ Mass retained on sieve: _____ Mass passing sieve: _____
7. Residue on each sieve weighed to 0.1% of original dry mass?..... _____
8. Sieves not overloaded - mass of residue on each sieve [finer than 4.75-mm (No. 4) sieves] less than 7 kg/m² of sieving surface (200 g for 8" diameter sieve)? _____
9. Total mass of material after sieving agrees with mass before sieving to within 0.3% (If not, do not use for acceptance testing)?..... _____
10. Percentages calculated to the nearest 0.1% and reported to the nearest whole number (except 75- μ m - if less than 10%, percentages reported to nearest 0.1%)?..... _____
11. Percentage calculations based on original dry sample mass, including the passing 75- μ m fraction (if T11/*ASTM C136* was used)? _____

Appendix A: Technician Proficiency

VERMONT AGENCY OF TRANSPORTATION
MATERIALS TESTING

TECHNICIAN PROFICIENCY EVALUATION
FOR
Test: Sieve Analysis of Fine and Coarse Aggregate- AASHTO T27

Technician being Evaluated: _____ Date: _____

Assessor: _____ Date: _____

Coarse Aggregate

Initial mass: _____ Final mass: _____

1. If whole field sample is not used, is test sample obtained by T248 (*ASTM C702*)?..... _____
2. Sample dried to constant weight at 110±5°C (230±9°F) or sieved surface dry?..... _____
3. AASHTO: Mass determined to nearest 0.1%?..... _____
Note: If specimen consists of material leftover after T11 (*ASTM C117*) then Step 3 does not apply because it is assumed that total specimen mass was determined as part of that test.
4. Minimum sample mass: 3/8 in. - 1 kg; 1/2 in. - 2 kg; 3/4 in. - 5 kg; 1 in. - 10 kg; 1 ½ in. - 15 kg; 2 in. - 20 kg; 2 ½ in. - 35 kg; 3 in. - 60 kg; 3 ½ in. - 100 kg?..... _____
5. If hand sieving, particles not forced to pass through openings?..... _____
6. *AASHTO: Sieving continued until not more than 0.5% by mass of the total specimen passes a given sieve during one minute of continuous hand sieving?..... _____
***ASTM: Sieving continued until not more than one mass % of the residue on any individual sieve passes that sieve during one minute of continuous hand sieving?** _____
Sieve size: _____ Mass retained on sieve: _____ Mass passing sieve: _____
7. Residue on each sieve weighed to 0.1% of original dry mass?..... _____
8. Sieves not overloaded:
 - (a) Mass of residue on each sieve [finer than 4.75-mm (No. 4) sieves] does not exceed 7 kg/m² of sieving surface (200 g for 8" diameter sieve)?..... _____
 - (b) Mass of residue on each sieve [for 4.75-mm (No. 4) sieves and larger] does not exceed 2.5 X (sieve opening, mm) X (effective sieving area, m²)?..... _____
9. Total mass of material after sieving agrees with mass before sieving to within 0.3% (If not, do not use for acceptance testing)?..... _____
10. Percentages calculated to nearest 0.1% and reported to nearest whole number?..... _____
11. Percentage calculations based on original dry sample mass, including the passing 75-µm fraction (if T11/*ASTM C136* was used)?..... _____

* Check by hand with 8-in. diameter sieve.

COMMENTS:

Appendix A: Technician Proficiency (continued)

APPENDIX B

Example Employee Training and Evaluation Record

