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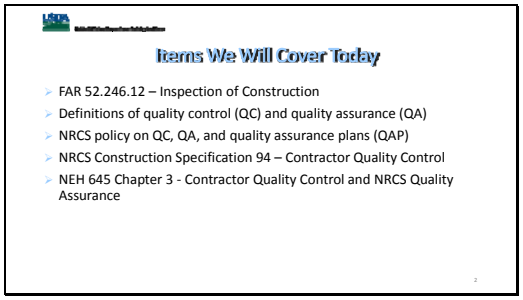

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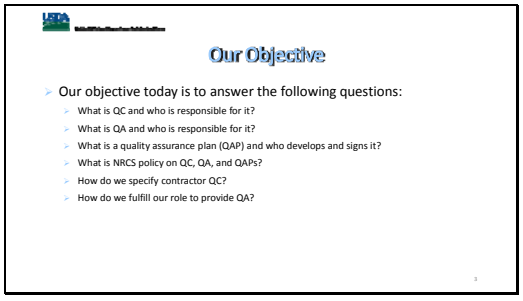
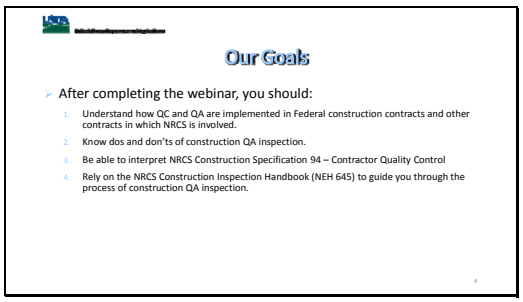


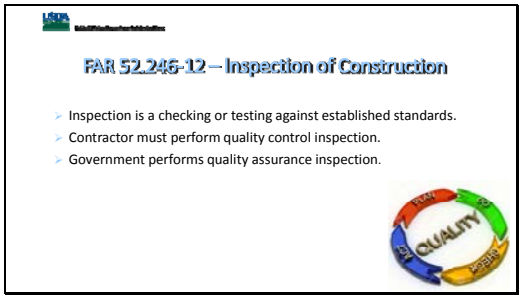
Our objective for this webinar is to answer the questions you see here. If you have answers to these questions, you will have a basic knowledge of QC and QA and how NRCS goes about ensuring that we have the necessary QC and QA on our construction contracts necessary to ensure the quality of construction that is needed for the constructed practice to function as intended.

Slide 4



Our first goal is for you to understand how QC and QA are implemented on NRCS involved Federal contracts. This may also apply to other construction contracts such as those implemented by a contracting local organization with whom we partner on a project. Our second goal is for you to know the dos and don'ts of QA inspection which are outlined in the Federal Acquisition Regulation clause 52.246.12 – Inspection of Construction. Thirdly, you should be able to interpret Construction Specification 94 or at least have a working knowledge and understanding of the specification so that you can better verify that the specified QC is being performed compliant with the specification. And our last goal for today is for you to begin relying on NEH 645 Chapter 3 and the other chapters and tools that are available in NEH 645 for the construction inspection guidance and skills needed to provide QA on NRCS construction contract work.

Slide 5



FAR clause 52.216-12, Inspection of Construction, is the clause used in most construction contracts and is required in those over $150,000. It details the rights and obligations of the contractor and of the government regarding inspections and testing.

In simple terms, inspection is a checking or testing of work completed against established standards. The only standards applied are those permitted or specified by the contract.

It is the contractor that performs quality control inspections and testing.

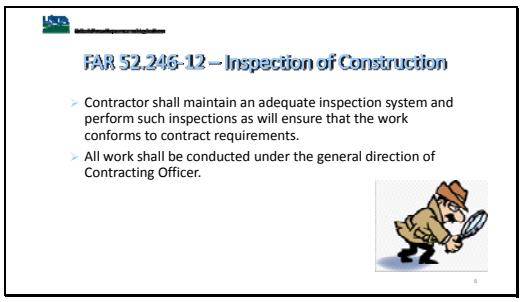
The government on the other hand performs quality assurance inspections and testing.

As you can see, both parties perform inspections, but those inspections are for different purposes.

One way to remember who is responsible for quality control versus quality assurance is that the contractor is the one that controls the quality of work they perform. The government simply needs to assure itself that the work was completed in accordance with the contract requirements.

Dennis will talk more about contractor quality control requirements established by the contract and the quality assurance plan developed and implemented by NRCS personnel. However, for the next few slides I will be talking specifically about the Inspection of Construction clause that is in most construction contracts and the rights and obligations it places on both the contractor and the government.

Slide 6



The text on this and the next few slides comes from the inspection clause itself.

The clause establishes the requirement for the contractor to maintain an adequate inspection system and perform inspections to make sure the work is accomplished in accordance with the contract specifications and drawings. As mentioned earlier, Dennis will go into more detail regarding what additional contractor quality control requirements might exist in the contract specifications.

The work performed by the contractor is under the general direction of the contracting officer. This does not mean the contracting officer directs the day to day work performed by the contractor, that is the contractor's job. Instead, what it means is, the contracting officer has the ability to direct the contractor's performance to the extent it does not meet contract requirements. The contracting officer, or anyone else, should not be otherwise directing the contractor's work if the work conforms to the contract requirements. If work is directed to be done in a specific manner that is not prohibited by the contract, that could be regarded as a contract change and the contractor could seek equitable adjustment if the change causes an increase in the amount of time needed to perform the work or an increase in the cost of the work.

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All work is subject to government inspection and testing as specified in the contract.

These inspections can be conducted at "all places" where the work is conducted. The inspection clause defines the term "work" as including, but not limited to, materials, workmanship, manufacture, and fabrication of components. Normally, government inspections are limited to the construction site itself, but the inspection clause does permit inspections to be conducted elsewhere unless the contract specifications are otherwise more restrictive regarding the location of inspections.

Inspections can be conducted at all reasonable times before acceptance, unless the contract specifications are more restrictive as to the time of inspection. This mean inspections can occur while the work is being performed, so long as the inspections are not conducted in a way that unreasonably delays the contractor's work or are conducted at an unreasonable time. Inspection can also occur after the work has been completed, but before the work has been accepted by the contracting officer. However, the time of inspection can be critical in determining the government's right to reject nonconforming work or terminate the contract for default.

Inspections are performed to ensure strict compliance with the terms. Not holding a contractor to strict compliance means that a contractor is

being permitted to do less than is required by the contract for the same amount of money. Generally speaking, the government is entitled to enforce strict compliance with the contract requirements.

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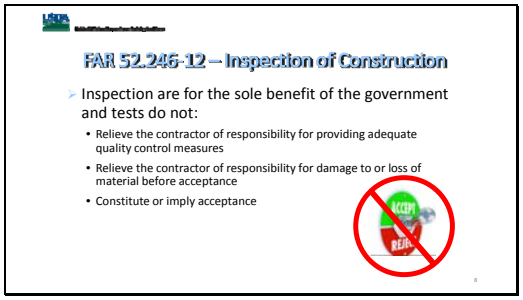

Inspections are for the sole benefit of the government to assure itself as to whether or not the contactor has performed the work as required by the contract.

Government inspections are not a substitute for the contractor's quality control system. The contractor is still responsible for providing adequate quality control measures to ensure contract requirements are met. Even if an inspector inspects the work or observes contractor performance, that does not relieve a contractor from correcting work that is later found to be defective. The government would only be responsible for the cost of correcting the nonconforming work if the contractor can prove that 1) the government had actual knowledge of the defect but deliberately allowed the work to continue uncorrected or 2) there is evidence of either express acquiescence or a deliberate decision to not point out the defect.

Also, just because the government inspects contractor materials, it does not relieve the contractor of

responsibility for damage or loss to that material. This is consistent with another FAR clause (52.236-7, Permits and Responsibilities), which states the contactor is responsible for all materials delivered and work performed until completion and acceptance of the work.

Also, just because the government conducts a test or inspection and the material or work is found to meet contact requirements, it does not mean the government has accepted the work. Typically, acceptance occurs after all work required by the contract is completed, unless the contract provides for acceptance of severable portions or phases of work.

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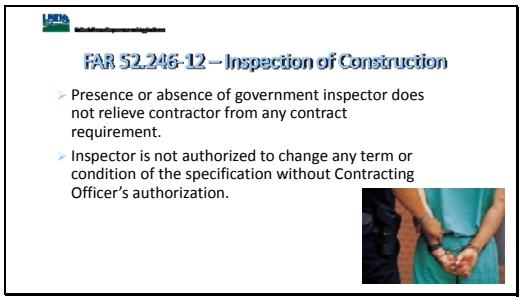
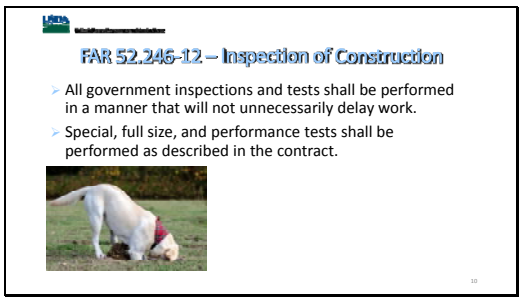


The presence or absence of government inspector does not relieve the contractor from compliance with contract requirements. This means that just because the government chooses not to perform some inspection or test as part of its quality assurance plan, it does not take the contractor off the hook from meeting a contract requirement. Remember, inspections by the government are for its sole benefit.

The inspector or anyone else is not authorized to make any change to the contract without the contracting officers authorization. Remember, only the contracting officer is authorized to make a change to the contract. Authorizing or directing such a change without the contracting

officer's approval will likely result in an unauthorized commitment having occurred. The action can also result in legal consequences including the contractor being entitled to an equitable adjustment (that is more time and/or money). It can also result in a contract claim that could wind up being litigated before the Civilian Board of Contract Appeals or the Court of Federal Claims.

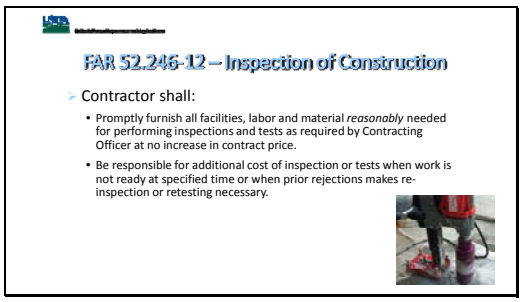
Slide 10



All government inspections and tests must be performed in a manner that will not unnecessarily delay work. It is okay to conduct multiple inspections, provided they are conducted at reasonable times and do not unnecessarily or unduly delay the work. Inspections can also be done in any manner so long as it is not prohibited by the contract, it does not unreasonably interfere with the contractor's performance, or increase the cost or amount of work to be performed.

Special, full size, and performance tests shall be performed as described in the contract. Deviating from the inspections and tests specified in the contract, which increase the contractor's cost or amount of work to be performed, could cause the contractor to be entitled to additional money or time to complete the work.

Slide 11



The clause also requires the contractor to provide the facilities, labor, and material reasonably needed for the government to preform its inspections and tests and at no additional cost to the government. This means the contractor is required to pay normal costs incurred in the course of government inspections. However, the contractor is protected from improper and disproportionate demands by the government under the reasonableness standard included in the clause. Reasonableness is determined by what the contactor can be expected to have foreseen at the time of entering into the contract. CORs should be exercise caution and contact the contracting officer if there is doubt as to the reasonableness of the government's need of the contractor as it relates to inspection and tests. Unreasonable demands could result in a request for equitable adjustment or a claim from the contractor for increased costs and/or time to complete the work.

The contractor is also responsible for any additional cost of inspection or tests when the work is not ready at the time specified in the contract or when re-inspection or re-testing is necessary due to work having been previously rejected as not meeting contract requirements. This is because it is not the fault of the government that the prior work was nonconforming and the government has to expend additional resources to accomplish the task more than the one time that should have been necessary. If the government's cost of inspection or testing increases, it is

entitled to equitable adjustment from the contractor.

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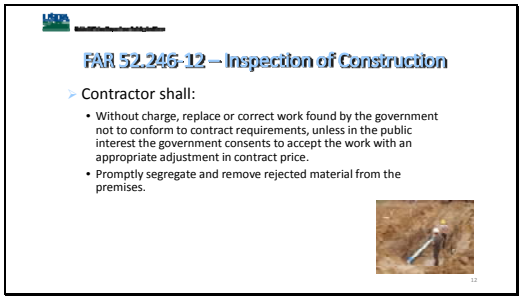

If work does not meet contract requirements, the contractor must replace or correct the work at no additional cost to the government. Generally, the government is entitled to enforce strict compliance with the contract requirements. An exception to this is when the cost of correction would involve economic waste. The concept of economic waste applies when replacement is economically wasteful and the government received work that substantially complies with the specifications. In such a situation, the government's remedy is limited to a price adjustment based on loss of value or savings to the contractor and it cannot require replacement.

Also, if materials are rejected as not conforming to the contract requirements, the contractor must promptly segregate and remove rejected material from the site. This is to help prevent use of the defective material in performing the work.

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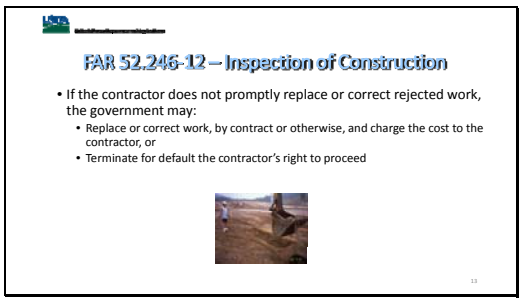

If the contractor does not promptly replace or correct rejected work, the government may either 1) replace or correct work, by contract or otherwise, and charge the cost to the contractor, or 2) terminate for default the contractor's right to proceed.

Default is the least desired action since it has an adverse consequence on the government and not just the contractor. Default terminations are usually contested in court by the contractor, cause significant delays in the government getting the needed work completed, and come at an additional cost to the government in the form of additional resources being expended.

Normally, a contractor will ultimately replace or correct the work as required by the contracting officer. However, should the contractor not do so, the government should contract for the work to be done or do the work itself and then charge the cost of it to the contractor by filing a claim against the contractor.

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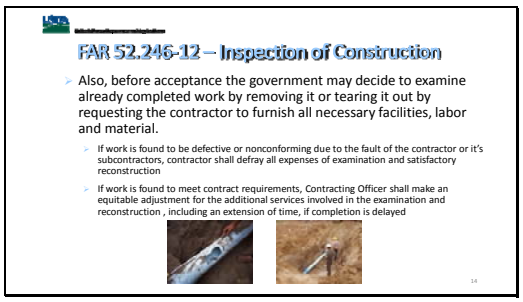

Requiring the contractor to remove or tear out completed work is normally avoided when possible due to the additional cost and potential for time delays involved. However, there may be times when it is appropriate. For example, if the government has some reason to believe the work does not comply with the specifications and/or drawings it may become necessary.

Once removed or torn out, if the work is found to be defective due to the fault of the contractor, the contractor is liable for the cost of inspection and satisfactory reconstruction. This can include the filing of a claim against the contractor by the government for the additional cost of inspection and testing.

If the work is found to not be defective, the contracting officer must provide equitable adjustment to the contractor for the additional cost and/or time needed for re-accomplishing the work.

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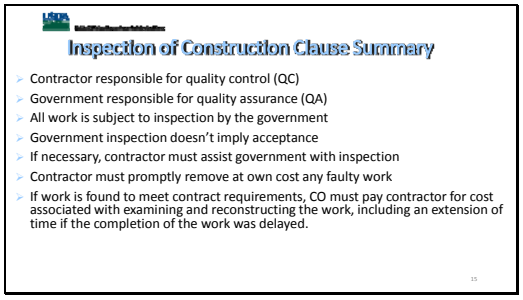

Here is a summary of some of the key rights and obligations of the contractor and the government from the Inspection of Construction clause that we just went over.

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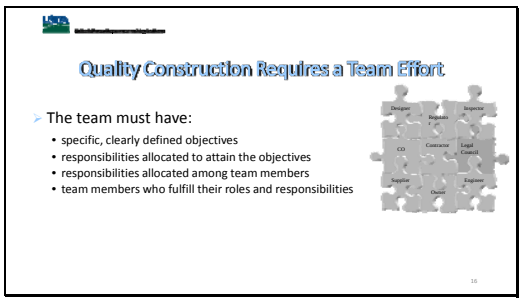

Quality construction is definitely a team effort. It starts with the designer or specification writer who best knows the importance of quality and the criticality of specific aspects of the job where quality cannot be compromised. This is the person who writes the specifications and generally drafts the quality assurance plan. The inspection staff including the COR, construction inspectors, and support staff are responsible for quality assurance inspection. The contractor is responsible for quality control. And the CO is responsible to ensure that the work is accomplished in compliance with the contract, which means that it must be constructed to the level of quality specified in the contract.

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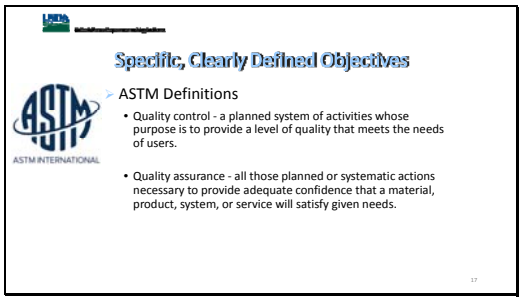
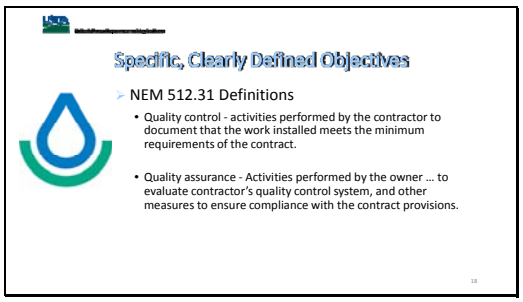


These definitions point to a planned system of activities for both QC and QA, but QC is focused on providing the quality while QA's focus is on providing confidence that the quality is being provided. Another way of saying this is to say that QC is there to ensure quality and QA is there to watch over QC to make sure QC is doing it's job.

Slide 18



The National Engineering Manual (NEM) views QC as having to perform activities to document contract compliance. When you think about it, this means that not only does QC have to ensure quality, but they have to document it too. This implies that QC must do testing and document test results. NEM's definition of QA says that QA must ensure compliance, but how can QA do that if QA inspectors have no authority to stop work for non-compliance? QA inspectors can't direct the contractor's work, so how can they ensure contract compliance? In order to answer these questions we need a thorough understanding of who is responsible for what.

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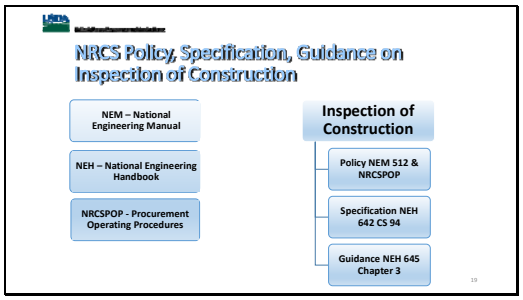

We have these resources to help us understand who is responsible for QC, QA, and the QAP and how we ensure compliance with contract requirements. The National Engineering Manual is our Engineering policy manual. The National Engineering Handbook Part 645 provides guidance on construction inspection. There is also quality assurance related policy in the Procurement Operating Procedures which we must follow when we are contracting for construction.

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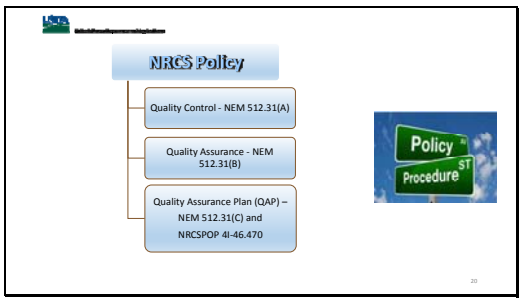
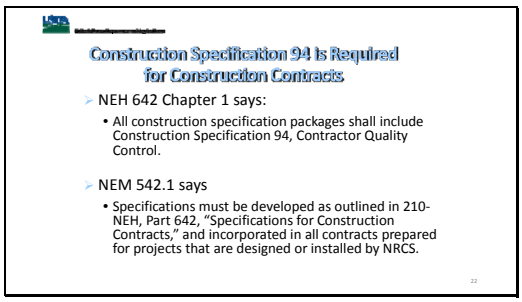


NEM 512.31 is where you go to find the NRCS definitions of QC, QA, and QAP. In 512 you will also find a list of items that must be included in the QAP along with requirements for the level of approval required (i.e. who must sign to approve the QAP). This policy is also very important to our procurement folks because our COs are responsible for making sure that the government is getting what we pay for. So similar requirements for the QAP are listed in our acquisition workforce's procurement operating procedures.

Slide 21

NEM defines QC and says that Construction Spec 94 may be a bid item for sealed bid contracts and must be included in any negotiated construction contract. You have to dig a little deeper to find that CS 94 is a required specification in all of the contracts that are designed or administered by NRCS. For this you must go to NEH 642 Chapter 1.

Slide 22



NEM requires NEH 642 specifications be used whenever NRCS designs or installs projects and NEH 642 requires that the specification package include CS 94.

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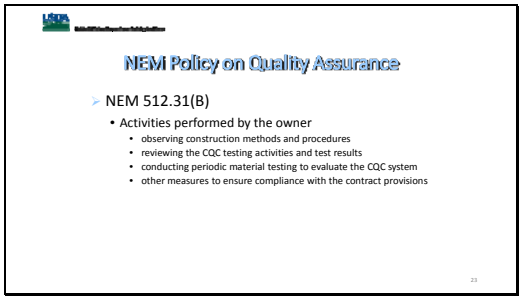

NEM reaffirms that QA is the responsibility of the owner. When NRCS is the contracting agency, NRCS is considered the owner. If the contract is administered by a CLO, the CLO is considered the owner. NRCS often assists the CLO with QA activities, but the CLO has ultimate responsibility for QA. NEM provides this list of items that are required of the QA inspection staff. Notice the last bulleted item says that QA must perform other measures to **ensure** compliance with the contract provisions. Remember that earlier I asked the question of how could QA ensure contract compliance if the QA staff has no authority to stop work for non-compliance? Well, we can answer that question with one word "TEAMWORK". The QA staff is only part of the team. The CO is the team member that can ensure compliance by stopping work or failing to pay for non-compliant work, but the CO relies on the QA staff to provide verification that the work is either compliant or non-compliant.

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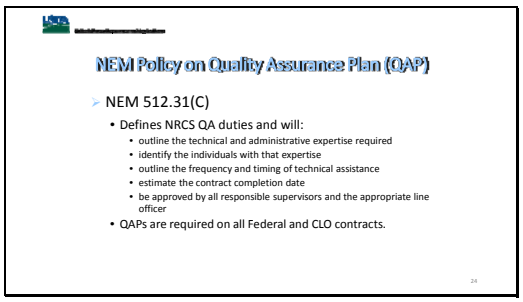

NEM says that QAPs are required on all Federal and CLO contracts. Not only does the QAP list items that are to be inspected and in some cases tested for compliance, but it goes further to list human and other resources that must be devoted to the effort and the anticipated length of time that these resources will be needed. Then, it must be signed by supervisors and the line officer that has the authority to guarantee that the listed resources will be available when needed.

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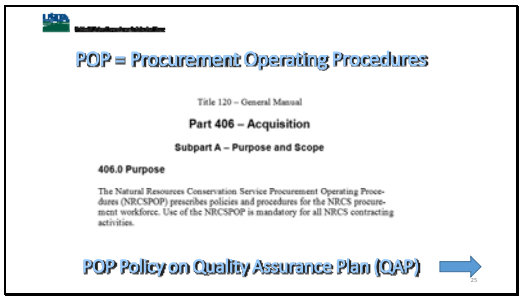

The NRCS acquisition team must follow mandatory procedures for NRCS procurement. One of these has to do with the requirement for a QAP.

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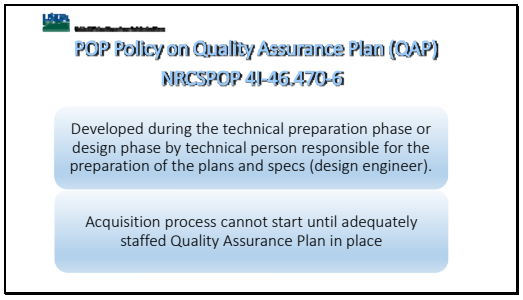

The POP says that the QAP must be in place before the acquisition process can begin. That means that, before bids are solicited, the QAP must be in place. The reason for this is that the QAP is the document that guarantees that adequate QA inspection resources will be available to provide QA for the work that is being bid. The work cannot be bid until the CO has assurance that the necessary QA inspection will be provided to ensure the work will be done as specified.

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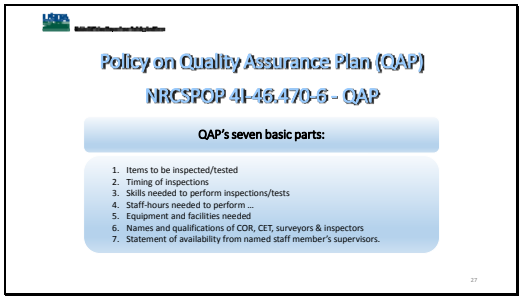

The POP reiterates the items that are listed in NEM that must be included in the QAP.

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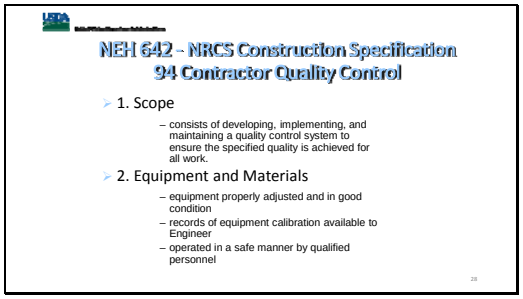

Spec 94 requires the contractor develop, implement, and maintain a QC system. The system must be submitted to the CO in writing. The equipment mentioned in section 2 is equipment needed for testing and inspecting the work.

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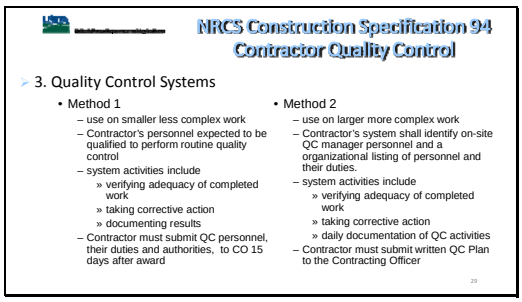

There are two methods of quality control defined in Spec 94. The specification writer must choose the method applicable to the inspection of the job at hand. Method 2 is the more stringent method and requires a QC manager that must be on-site during construction.

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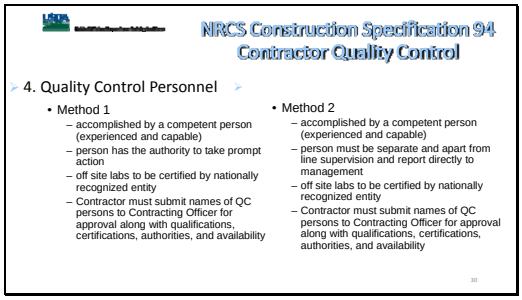
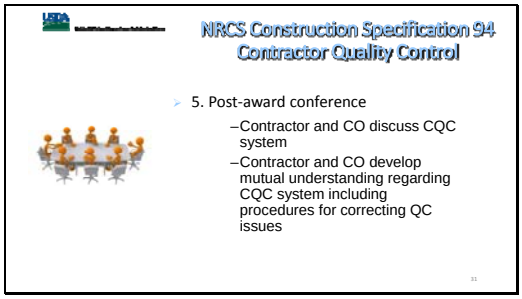


The personnel methods listed in section 4 align with the QC system methods in section 3. Method 2 is more stringent in that the QC person must be separate and apart from line supervision and report directly to management.

Slide 31



Spec 94 requires the QC system be a topic that is hard-wired into the post-award (preconstruction) conference. This is an opportunity for the contractor to work with the CO to refine the QC system, if necessary, to comply with contract requirements for QC.

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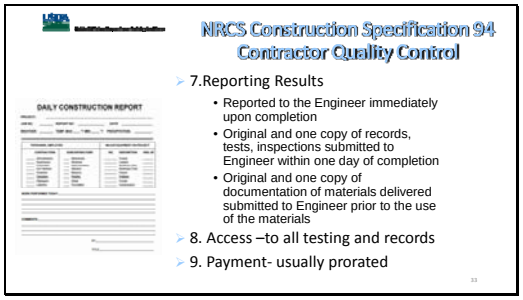
In keeping with the definition of QC, the contractor must document all acceptable and deficient work and include the details listed here.

Slide 33



Spec 94 requires that QC records be reported to the engineer immediately. This generally means within one day of recording: test results, documentation relating to materials delivered, and inspection of the work. It is common for the contractor to use some standard form that is paper or electronic. It is given to the NRCS on-site construction QA inspector at the end of the day or sometime the day following the date of the report. But, the QA inspector has access to all testing and records as they are being generated. Payment for CQC is generally made on a prorated basis and making QC a bid item is strongly encouraged. By making QC a stand alone bid item you avoid the confusing practice of making it subsidiary to almost every bid item on the bid schedule and you **emphasize** the importance of CQC.

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The last section of the specification, like all NRCS standard construction specifications, is an open section that is written by the specification writer specifically for the job at hand. This section designates the bid item number for contractor QC and any details related to CQC including listing the applicable QC system method in section 3 and personnel method listed in section 4. This is where specific requirements and the details of inspection for each item of work are listed. Sometimes, these details are shown in a table listing the item of work and the required inspection and testing tasks. Two of the available handouts for this webinar are examples of Section 10 from CS 94 taken from typical specification packages for work on a small watershed dam.

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In section 10 of Spec 94, the inspection items will be designated as continuous inspection items or intermittent. Continuous items are items that cannot be inspected after the installation, but must be inspected during the performance of the work.

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Intermittent inspection items are items that can be inspected at some point in time after the work. It may be that the inspection must be done prior to other work being done, so a schedule is needed showing when these items must be inspected before other work can commence.

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Our construction inspectors are some of the hardest working employees in the agency. They are charged with being on site during construction when work is being performed. They not only inspect the work but are also required to make labor interviews, interpret plans and specifications, verify that reasonable standards of safety and health are being followed, document day-to-day activities for as-built documentation, certify compliance with contract requirements, and provide documentation that might some day might be needed to defend the owner against a contract claim. Chapter 3 of NEH 645 describes in detail the job of NRCS construction inspectors do and gives the reader a little insight into what it takes to be successful as a NRCS construction QA inspector.

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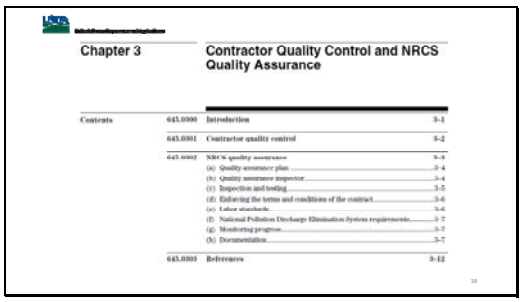

Here's the table of contents for Chapter 3. I'm only mentioning Chapter 3 because it is directly related to our topic today, but the entire handbook is a great resource for inspectors and engineers working with conservation measures that are installed under any of the programs with which NRCS installs conservation engineering measures.

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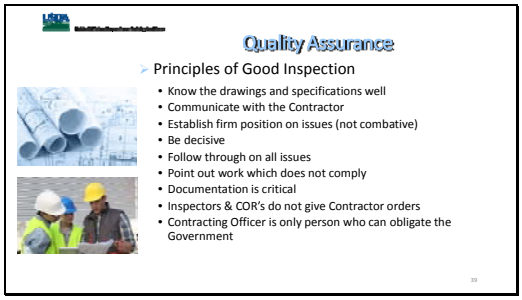
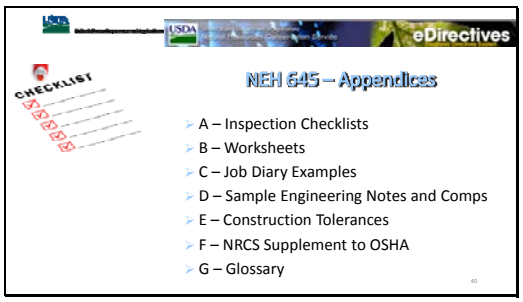


This list of principles of good inspection is excerpted from Chapter 3. I included this to give you a taste of the type of information provided in the chapter. Lists and checklists are dominant features throughout NEH 645. These lists and checklists are supported by the text so that items that are not common knowledge or need more explanation are explained in the text. If you are tasked with inspecting an item of work and you would like some guidance on the specific aspects of the work that an inspector needs to check for compliance verification, check out NEH 645; I think you will be please to find what a great resource it is.

Slide 40



One last thing about the Construction Inspection Handbook, the appendices contain some great working tools for inspectors and engineers.

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In closing, I'd like to say that quality control can only be guaranteed with a good contractor quality control system. And it's the role of quality assurance personnel to verify that the CQC system is effectively guaranteeing that the quality of construction is as specified and is adequate so that the project or measure being installed will serve its intended purpose throughout its designed life.