

SECTION 01 45 00
QUALITY CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies requirements for Quality Control (QC) for construction projects.

1.2 APPLICABLE PUBLICATIONS

A. The publication listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

B. ASTM International (ASTM)

1. ASTM D3740 - (2012a) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
2. ASTM E29 - (2014a) Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.3 SUBMITTALS

Government approval is required for all submittals. QC inspection reports shall be submitted under this Specification section and follow the Applicable QC Control Phase (Preparatory, Initial, or Follow-Up): [Applicable Specification section] naming convention.

1. Preconstruction Submittals
 - a. Interim QC Plan
 - b. QC Plan
2. Test Reports
 - a. Verification Statement

PART 2 PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

Establish and maintain an effective quality control (QC) system that complies with the **FAR Clause 52.246.12** titled "**Inspection of Construction**". QC consists of plans, procedures, and organization necessary to produce an end product which complies with the Contract requirements. The QC system covers construction operations, both onsite

and offsite, and be keyed to the proposed construction sequence. The project superintendent will be held responsible for the quality of work and is subject to removal by the Contracting Office or Authorized designee for non-compliance with the quality requirements specified in the Contract. In this context, the highest-level manager responsible for the overall construction activities at the site, including quality and production is the project superintendent. The project superintendent maintains a physical presence at the site at all times and is responsible for all construction and related activities at the site, except as otherwise acceptable to the Contracting Officer.

3.2 QC PLAN:

- A. Submit no later than 15 days after receipt of Notice to Proceed (NTP), the QC Plan proposed to implement the requirements of the **FAR Clause 52.246.12** titled "**Inspection of Construction**". The Government will consider an Interim QC Plan for the first 30 days of operation, which must be accepted within 10 business days of NTP. Construction will be permitted to begin only after acceptance of the QC Plan or acceptance of an Interim plan applicable to the particular feature of work to be started. Work outside of the accepted Interim QC Plan will not be permitted to begin until acceptance of a QC Plan or another Interim QC Plan containing the additional work scope is accepted.
- B. Content of the QC Plan: Include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by **subcontractors**, fabricators, suppliers, and purchasing agents:
 1. An acknowledgement that the QC staff will implement the three-phase control system for all aspects of the work specified. Include a QC System Manager that reports to the project manager.
 2. The name, qualifications, (in resume format) duties, responsibilities, and authorities of each person assigned a QC function.
 3. A statement to the QC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the QC System Manager, including authority to stop work which is not in compliance with the Contract. Letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities will be issued by the QC System Manager to the Contracting Officer or Authorized designee.

4. Procedures for scheduling, reviewing, certifying, and managing submittals including those of subcontractors, consultants, suppliers and purchasing agents. These procedures must be in accordance with Section 01 33 23 Shop Drawings, Product Data, and Samples.
5. Control, verification, and acceptance of testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer or Authorized designee are required to be used)
6. Procedures for tracking Preparatory, Initial, and Follow-Up control phases and control, verification, and acceptance tests including documentation.
7. Procedures for tracking and construction deficiencies from identification through acceptable corrective action. Establish verification procedures that identified deficiencies have been corrected.
8. Reporting procedures, including proposed reporting formats.
9. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks has separate control requirements, and is identified by different trades or disciplines, or it is work by the same trade in a different environment. Although each section of specifications can generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the Coordination meeting.

3.3 COORDINATION MEETING:

After the Preconstruction Conference and before start construction, and prior to acceptance by the Government of the QC Plan, meet with the Contracting Officer or Authorized designee to discuss the Contractor's quality control system. Submit the QC Plan a minimum of 5 business days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details must be developed, including the forms for recording the QC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting will be prepared by the Government, signed by both the Contractor and Contracting

Officer or Authorized designee and will become a part of the contract file. There can be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings or address deficiencies in the QC system or procedures which can require corrective action by the Contractor.

3.4 QUALITY CONTROL SYSTEM MANAGER:

- A. Personnel Requirements: The Contractor's QC system manager will maintain a presence at the site as required during progress of the work and have complete authority and responsibility to take any action necessary to ensure Contract compliance. The QC system manager will be subject to acceptance by the Contracting Officer or Authorized designee.
- B. QC System Manager: Identify as QC system Manager, an individual within the onsite work organization that is responsible for overall management of QC and has the authority to act in all QC matters for the Contractor. The QC system Manager is required to be a graduate engineer, graduate architect, or a graduate of construction management, with a minimum of 5 years' construction experience on construction similar to the scope of this Contract. This QC system manager is on the site as required during construction and is employed by the General Contractor. The QC system manager is assigned as QC system manager and can perform other duties, but needs to be allowed sufficient time to perform QC duties as described in the QC plan. The QC system manager will **NOT** have any duties as project superintendent in addition to quality control.
- C. Organizational Changes: Maintain the QC staff at full strength at all times. When it is necessary to make changes to the QC staff, revise the QC Plan to reflect the changes and submit the changes to the Contracting Officer or Authorized designee for acceptance.

- 3.5 SUBMITTALS AND DELIVERABLES:** Submittals must comply with the requirements in Section 01 33 23 Shop Drawings, Product Data, and Samples. The QC organization is responsible for certifying that all submittals and deliverables are in compliance with the contract requirements. Section 01 91 00 General Commissioning Requirements is included in the contract, the submittals required by the section must be coordinated with the Section 01

33 23 Shop Drawings, Product Data, and Samples to ensure adequate time is allowed for each type of submittal required.

3.6 CONTROL:

- A. QC is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control are required to be conducted by the QC system Manager for each definable feature of the construction work as follows:
1. Preparatory Phase: This phase is performed prior to beginning work on each definable feature of work after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase includes:
 - a. A review of each paragraph of applicable specifications, references codes, and standards. Make available during the preparatory inspection a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field.
 - b. Review of the Contract drawings and specs.
 - c. Check to assure that all materials and equipment have been tested, submitted, and approved.
 - d. Review of provisions that have been made to provide required control inspection and testing.
 - e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the Contract.
 - f. Examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
 - g. Review of the appropriate Activity Hazard Analysis (AHA) to assure safety requirements are met.
 - i. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards - contract defined or industry standard if not contract defined - for that feature of work.
 - j. Check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
 - k. Discussion of the initial control phase.

- B. Initial Phase: This phase is accomplished at the beginning of a definable feature of work. Accomplish the following:
1. Check work to ensure that it is in full compliance with contract requirements.
 2. Verify adequacy of controls to ensure full contract compliance. Verify the required control inspection and testing is in compliance with the contract.
 3. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
 4. Resolve all differences.
 5. Check safety to include compliance with an upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- C. Follow-Up Phase: Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements until the completion of the particular feature of work. Record the checks in the QC documentation. Conduct final Follow-Up checks and correct all deficiencies prior to the start of additional features of work which may be affected by the deficient work. **Do not build upon nor conceal non-conforming work.**
- D. Additional Preparatory and Initial Phases on the same definable features of work if: the quality ongoing work is unacceptable; if there are changes in the applicable QC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.7 TESTS

- A. Testing Procedure: Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and acceptance test when specified. Perform the following activities and record and provide the following data:
1. Verify that testing procedures comply with contract requirements.
 2. Verify that facilities and testing equipment are available and comply with testing standards.
 3. Check test instrument calibration data against certified standards.

4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
 5. Record results of all tests taken, both passing and failing on the QC report for the date taken. Specification paragraph reference, location where tests were taken, and the unique sequential control number identifying the test. If approved by the Contracting Officer or Authorized designee, actual test reports are submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the Contracting Officer or Authorized designee. Failure to submit timely test reports as stated results in nonpayment for related work performed and disapproval of the test facility for this Contract.
- B. Testing Laboratories: All testing laboratories must be validated through the procedures contained in Specification section 01 45 29 Testing Laboratory Services.
1. Capability Check: The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt and steel is required to meet criteria detailed in ASTM D3740 and ASTM E329.
 2. Capability Recheck: If the selected laboratory fails the capability check, the Contractor will be assessed a charge equal to value of recheck to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the Contract amount due the Contractor.

3.8 COMPLETION INSPECTION

- A. Punch-Out Inspection: Conduct an inspection of the work by the QC system Manager near the end of the work, or any increment of the work established by a time stated FAR 52.211-10 - Commencement, Prosecution, and Completion of Work, or by the specifications. Prepare and include in the QC documentation a punch list of items which do not conform to the approved drawings and specifications. Include within the list of deficiencies the estimated date by which the deficiencies will be corrected. Make a second inspection the QC system Manager or staff to

ascertain that all deficiencies have been corrected. Once this is accomplished, notify the Government that the facility is ready for the Government Final Inspection.

- B. Final Acceptance Inspection: The Contractor's QC Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Authorized designee is required to be in attendance at the Final Acceptance Inspection. Additional Government personnel can also be in attendance. The Final Acceptance Inspection will be formally scheduled by the Contracting Officer's or Authorized designee Resident Engineer office at least 14 days prior to the Final Acceptance Inspection and include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date schedule for the Final Acceptance Inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with **FAR Clause 52.246-12** titled "**Inspection of Construction**".

3.9 DOCUMENTATION

- A. Quality Control Activities: Maintain current records providing factual evidence that required QC activities and tests have been performed. Include in these records the work of subcontractors and suppliers on an acceptable form that includes, as a minimum, the following information:
1. The name and area of responsibility of the Contractor/Subcontractor
 2. Test and control activities performed with results and references to specification/drawing requirements. Identify the Control Phase (Preparatory, Initial, and/or Follow-Up). List deficiencies noted, along with corrective action.
 3. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specification/drawing requirements.
 4. Submittals and deliverables reviewed, with Contract reference, by whom, and action taken.
 5. Offsite surveillance activities, including actions taken.
 6. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

7. Instructions given/received and conflicts in plans and specifications.
- B. Verification Statement: Cover both conforming and deficient features and include a statement that equipment and materials incorporated in the work and workmanship comply with the Contract. Furnish these records in report form for the previous week, as part of the daily log. As a minimum, prepare and submit on report for every 7 days of no work, all calendar days need to be accounted for throughout the life of the contract. Reports need to be signed and dated by the QC system Manager. Include copies of test reports and copies of reports prepared by all subordinate QC personnel within the QC system Manager Report.
- C. Quality Control Activities: Maintain current records providing factual evidence that required QC activities and tests have been performed. Include in these records the work of subcontractors and suppliers on an acceptable form that includes, as a minimum, the following information:
1. Type and results of inspection to include P - Preparatory, I - Initial, or F - Follow-up, and include satisfactory work completed or deficiencies with action taken to be taken.
 2. Tests required by plans and/or specs performed and results of tests.
 3. Contractors and/or sub-contractors, areas where inspections and/or tests were conducted, and any pertinent comments that the QC system manager feels is required.

3.10 NOTIFICATION OF NONCOMPLIANCE: The Contracting Officer or Authorized designee will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor should take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site will be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer can issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

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