

CEMP-CE Regulation No. 1180-1-6	Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000	ER 1180-1-6 30 Sep 95
	Contracts CONSTRUCTION QUALITY MANAGEMENT	
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CEMP-CE
CECW-OC

DEPARTMENT OF THE ARMY
U. S. Army Corps of Engineers
Washington, D.C. 20314-1000

ER 1180-1-6

Regulation
No. 1180-1-6

30 September 1995

Contracts
CONSTRUCTION QUALITY MANAGEMENT

Supplementation to this regulation is required. USACE commanders will provide a copy of their supplement to HQUSACE, (CEMP-CE), WASH, DC 20314-1000, thru chain of command channels.

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

2. Applicability. This regulation applies to all HQUSACE/OCE elements, major subordinate commands, districts, laboratories, and field operating activities (FOA) responsible for awarding and supervising construction contracts.

3. References.

- a. FAR, part 46.312
- b. FAR, part 52.246-12
- c. ER 415-1-11

4. Definitions.

a. Quality - conformance to properly developed requirements. In the case of construction contracts, these requirements are established by the contract specifications and drawings.

b. Quality Management(QM) - is all control and assurance activities instituted to achieve the quality established by the contract requirements.

This regulation supersedes ER 1180-1-6, dated 30 June 1994.

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c. Contractor Quality Control (CQC) - is the construction contractor's system to manage, control and document his/her own, his/her supplier's, and his/her subcontractor's activities to comply with contract requirements.

d. Quality Assurance (QA) - is the system by which the government fulfills its responsibility to be certain the CQC is functioning and the specified end product is realized.

5. Policy.

a. General. 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 in order to realize this common goal. The contract documents establish the quality required in a project to be constructed. Contracting officers 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. Certain civil works structures are specified by 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.

b. Contractor Quality Control. Reference 3a establishes a requirement for CQC in construction contracts. In contracts of \$1,000,000 or more, detailed CQC will be applied and a properly edited CEGS-01440 will be included in the contract. Inclusion of detailed CQC in construction contracts under \$1,000,000 is discretionary. When construction services are obtained through an international governmental agreement, CQC will not be used unless it is specifically required by that agreement.

c. Government Quality Assurance. QA is required on all construction contracts. The extent of assurance shall be commensurate with the value and complexity of the contracts involved and the requirements of this regulation.

6. Contractor Responsibility.

a. General. Contractors shall be made responsible for all activities necessary to manage, control, and document work so as to ensure compliance with the contract plans and specifications. The contractor's responsibility includes ensuring adequate quality control services are provided for work accomplished on- and off-site by his/her organization, suppliers, subcontractors, technical laboratories and consultants. The work activities include safety, submittal management, and all other functions relating to the requirement for quality construction.

b. Staffing. It is the contractor's responsibility to carefully examine the contract requirements for CQC and provide personnel capable of complying with the CQC requirements of the contract clauses and technical provisions. The CQC staff must be of sufficient size and have the qualifications necessary to ensure contract compliance, whether work is performed by the prime contractor or by subcontractors or vendors. The CQC system manager will be an employee of the prime contractor and must report directly to the project superintendent or someone higher in the contractor's organization. The size and composition of the CQC organization may vary as the job progresses. At all times it should be compatible with the level of effort and capability required by the contract and construction schedule.

c. Quality Control Plans and Procedures. Contractors will be required to prepare a quality control plan for all projects except those excluded under the discretionary authority described in paragraph 5 of this regulation. Plans and procedures will include the features described in CEGS-01440.

7. Government Responsibilities.

a. General. Quality assurance is the process by which the government assures end product quality. The process starts well before construction and includes reviews of the plans and specifications for biddability, constructibility, operability and environmental responsibility, plan-in-hand site reviews, coordination with using agencies or local interests, establishment of performance periods and quality control requirements, field office planning, preparation of QA plans, reviews of quality control plans, enforcement of contract clauses, maintenance of quality assurance and quality control inspection and work records, and acceptance of completed construction.

b. Planning. Prior to construction, the following activities will be performed:

(1) Develop a written quality assurance organizational operating plan. This plan will be developed at the district level with input from the area/resident engineer and will address the overall QA operations of the district and field offices. It is recommended that the plan be developed in conjunction with the annual office operating budget. The plan will provide a "road map" for the QA operations for the coming year and as such should address projected workload, organization, staffing, job responsibilities, training, pre-award activities, post-award activities, testing, and documentation. In order to be an effective management tool, the plan must be kept current and adjusted for changes in workload, staffing, etc. Therefore, after initial development, the plan will be reviewed and updated as often as necessary but not less than annually. Supplements incorporating project specific requirements will be developed for all contracts by the area/resident/project office. A suggested outline for the QA plan is provided in Appendix A.

(2) Participate in pre-award activities.

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

(b) Conduct biddability, constructibility, operability and environmental reviews as required by ER 415-1-11. Input from field office required.

(c) Conduct site plan-in-hand reviews. This is a field office responsibility.

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

(3) Review field office workloads and staffing needs.

(4) Assure office and field personnel have a clear understanding of QA/CQC responsibilities. Training needs shall be identified and addressed through the appropriate combination of in-house and PROSPECT course attendance.

(5) Review the contractor's CQC plan and assure affirmative answers to the following questions as 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, 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 staff manager clear? Does this person report directly to the highest ranking contractor personnel on-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 detailed?

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

(j) Are definable features of work identified. A definable feature of work is a task which is separate and distinct from other tasks and has separate control requirements. For example, definable features for concrete would be formwork; reinforcing and imbedded items; placement including mix design, finish, etc.; and curing.

(6) Accept 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 acceptance.

c. Implementation and Enforcement. During construction the following activities will be performed by quality assurance personnel (QAP):

(1) After the preconstruction conference, the area/resident engineer or other responsible designee shall conduct a coordination meeting with the contractor on the CQC/QA program. Minutes of the meeting will be prepared for signature by both the contractor and the government representative.

(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) Spot check CQC approved submittals.

(6) Review contractor's daily quality control reports (QCR) to assure that they adequately document his/her quality control operations. If reports are not adequate, require the contractor to submit a supplementary report containing the necessary information as specified in CEGS-01440. The QAP will not alter, sign, initial or approve the QCR.

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

(8) Participate in the three-phase control process as necessary to assure 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 (i.e., roofing and waterproofing) is required. Government participant will be totally familiar with contract requirements. 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 shall be made readily accessible for quick reference throughout the life of the project.

(9) Conduct government QA tests at the job-site to assure acceptability of the completed work. A sufficient number of tests, but not less than 5 percent of the frequency of the CQC tests, should be scheduled to verify CQC test procedures and results. For test procedures for which duplicate sampling is appropriate the contractor shall be required to furnish for possible QA testing duplicate samples of test specimens of a

minimum of 20 percent of the CQC tests. A minimum of one-fourth of these duplicate samples should be tested and the results compared to the CQC test results to verify test procedures and results. The duplicate samples on which QA test are performed should not be known in advance by the contractor, so that the CQC staff will not know which of the CQC test results are subject to verification. The results of QA test performed on duplicate samples should be made available to and discussed with the contractor in order to reconcile any discrepancies. Testing duplicate samples is part of, not in addition to, the requirement to perform QA test at a minimum frequency of 5 percent of the CQC tests. QA testing and inspection should be conducted at unannounced intervals. The contracting officer's representative should verify the accuracy and calibration of equipment, assure 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 with the confidence level in the contractor's CQC system and consistency in government and contractor test results. Test reports, which should be submitted as attachments to the contractor's CQC reports, should be reviewed by government engineering, laboratory, and/or QA personnel assigned to the work depending upon the type of test.

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

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

(12) Prepare QA reports (QAR) and all other necessary QA documentation as detailed below:

(a) Quality assurance personnel 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 for some reason QAP did not visit the site on a particular day of construction, the reason for non-visit and pertinent observations as to events occurring during 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 the record (MFR), letters, and the QAR will be used to provide a formal record of contract information. Particular care will be taken to record and preserve all possible data and exhibits with respect to any matter which may become the basis for a claim.

(b) The district/division has the option to use a combined Quality Control/Quality Assurance report. As a minimum this combined form will cover the following areas: Contractor name, date, contract number, daily report number, project title and location, weather, precipitation, temperature (max. and min.), portion of the day suitable for work, contractors/subcontractors on job and area of responsibility, operating plant or equipment, work performed today, results of control activities, tests performed, equipment and materials received, job safety, verbal instructions received, remarks and a statement by the contractor's authorized representative that "The above report is complete and correct and all materials and equipment used and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above". A space will be provided on the combined report form titled "Government Quality Assurance Report". In this section the QAP will document the results of their QA inspections and tests, deficiencies observed, actions taken and corrective actions of the contractor. They should also include comments pertaining to the CQC activities.

(c) If the combined QC/QA report form is not used then the QAR reports will be prepared on ENG Forms 2538-1-R (MILITARY) or 2538-2-R (CIVIL), Inspectors Quality Assurance Report (QAR), Daily Log of Construction, as appropriate. Forms are illustrated at Appendix B. Forms will be obtained from USACE Publications Depot, 2803 52nd Avenue, Hyattsville, MD 20781. The use of electronically generated reports is authorized provided electronic issues are prepared in accordance with existing guidelines on electronic generation, i.e., data elements must be literally and sequentially the same as in the conventional issues. Further guidance on electronic generation of forms is available through the local forms management officer (FMO).

(d) All pertinent items of information will be included on the QAR. Data incorporated on the contractor quality control report will not be repeated on the QAR unless it is necessary to augment or correct erroneous entries on the QCR.

(e) The resident engineer/project engineer or their designees are responsible for assuring that the QAR contains all pertinent items of information. In order to assure 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. Those reports reviewed will be initialed.

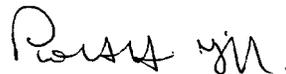
(13) The QAP will review the entries on the contractor's QCR. The QCR should contain information on the contractor's quality control operations as described above and not be burdened with other peripheral information. The QCR will be attached to or filed with the QAR, if separate report forms are used, to form a complete quality control/quality assurance report, retained until completion of the job, and then forwarded to the district office to be kept in the specific contract file.

(14) Document contractor performance throughout the contract and initiate interim and final unsatisfactory ratings where necessary.

d. QA for Procedural Specifications. Some QA testing in the case of certain critical earthwork and concrete dam structures must be conducted continuously. A comprehensive quality assurance 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 which control the prescriptive procedures and strictly avoid any duplication of government testing.

e. Performing Acceptance Inspections. Subsequent to CQC completion inspections, acceptance inspections of completed construction are a government responsibility.

FOR THE COMMANDER:



ROBERT H. GRIFFIN
Colonel, Corps of Engineers
Chief of Staff

2 Appendices
APP A - Suggested Outline
for Quality Assurance Plan
APP B - ENG FORM 2538-1-R
ENG FORM-2538-2-R

APPENDIX A

SUGGESTED OUTLINE FOR QUALITY ASSURANCE PLAN

NOTE: This outline is provided for guidance only. It is not intended to limit or restrict individual initiative in the development of QA plans. Plans will be dated.

I. Purpose and Scope

- A. Establishes QA annual operating plan
- B. Period covered (i.e., FY__)
- C. Applicability

II. Workload

- A. Contracts underway
- B. Anticipated contracts

III. Organization

- A. Description
- B. Chart

IV. Staffing

- A. Current
- B. Required (keyed to workload)

V. Responsibilities

- A. General
- B. Specific

VI. Training

- A. Needs analysis
- B. Planning

VII. Pre-Award

- A. Design review conferences
- B. Input to CQC specifications, schedule requirements, etc.
- C. BCO reviews
- D. Plan-In-Hand reviews

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APPENDIX A

VIII. Post-Award

- A. QA surveillance
 - 1. Participation in phases
 - 2. Problem solving
 - 3. Deficiency monitoring

- B. QA testing
 - 1. Policy
 - 2. Facilities
 - 3. Schedule

- C. Reporting

IX. Supplements

NOTE: Job Supplements will contain the following items as a minimum:

- A. Staffing
- B. QA surveillance responsibilities
- C. Job specific QA testing to include type and frequency
- D. Definable features of work

APPENDIX B

QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION - MILITARY (ER 1180-1-6)		THE OCR WILL BE ATTACHED TO OR FILED WITH THE QAR.	
		REPORT NUMBER	
PROJECT		DATE	
		CONTRACT NUMBER	
CONTRACTOR (Or hired labor)		WEATHER	
CQC Control phases attended and instruction given:			
Results of QA activities and tests, deficiencies observed, actions taken and corrective action of contractor. Including training to contractors CQC activities.			
<p style="text-align: center;">FOR ILLUSTRATION PURPOSES ONLY (Local reproduction authorized - blank masters available from local FMO)</p>			
VERBAL INSTRUCTION GIVEN TO CONTRACTOR (reactions and remarks)			
HAS ANYTHING DEVELOPED ON THE WORK WHICH MIGHT LEAD TO A CHANGE ORDER OR FINDING OF FACT? <input type="checkbox"/> NO <input type="checkbox"/> YES			

Information on progress of work, causes for delays and extent of delays, weather, plant, material, etc.			
Information, instructions or actions taken not covered on QCR report or disagreements:			
FOR ILLUSTRATION PURPOSES ONLY (Local reproduction authorized - blank masters available from local FMO)			
SAFETY: <i>(Include any infractions of approved safety plan, safety manual or for government personnel. Specify corrective action taken.)</i>			
REMARKS: <i>(Include visitors to project and miscellaneous remarks pertinent to work.)</i>			
QA REPRESENTATIVES SIGNATURE	DATE	SUPERVISOR'S INITIALS	DATE

QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION - CIVIL <i>(ER 1180-1-6)</i>						THE OCR WILL BE ATTACHED TO OR FILED WITH THE QAR.	
TO						REPORT NUMBER	
PROJECT						DATE	
CONTRACTOR (Or hired labor)						CONTRACT NUMBER	
PORTION OF SCHEDULED DAY SUITABLE FOR OPERATIONS						WEATHER	
STRUCTURAL EXCAVATION	BORROW EXCAVATION	EMBANKMENT	CONCRETE	STRUCTURE	MINIMUM	TEMPERATURE MAXIMUM	
%	%	%	%	%			
HAS ANYTHING DEVELOPED ON THE WORK WHICH MIGHT LEAD TO A CHANGE ORDER OR FINDING OF FACT? <input type="checkbox"/> NO <input type="checkbox"/> YES (Explain)						24 HOUR PRECIPITATION	
						INCHES	ENDING
NUMBER OF GOVERNMENT EMPLOYEES						RIVER STAGE	
SUPERVISORY	OFFICE	LAYOUT	INSPECTION	TOTAL	LABOR	FEET	TIME
NUMBER OF CONTRACTOR'S EMPLOYEES						NUMBER OF SHIFTS <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	
SUPERVISORY	SKILLED	LABORERS	TOTAL	FROM	TO	FROM	TO
				M	M	M	M
Attach list of the following: (a) Major items of equipment either idle or working, and (b) Number and classification of Note: If the contractor's Quality Control Report (QCR) contains the information it need not be repeated.							
CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:							
a. _____							
b. _____							
c. _____							
d. _____							
e. _____							
f. _____							
g. _____							
WORK PERFORMED TODAY: (Indicate location and work performed. Refer to work performed by prime and/or subcontractors by letter in Table above.)							
Days of no work and reasons for same:							
Information on progress of work, causes for delays and extent of delays, fleet, material, etc.							

FOR ILLUSTRATION PURPOSES ONLY
(Local reproduction authorized - blank masters available from local FMO)

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CQC CONTROL PHASES ATTENDED AND INSTRUCTIONS GIVEN:			
RESULTS OF QA INSPECTIONS AND TESTS, DEFICIENCIES OBSERVED, ACTIONS TAKEN AND CORRECTIVE ACTION OF CONTRACTOR. INCLUDE COMMENT PERTAINING TO CONTRACTORS CQC ACTIVITIES			
VERBAL INSTRUCTIONS GIVEN TO CONTRACTOR: <i>(include names, reactions and remarks)</i>			
CONTROVERSIAL MATTERS IN DETAIL:			
DISAGREEMENTS:			
INFORMATION, INSTRUCTIONS OR ACTIONS TAKEN NOT COVERED IN QCR			
FOR ILLUSTRATION PURPOSES ONLY <i>(Local reproduction authorized - blank masters available from local FMO)</i>			
REMARKS: <i>(include visitors to project and miscellaneous remarks pertinent to work)</i>			
SAFETY: <i>(include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective action taken.)</i>			
QA REPRESENTATIVES SIGNATURE	DATE	SUPERVISOR'S INITIALS	DATE

(Reverse of ENG Form 2538-2-R)

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