

SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION



MATERIALS TESTING AND INSPECTION
CERTIFICATION PROGRAM
MANUAL

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SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

MATERIAL TESTING AND INSPECTION
CERTIFICATION PROGRAM MANUAL

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LIST OF ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ASTM	American Society for Testing and Materials
CCRL	Cement and Concrete Reference Laboratory
CFR	Code of Federal Regulations
FHWA	Federal Highway Administration
IA	Independent Assurance
NHS	National Highway System
NIST	National Institute of Standards and Technology
QC	Quality Control
QA	Quality Assurance
QC/QA	Quality Control and Quality Assurance
SDDOT	South Dakota Department of Transportation
SDBHRA	South Dakota Bureau of Human Resources and Administration

REFERENCES

SDDOT Standard Specifications for Roads and Bridges, current edition

SDDOT Materials Manual, current edition

GLOSSARY OF TERMS

AASHTO Accredited Laboratories - Laboratories that satisfy the quality system requirements specified in AASHTO Practice R 18 and received an on-site assessment from AASHTO resource and/or CCRL for which test method accreditation is being sought.

Abuse - An intentional deviation from approved procedures.

Acceptance Testing – Acceptance samples and tests include the samples and tests used for determining the acceptability of the materials and workmanship which have been or are being incorporated in the project. They are the principal basis for determining the acceptability of the projects' materials and construction.

Certified Individual - An individual, who has successfully demonstrated through passing the required written and/or performance exams, with the knowledge and skills required to properly sample and test material or provide inspection of construction activities.

Certification Program - The process in-place that provides the requirements for those seeking certification and administration of the program.

Course Exam - An exam taken at the end of an approved course to gain certification.

Ethical Work - All work will be accomplished honestly in a professional manner in accordance with the plans, specifications, contract, materials manual, or any other pertinent requirements. It will be considered unprofessional and inconsistent with proper conduct and contrary to the public interest:

- a) To act for his/her client or for his/her employer other than as a faithful agent or trustee.
- b) To accept remuneration for services rendered other than from his/her client or his/her employer.
- c) To attempt to injure (falsely or maliciously) the professional reputation of another individual or business.
- d) To exert undue influence or to offer, solicit, or accept compensation for the purpose of affecting negotiations of a contract or contract item.
- e) To act in any manner derogatory to honor, integrity, and dignity.

Independent Assurance (IA) Testing – Independent Assurance samples and tests are the samples taken, tests made, and other procedures performed for the expressed purpose of making independent checks on the reliability of the results of Acceptance sampling and testing. They do not provide test results for acceptance.

Inspection - The process of observing, measuring, examining, testing, gauging, or otherwise evaluating materials, products, services, testing activities, and equipment to determine their acceptability in meeting specification requirements.

Misconduct - An intentional wrongdoing or deliberate violation of the requirements of the certification program.

Negligence - A repeated unintentional deviation from approved procedures, which may or may not cause erroneous results.

Permanent Employee - A full time individual employed by a company or organization, who normally works 40 hours per week 52 weeks per year for the same company or organization.

Performance Checklist – A list of proficiency checks for testing procedures that is specific to the type of testing that is being performed that administered by a certified individual to a non-certified individual. Performance Checklist may be obtained from the Region Materials Engineer.

Performance Exam - An exam taken by an individual to show that he/she has the knowledge and ability to perform the specified test.

Proficiency Sample - A standardized sample given to multiple laboratories to evaluate the performance of the laboratories and those performing the tests.

Quality - Consistently conforming to mutually agreed upon requirements.

Quality Assurance - All those planned and systematic activities necessary to provide adequate confidence that a product or service will satisfy given requirements for quality. In the laboratory, quality assurance should provide adequate confidence in each test result reported by the laboratory.

Quality Control - The sum of total activities performed by the seller (producer, manufacturer, and/or contractor) to make sure that a product meets contract specification requirements. Within the context of highway construction this includes materials handling and construction procedures, calibration and maintenance of equipment, production process control, and any sampling, testing, and inspection that is done for these purposes.

Recertification Exam - An exam taken by an individual to obtain certification in those areas for another specified time frame.

Reciprocity - When the Certification is granted to an individual based on other certifications, licenses, etc.

Re-test Exam - A different exam, other than the one that was previously failed, given to an individual to obtain certification.

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

MATERIALS TESTING AND INSPECTION
CERTIFICATION PROGRAM MANUAL

I. Objective:

The Federal Highway Administration (per 23 CFR 637 Subpart B) requires that all individuals performing acceptance testing or independent assurance testing will be certified, and all testing equipment be calibrated at a specified frequency for all work on the National Highway System. The intent is to continually improve the quality of our highway system. With the adoption of quality control/quality assurance specifications, many more individuals are testing and inspecting, which requires training and good testing equipment to provide consistency and repeatability of results. The intent of the program is to assure that the quality of the inspection, testing, and testing equipment is uniform and consistent in providing quality results.

This Certification Program does not apply to the SDDOT Central Laboratory. The Central Laboratory will meet the requirements of CFR 637.209(a)(2).

All activities must be conducted in accordance with this manual.

A. There are three major parts to the program:

1. Calibration of Testing Equipment includes calibrations, standardizations and checks of equipment.
2. Material Testing Certification of Individuals.
3. Inspection Certification of Individuals.

B. The Program applies to highway construction on all highway systems plus all informal/maintenance projects which require testing and inspection as determined by the Region Engineer or Region Materials Engineer.

C. Any individual, who is performing acceptance or independent assurance testing of material, will be certified.

D. Any individual, who is performing acceptance inspection of contract work in the areas designated by this program, will be certified.

E. Overall Program Responsibility: The SDDOT Materials and Surfacing Program has the overall responsibility to administer this program. The duties and responsibilities of those individuals in the Materials and Surfacing Program to meet the administrative requirements will be as outlined in this document.

F. The current edition of the SDDOT Materials Manual, Standard Specifications and Special Provisions will be used as the source for the following:

1. Minimum Acceptance, Quality Control and Quality Assurance Testing Frequencies.
 2. Minimum Independent Assurance Testing Frequencies.
 3. Sampling and Testing Procedures.
 4. Procedures for handling failing test results.
 5. Procedures for the identification, conditioning, storage, retention, and disposal of test samples.
- II. Testing Equipment: All testing equipment will be calibrated to assure uniformity in the testing equipment and to provide more uniform test results. The Independent Assurance testing will be used to monitor uniformity of the testing equipment and procedures.
- A. Requirements: All testing equipment identified by the Materials and Surfacing Program will:
1. Be calibrated at the required Frequency (Appendix 1).
 2. Be calibrated according to the Equipment Calibration Procedures (Appendix 2).
 3. The equipment calibration will be recorded on the Equipment Calibration Records (Appendix 2). Where large numbers of a particular type of equipment exist, it will be permissible to list as many items on one record document as it will accommodate provided all required documentation, measurements, and any other required information is shown for each equipment item.
 4. Equipment Calibration Records will be retained for a period of three years.
 5. No equipment will be used for testing if it does not meet the calibration requirements. This may require corrective work or disposing of the non-conforming equipment.
- B. Responsibilities:
1. Materials and Surfacing Program:
 - a) Develop and furnish equipment calibration frequencies, procedures, and records.
 2. Region Materials:
 - a) Calibrate SDDOT Region and Area equipment.
 - b) Maintain equipment inventory.
 - c) Maintain equipment calibration records.
 3. Area Office:
 - a) Ensure Area, Contractor, Consultant, or other's equipment is calibrated prior to use.

- b) Review contractor, consultant, or other entities' records. The Area Office will need to ensure that the consultant, contractor, or other entity's equipment calibration records are available for review on the project site. IA testing will be used to monitor accuracy of equipment calibration and uniformity of testing procedures.
 - 4. Contractor, Consultant, or other entities:
 - a) Calibrate their equipment prior to use on project.
 - b) Maintain their equipment inventory.
 - c) Maintain their equipment calibration records.
 - d) Have a copy of current equipment calibration records available on project site.
 - e) Cooperate in the inspection conducted by SDDOT of their facilities, equipment, and/or records.
 - 5. Individual:
 - a) Each individual will be responsible for keeping well-maintained and clean equipment and workspace.
 - b) Each individual will assure that their equipment has been calibrated and is functioning as intended.
- III. Individual Certification: Any individual, who is performing Acceptance, Quality Control, Quality Assurance, or Independent Assurance testing of materials and/or acceptance inspection in the areas designated by this program, will be certified.

Permanent SDDOT employees, who will be sampling and testing materials for acceptance, or performing acceptance inspection will become certified as soon as scheduling will permit. Until an individual is certified, they will function in accordance with the parameters established for temporary or seasonal personnel.

All Materials certifications are valid for four (4) years, except the ACI Certification and the DOT+ which is valid for five (5) years, after which time the individual must become recertified before the expiration date of the current certification.

Participation in conducting any of the Department sponsored certification testing and inspection courses as an instructor, will fulfill the requirement for certification or recertification for that course for a period not to exceed one year. Recertification will be allowed for individuals who no longer participate as an instructor. The recertification will be valid for a period not to exceed four years.

- A. Certification will be required for all personnel who will be performing Materials Testing or Project Inspection in the following areas:
 - 1. Materials Testing:
 - a) Soils - SD 103, SD 104, SD 105, SD 106, SD 108, SD 110, and SD 114.
 - b) Aggregate - SD 201, SD 202, SD 203, SD 206, SD 207, SD 208, SD 211, SD 212, SD 213, SD 214, and SD 219.

- c) Asphalt Aggregate Testing - SD 108, SD 201, SD 202, SD 208, SD 211, SD 212, SD 213, SD 214, SD 217, and SD 221.
 - d) Hot Mix Testing – SD 301, SD 305, SD 306, SD 307, SD 311, SD 312, SD 314, SD 315, SD 317, SD 318, SD 321, and SD 502.
 - e) Fresh Concrete - SD 402, SD 403, SD 404, SD 405, SD 408, and SD 411.
 - 2. Project Inspection:
 - a) Earthwork, Pipe Installation, Erosion Control.
 - b) Structures.
 - c) Concrete Paving.
 - d) Concrete Plants.
 - e) Asphalt.
 - f) Erosion and Sediment Control/Storm Water Management.
- B. Requirements for Permanent Personnel:
- 1. Initial certification:
 - a) Soils or Aggregate Testing: The individual must successfully complete each segment of the Department's Soils and Aggregate Testing Course.
 - b) Asphalt Testing and Inspection (Class Q): Individual must follow the procedures for certification contained in Appendix 3 of this document. The individual must attend the course and pass the required exams prior to sampling and testing, or inspection of materials associated with asphalt concrete construction.
 - c) Fresh Concrete Testing: Individual must be certified as an ACI Concrete Field-Testing Technician – Grade I prior to sampling and testing concrete. All personnel performing Acceptance testing are required to take the SDDOT+ course on DOT procedures in SDLearn. Contractors and Consultants may sign up at: <https://dot.sd.gov/doing-business/certification-accreditation/training>
 - d) Project Inspection: Individual must successfully complete each inspection course in which they will be inspecting.
 - 2. Recertification:
 - a) Soils or Aggregate: Recertification must be accomplished by successfully completing the recertification exam or successfully completing the course on an alternating basis every four (4) years and before the expiration date of the

current certification. Recertification exams will be scheduled through SDLearn.

Contractors and Consultants may sign up for recertification exams at <https://dot.sd.gov/doing-business/certification-accreditation/training>.

- b) Asphalt Testing and Inspection (Class Q): Individuals must follow the procedures for recertification contained in Appendix 3 of this document.
- c) Fresh Concrete: Individuals certified by ACI must follow the current ACI procedures to become recertified.
- d) Project Inspection: Recertification must be accomplished by completing the recertification process or successfully completing the course on an alternating basis every four (4) years and before the expiration date of the current certification. Recertification exams will be completed through SDLearn except for Concrete Plants which will be administered through the Region Materials Engineer.

Contractors and Consultants may sign up for recertification exams at <https://dot.sd.gov/doing-business/certification-accreditation/training>

C. Requirements for Temporary and Seasonal Personnel:

- 1. Soils/Aggregate: Individuals will work on the same project under direct supervision of an individual certified in that area of testing.
 - a) Temporary and seasonal personnel who are utilized to perform materials testing duties will obtain a copy of the test procedure(s) and become familiar with them.
 - b) Will observe a certified technician perform the test procedure.
 - c) Will perform the test procedure until proficiency is achieved.
 - d) Will demonstrate the test procedure to a certified technician. The certified technician will use the Performance Checklist for the test being demonstrated to ascertain all steps are performed correctly. This document will be retained as verification of successful demonstration of the procedure.
 - e) Will have a copy of the applicable test procedure available during the demonstration testing and while testing material on the project.

- f) A copy of the Performance Checklist for the test(s) in which a temporary or seasonal individual has demonstrated proficiency and the Training and Evaluation Record document for all non-DOT personnel used on a project will be available for review in the Project File at the Area Office and in the laboratory on the project. These records for temporary or seasonal DOT Personnel will be available for review at the Area office.
 - g) Direct supervision (materials testing): A non-certified individual may perform tests or portions of tests only under direct observation of a certified technician until such time the non-certified technician demonstrates they can consistently perform the test or portion thereof in accordance with the outlined procedures. From that point on, the non-certified individual can perform the test or portion thereof whether or not a certified technician is physically present at the test site. The certified technician is however required to spend time at the project/laboratory on a daily basis. The certified technician assumes all responsibility for the accuracy of the test data and signifies so by placing their initials on the worksheet as the checker.
- 2. Fresh Concrete: Individuals must be certified as an ACI Concrete Field-Testing Technician – Grade I and successfully complete the SDDOT+ course on DOT procedures prior to testing concrete. Direct supervision will not be required.
 - 3. Asphalt Testing and Inspection: Individuals on QC/QA asphalt projects must follow the procedures contained in Appendix 3 of this document.
 - 4. Project Inspection:
 - a) An individual's qualifications (certifications, education, and experience) will be considered in determining their ability to provide proper inspection in a particular area.
 - b) The individual must work on the same project under direct supervision of an inspector certified in that inspection area.
Direct Supervision (Inspection): A non-certified individual may perform inspection of a phase of work only under the direct observation of a certified individual until such time the non-certified individual demonstrates a thorough understanding and knowledge of the requirements and procedures for that phase of work. The certified individual assumes all responsibility for the accuracy of the documentation provided.
 - c) The certified individual will determine whether the temporary or seasonal person is qualified for a particular area of inspection.
 - d) The individual will review the applicable course manual and have it available for use on the project.

- e) Temporary or seasonal personnel will not be required to take any of the inspection certification courses.
- f) A copy of the Training and Evaluation Record document showing the area(s) in which a temporary or seasonal individual has demonstrated proficiency for inspection for non-DOT personnel used on a project will be available for review in the Project File at the Area Office, on the project, and submitted to the Region Materials Engineer. These records for temporary or seasonal DOT personnel will be available for review at the Area Office.
- g) Individuals must be certified in Erosion and Sediment Control/Storm Water Management.

D. Responsibilities - Material Testing and Certification:

1. Materials and Surfacing Program will:

- a) Assist in the development of the certification course material and/or provide instructors for the inspection and testing classes.
- b) Ensure exams are graded by a course Instructor.
- c) Maintain a list of certified individuals.
- d) Retain records (exams) for five (5) years.
- e) Retain all certification records.
- f) Provide a letter of notification to all individuals who fail to achieve a passing score. (A copy of this letter will be provided to the Area Engineer and the Region Materials Engineer for DOT employees or to the employer and Region Materials Engineer if the individual is not a DOT employee).
- g) Provide each individual a card at the beginning of the construction season indicating the areas in which they are certified and the expiration date of each certification.
- h) At the beginning of each construction season, provide the Operations and Area Engineers with a tabulation of the personnel in their respective Regions/Areas that are certified, along with the expiration dates for those certifications.
- i) Distinguish between the types of exams given to the individual (re-test, re-certification, provisional, or course exam) for each certification area.

2. Region Materials

- a) Monitor certified individual's test procedures and comparison results through Independent Assurance testing.
- b) Verify temporary and seasonal personnel test procedures and comparison results through Independent Assurance testing.
- c) Administer and grade the written re-certification and re-test exams for Soils and Aggregate Testing and applicable QC/QA levels to Area Office personnel, Contractors, Consultants, and other entities. The Region Materials Engineer may assign a designee to administer the written re-certification and re-test exams.
- d) Maintain a summary of Independent Assurance Testing to document proficiency of employees performing acceptance testing on DOT projects.
- e) Responsible for sending their individuals to the appropriate certification courses.
- f) Notify Area Office, Consultant, Contractor, or other entity of an individual's substandard test procedures or comparison results.
- g) Ensure all necessary equipment calibration records are complete and on file.

3. Area Office

- a) Ensure projects are staffed with properly certified Area personnel and verify Contractor, Consultant, or other entity personnel are certified in the area in which they are working.
- b) Responsible for sending their individuals to the appropriate certification course.
- c) Qualify SDDOT temporary and seasonal employees annually.
- d) Maintain documentation of seasonal qualifications on Training and Evaluation Record (Figure 1) and provide a copy to the Region Materials Engineer.
- e) Ensure that certified personnel are meeting the supervision requirements for temporary or seasonal personnel.
- f) Take appropriate action when notified of an individual's substandard test procedure or comparison results.

4. Contractors, Consultants and Other Entities

- a) Responsible for sending their individuals to the appropriate certification courses.

- b) Ensure properly certified individuals staff the project.
- c) Qualify their own temporary and seasonal employees annually.
- d) Maintain documentation on seasonal qualifications on *Training and Evaluation Record* (Figure 1).
- e) Take appropriate action when notified of an individual's substandard test procedures or comparison results.
- f) Have a copy of the Equipment Calibration Records for all testing equipment used on the project available for review in the project files at the Area Office and in the testing laboratory on the project.

5. Certified Individual

- a) Ensure he/she works only in the areas for which he/she has been certified.
- b) Ensure that certifications are kept current.
- c) Ensure the material tests are performed in accordance with the material test procedures and material test results are reported to the required precision.
- d) Ensure inspections are conducted to verify compliance with plans and specifications and that proper documentation is made.
- e) Ensure the equipment has been calibrated and properly maintained.
- f) Ensure that test samples are retained for the specified period of time. When a time period is not specified, passing samples will be disposed of in a safe and expeditious manner after the testing is complete and the test results have been approved. Ensure that applicable State or Federal guidelines or regulations for the disposal of materials are strictly adhered to.
- g) The certified individual will be responsible for overseeing the temporary or seasonal employee's work and initial any reports.
- h) Take corrective action when notified of substandard testing procedures or comparison results.
- i) Ensure work is accomplished in an ethical manner and non-specification work is properly documented and reported to the Area Engineer.
- j) Qualify temporary and seasonal employees based on education, experience, and/or successful completion of exam.

E) Conflict of Interest:

To avoid a conflict of interest, no individual or laboratory will perform more than one of the following types of testing on the same project:

- Acceptance Testing
- Quality Control Testing
- Quality Assurance Testing
- Independent Assurance Testing
- Dispute Resolution Testing

Note: The Region Materials Laboratory may perform Dispute Resolution Testing on QC/QA projects.

F) Dispute Resolution Testing:

Dispute resolution testing of materials will be accomplished by the SDDOT Central Testing Laboratory, AASHTO Accredited Laboratories, Region Materials Laboratory or other SDDOT Approved Accredited Laboratories. The dispute resolution system will be administered by the SDDOT.

G) Suspension/Revocation of Certification:

Any suspension or revocation of an individual's certification will be administered by the Oversight Committee. A meeting of the Oversight Committee may be called at any time by the Chair of the committee or by a written request to the Chair by at least three committee members. A majority of the members will be present for the transaction of official business.

1. Oversight Committee members are:

- a) Chief Materials and Surfacing Engineer - Chair.
- b) Construction Engineer Manager.
- c) Certification/Accreditation Program Administrator.
- d) Pavement and Materials Engineer, FHWA.
- e) One Region Operations Engineer rotated on a four (4) year basis.
- f) One Area Engineer rotated on a four (4) year basis.
- g) Region Materials Engineers.

Note: A list of Oversight Committee members will be maintained by the Certification/Accreditation Program Administrator.

2. Oversight Committee responsibilities:

- a) The purpose of the Oversight Committee is to review the certification program on a bi-annual basis or as often as deemed necessary by the Chair of the committee.
- b) Investigate and resolve (majority vote) written allegations of misconduct. Allegations of misconduct will be made to the Chair of the Oversight Committee in writing. The allegation will contain the

name, phone number, address, and signature of the individual(s) making the allegation. The allegations will be investigated by the Oversight Committee. If warranted, the accused and the individual(s) making the allegation will be given the opportunity to appear before the Oversight Committee to resolve the allegation. The Chair of the Oversight Committee will provide written notification to all the involved parties of the decision of the Oversight Committee. Any warranted penalties may be imposed as determined by the Oversight Committee.

For just cause the Oversight Committee may impose suspension or revocation of an individual's certification at any time. The reasons that an individual will be subject to revocation or suspension of their certification are falsification of records/tests/reports, negligence, or abuse of their responsibilities. The Oversight Committee may also suspend or revoke an individual's certification for other reasons of just cause, which may or may not be specifically defined.

Negligence is defined as repeated unintentional deviations from approved procedures, which may or may not cause erroneous results. A reoccurring finding of negligence will result in a letter from the Oversight Committee to the employer directing them to write a letter of reprimand to the individual. A continuing finding will result in a thirty (30) day suspension of the individual's certification. Any subsequent finding will be treated as abuse.

Abuse is defined as intentional deviations from approved procedures. (Examples of abuse include but are not limited to: the falsification of test results or records, submittal of false information on certification applications, and/or unwillingness to follow prescribed test procedures.) The first instance of abuse will result in a one (1) year suspension of an individual's certification. Any subsequent finding of abuse will result in the permanent revocation of the individual's certification.

Any findings of abuse or negligence warranting the revocation or suspension of an individual's certification will result in the revocation or suspension of all certifications held by that individual in the various material testing or inspection areas. When the suspended individual is reinstated and prior to performing work, the individual will be required to pass the written and/or performance re-certification exams, as applicable, and the individual's recertification expiration date(s) will be that expiration date(s) held prior to the suspension.

Falsification of records/tests/reports: Any person who knowingly makes any false statements of records/tests/reports as to the quantity, quality, or cost of the material used on, or the work performed on any federal-aid project is also subject to be fined or

imprisoned in accordance with Title 18, United States Code Section 1020.

- c) Investigation and resolution (majority vote) of any appeals of exam scores due to ambiguous question(s) or problem(s) with the course exam(s). For just cause the Oversight Committee may adjust an exam score of an individual if investigation and resolution of the written request warrants such action. The individual must provide a written appeal with the justification(s) why the question(s) or problem(s) was/were ambiguous within 60 calendar days from the date of the exam.
- d) The Oversight Committee will notify the employer of all actions taken.
- e) Other duties as required to successfully implement and continue the Certification Program.

H) Reciprocity:

- 1. Reciprocity may be allowed for soil and aggregate material testing. The individual's qualifications will be reviewed by the Materials and Surfacing Program to see if they meet SDDOT standards of material testing and must be approved by the Chief Materials and Surfacing Engineer. The individual will also need to pass the respective SDDOT exam. Reciprocity will not be granted for inspection certification or asphalt and concrete material testing certification.
- 2. Reciprocity may also be granted for erosion and sediment control/storm water management when the individual provides documentation, he/she is certified in one or more of the following.
 - a) Certified Professional in Erosion and Sediment Control (CPESC)
 - b) Certified Professional in Storm Water Quality (CPSWQ)
 - c) Certified Erosion, Sediment and Storm Water Inspector (CESSWI)
 - d) Certified Storm Water Compliance Inspector (CSWCI)
 - e) Certified Preparer of SWPPPs (CPSWPPP)
 - f) Other States' certification in Erosion and Sediment Control/Storm Water Management contingent on the individual also passing the SDDOT exam.

Note: Individual certifications will be verified by a representative from SDDOT Office of Administration, Environmental Program.

- 3. Reciprocity is only valid for the current construction season. Individuals who have been granted reciprocity will need to take the next available certification course.

IV. Exams

A. Types of Exams:

1. Written Exams:
 - a) Types of written exams:
 - 1) Course Exam.
 - 2) Re-test Exam.
 - 3) Recertification Exam.
 - 4) Provisional Exam.

Note: A Provisional Certification is an exam opportunity made available upon approval by the Chairman of the Certification Advisory Committee for QC/QA Asphalt Projects or by the Chairman of the Oversight Committee for the Materials Testing and Inspection Program to provisionally certify an individual, so they may provide inspection or testing for only one construction season. A provisionally certified individual will need to attend the next available course for the applicable area of expertise to maintain that certification. This process is permitted only when there is a shortage of certified individuals as a result of a locally heavy workload in combination with unforeseen circumstances. This individual must pass the written examination for the area of work in which they are going to perform.

- b) Exams will be open book unless precluded by the approved testing entity.
- c) A minimum overall score of 70% on the written exam will be obtained to successfully pass the written exam or as deemed passing by the approval testing entity.
- d) If the written exam is failed, the individual will be given one more opportunity to pass another written exam. The re-test exams will be administered by the Region Materials Engineer or their designee and scheduled at their convenience. Re-test exams will need to be completed within 30 calendar days of the original written exam. The Region Materials Engineer cannot administer a re-test for the ACI course. This re-test must be rescheduled with a duly authorized ACI representative. If a re-test is failed, the individual will not be allowed to provide inspection, acceptance testing, or independent assurance testing for that certifiable area until the individual has taken the appropriate class and successfully completed the written exam(s).

NOTE: Any individual failing the written exam in an attempt to become recertified will not be allowed to re-test and will be required to attend the appropriate class and successfully complete the written exam before being allowed to provide inspection, acceptance testing or independent assurance testing for that certifiable area. Individuals failing the written exam(s) may be utilized to provide

inspection and acceptance testing provided the rules under “Requirements for Temporary and Seasonal Personnel” are followed and only at the discretion and approval of the Region Materials Engineer.

2. Performance Exams:

- a) Types of Performance Exams:
 - 1) Course Performance Exam.
 - 2) Re-test Performance Exam.
 - 3) Provisional Performance Exam.

Note: A Provisional Performance Exam is an exam opportunity made available upon approval by the Chairman of the Certification Advisory Committee for QC/QA Asphalt Projects or by the Chairman of the Oversight Committee for the Materials Testing and Inspection Program to provisionally certify an individual, so they may provide inspection or testing for only one construction season. A provisionally certified individual will need to attend the next available course for the applicable area of expertise to maintain that certification. This process is permitted only when there is a shortage of certified individuals as a result of a locally heavy workload in combination with unforeseen circumstances. This individual must pass the performance examination for the area of work in which they are going to perform.

- b) The individual will be required to demonstrate and/or explain the material test procedure as determined by the testing agency.
- c) Individuals will successfully complete all of the items covered on the checklist for each test method within the test procedure time restraints. The omission of one or more of the prescribed procedures will constitute failure of the performance test method. The individual will be allowed two trials on the day of the performance examination for each test procedure. Failure of any one of the prescribed tests after two trials will constitute failure of the entire performance exam. Grading of the performance exam is on a Pass/Fail basis.
- d) Any individual failing the performance exam on the day of the examination has the opportunity to retake another exam at the scheduling convenience of the department.
- e) If the individual fails the performance exam a second time, they will not be allowed to provide testing in that certifiable area until the individual attends the appropriate class and successfully completes the exam(s).

B. Requirements:

1. Materials Testing Certification:
 - a) Pass Written Exam.
 - b) Pass Performance Exam.
2. Inspection Certification:
 - a) Pass Written Exam.

V. Certification Courses:

Courses will be provided by SDDOT or other SDDOT approved entities. Each individual attending any of the certification courses or test outs will furnish their driver's license or employee number. The number will be used as the key identifier for tracking each individual's certification record.

A. Instructors: SDDOT will provide instructors or other authorized individuals to teach the courses.

B. Enrollments: SDDOT will maintain course enrollment information and provide an accurate roster of those participants in attendance to the SDDOT Materials and Surfacing Program at the completion of each course.

1. SDDOT Employees: DOT approving authority will confirm enrollment and the AFE number and provide enrollment information: Employee name, department, employee work address, employee's or supervisor's phone number, employee's identification number, and course title, date, and location through SDLearn.
2. Non-DOT Persons: The SDDOT will advertise the course prerequisites, cost, date(s), and time(s) on the DOT website by November 1. The individual can enroll in the certification course at the SDDOT web site <https://dot.sd.gov/doing-business/certification-accreditation/training>. To enroll, individuals must create an account and receive a User ID from SDLearn. The User ID will be used as the key identifier for tracking each individual's certification record. Enrollment information includes employee name, company, employee home and course title, date, and location. The company will pay for certification courses and manuals. Confirmation of enrollment will be sent to the employee's email address.
3. Attendance Cancellation Policy: If the individual enrolled in the course cannot attend, the individual, supervisor, or company is required to cancel their registration according to the course announcements. Failure to cancel according to the course announcements will result in forfeiture of the registration fee and may deprive a person on the waiting list from being able to attend. A refund of the registration fee(s), if prepaid, will be granted if the class is canceled by the SDDOT. If notified on the day of the course that an individual is unable to attend due to inclement weather or good cause email dotlms@state.sd.us, the registration fee may be refunded. To cancel

an individual from the certification course please send an email to dotlms@state.sd.us.

- C. Costs of Certification Courses: The SDDOT will determine the cost of the certification course for those they are conducting. Other entities providing certification courses (ACI and Asphalt QC/QA) will determine the cost of the certifications that they provide. These costs will be provided in the course announcements. The cost of course manuals may be billed separately.

SDDOT Material Testing and Inspection Certification Program

Training and Evaluation Records

[illegible]

CC: Region Materials Engineer

Figure 1

APPENDIX 1

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION REGION AND AREA/FIELD LABS JUNE 2021

APPARATUS	REQUIREMENT	IA REGION CALIBRATION AND VERIFICATION FREQUENCY	ACCEPTANCE AREA/FIELD CALIBRATION AND VERIFICATION FREQUENCY	TEST METHOD	PROCEDURE NUMBER
Oven	Standardize thermometric device	Annually	Annually (Area Lab Only)		02
Handheld Rammer, Proctor	Check weight and critical dimensions	Annually	Annually	T 99, T 180, SD 104	04
Mold, Proctor	Check critical dimensions	Annually	Annually	T 99, T 180, SD 104	05
Sieve, Coarse	Check physical condition and opening dimensions	Annually	Annually	E11	06
Sieve, Fine	Check physical condition	Annually	Annually	E11	06
Unit Weight Measure	Standardize	Annually	Annually	T 19, T 121, SD 205, SD 403, SD 411	07
Vacuum System	Standardize	Annually	Annually	T 100, T 209	09
Compression Testing Machine	Standardize	Annually (Contracted)	Annually (Contracted)	T 22	11
Liquid Limit Device and Grooving Tool	Check wear and critical dimensions	Annually	Annually	T 89, SD 207	15
Flakiness Index Slotted Plate	Checking Flakiness Index	Annually	Annually	SD 203	25
Slump Cone	Check critical dimensions	Annually	Annually	T 119, SD 404	38
Mechanical Shaker	Check sieving thoroughness	Annually	Annually (Area Lab Only)	T 27	40
Thermometer	Standardize	Annually	Annually	T 88, T 100	44
Scale, Balance	Standardize	Annually (Contracted)		M 231	45
Scale, Balance (Field)	Standardize		Annually	M 231, ASTM E617, C138 NIST Handbook 44	46
Gyratory Mold, Ram Head and Base Plate	Check critical dimensions	Annually (By Central Lab)	Annually (By Central Lab)	T 312, SD 318	49

**SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION
REGION AND AREA/FIELD LABS
JUNE 2021**

APPARATUS	REQUIREMENT	IA REGION CALIBRATION AND VERIFICATION FREQUENCY	ACCEPTANCE AREA/FIELD CALIBRATION AND VERIFICATION FREQUENCY	TEST METHOD	PROCEDURE NUMBER
Mechanical Rammer, Proctor	Standardize	Annually		D 2168 SD 104	67
Rubber Balloon Density Apparatus	Calibrate	Annually	Annually	ASTM D2167, SD 106	68
Straightedge	Check critical dimensions and planeness of edge	Annually	Annually	T 99, T 180, SD 104	70
Concrete Cylinder Mold, Metal	Check critical dimensions	Annually	Annually	T 22, M 205, SD 405	71
Air Meter Pressure, Type B	Standardize	Annually	Annually	T 152, SD 403	72
Sand Equivalent Apparatus	Check critical dimensions	Annually	Annually (By Central Lab)	T 176, SD 221	75
Fine Aggregate Angularity	Check dimensional tolerances	Annually	Annually (By Central Lab)	T 304, SD 217	76
Gyratory Compactor	Standardize	Annually (By Central Lab)	Annually (By Central Lab)	T 312, SD 318	78
Caliper	Standardize	Annually			81
10' Straightedge	Standardize	Annually	Annually	ASTM E 1703	82

Calibrations performed by the Region Materials office unless otherwise noted.

Appendix 2

**REGION AND AREA/FIELD LABS
CALIBRATION PROCEDURES and RECORDS
JUNE 2021**

EQUIPMENT	PROCEDURE #	RECORD #
OVEN	<u>02</u>	<u>02</u>
HANDHELD RAMMER PROCTOR	<u>04</u>	<u>04</u>
MOLD PROCTOR	<u>05</u>	<u>05</u>
SIEVES, COARSE	<u>06</u>	<u>06-C</u>
SIEVES, FINE	<u>06</u>	<u>06-F</u>
UNIT WEIGHT MEASURE	<u>07</u>	<u>07</u>
VACUUM SYSTEM	<u>09</u>	<u>09</u>
COMPRESSION TESTING MACHINE (CONTRACTED)	<u>11</u>	<u>11</u>
LIQUID LIMIT DEVICE and GROOVING TOOL	<u>15</u>	<u>15</u>
FLAKINESS INDEX SLOTTED PLATE	<u>25</u>	<u>25</u>
SLUMP CONE	<u>38</u>	<u>38</u>
MECHANICAL SHAKER	<u>40</u>	<u>40</u>
THERMOMETER	<u>44</u>	<u>44</u>
SCALE, BALANCE	<u>45</u>	<u>45</u>
SCALE, BALANCE (FIELD)	<u>46</u>	<u>46</u>
GYRATORY MOLD, RAM HEAD and BASE PLATE (CENTRAL LAB)	<u>49</u>	<u>49</u>
AIR METER PRESSURE TYPE A	<u>59</u>	<u>59</u>
MECHANICAL RAMMER PROCTOR (CENTRAL LAB)	<u>67</u>	<u>67</u>
RUBBER BALLOON DENSITY APPARATUS	<u>68</u>	<u>68</u>
STRAIGHTEDGE	<u>70</u>	<u>70</u>
CONCRETE CYLINDER MOLD METAL	<u>71</u>	<u>71</u>
AIR METER PRESSURE TYPE B	<u>72</u>	<u>72</u>
SAND EQUIVALENT APPARATUS	<u>75</u>	<u>75</u>
FINE AGGREGATE ANGULARITY (CENTRAL LAB)	<u>76</u>	<u>76</u>
GYRATORY COMPACTOR (CENTRAL LAB)	<u>78</u>	<u>78</u>
CALIPER	<u>81</u>	<u>81</u>
10' STRAIGHTEDGE	<u>82</u>	<u>82</u>

Appendix 3

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION CLASS Q ASPHALT CONCRETE CERTIFICATION PROGRAM

1. SCOPE:

The purpose of this program is to develop and maintain a pool of well-trained technicians for the Department and its contractors, and to test and manage highway construction materials. The intent of this program is to improve the quality and performance of hot mixed asphalt pavements through knowledge and understanding of the products.

2. CERTIFICATION LEVELS:

Introduction to Asphalt Concrete (strongly recommended but not mandatory.)

Asphalt Concrete Aggregate Testing: SD 108, SD 201, SD 202, SD 208, SD 211, SD 212, SD 213, SD 214, SD 217, and SD 221.

Asphalt Concrete Hot Mix Testing: SD 301, SD 305, SD 306, SD 307, SD 312, SD 314, SD 315, SD 317, SD 318, SD 321, and SD 502.

Asphalt Concrete Roadway Inspection: SD 312, SD 315, and SD 320.

Asphalt Concrete Mix Design and Production Control: SD 203, SD 209, SD 210, SD 212, SD 309, SD 317, SD 319, SD 322

Aggregate Testing, Asphalt Concrete Hot Mix Testing and Asphalt Concrete Roadway Inspection are prerequisites to Asphalt Concrete Mix Design and Production Control.

3. CERTIFICATION STANDARDS:

When the South Dakota Department of Transportation specifications require Quality Control / Quality Assurance testing, those technicians performing the sampling and testing must be certified in South Dakota. Certification may be attained in one of the following ways:

- A. Technicians currently certified in a surrounding state may test out of Asphalt Concrete Roadway Inspection. In order to test out the candidate must request to test out of this specific certification level by writing to the South Dakota Department of Transportation Chief Materials and Surfacing Engineer their desire to test out. The candidate must furnish documented work history showing that the candidate has been involved in the specific work area the past four years that relates to the certification level and have a current applicable certification level from one of the surrounding states.

- B. Candidates not eligible to test out must attend the certification course.
1. The candidate will successfully complete the class and laboratory evaluations (if required).
 - a. Class Evaluation – Candidates will successfully pass an open book examination administered by a qualified evaluator.
 - i. Successfully passing the written examination will be defined as scoring a minimum of 70 percent.
 - ii. A candidate failing the examination will be given the opportunity to retest within a period of thirty (30) days. There will be no charge for the retest.
 - iii. Failure to pass the retest will be considered as failing the entire course. Students still desirable of becoming certified must retake the entire course.
 - b. Laboratory Evaluation – Candidates will successfully perform in the presence of a qualified evaluator, all necessary tests required to control hot mixed asphalt mixtures as outlined in the course manual.
 2. No refund of course fees will be made for failure to successfully complete the course.
- C. Provisional Certification may be allowed under special circumstances.
1. The applicant's employer, whether SDDOT or contractor, must include the circumstances for the needed provisional status. These circumstances must outline the reasons for application and should be detailed enough for the Chief Materials and Surfacing Engineer to understand the organizational need for provisional certification.
 2. A prior work history of the applicant must accompany the request for provisional status.
 3. Whoever is applying for provisional certification in Asphalt Concrete Aggregate Testing, Asphalt Concrete Hot Mix Testing or Asphalt Concrete Roadway Inspection must pass the test for the area of work they are going to perform. This test would be administered by the SDDOT.
 4. If the applicant successfully passes the test, they must work under the direction of an Asphalt Concrete Aggregate Testing, Asphalt Concrete Hot Mix Testing or Asphalt Concrete Roadway Inspection certified individual for a period of not less than two (2) days to ascertain familiarity with the project requirements and appropriate tests and procedures.

5. Provisional Certification is only valid for the remainder of the current construction season.

D. Non-certified temporary and seasonal individuals:

1. Non-certified individuals who test materials on a Project must demonstrate that they can correctly perform the test procedure by performing the procedure in front of a certified technician who completes a Performance Checklist. The certified technician will use the Performance Checklist for the test being demonstrated to ascertain that all steps are performed correctly. The performance Checklist will be retained in the laboratory and the Project file, copies will be provided to the Region Materials Engineer and the Project Engineer.
2. The non-certified individual must work under the supervision of a certified individual. The non-certified individual will not assist with or conduct any test unless a passing Performance Checklist has been completed for that test procedure and is on file.
3. The certified technician assumes all responsibility for the accuracy of the test data and signifies by placing their initials as the checker on the worksheet with the test data and signature of the non-certified individual.
4. The non-certified individual will not conduct the hot mix testing on Class Q Asphalt Concrete projects.

4. CERTIFICATION:

Final certification will be contingent upon the applicant passing all course requirements. The SDDOT Materials and Surfacing Certification/Accreditation Program Administrator in Pierre will maintain records of certification. Candidates are responsible for assuring that they work only in areas in which they are certified, that their certification does not expire, and that they are able to provide proof of certification when requested.

5. RECERTIFICATION:

A technician's certification is valid for not more than four (4) years, after which the individual must become recertified before the expiration date of the current certification. Recertification can be accomplished in one of the following ways.

- a. Recertification can be accomplished by independent study of course materials and then successfully completing the recertification exam with a score of 70 percent or higher. If the candidate fails to pass the recertification exam, the candidate will attend a certification course and pass the course to become certified. After successfully passing the recertification course, the technician will be fully certified for an additional four (4) year period.
- b. The candidate must attend the certification course every four (4) years or attend the certification course and the independent study and recertification test on an alternating

basis every four (4) years and before the expiration of the current certification. After the end of a four (4) year recertification period the candidate must attend the certification class.

6. DECERTIFICATION:

Any suspension or revocation of an individual's certification will be administered by the Asphalt Certification Advisory Committee. A meeting of the Asphalt Certification Advisory Committee may be called at any time by the Chair of the committee or by a written request to the Chair.

Allegations of misconduct will be made to the Asphalt Certification Advisory Committee in writing. The allegation will contain the name, phone number, address and signature of the individual(s) making the allegation. Upon receipt of the written allegation, the Oversight Committee will investigate the matter. If warranted, the accused and the individual(s) making the allegation will be given the opportunity to appear before the Asphalt Certification Advisory Committee to resolve the allegation. The Chair of the Asphalt Certification Advisory Committee will provide written notification to all the involved parties of the decision of the Asphalt Certification Advisory Committee. Any warranted penalties may be imposed as determined by the Asphalt Certification Advisory Committee.

For just cause, the Asphalt Certification Advisory Committee may impose suspension or revocation of an individual's certification at any time. An individual may be subject to revocation or suspension of their certification based on falsification of records/tests/reports, negligence, or abuse of their responsibilities. The Asphalt Certification Advisory Committee may also suspend or revoke an individual's certification for other reasons of just cause, which may or may not be specifically defined. Two levels of misconduct which may result in decertification, along with the associated penalties, are defined as follows:

1. Negligence: Negligence is defined as repeated unintentional deviations from approved procedures, which may or may not cause erroneous results. A reoccurring finding of negligence will result in a letter from the Asphalt Certification Advisory Committee to the employer directing them to write a letter of reprimand to the individual. A continuing finding will result in a suspension of not less than thirty (30) days of the individual's certification. Any subsequent finding will be treated as abuse.
2. Abuse: Abuse is defined as intentional deviations from approved procedures. (Examples of abuse include but are not limited to the falsification of test results or records, submittal of false information on certification applications, and/or unwillingness to follow prescribed test procedures). The first instance of abuse will result in a suspension of not less than one (1) year of an individual's certification. Any subsequent finding of abuse will result in the permanent revocation of the individual's certification.

Any findings of abuse or negligence warranting the revocation or suspension of an individual's certification will result in the revocation or suspension of all certifications held by that individual in the various Materials Testing or Inspection Areas. When the suspended individual is reinstated and prior to performing work, the individual will be required to pass the written and/or performance certification exams as applicable. Any individual whose suspension was for at least

one (1) year will be required to attend the asphalt certification courses. Certification expiration date(s) will be the expiration date(s) held prior to suspension.

7. ASPHALT CERTIFICATION ADVISORY COMMITTEE:

The purpose of the Asphalt Certification Advisory Committee is to investigate and resolve allegations of misconduct for Class Q Asphalt Concrete.

Membership: The membership of the Asphalt Certification Advisory Committee will be composed of the following individuals:

- a) Chief Materials and Surfacing Engineer - Chair
- b) Construction Engineer Manager
- c) DAPA Executive Director

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Note: A list of Asphalt Certification Advisory Committee members will be maintained by the Certification/Accreditation Program Administrator.

8. REGISTRATION:

Registration information for any of the asphalt certification or recertification courses can be obtained from the Dakota Asphalt Pavement Association (DAPA) at dakota-asphalt.org or the SDDOT at <https://dot.sd.gov/doing-business/certification-accreditation/training>.