



United States Department of Agriculture



COR Webinar Series 6

Inspection, Quality Control and Quality Assurance





Items We Will Cover Today

- FAR 52.246.12 – Inspection of Construction
- Definitions of quality control (QC) and quality assurance (QA)
- NRCS policy on QC, QA, and quality assurance plans (QAP)
- NRCS Construction Specification 94 – Contractor Quality Control
- NEH 645 Chapter 3 - Contractor Quality Control and NRCS Quality Assurance



Our Objective

- Our objective today is to answer the following questions:
 - What is QC and who is responsible for it?
 - What is QA and who is responsible for it?
 - What is a quality assurance plan (QAP) and who develops and signs it?
 - What is NRCS policy on QC, QA, and QAPs?
 - How do we specify contractor QC?
 - How do we fulfill our role to provide QA?



Our Goals

- After completing the webinar, you should:
 1. Understand how QC and QA are implemented in Federal construction contracts and other contracts in which NRCS is involved.
 2. Know dos and don'ts of construction QA inspection.
 3. Be able to interpret NRCS Construction Specification 94 – Contractor Quality Control
 4. Rely on the NRCS Construction Inspection Handbook (NEH 645) to guide you through the process of construction QA inspection.



FAR 52.246-12 – Inspection of Construction

- Inspection is a checking or testing against established standards.
- Contractor must perform quality control inspection.
- Government performs quality assurance inspection.



FAR 52.246-12 – Inspection of Construction

- Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work conforms to contract requirements.
- All work shall be conducted under the general direction of Contracting Officer.



FAR 52.246-12 – Inspection of Construction

- All work is subject to government inspection and testing:
 - At all places
 - At all reasonable times before acceptance
 - To ensure strict compliance with terms



FAR 52.246-12 – Inspection of Construction

- Inspection are for the sole benefit of the government and tests do not:
- Relieve the contractor of responsibility for providing adequate quality control measures
 - Relieve the contractor of responsibility for damage to or loss of material before acceptance
 - Constitute or imply acceptance



FAR 52.246-12 – Inspection of Construction

- Presence or absence of government inspector does not relieve contractor from any contract requirement.
- Inspector is not authorized to change any term or condition of the specification without Contracting Officer's authorization.



FAR 52.246-12 – Inspection of Construction

- All government inspections and tests shall be performed in a manner that will not unnecessarily delay work.
- Special, full size, and performance tests shall be performed as described in the contract.



FAR 52.246-12 – Inspection of Construction

➤ Contractor shall:

- Promptly furnish all facilities, labor and material *reasonably* needed for performing inspections and tests as required by Contracting Officer at no increase in contract price.
- Be responsible for additional cost of inspection or tests when work is not ready at specified time or when prior rejections makes re-inspection or retesting necessary.



FAR 52.246-12 – Inspection of Construction

➤ Contractor shall:

- Without charge, replace or correct work found by the government not to conform to contract requirements, unless in the public interest the government consents to accept the work with an appropriate adjustment in contract price.
- Promptly segregate and remove rejected material from the premises.



FAR 52.246-12 – Inspection of Construction

- If the contractor does not promptly replace or correct rejected work, the government may:
 - Replace or correct work, by contract or otherwise, and charge the cost to the contractor, or
 - Terminate for default the contractor's right to proceed



FAR 52.246-12 – Inspection of Construction

- Also, before acceptance the government may decide to examine already completed work by removing it or tearing it out by requesting the contractor to furnish all necessary facilities, labor and material.
 - If work is found to be defective or nonconforming due to the fault of the contractor or it's subcontractors, contractor shall defray all expenses of examination and satisfactory reconstruction
 - If work is found to meet contract requirements, Contracting Officer shall make an equitable adjustment for the additional services involved in the examination and reconstruction , including an extension of time, if completion is delayed





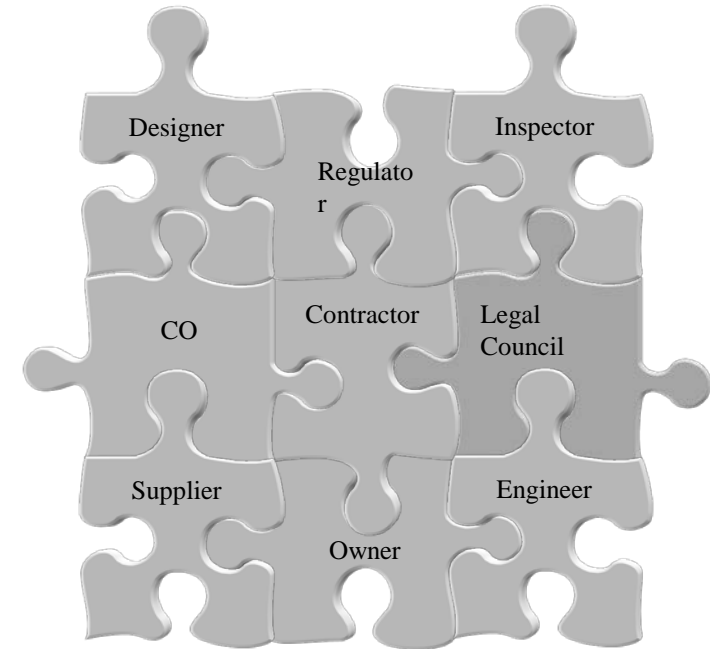
Inspection of Construction Clause Summary

- Contractor responsible for quality control (QC)
- Government responsible for quality assurance (QA)
- All work is subject to inspection by the government
- Government inspection doesn't imply acceptance
- If necessary, contractor must assist government with inspection
- Contractor must promptly remove at own cost any faulty work
- If work is found to meet contract requirements, CO must pay contractor for cost associated with examining and reconstructing the work, including an extension of time if the completion of the work was delayed.

Quality Construction Requires a Team Effort

➤ The team must have:

- specific, clearly defined objectives
- responsibilities allocated to attain the objectives
- responsibilities allocated among team members
- team members who fulfill their roles and responsibilities



Specific, Clearly Defined Objectives



➤ ASTM Definitions

- Quality control - a planned system of activities whose purpose is to provide a level of quality that meets the needs of users.
- Quality assurance - all those planned or systematic actions necessary to provide adequate confidence that a material, product, system, or service will satisfy given needs.

Specific, Clearly Defined Objectives

➤ NEM 512.31 Definitions

- Quality control - activities performed by the contractor to document that the work installed meets the minimum requirements of the contract.
- Quality assurance - Activities performed by the owner ... to evaluate contractor's quality control system, and other measures to ensure compliance with the contract provisions.





NRCS Policy, Specification, Guidance on Inspection of Construction

NEM – National Engineering Manual

NEH – National Engineering Handbook

NRC SPOP - Procurement Operating Procedures

Inspection of Construction

Policy NEM 512 & NRC SPOP

Specification NEH 642 CS 94

Guidance NEH 645 Chapter 3

NRCS Policy

Quality Control - NEM 512.31(A)

Quality Assurance - NEM
512.31(B)

Quality Assurance Plan (QAP) –
NEM 512.31(C) and
NRCSPOP 4I-46.470



NEM Policy on Quality Control

➤ NEM 512.31(A)

- Activities performed by the Contractor to document that the work installed meets the minimum requirements of the contract.
- CQC required by 210-NEH, Part 642, “Construction Specification (CS) 94, Contractor Quality Control.”



Construction Specification 94 is Required for Construction Contracts

- NEH 642 Chapter 1 says:
 - All construction specification packages shall include Construction Specification 94, Contractor Quality Control.

- NEM 542.1 says
 - Specifications must be developed as outlined in 210-NEH, Part 642, “Specifications for Construction Contracts,” and incorporated in all contracts prepared for projects that are designed or installed by NRCS.

NEM Policy on Quality Assurance

➤ NEM 512.31(B)

- Activities performed by the owner
 - observing construction methods and procedures
 - reviewing the CQC testing activities and test results
 - conducting periodic material testing to evaluate the CQC system
 - other measures to ensure compliance with the contract provisions

NEM Policy on Quality Assurance Plan (QAP)

➤ NEM 512.31(C)

- Defines NRCS QA duties and will:
 - outline the technical and administrative expertise required
 - identify the individuals with that expertise
 - outline the frequency and timing of technical assistance
 - estimate the contract completion date
 - be approved by all responsible supervisors and the appropriate line officer
- QAPs are required on all Federal and CLO contracts.



POP = Procurement Operating Procedures

Title 120 – General Manual

Part 406 – Acquisition

Subpart A – Purpose and Scope

406.0 Purpose

The Natural Resources Conservation Service Procurement Operating Procedures (NRCSPOP) prescribes policies and procedures for the NRCS procurement workforce. Use of the NRCSPOP is mandatory for all NRCS contracting activities.

POP Policy on Quality Assurance Plan (QAP)





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POP Policy on Quality Assurance Plan (QAP)

NRC SPOP 41-46.470-6

Developed during the technical preparation phase or design phase by technical person responsible for the preparation of the plans and specs (design engineer).

Acquisition process cannot start until adequately staffed Quality Assurance Plan in place



Policy on Quality Assurance Plan (QAP)

NRC SPOP 41-46.470-6 - QAP

QAP's seven basic parts:

1. Items to be inspected/tested
2. Timing of inspections
3. Skills needed to perform inspections/tests
4. Staff-hours needed to perform ...
5. Equipment and facilities needed
6. Names and qualifications of COR, CET, surveyors & inspectors
7. Statement of availability from named staff member's supervisors.

NEH 642 - NRCS Construction Specification 94 Contractor Quality Control

➤ 1. Scope

- consists of developing, implementing, and maintaining a quality control system to ensure the specified quality is achieved for all work.

➤ 2. Equipment and Materials

- equipment properly adjusted and in good condition
- records of equipment calibration available to Engineer
- operated in a safe manner by qualified personnel



NRCS Construction Specification 94 Contractor Quality Control

➤ 3. Quality Control Systems

- Method 1

- use on smaller less complex work
- Contractor's personnel expected to be qualified to perform routine quality control
- system activities include
 - » verifying adequacy of completed work
 - » taking corrective action
 - » documenting results
- Contractor must submit QC personnel, their duties and authorities, to CO 15 days after award

- Method 2

- use on larger more complex work
- Contractor's system shall identify on-site QC manager personnel and a organizational listing of personnel and their duties.
- system activities include
 - » verifying adequacy of completed work
 - » taking corrective action
 - » daily documentation of QC activities
- Contractor must submit written QC Plan to the Contracting Officer



NRCS Construction Specification 94

Contractor Quality Control

➤ 4. Quality Control Personnel ➤

- Method 1

- accomplished by a competent person (experienced and capable)
- person has the authority to take prompt action
- off site labs to be certified by nationally recognized entity
- Contractor must submit names of QC persons to Contracting Officer for approval along with qualifications, certifications, authorities, and availability

- Method 2

- accomplished by a competent person (experienced and capable)
- person must be separate and apart from line supervision and report directly to management
- off site labs to be certified by nationally recognized entity
- Contractor must submit names of QC persons to Contracting Officer for approval along with qualifications, certifications, authorities, and availability

NRCS Construction Specification 94

Contractor Quality Control

➤ 5. Post-award conference

- Contractor and CO discuss CQC system
- Contractor and CO develop mutual understanding regarding CQC system including procedures for correcting QC issues



NRCS Construction Specification 94

Contractor Quality Control

➤ 6. Records



- Document all acceptable and deficient work and must be legible, dated, and signed
- Records shall include:
 - documentation of shop drawings
 - documentation of material delivered and QC examinations
 - type, number, date, time, and name of person performing QC activities
 - item inspected or tested, location, and description of conditions and test results
 - determination that material met contract provisions
 - for deficient work, nature of defects and corrective action taken



NRCS Construction Specification 94 Contractor Quality Control

➤ 7. Reporting Results

- Reported to the Engineer immediately upon completion
- Original and one copy of records, tests, inspections submitted to Engineer within one day of completion
- Original and one copy of documentation of materials delivered submitted to Engineer prior to the use of the materials

➤ 8. Access –to all testing and records

➤ 9. Payment- usually prorated

DAILY CONSTRUCTION REPORT

PROJECT: _____

JOB NO. _____ REPORT NO. _____ DATE _____

WEATHER: _____ TEMP. MAX _____ °F MIN _____ °F PRECIPITATION: _____

PERSONNEL EMPLOYED		MAJOR EQUIPMENT ON PROJECT		
CONTRACTORS	SUBCONTRACTORS	NO.	DESCRIPTION	HRS. OP
____ Administrative	____ Mechanical	____	Cranes	_____
____ Supervisors	____ Electrical	____	Loaders	_____
____ Carpenters	____ Instrumentation	____	Backhoes (Trik)	_____
____ Iron Workers	____ Sitework	____	Backhoes (Tire)	_____
____ Finishers	____ Masonry	____	Dozers	_____
____ Operators	____ Roofing	____	Welders	_____
____ Pipelayers	____ Rebar	____	Pumps	_____
____ Laborers	____ Foundation	____	Compressors	_____

WORK PERFORMED TODAY: _____

COMMENTS: _____

BY: _____

TITLE: _____

NRCS Construction Specification 94 Contractor Quality Control

➤ 10. Bid Item #, Contractor QC

- Items to be included regardless of method chosen
 - specific requirements for QC testing
 - establish types of materials required to be tested, types of tests, and frequency of tests (as appropriate for the method chosen)
 - specify the documentation required (as appropriate for the method chosen)
 - prescribe specific requirement`s regarding:
 - initial or benchmark testing
 - standards to be used for QC testing and inspection
 - special testing or inspection procedures that need to be included in the system



NRCS Construction Specification 94 Contractor Quality Control

➤ Continuous Inspection

- The continuous presence of an inspector to observe or perform tests and measurements at critical points in operations and be available for consultation or emergency.
- Required for construction activities where the quality cannot be verified by intermittent observations and work that cannot readily be removed or replaced if it does not meet the contract requirements
- Examples of items requiring continuous inspection:
 - earthfill
 - concrete placement
 - installing drains and filters



NRCS Construction Specification 94 Contractor Quality Control

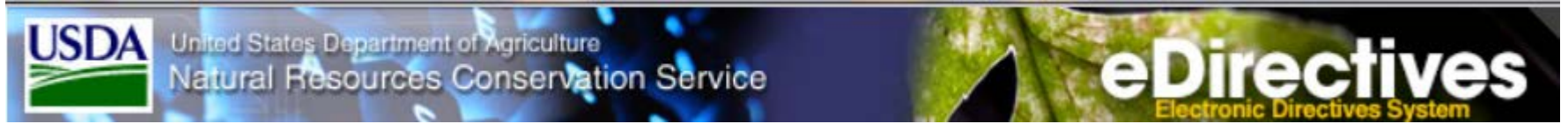
➤ Intermittent (Periodic) Inspection

- May be adequate for certain phases of project activities depending on the complexity and potential impacts to public safety
- Examples of items requiring intermittent inspection
 - dewatering
 - excavation, such as channel excavation
 - forming and placing steel
 - mulching
 - painting
 - fencing





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NEH 645 - Construction Inspection

- Chapter 3 – Contractor Quality Control and NRCS Quality Assurance
- Appendices



Chapter 3

Contractor Quality Control and NRCS Quality Assurance

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Quality Assurance

➤ Principles of Good Inspection

- Know the drawings and specifications well
- Communicate with the Contractor
- Establish firm position on issues (not combative)
- Be decisive
- Follow through on all issues
- Point out work which does not comply
- Documentation is critical
- Inspectors & COR's do not give Contractor orders
- Contracting Officer is only person who can obligate the Government





NEH 645 – Appendices

- A – Inspection Checklists
- B – Worksheets
- C – Job Diary Examples
- D – Sample Engineering Notes and Comps
- E – Construction Tolerances
- F – NRCS Supplement to OSHA
- G – Glossary

Quality Control & Quality Assurance

- Check everything that matters.



- Almost everything matters.