

State of Illinois
Department of Transportation
Bureau of Materials
Springfield

POLICY MEMORANDUM

Revised: February 8, 2019

30-12.2

This Policy Memorandum supersedes number 30-12.1 dated March 15, 2013

TO: REGIONAL ENGINEERS AND BUREAU CHIEFS IN THE OFFICE OF HIGHWAYS PROJECT IMPLEMENTATION AND PRIVATE RESISTIVITY/CHEMICAL TESTING LABORATORIES

SUBJECT: MINIMUM PRIVATE LABORATORY REQUIREMENTS FOR RESISTIVITY AND CHEMICAL TESTING OF FINE AND COARSE AGGREGATES USED IN MSE WALLS

1.0 SCOPE

This policy governs the minimum qualifications for **Private Resistivity/Chemical Testing Laboratories** operated by **Contractors, Producers** and **Consultants** that conduct resistivity and/or chemical tests on fine and coarse aggregates used as select fill in mechanically stabilized earth walls (MSE).

Private Resistivity/Chemical Testing Laboratories shall be approved as one of the following laboratory types:

1. Chemical
2. Resistivity
3. Resistivity and Chemical

2.0 PURPOSE

1. To ensure that **Private Resistivity/Chemical Testing Laboratories** are equipped and maintained at a uniform and high level of quality
2. To establish uniform procedures for evaluating and approving **Private Resistivity/Chemical Testing Laboratories**
3. To maintain a uniform standard for inspecting test equipment and test procedures

3.0 AUTHORITY AND REFERENCES

3.1 **Authority.** Federal regulations (23 CFR Part 637) require the **Department** to establish an **Acceptance Program** for qualifying construction testing laboratories.

3.2 **References.**

1. IDOT Standard Specifications for Road and Bridge Construction
2. IDOT Manual of Test Procedures for Materials
3. AASHTO, ASTM, and IDOT Test Procedures
4. Code of Federal Regulations (23 CFR Part 637)

5. Department Policy MAT-15, "Quality Assurance Procedures for Construction"

4.0 DEFINITIONS

AASHTO - American Association of State Highway and Transportation Officials.

AASHTO R 18 - The **AASHTO** Standard for "Establishing and Implementing a Quality System for Construction Materials Laboratories." The principles and/or requirements of **AASHTO R 18** are used by the **Bureau** to administer the **Qualified Laboratory** program for **Private Resistivity/Chemical Testing Laboratories**.

ACCEPTANCE PROGRAM - All factors that comprise the **Department's** determination of the quality of the product as specified in the contract requirements.

ACCREDITED LAB - A laboratory that is currently accredited by the **AASHTO** Accreditation Program (AAP) or other accrediting body recognized by **FHWA**.

ASTM - American Society for Testing Materials.

BUREAU - Central Bureau of Materials (CBM), Illinois **Department** of Transportation.

BUREAU LABORATORY - The **Department's** central laboratory maintained and operated by the **Bureau**. The **Bureau Laboratory** administers the **Qualified Laboratory** program for **Private Resistivity/Chemical Testing Laboratories**.

CONSULTANT - A private firm which performs construction materials testing for the **Department**, **Producer**, or **Contractor**.

CONTRACTOR - The individual, firm, partnership, joint venture, or corporation contracting with the **Department** for performance of prescribed work.

DEPARTMENT - Illinois Department of Transportation (IDOT), including its Districts and Central Bureau offices.

FHWA - Federal Highway Administration

PRIVATE RESISTIVITY/CHEMICAL TESTING LABORATORY - A resistivity and/or chemical construction materials testing laboratory not operated by the **Department** or a **Local Agency**.

PRODUCER - An individual or business entity providing materials and/or products for performance of prescribed work.

QUALIFIED LABORATORY - A laboratory that is inspected and approved by the **Department**. FHWA's regulations (23 CFR 637.203) define these as *Laboratories that are capable as defined by appropriate programs established by each state transportation department. As a minimum, the qualification program shall include provisions for checking test equipment, and the laboratory shall keep records of calibration checks.*

QUALIFIED PERSONNEL - Personnel with demonstrated capability to perform the applicable inspection and testing.

SPECIFICATIONS - Specifications for materials; manufactured, fabricated or constructed items; processes; products; designs; conducted test procedures, etc. which includes the **Standard Specifications**, supplemental specifications and recurring special provisions, highway standards, shop drawings, contract plans, project special provisions, **AASHTO Specifications**, **ASTM Specifications**, etc., as applicable.

STANDARD SPECIFICATIONS - The **Department's** Standard Specifications for Road and Bridge Construction.

TECHNICAL MANAGER - The individual with responsibility for the overall operations, condition, and maintenance of the **Private Resistivity/Chemical Testing Laboratory**. The **Technical Manager** shall be identified in writing.

5.0 PRIVATE RESISTIVITY/CHEMICAL TESTING LABORATORY REQUIREMENTS

5.1 Personnel Qualifications/Responsibilities.

5.1.1 All testing for **Department** contracts shall be performed by **Qualified Personnel** as determined by the **Bureau**.

5.2 Facilities and Equipment.

5.2.1 The **Department** will approve all **Private Resistivity/Chemical Testing Laboratories** used on **Department** projects.

5.2.2 Each **Private Resistivity/Chemical Testing Laboratory** shall maintain the equipment and facilities necessary to perform the tests required for each laboratory type it is approved for. Lists of required **Private Resistivity/Chemical Testing Laboratory** test capabilities for each **Qualified Laboratory** type are provided in Articles 1003.07 and 1004.06 of the **Standard Specifications**.

5.2.3 Each **Private Resistivity/Chemical Testing Laboratory** shall have adequate floor space to efficiently conduct the required tests for each laboratory type it is approved for.

5.2.4 Each **Private Resistivity/Chemical Testing Laboratory** shall have HVAC equipment capable of maintaining a room temperature of 68-86° F (20 to 30° C).

6.0 QUALITY SYSTEM CRITERIA

6.1 **Technical Manager.** Each **Private Resistivity/Chemical Testing Laboratory** shall have a **Technical Manager** (however titled) who has overall responsibility for the technical operations of the **Private Resistivity/Chemical Testing Laboratory**. The **Technical Manager** shall be responsible for equipment maintenance, calibration, standardization, verification and checks; maintaining records; and ensuring that current test procedures are utilized.

6.2 **Equipment Calibration, Standardization, Verification and Checks.** The **Private Resistivity/Chemical Testing Laboratory** shall calibrate, standardize, verify or check all testing equipment associated with tests performed for each laboratory type it is approved. Calibration, standardization, verification and check intervals for each piece of

testing equipment shall be according **Department** Policy Memorandum 6-08, **AASHTO R 18**, or as specified in a particular test method, as applicable.

6.3 **Department Proficiency Testing.** **Private Resistivity/Chemical Testing Laboratory** qualifications may include round-robin proficiency testing conducted by the **Department**. Results of proficiency testing may be considered in the overall evaluation of the **Private Resistivity/Chemical Testing Laboratory** to conduct specific tests.

6.4 **Records.**

6.4.1 Test Records. Each **Private Resistivity/Chemical Testing Laboratory** shall maintain test records which contain sufficient information to permit verification of any test report.

6.4.2 Laboratory Quality Records. Each **Private Resistivity/Chemical Testing Laboratory** shall maintain documentation of internal quality controls. At a minimum, the records shall include:

1. Documentation of assignment of personnel responsible for internal quality controls
2. Documentation of equipment calibration, standardization, verification and checks
3. All documentation shall be maintained and available for **Department** inspection for a period of three years

6.4.2.1 Equipment Calibration, Standardization, Verification and Check Records. Calibration, standardization, verification and check records shall include the minimum information listed below. **AASHTO R 18** may provide additional guidance for recording calibration, standardization, verification and check records for testing equipment.

1. Description
2. Model & Serial Number
3. Name of person calibrating, standardizing, verifying or checking
4. Equipment used for calibration, standardization, verification or checks
5. Date calibrated, standardized, verified, or checked & next due date
6. Reference procedure used
7. Results of calibration, standardization, verification or checks

6.4.3 Proficiency Sample Records. Each **Private Resistivity/Chemical Testing Laboratory** shall retain results of participation in any proficiency sample program, including the documentation of steps taken to determine the cause of poor results and corrective action taken.

6.5 **Publications.** Each **Private Resistivity/Chemical Testing Laboratory** shall maintain current copies or electronic access to the required test procedures for each laboratory type it is approved for. Each **Private Resistivity/Chemical Testing Laboratory** shall maintain a current copy or electronic access to the Manual of Test Procedures for Materials.

7.0 LABORATORY INSPECTIONS

7.1 **General.** The **Department** will approve **Private Resistivity/Chemical Testing Laboratories** by inspection and other requirements, as applicable.

- 7.2 **Travel Reimbursement.** The **Private Resistivity/Chemical Testing Laboratory** shall be responsible for payment of transportation, per diem (meals), lodging, and incidental travel costs incurred by the **Bureau** if the trip from the **Bureau** to the **Private Resistivity/Chemical Testing Laboratory**, the **Private Resistivity/Chemical Testing Laboratory** inspection, and the return trip to the **Bureau** cannot be completed within one day's normal work hours of 8:00 AM to 4:30 PM. Reimbursement for travel costs shall be provided no later than 30 calendar days after receipt of costs submitted by the **Department**.
- 7.3 **AASHTO Accredited Private Resistivity/Chemical Testing Laboratories.** AASHTO accreditation does not waive the right of the **Department** to conduct inspections and/or re-inspections.
- 7.4 **Private Resistivity/Chemical Testing Laboratory Inspection Scope.**
1. Facilities - Physical and environmental conditions
 2. Equipment - Test apparatus for specification compliance
 3. Documentation - Calibration, standardization, verification and check records
 4. Personnel - A review of **Qualified Personnel** credentials
 5. Observation - The **Private Resistivity/Chemical Testing Laboratory** may be required to demonstrate required tests. Some test procedures may be evaluated through discussion with laboratory personnel.
 6. Split Sample Testing - Results of split sample testing between the **Private Resistivity/Chemical Testing Laboratory** and the **Bureau**
 7. Proficiency Sample Testing - Results of proficiency sample testing programs conducted by the **Bureau**
 8. Report - The **Private Resistivity/Chemical Testing Laboratory** will be provided with a report listing those tests for which it is approved. The report will note deficiencies.
- 7.5 **Private Resistivity/Chemical Testing Laboratory Inspection Procedure.**
- 7.5.1 The **Private Resistivity/Chemical Testing Laboratory** shall submit a written request for an inspection to the **Bureau**. The request shall indicate the following:
1. The location of the **Private Resistivity/Chemical Testing Laboratory**
 2. The type of **Private Laboratory**, i.e., **Resistivity, Chemical, Resistivity/Chemical**
 3. The name of the **Technical Manager** who will be present for the inspection
 4. The date the **Private Resistivity/Chemical Testing Laboratory** will be ready for inspection
- 7.5.2 **Bureau** personnel will establish a tentative date to perform the inspection.
- 7.5.3 **Bureau** personnel will perform the inspection and prepare a report. Standard inspection forms and a preliminary report, developed and maintained by the **Bureau Laboratory** will be used.
- 7.5.4 **Bureau** personnel will assign identification numbers to all test equipment.

- 7.5.5 **Bureau** personnel will perform a close-out with the **Technical Manager**. The **Technical Manager** will be given a copy of the preliminary report.
- 7.5.6 If a review of the preliminary report indicates there are no deficiencies, the **Bureau** will provide written notification to the **Private Resistivity/Chemical Testing Laboratory** indicating the **Private Resistivity/Chemical Testing Laboratory** is now approved. The notification will include an equipment list.
- 7.5.7 If the preliminary report indicates there are deficiencies, the **Bureau** will provide written notification to the **Private Resistivity/Chemical Testing Laboratory**, indicating the deficiencies and that corrective action is required.
- 7.5.8 After correction of all cited deficiencies, the **Private Resistivity/Chemical Testing Laboratory** shall notify the **Bureau**. The **Bureau** will re-inspect the **Private Resistivity/Chemical Testing Laboratory** to verify the deficiencies have been corrected.
- 7.5.9 The **Bureau** will provide written notification to the **Private Resistivity/Chemical Testing Laboratory**, indicating the **Private Resistivity/Chemical Testing Laboratory** is now an approved lab. The notification will include an equipment list.
- 7.5.10 Uncorrected deficiencies will not be waived. Equivalent equipment specifications may be approved only with the written approval of the **Bureau's** Engineer of Concrete, Soils, and Metals.
- 7.6 Re-Approval of Approved Private Resistivity/Chemical Testing Laboratories.**
- 7.6.1 The re-inspection of **Private Resistivity/Chemical Testing Laboratories** will be conducted at intervals deemed appropriate by the **Bureau**. The interval between inspections will not exceed two calendar years. The **Bureau's** evaluation may include the following:
1. Physical inspection of the laboratory facility and equipment
 2. Review of the **Private Resistivity/Chemical Testing Laboratory's** internal quality plan and documentation in accordance with this policy and those parts of **AASHTO R 18** incorporated by this policy
 3. Observations of tests performed by **Qualified Personnel**
 4. Results of split sample testing between the **Private Resistivity/Chemical Testing Laboratory** and the **Bureau**
 5. Results of proficiency sample testing programs conducted by the **Bureau**
 6. Overall past performance and experience
- 7.6.2 The **Bureau** will issue a letter of re-approval to the **Private Resistivity/Chemical Testing Laboratory** or provide a written and itemized deficiency list. The **Private Resistivity/Chemical Testing Laboratory** shall notify the **Bureau** when deficiencies are corrected and ready for re-inspection.
- 7.6.3 At any time, if the **Bureau** identifies deficiencies in the facility, equipment, or test procedures that could affect the results of any tests, the **Bureau** will require the **Private**

Resistivity/Chemical Testing Laboratory to take immediate action to correct the deficiency.

8.0 LABORATORY DATABASE AND APPROVED LIST

8.1 The **Department** will maintain a computer database to monitor the approval status of **Private Resistivity/Chemical Testing Laboratories**. The database will include the following information:

1. Laboratory Codes (**Department, Producer**, etc.)
2. Type Laboratory (Chemical, Resistivity, Resistivity/Chemical)
3. Demographics (Address, etc.)
4. Date Inspected
5. Approval Status

8.2 **Approved List.** The **Department** will maintain a list of approved **Private Resistivity/Chemical Testing Laboratories** on the Internet. The list will be entitled "Approved List of Laboratories to Perform Resistivity and/or Chemical Testing" and will include the following information:

1. Laboratory Name
2. Address
3. Contact Person and Title
4. Phone No.
5. Website

The **Department** may remove a **Private Resistivity/Chemical Testing Laboratory** from the list if deficiencies in the facility, equipment, or test procedures are indicated through inspections, proficiency testing, or other circumstances, unless the **Private Resistivity/Chemical Testing Laboratory** takes immediate action and corrects the deficiency.

9.0 CLOSING NOTICE

Archived versions of this policy memorandum may be examined by contacting the **Bureau**.

The current **Bureau** Chief of Materials has approved this policy memorandum. Signed documents are on file with the **Bureau**.