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CECW-EC

Contracts Construction Quality Management

FOR THE COMMANDER:

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Chief of Staff

Purpose. This engineer regulation provides the general policy and guidance for establishing quality management procedures in the execution of construction contracts. It defines the related roles and responsibilities of both the contractor and the Government in the management of quality in support of construction.

Applicability. This regulation applies to all Headquarters, United States Army Corps of Engineers/Office of the Chief of Engineers elements, major subordinate commands, Districts, laboratories, and field operating activities responsible for awarding and supervising construction contracts.

Distribution Statement. Approved for public release; distribution is unlimited.

Proponent and Exception Authority. The proponent of this regulation is the Headquarters, United States Army Corps of Engineers, Engineering and Construction Directorate Director. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. Only the proponent of a publication or form may modify it by officially revising or rescinding it.

*This regulation supersedes ER 1180-1-6, dated 30 September 1995.

Summary of Change

Engineer Regulation 1180-1-6
Construction Quality Management

This major revision, dated 22 January 2025:

- Clarifies requirements for organizational and project specific quality assurance plans.
- Updates all sections of the regulation to incorporate current policy on construction quality management.
- Updates the references.
- Removes original appendixes per publications guidance.
- Provides links to supplemental information previously contained in the original appendixes and links to new templates.

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Glossary of Terms

1. Purpose

This engineer regulation provides the general policy and guidance for establishing quality management procedures in the execution of construction contracts. It defines the related roles and responsibilities of both the contractor and the Government in the management of quality in support of construction.

2. Distribution statement

Approved for public release; distribution is unlimited.

3. References

See Appendix A.

4. Records management (recordkeeping) requirements

a. The records management requirement for all record numbers, associated forms, and reports required by this publication are addressed in the Army Records Retention Schedule. Detailed information for all related record numbers is located on the U.S. Army Corps of Engineers (USACE) Records Management Site <https://usace.dps.mil/sites/INTRA-CIOG6/SitePages/Records-Management.aspx>. If any record numbers, forms, and reports are not current, addressed, and/or published correctly, see DA Pam 25-403 for guidance.

b. Provide all required documentation in the appropriate systems of record including the completed/signed Project-Specific Quality Assurance Plan (PSQAP) in the appropriate system(s) of record in accordance with this ER and the USACE Acquisition Instruction (UAI). These systems include:

(1) Construction Management (CM) system of record (currently Resident Management System [RMS]).

(2) Contracting systems of record (currently the Army Contract Writing System (ACWS) (formerly known as Standard Procurement System [SPS]), the Virtual Contracting Environment (VCE) – Paperless Contract File (PCF), and the Procurement Integrated Enterprise Environment (PIEE).

5. Associated publications

This section contains no entries.

6. Policy

a. *General.*

(1) Obtaining quality construction is a combined responsibility of the construction contractor and the Government. Their mutual goal must be a quality product conforming

to the contract requirements. A cooperative and professional working relationship should be established to realize this common goal. See EP 34-1-1 for additional information on relationship building.

(2) The contract documents establish the quality required in a project to be constructed. Contracting officers and their designated representatives are responsible for assuring the contract documents clearly define the quality of materials and workmanship required for a project and that construction contractors comply with the contract documents and produce the required product. Contracts for certain civil works structures specify a construction procedure in lieu of end product quality. In these instances, contractors are responsible for the specified procedure, and contracting officers must verify design assumptions and control and assure the end product quality.

(3) Documentation of construction quality is critical to the success of any project. It enables success in active projects and provides a means to collect lessons learned for future projects.

(a) All construction contracts will be administered, managed, and documented (including all contract data and records) using the USACE CM system of record. At the time of this publication, the current CM system of record is the RMS.

(b) Personnel who have been delegated Administrative Contracting Officer (ACO) authority by the Senior (Regional) Contracting Officer must comply with the Federal Acquisition Regulation (FAR) clauses specified in their appointment letters, delegation letters, and the UAI. Personnel delegated Contracting Officer's Representative (COR) authority must comply with the documentation requirements in their designation letters and the UAI. Additionally, both ACOs and CORs are responsible for ensuring that all required documentation is stored in the appropriate systems of record. At the time of this publication, the Administrative Contracting Office Contract File system of record is the construction management system of record (currently RMS) and the Contracting Office Contract File systems of record are the ACWS (formerly known as SPS), the VCE-PCF, and the PIEE.

b. Contractor quality control. FAR 46.312 establishes a requirement for contractor quality control (CQC) in construction contracts. All contracts will include detailed CQC requirements in a properly edited Unified Facilities Guide Specifications (UFGS) 01 45 00 Quality Control or similar applicable UFGS quality control (QC) specification. When construction services are obtained through an international governmental agreement, CQC will not be used unless it is specifically required by that agreement per FAR 46.406.

c. Government quality assurance. Quality assurance (QA) is required on all construction contracts. The extent of assurance will be commensurate with the value and complexity of the contracts involved and the requirements of this ER.

7. Government responsibility

a. General.

(1) QA is the process by which the Government assures the end product quality. The process starts well before construction and includes reviews of the plans and specifications for biddability, constructability, operability, environmental and sustainability (BCOES), plan-in-hand site reviews, coordination with using agencies or local interests, establishment of performance periods and QC requirements, field office planning, preparation of QA plans, reviews of QC plans, enforcement of contract clauses, maintenance of QA and QC inspection and work records, and acceptance of completed construction.

(2) Tools to assist users with implementation of this policy include the following:

(a) A suggested Construction Organizational Quality Assurance Plan (COQAP) outline, a suggested PSQAP template, and a sample project-specific QA test plan that are found on the USACE Construction Management Administration Application (CMA²) site at: https://usace.dps.mil/sites/TDL-CECW-EC-CMA/SitePages/Quality-Assurance-Plans_kb.aspx.

(b) Suggested items for a plan-in-hand review that are found on the USACE CMA² site at: https://usace.dps.mil/sites/TDL-CECW-EC-CMA/SitePages/BCOES-Review_kb.aspx.

(3) ACOs and CORs must assure compliance with FAR 52.232-5, 52.236-5, 52.236-6, 52.236-21, and 52.246-12; UFGS 01 30 00; and USACE Acquisition Instruction (UAI) 5146 and 5152.236-9011.

b. *Planning.* Prior to construction, the responsible USACE District will perform the following activities:

(1) Develop a written COQAP(s). The District Construction Branch or Construction Division, with input from the Area/Resident Engineer, will develop this plan to address the overall QA operations of the District and field offices. The plan should be developed in conjunction with the annual office operating budget. The signature and approval authority for the COQAP lies with the senior construction position of the organization.

(a) The plan will provide a “road map” for the QA operations for the coming year that will address projected workload, organization, staffing, job responsibilities, training, pre-award activities, post-award activities, testing, and documentation. This plan will also include signature and approval authorities for any of the supplemental plans required by paragraph 7b(2), as well as the District’s plan for relaying the information, such as annual training or acknowledgements, to employees involved in QA.

(b) To be an effective management tool, the District must keep the plan current and adjusted for changes in workload, staffing, etc. Therefore, after initial development, the District Construction Office will review and update the plan as often as necessary, but

not less than annually. The District should include Area/Resident Office QA procedures in this organizational plan or outline them in separate, supplemental Area/Resident Office QA Plans and include them as appendixes to the organizational plan. A suggested outline for the COQAP is provided on the CMA² at the link in paragraph 7a(2).

(2) *Develop a written PSQAP.* The responsible project field office will develop this plan as a supplement to the COQAP and Area/Resident Office QA Plans.

(a) The PSQAP plan will incorporate project-specific QA requirements and procedures, including special-consideration submittals, special inspections if required by contract (see UFGS 01 45 35), centers of expertise as required by ER 1110-1-8158, specific project team members' roles/responsibilities, engineering considerations and instructions for field, personnel, QA/QC testing types and quantities, testing facilities to be used, and requirement to ensure QA/QC testing facilities comply with ER 1110-1-261. The CMA² link in paragraph 7a(2) contains a sample project-specific QA test plan. The PSQAP should include a resolution matrix for any issues experienced and discuss time frames for raising issues to the next level. The PSQAP and Contractor's QC Plan outline the quality management for the project. The CMA² link provided in paragraph 7a(2) contains the suggested outline for the PSQAP plan.

(b) To be an effective management tool, the responsible project field office must keep the plan current and adjusted for changes in workload, staffing, etc. Therefore, after initial development, the project field office will review and update the plan as often as necessary, but not less than annually after notice to proceed is issued. A suggested template for the PSQAP is provided on the CMA² at the link in paragraph 7a(2).

(3) Participate in pre-award activities. Coordinate budget and funding for these activities based on the complexity of individual projects.

(a) Participate in the design review conference. Recommend that a representative of the field office responsible for the administration of the contract participate.

(b) Conduct BCOES reviews as required by ER 415-1-11. Input from field office is required.

(c) Conduct site plan-in-hand reviews. This is a field office responsibility. A list of suggested items to check during plan-in-hand reviews is provided on the CMA² at the link in paragraph 7a(2).

(d) Establish the contract CQC requirements. Input from field office is required.

(4) Review field office workloads and staffing needs. This review should include an analysis of office budgets, number of personnel required to cover workloads, disciplines needed, and required qualifications and experience levels of personnel.

(5) Verify that office and field personnel have a clear understanding of CQC/QA responsibilities. Identify training needs and address them through the appropriate

combination of in-house and USACE Proponent-Sponsored Engineer Corps Training course attendance.

(6) Review the contractor's CQC plan and confirm affirmative answers to the following questions, at a minimum:

(a) Does the plan adequately cover control of all features of the contract?

(b) Is the CQC staff adequately sized to maintain quality and accomplish tests required?

(c) Have the person or persons responsible for each definable feature of work (DFOW), all tests, and submittal control and review been identified?

(d) Do the qualifications of the staff appear adequate for the control and test requirements?

(e) Is the delegation of responsibility and authority to the CQC manager clear? Does this person report directly to the highest-ranking contractor personnel on the site with responsibility for the overall management of the project, including quality and production?

(f) Are the CQC organization lines of authority and responsibility clear?

(g) Are individual control and test duties clearly assigned?

(h) Do the proposed control and test report forms include all the required features and reporting items? Are system-commissioning procedures clearly defined?

(i) Does it comply with the specific requirements established by the contract?

(j) Are DFOWs identified? A DFOW is a task that is separate and distinct from other tasks and has separate control requirements. For example, definable features for concrete could include formwork, reinforcing and embedded items, placement, mix design, finish, and curing. DFOWs should be well thought out by QC for the specific contract and NOT a list of technical specifications. A DFOW may be covered by more than one technical specification and more than one DFOW may be included in each technical specification.

(k) Does it include submittal procedures required by UFGS 01 33 00 and ER 415-1-10?

(7) Approve the CQC plan subject to satisfactory performance and reserve the right to require revisions to correct unsatisfactory performance. Revisions made by the contractor are subject to Government approval.

(8) Include the design QA as part of the PSQAP for design-build contracts. UFGS 01 33 16.00 10 Design Data (Design After Award) requires a design quality

control (DQC) plan as part of the construction QC management for design-build contracts.

c. Implementation and enforcement. Include the following activities in the PSQAP and perform them during construction:

(1) After the post-award or preconstruction conference, the Area/Resident Engineer or other responsible designee will conduct a mutual understanding/coordination meeting with the contractor on the CQC/QA program. The Area/Resident Engineer will ensure the Government prepares comprehensive, detailed minutes of the meeting for signature by both the contractor and the Government representatives.

(2) Delay construction start until after the coordination meeting and submittal and acceptance of at least the interim CQC plan, if required.

(3) Require revision of the CQC plan and its execution as necessary to obtain quality.

(4) Verify adequacy and calibration of test equipment, application of specified test standards, and computation of test results.

(5) Check CQC approved submittals to include an emphasis on reviewing items that pose increased risk or impact to specific and/or overall project quality.

(6) The quality assurance personnel (QAP) will review entries on the daily CQC reports to verify they document their QC operations according to contract requirements.

(a) If reports do not comply with the contract, return the CQC reports to the contractor and require the contractor to resubmit the reports containing the necessary information as specified in the contract QC specification.

(b) The QAP will not alter, sign, initial, or approve the CQC report.

(c) The QAP will bring any items of importance or systemic issues to the attention of the COR.

(d) If the report meets contract requirements, the QAP will acknowledge receipt and file the CQC report with the Quality Assurance Report (QAR) in the USACE CM system of record to form a complete QC/QA report, retained according to statutory requirements.

(7) Hold periodic jobsite assurance conferences on CQC/QA interrelationship of activity and effectiveness.

(8) Participate in the three-phase control process as necessary to confirm that the contractor is adequately conducting the required control processes. Attendance at a majority of the preparatory and initial-phase meetings, including mechanical, electrical, and critical features (roofing and waterproofing) is required. The Government participant

will be familiar with contract requirements and will ensure that the contractor prepares minutes of each preparatory and initial meeting and includes highlights of each control phase on the daily CQC report. These reports will be made readily accessible for quick reference throughout the life of the project.

(9) Conduct Government QA tests at the jobsite to assure acceptability of the completed work. Schedule a sufficient number of QA tests, but not less than 5 percent of the frequency of the CQC tests, to verify CQC test procedures and results.

(a) QAP should conduct QA testing and inspection at unannounced intervals.

(b) The COR should verify the accuracy and calibration of equipment. QAP will validate correct application of specified test standards and verify the coverage and accuracy of required CQC tests by observing approximately 10 percent of the CQC tests. The exact number of tests observed will be commensurate to the confidence level in the contractor's CQC system and consistency in Government and contractor test results.

(c) Depending on the type of test, Government engineering, laboratory, and/or QAP assigned to the work will review QC test reports, which the contractor should submit as attachments to their CQC reports.

(10) For test procedures for which duplicate sampling is appropriate, the Government will require the contractor to furnish duplicate samples of test specimens of a minimum of 20 percent of the CQC tests for possible QA testing.

(a) The Government should test a minimum of 25 percent of these duplicate samples and compare the results to the CQC test results to verify test procedures and results. Do not notify the contractor in advance which of the duplicate samples the Government has selected to perform QA tests so that the CQC staff will not know which of the CQC test results are subject to verification. The Area/Resident Engineer or other responsible designee should make available to and discuss with the contractor the results of QA tests performed on duplicate samples to reconcile any discrepancies.

(b) Testing duplicate samples is part of, not in addition to, the requirement to perform QA tests at a minimum frequency of 5 percent of the CQC tests.

(11) Monitor contractor's procedures for tracking construction deficiencies to validate acceptable corrective action and that an audit trail is maintained.

(12) Ensure that new work is not placed on unacceptable work and that progress payments do not include the value of non-conforming construction.

(13) Prepare QARs and all other necessary QA documentation as detailed here:

(a) QAP will prepare a report for each visit day of construction or fabrication on each contract and each project accomplished by Government plant and hired labor. If the QAP did not visit the site on a particular day of construction, the reason for non-visit

and pertinent observations about events occurring during the period of absence will be included in the QAR for the next subsequent visit day. The purpose of the QAR is to document Government activities in the day-to-day administration of the contract. Memoranda for record, letters, and the QAR will be used to provide a formal record of contract information. QAP will take particular care to record and preserve all possible data and exhibits regarding any matter that may become the basis for a claim.

(b) Contractors and Government will complete both CQC reports and QARs in the USACE CM system (RMS or similar) as described in paragraph 6a(3). If the Proponent grants an exception and the USACE CM system is not used, the ENG Forms 2538-1 (MILITARY) or 2538-2 (CIVIL) QAR daily log of construction templates are available for use. See Appendix A, Prescribed Forms, for links to these forms.

(c) At a minimum, the QAR will cover the following areas: weather; types of construction equipment on site; type and amount of work performed that day; pertinent information on the progress of work, delays, causes of delays, and extent of delays; instructions given to the contractor, including name of contract's representative instructed; controversial matters, including complete details of any matter that may possibly result in a claim; visitors to the project; safety violations observed and corrective measures taken; CQC phases attended and instructions given; miscellaneous remarks pertinent to the job; and comments on entries in the contractor's daily CQC reports.

(d) QAP will include all pertinent items of information on the QAR. The QAR will not repeat data incorporated on the daily CQC report unless necessary to augment or correct erroneous entries on the CQC report. The QAP will sign the QAR once it is complete.

(e) The Resident Engineer/Project Engineer or their designees are responsible for assuring that the QAR contains all pertinent items of information. To validate the accuracy and completeness of the QAR, this individual will review initial reports of any QAP and perform follow-up reviews as deemed necessary to confirm/maintain continued acceptability. The reviewer must sign reviewed reports in the CM system of record and finalize QARs as indicated in the COQAP.

(14) Consistent with ER 415-1-17, document the contractor's performance regarding quality throughout the contract and initiate the interim(s) and final performance evaluations in the designated performance reporting system.

(15) The Resident Engineer/Project Engineer or their designees will verify that construction contractor QC Managers maintain current Construction Quality Management for Contractors (commonly known as CQM-C) certificates throughout the course of each project.

d. Quality assurance for procedural specifications. In the case of certain critical earthwork and concrete dam structures, the QAP must conduct some QA testing continuously. A comprehensive QA testing program is necessary on the part of the

Government when specifications limit the contractor to prescriptive procedures, leaving the responsibility for end-product quality to the Government. Contracting officers must limit contractor responsibilities for tests to those that control the prescriptive procedures and strictly avoid any duplication of Government testing.

e. Performing acceptance inspections. After CQC completion inspections, acceptance inspections of completed construction are a Government responsibility.

Appendix A References

Section I

Required Publications

Unless otherwise indicated, Army and USACE publications are available at <https://armypubs.army.mil/> and <https://www.publications.usace.army.mil/>. USACE Acquisition Instruction (UAI) references are found in https://www.usace.army.mil/Portals/2/docs/Contracting/USACE_Aquisition_Instruction_and_Desk_Guide_26MAR2024.pdf. Federal Acquisition Regulation (FAR) publications are available at <https://www.acquisition.gov/browse/index/far>. Unified Facilities Guide Specifications (UFGS) publications are available at <https://www.wbdg.org/dod>.

DA Pam 25-403

Army Guide to Recordkeeping

EP 34-1-1

Construction Project Partnering Playbook

ER 415-1-10

Contractor Submittal Procedures

ER 415-1-11

Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews

ER 415-1-17

Construction Contractor Performance Evaluation

ER 1110-1-261

Quality Assurance of Laboratory Testing Procedures

ER 1110-1-8158

Centers of Expertise Program

FAR 46.312

Construction Contracts

FAR 46.406

Foreign Governments

FAR 52.232-5

Payments Under Fixed-Price Construction Contracts

FAR 52.236-5

Material and Workmanship

FAR 52.236-6

Superintendence by the Contractor

FAR 52.236-21

Specifications and Drawings for Construction

FAR 52.246-12

Inspection of Construction

UAI 5146

Quality Assurance

UAI 5152.236-9011

Design-Build Construction Contracts

UFGS 01 30 00

Administrative Requirements

UFGS 01 33 00

Submittals

UFGS 01 45 00

Quality Control

UFGS 01 45 35

Special Inspections

Section II**Prescribed Forms**

The following suggested USACE-derived outlines are available at:

https://usace.dps.mil/sites/TDL-CECW-EC-CMA/SitePages/Quality-Assurance-Plans_kb.aspx. The suggested review checklist is available at:

https://usace.dps.mil/sites/TDL-CECW-EC-CMA/SitePages/BCOES-Review_kb.aspx.

The USACE engineer forms are available at

<https://www.publications.usace.army.mil/USACE-Publications/Engineer-Forms/>.

Construction Organizational Quality Assurance Plan Outline**ENG Form 2538-1**

Quality Assurance Report (QAR) Daily Log of Construction – Military

ENG Form 2538-2

Quality Assurance Report (QAR) Daily Log of Construction – Civil

Plan-in-Hand Review Checklist**Project Specific Quality Assurance Plan Outline**

Glossary of Terms

Acronym	Expansion
ACO	Administrative Contracting Officer
ACWS	Army Contract Writing System
ARIMS	Army Records Information Management System
BCOES	Biddability, Constructability, Operability, Environmental and Sustainability
CM	Construction Management
CMA ²	Construction Management Administration Application
COQAP	Construction Organizational Quality Assurance Plan
COR	Contracting Officer's Representative
CQC	Contractor Quality Control
CQM-C	Construction Quality Management for Contractors
DA	Department of the Army
DCE	Design and Construction Evaluation
DFOW	Definable Feature of Work
DQC	Design Quality Control
ECIFP	Engineering Considerations and Instructions for Field Personnel
ENG	Engineer
EP	Engineer Pamphlet
ER	Engineer Regulation
FAR	Federal Acquisition Regulation
PCF	Paperless Contract File
PIEE	Procurement Integrated Enterprise Environment
PSQAP	Project-Specific Quality Assurance Plan
QA	Quality Assurance
QAP	Quality Assurance Personnel
QAR	Quality Assurance Report
QC	Quality Control
RMS	Resident Management System
RRS-A	Records Retention Schedule—Army
SPS	Standard Procurement System
U.S.	United States
UAI	USACE Acquisition Instruction
UFGS	Unified Facilities Guide Specifications
USACE	United States Army Corps of Engineers
VCE	Virtual Contracting Environment

Definitions

Contractor Quality Control

The construction contractor's system to manage, control, and document their own, their supplier's, and their subcontractor's activities to comply with contract requirements.

Definable Feature of Work

Tasks that are separate and distinct from other tasks and have separate control requirements. DFOWs are critical items addressed in both the project specific Quality Assurance Plan and the contractor's CQC plan that will be monitored with the three-phase construction inspection program. For example, DFOWs related to concrete may be formwork; reinforcing and embedded items; placement, including mix design, finish, etc.; and curing. Track all DFOWs using the USACE construction management system.

Engineering Considerations and Instructions for Field Personnel

A brief document outlining the engineering considerations used to make design decisions, including the project discussions on the intent and why specific designs and materials were selected and any features requiring special attention. The transition document from engineering to construction.

Follow-Up Phase

The continuous inspection of work in progress to confirm that work conforms to project quality requirements.

Initial Phase

The verification phase for controlling quality on a feature of work that has begun; includes a review of the minutes of the preparatory meeting, confirmation that a representative sample of work fully complies with contract requirements, establishment of acceptable level of workmanship, check on compliance with the safety plan and activity hazard analysis, and an initial phase meeting.

Preparatory Phase

The planning phase for controlling quality on an upcoming feature of work that includes a requirements review, site inspection, and preparatory meeting.

Quality

Conformance to properly developed requirements. In the case of construction contracts, the contract specifications and drawings establish the requirements.

Quality Management

All control and assurance activities instituted to achieve the quality established by the contract requirements.

Quality Assurance

The system by which the Government fulfills its responsibility to be certain the CQC functions effectively and the end product complies with the specified requirements.

Quality Assurance Personnel

Any member of the field team that performs Government QA activities, to include Construction Representatives, Project Engineers, Resident Engineers, Field Engineers, etc.

Three-Phase Control System

The core of a construction project's quality management program. This system consists of three distinctly different phases (preparatory, initial, and follow-up) carried out by the project quality management team for each DFOW to ensure work is being performed according to the contract requirements.