US Army Corps
of Engineers ®
New Orleans District

Manual for Reporting Construction Materials Test Results

May 2026

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CEMVDN-CD 14 May 2026

Manual for Reporting Construction Materials Test Results

1. Purpose. This manual establishes the requirements and procedures for the submittal of construction materials test results to the Government. This manual aims to ensure accuracy, consistency, and traceability in the handling of Quality Control (QC) and Quality Assurance (QA) testing data.

2. Applicability. The procedures outlined in this manual apply to all Government personnel and contractors who are responsible for the management and review of construction materials testing done for the New Orleans District.

3. Scope of the Manual. This manual is limited to the documentation, formatting, and submittal requirements of test results for construction materials on all New Orleans District projects including, but not limited to earthwork and soil compaction, concrete, welding, and protective coatings.

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Chapter 1 Introduction

1. General:

This document provides a structured procedure for submitting Contractor QC and Government QA test results for construction materials testing performed on New Orleans District (CEMVN) projects.

Contractors shall only utilize laboratories that are currently validated by the USACE Materials Testing Center, Vicksburg, MS.

2. Responsibility, Compilation, and Submittal of Test Results:

a. All test results shall be distributed to the relevant POCs as well as the MVN-CD-Q-TESTRESULTS@usace.army.mil inbox. Test Results shall be submitted within 48 hours from sampling. Payment for any material placed, as well as for any subsequent construction, will not be made until test results are sent to the inbox and analyzed by Quality Assurance personnel. The Contractor shall maintain a hard copy of the materials testing log, test reports and control charts at the Contractor's field office. These records shall always be available for review by Government personnel.

b. Any tests not conforming to the contract will be immediately reported to the Administrative Contracting Officer along with the recommended corrective action to bring the work into complete compliance with the specifications. The Administrative Contracting Officer may designate additional re-sampling or retesting to verify the work represented by the failing test. This testing is at the Contractor's expense.

c. For work that involves aggregates, concrete, masonry, rock or soil the testing laboratory shall, at its own expense, obtain and maintain validation as an approved testing laboratory by the Materials Testing Center (MTC) of the Engineering Research and Development Center (ERDC). This shall be done in accordance with the latest version of the MTC Engineering Regulation (ER) 1110-1-8100, "Materials Testing Laboratories and Validation".

d. For work that involves vibration, steel, steel reinforcing bars, coatings inspections and other specialized construction material testing and inspection the testing

company shall maintain personnel, procedures, and equipment that meet applicable industry standards.

e. Field sampling and testing locations shall be recorded using Latitude/Longitude coordinates reported in decimal degree format to the millionth decimal and be surveyed using techniques to achieve ±10 feet accuracy. (Report Form input example: 29.934003, -90.133745)

Chapter 2 Soils

1. Scope of Part:

This chapter establishes the requirements for the documentation and submittal of soils test results for all earthwork activities performed on New Orleans District projects. This applies to both tests performed by the Contractor's QC testing lab, as well as the verification testing performed by the Government's QA testing lab.

2. Testing Personnel Requirements:

The individuals who inspect, monitor, sample and test embankment material on New Orleans District construction projects shall be part of a validated laboratory that has been inspected or audited by the USACE Materials Testing Center, Vicksburg, MS.

The testing laboratory shall submit certification and/or documentation to provide evidence of qualification. The appointed Registered Professional Civil Engineer, identified in Chapter 1, Section 3.b to certify inspections and test results, remains responsible for compliance with all inspection and testing activities.

3. Test Forms for Submission:

Testing and reporting shall be performed in accordance with the latest American Society of Testing and Materials (ASTM) Standard, as indicated in Table 2-1.

Table 2-1
ASTM References

Standards	Gradation	Form to Fill
ASTM D-1140	Standard Test Methods for Determining the Amount of Material in Soils Finer than No. 200 (75-µm) Sieve in Soils by Washing	MVNQS01 - Sieve Analysis.xlsx
ASTM D-6913	Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis	
Standards	**Proctor Tests**	**Form to Fill**
ASTM D-698	Laboratory Compaction Characteristics of Soil Using Standard Efforts (12,400ft lbs/ft3 (6000KN)) [Moist Prep Proctor]	MVNQS02 - Standard Compactic
ASTM D-698	Laboratory Compaction Characteristics of Soil Using Standard Efforts (12,400ft lbs/ft^3 (6000KN)) [1-Point Moist Prep Proctor]	
ASTM D-1557	Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)) [Moist Prep Proctor]	
ASTM D-1557	Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)) [1-Point Moist Prep Proctor]	

Standards	Soil Density By Sand Cone Method	Form to Fill
ASTM D-1556	Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method	MVNQS03 - Density by Sand Cone.xlsx
Standards	**Unconfined Compressive Strength**	**Form to Fill**
ASTM D-2166	Standard Test Method for Unconfined Compressive Strength of Cohesive Soil	MVNQS05 - Unconfined Compre
Standards	**Materials Classification**	**Form to Fill**
ASTM D-2487	Standard Practice for Classification of Soils for Engineering Purposes	MVNQS06 - Soil Classification.xls
ASTM D-4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils	
ASTM D-1140	Standard Test Methods for Determining the Amount of Material in Soils Finer than No. 200 (75-µm) Sieve in Soils by Washing	
Standards	**Organic Content**	**Form to Fill**
ASTM D-2974	Standard Test for Determining the Water (Moisture) Content, Ash Content, and Organic Material of Peat and Other Organic Soils (Method C)	MVNQS07 - Organic Content Determinat
Standards	**Moisture Content**	**Form to Fill**
ASTM D-2216	Standard Test for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (Method B - Oven Method)	MVNQS09 - Moisture Content D
ASTM D-4643	Standard Test Method for Determination of Water (Moisture) Content of Soil and Rock by Mass (Microwave Oven Method)	
Standards	**Soil Density By Nuclear Method**	**Form to Fill**
ASTM D-6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate Nuclear Methods (Shallow Depth)	MVNQS11 - Density by Nuclear.xlsx

4. Test Results Submission:

The results of the test and inspections shall be emailed to the MVN-CD-Q-TESTRESULTS@usace.army.mil inbox, along with Project Engineer and QAR for each respective contract. Samples of the reporting forms and instruction for each form are provided on demand, as needed. All data is to be submitted electronically within 48 hours of completion of the tests by the laboratory performing the testing.

The list of test forms is described as follows:

a. **MVNQS01 Sieve Analysis** –ASTM D 1140 and ASTM D 6913. This form is to be used in reporting material finer than No 200 sieve and a sieve analysis of coarse grain material.

b. **MVNQS02 (Compaction Control Curve) ASTM D 698.** This form is to be used in reporting the determination of the optimum moisture content and the maximum dry density. The moisture-density curve shall be plotted based on a minimum of five compaction test specimens. A one-point Proctor test – ASTM D 698 (modified, Figure 2- 2) shall be obtained for every five (5) field density test locations and reported with same. The soil One-Point proctor result obtained from the in-place density test location will serve as the basis for determining the applicable compaction control curve.

c. **MVNQS03 (Field Density Sand Cone Method) ASTM D 1556.** This form is to be used in reporting the determination of the degree of compaction and moisture content. Contract specifications shall govern the required compaction effort.

d. **MVNQS05 (Unconfined Compressive Strength) ASTM D 2166.** This form is to be used to report the compressive strength of an intact, remolded or reconstituted cohesive soil, using a strain-controlled application of the axial load. Contract specifications shall govern the acceptable strength requirements.

e. **MVNQS06 (Unified Soil Classification System) ASTM D 2487.** This form is to be used to report the determination of the liquid limit (One-point Method B), plastic limit, plasticity index, % sand content and % fines. MVNQS01 Sieve Analysis – ASTM C 117 and ASTM C 136 is to be used to report the results of gradation tests of the material if a granular material is specified. The final soil classification in accordance with ASTM D 2487 shall be stated on the same form. Contract specifications shall govern the acceptable atterberg limits, gradation limits, and material classification. The soil classification obtained from in-place density test location will serve as a basis for determining the applicable compaction control curves.

f. **MVNQS07 (Moisture, Ash, and Organic Content Determination) ASTM D 2974 (Method C).** This form is to be used in reporting the determination of the organic content of the material. Determination of organic content shall be performed in accordance with ASTM D 2974; Method C. Contract specifications shall govern the acceptable limits of organic content.

g. **MVNQS09 (Moisture Content Determination) ASTM D 2216, ASTM D 4643 and ASTM D 6938.** This form is to be used in reporting the determination of the moisture content of the in-place material when ASTM D 2216, ASTM D 4643 or ASTM D 6938 is the test method utilized. This form is not to be used when performing Field

Density Test Nuclear Method with Moisture Content Determination. Contract specifications shall govern the acceptable limits of moisture content.

h. **MVNQS11 (Field Density Test Nuclear Method).** This form is to be used in reporting the determination of the degree of compaction and moisture content by oven, microwave or nuclear gauge. Contract specifications shall govern the required compaction effort and moisture range. If the nuclear method is selected for field density testing, the Sand-Cone Method shall be used to confirm the accuracy of the Nuclear Method

Chapter 3 Concrete

1. Scope of Part:

This chapter establishes the requirements for the documentation and submittal of concrete test results for all concrete activities performed on New Orleans District projects. This applies to both tests performed by the Contractor's QC testing lab, as well as the verification testing performed by the Government's QA testing lab.

2. Testing Personnel:

The individuals who inspect, monitor, sample and test concrete on New Orleans District construction projects shall be part of a validated laboratory that has been inspected or audited by the USACE Materials Testing Center, Vicksburg, MS.

The testing laboratory shall submit certification and/or documentation to provide evidence of qualification. The appointed Registered Professional Civil Engineer, identified in Chapter 1, Section 3.b to certify inspections and test results, remains responsible for compliance with all inspection and testing activities.

3. Test Forms for Submission and Procedures:

Testing and reporting shall be performed in accordance with the latest American Society of Testing and Materials (ASTM) Standard, as indicated in Table 3-1.

Table 3-1
ASTM References

Standards	Compressive Cylinder Strength	Form to Fill
ASTM C-39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens	MVNQC01 - Concrete Compressi
Standards	**Concrete Field Tests**	**Form to Fill**
ASTM C-31	Standard Practice for Making and Curing Concrete Test Specimens in the Field	MVNQC02 - Concrete Field Data
ASTM C-172	Standard Practice for Sampling Freshly Mixed Concrete	
ASTM C-143	Standard Test Method for Slump of Hydraulic-Cement Concrete	
ASTM C-173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method	
ASTM C-231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method	
ASTM C-1064	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete	

Standards	Gradation	Form to Fill
ASTM C-117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing	MVNQC03 - Sieve Analysis.xlsm
ASTM C-136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates	

Sampling and testing for testing procedure ASTM C-39 Compressive Strength Cylinder is as follows:

Contractor Quality Control Testing

- Sampling and testing of the concrete cylinders shall, unless agreed upon otherwise, occur at the USACE New Orleans District Soils and Materials Processing Unit located at 7400 Leak Avenue in New Orleans, LA 70118-3651.

Government Quality Assurance Testing

- Sampling and testing of the concrete cylinders shall, unless agreed upon otherwise, occur at the designated independent Quality Assurance testing laboratory.

4. Test Results Submission:

The results of the test and inspections shall be emailed to the MVN-CD-Q-TESTRESULTS inbox, along with Project Engineer and QAR for each respective contract. Samples of the reporting forms and instruction for each form are provided on demand, as needed. **All data is to be submitted electronically within 48 hours of completion of the tests by the laboratory performing the testing.**

The list of test forms is described as follows:

a. **MVNQC01 (Concrete Compression Test Data – ASTM C 39).** This form is to be used in reporting the results of laboratory concrete compression testing. Contract specifications shall govern the required concrete compressive strength.

b. **MVNQC02 (Concrete Field Data).** This form is to be used in reporting the data collected by the laboratory while monitoring and testing concrete during placement. Contract specifications shall govern the required concrete properties during placement.

c. **MVNQC03 Sieve Analysis – C 117 and ASTM C 136.** This form is to be used in reporting the material that is finer than No 200 sieve and a sieve analysis of coarse grain material.

Chapter 4 Welding

1. Scope of Part:

This chapter establishes the requirements for the documentation and submittal of weld test results for all weld activities performed on New Orleans District projects. This applies to both tests performed by the Contractor's QC testing lab, as well as the verification testing performed by the Government's QA testing lab.

2. Testing Personnel

The individuals who inspect, monitor, and test welding on New Orleans District construction projects shall possess current, applicable certifications from nationally recognized organizations as explicitly defined in the contract specifications.

3. Test Forms for Submission:

Testing and reporting shall be performed in accordance with the latest American Society of Testing and Materials (ASTM) Standard, as indicated in Table 4-1.

Table 4-1
ASTM References

Standards	Weld Field Tests	Form to Fill
ASTM E-94	Standard Guide for Radiographic Examination Using Industrial Radiographic Film	 MVNQW06 - Combined Weld Exa
ASTM E-164	Standard Practice for Contact Ultrasonic Testing of Weldments	
ASTM E-165	Standard Practice for Liquid Penetrant Testing for General Industry	
ASTM E-709	Standard Guide for Magnetic Particle Testing	

4. Test Results Submission:

The results of the test and inspections shall be emailed to the MVN-CD-Q-TESTRESULTS inbox, along with Project Engineer and QAR for each respective contract. Samples of the reporting forms and instruction for each form are provided on demand, as needed. **All data is to be submitted electronically within 48 hours of completion of the tests by the laboratory performing the testing.**

The list of test forms is described as follows:

a. **MVNQW06 Field Weld Testing.** This form is to be used in reporting the results for any of the field tests outlined in Table 4-1.

Chapter 5 Coating

1. Scope of Part:

This chapter establishes the requirements for the documentation and submittal of coating test results for all coating activities performed on New Orleans District projects. This applies to both tests performed by the Contractor's QC testing lab, as well as the verification testing performed by the Government's QA testing lab.

2. Testing Personnel

The individuals who inspect, monitor, and test coating systems on New Orleans District construction projects shall possess current, applicable certifications from nationally recognized organizations as explicitly defined in the contract specifications.

3. Test Forms for Submission:

There are no standardized forms for test results for coating inspections and testing. However, the testing agency shall capture all data, parameters, and results as required by the contract specifications in their reports provided.