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

ER 1110-1-12
Change 2

CECW-CE

Regulation
No. 1110-1-12

31 March 2011

Engineering and Design
QUALITY MANAGEMENT

1. This change to ER 1110-1-12, dated 21 July 2006, replaces Chapter 5, 'DO' PHASE – QUALITY ASSURANCE.

2. Substitute the pages as shown below:

Chapter 5	Remove pages 5-1 to 5-3	Insert pages 5-1 to 5-4

3. This change brings ER 1110-1-12, dated 21 July 2006 into better alignment with EC 1165-2-209 Civil Works Review Policy, dated 31 January 2010. EC 1165-2-209 requires all USACE CW planning, engineering and scientific work to undergo a professional open, dynamic, and rigorous review process. This change specifically requires Architect-Engineer contract management either directly or under the direct supervision of licensed professionals in the District/Center Engineering Division.

FOR THE COMMANDER:

DIONYSIOS ANNINOS
Colonel, Corps of Engineers
Chief of Staff

CHAPTER 5

'DO' PHASE - QUALITY ASSURANCE

5-1. General. Quality Assurance (QA) is defined as that part of quality management focused on providing confidence that project quality requirements defined in the PMP will be fulfilled. QA includes those processes employed to assure that QC activities are being accomplished in accordance with planned activities and that those QC activities are effective in producing engineering and design products that meet the desired end quality. Together, the engineering and design QA/QC activities must be effective in producing engineering and design products that meet the required quality standards.

5-2. Responsibilities and Accountability for Assuring Quality of Engineering and Design Work. For engineering and design products or services being prepared by a geographic District, the District's Regional Headquarters is responsible and accountable for QA of the District's engineering and design products. For engineering and designs prepared by another District or Center, government agency, or A-E contract, the QA responsibility and accountability for engineering and design are assigned to the geographic District for which the work is being performed. The District's engineering organization shall lead QA of engineering and design products.

a. The Regional Headquarters will conduct regular QA activities for engineering and design using an audit process defined by its regional QMS. Regional leaders are responsible to verify periodically that their QA activities for engineering and design are effectively assuring the quality of all engineering and design products produced for use within their region. If a critical or persistent quality problem exists with engineering or design work performed within the Region, then the Regional Headquarters will promptly conduct on-site reviews to identify the root cause of the quality problem and take prompt actions to correct the engineering or design quality problem(s).

b. Districts or Centers will conduct all QA actions needed to produce engineering and design products that meet the required quality standards. These actions will include needed training and staffing; preparation of Quality Assurance Plans tailored for each specific project; review and approval of another District, Government agency, or A-E QCP; and disciplined, effective QA oversight.

5-3. Quality Assurance Plan (QAP) Implementation. The QAP prepared by the PDT during the planning phase will be implemented during execution of the engineering and design phase. The PDT will update the QAP as required for changing project conditions. The PDT may prepare additional QAPs for different engineering and design phases and products, depending on nature of the associated work.

5-4. Management of Technical Products. Technical Division Chiefs, Branch Chiefs, and Section Chiefs within a District's engineering organization are responsible for guiding and ensuring that all technical documents are developed to produce high quality work that meets the professional and project-specific criteria and standards. Effective management procedures, including personnel staffing, training, systems support, performance standards, and supervision of organizations and personnel, must be established to assure engineering and design products are high quality and consistent with applicable technical policies and professional practices. District managers and leaders will ensure that the PDT identifies and properly uses appropriate professional standards for legal, environmental, economic, building code, life safety, and health criteria when producing all engineering and design products. The technical chiefs and PMs are responsible for deciding how engineering and design work will be accomplished using options such as in-house capability, A-Es, design-build contracts, other Districts, or other Government agencies. Districts and Regions need to ensure that they use a mix of methods for delivery of engineering and design work to achieve a balance that supports the overall effectiveness and efficiency of USACE. Regardless of the specific method of delivery chosen for a project, the District and Region remain responsible and accountable for the quality of engineering and design aspects of their project.

5-5. A-E Selection and Management. FAR Part 36 and its supplements, as well as EP 715-1-7, will be used for the acquisition and administration of A-E services. Qualified members of the PDT will prepare a comprehensive SOW for the A-E services in accord with Project Scope and Customer Requirements Definition - PROC2010, participate in the selection of a highly qualified A-E firm, prepare an Independent Government Cost Estimate, assist in contract negotiations, coordinate and oversee the A-E contractor's performance, and perform QA of the contractor's product. Technical management of A-E contracts is an engineering function that shall be managed by licensed engineers, architects or land surveyors appointed as a contracting officer representative (COR) for the A-E contract and working in the District's/Center's engineering organization. The District/Center Chief of Engineering shall be responsible for the selection and management of A-E contract services. The Chief shall nominate a licensed professional engineer, architect or land surveyor, trained pursuant to current National Contracting Organization (NCO) policy, as a COR for an A-E contract or A-E task order. The COR is responsible for management of the A-E contract within its appointed responsibilities and authorities and ensuring that the contract requirements are satisfied. When the A-E services fulfill a requirement in support of another technical element (e.g. Construction Division), the Chief, through the Contracting Officer, may delegate this responsibility to a position requiring professional licensure in the serviced technical element. In special cases when the District Chief of Engineering determines that the A-E services do not require oversight by a licensed professional, the District Chief of Engineering may nominate an acquisition-trained, non-licensed engineer/architect as a COR. However, in all cases, the A-E services will be managed by a graduate professional under the direct supervision of a licensed professional.

5-6. In-House Design Management. Appropriate members of the PDT will prepare a comprehensive SOW in accord with Project Scope and Customer Requirements Definition - PROC2010 for the engineering and design services to be performed by the District's in-house staff. It is important that this in-house design team is staffed by properly qualified technical

members who are capable of performing engineering and design work at the needed professional standards for quality and efficiency. It is essential that USACE Districts perform the amounts and types of in-house engineering and design work sufficient to ensure needed levels of technical competency by USACE personnel.

5-7. Design Management Under Design-Build (D-B) Contracts. Appropriate members of the PDT will prepare an appropriate SOW in accord with Project Scope and Customer Requirements Definition - PROC2010 for the engineering and design phase of a District's design-build construction contract. The QA procedures appropriate for engineering and design products produced under the D-B method of delivery are specialized and must be tailored to conform to the provisions of the D-B contract and Government roles, and they must assure that the Designer of Record is taking all appropriate actions needed to assure quality engineering and design through all phases of work in accord with the D-B contract. As with other methods of delivery, USACE's customers continue to look to their District to assure the quality of all of the engineering and design services that are included in the D-B contract's scope.

5-8. Management of Design by Other Districts/Centers and Government Agencies. Appropriate members of the PDT will prepare a comprehensive SOW in accord with Project Scope and Customer Requirements Definition - PROC2010 for the engineering and design services provided by other Districts, Centers, and Government agencies, and the PDT will perform QA of the engineering and design products received. If USACE is accepting a design prepared by the customer requesting construction contract services, then the accountability for the quality of the design documents used to acquire the construction shall be clearly discussed and documented in the PMP/project files.

5-9. QA Oversight of Engineering and Design Work/Documents from Other Districts/Centers and Government Agencies. The geographic District PDT will review engineering and design documents prepared by another District or Center, Government agency, or A-E firm to verify that the appropriate technical criteria and assumptions are being used. This effort should not be an in-depth technical review, but needs to be performed to the degree necessary to satisfy the reviewer that the Government is receiving engineering and design products that substantially conform to appropriate technical criteria and will result in the Government receiving what it specifies and is paying for in any contracts for the project. If the District performing the review is not technically qualified to review specific aspects of the engineering and design work, then the District PDT will be expanded to acquire technically qualified review services from other Districts, Centers, other Government agencies, or qualified A-Es.

5-10. Typical QA Activities. Typical QA activities for engineering and design work include:

a. Review and approval of another District, Government agency, or A-E-prepared QCP.

b. Assurance that described activities of another District, Government agency, or A-E QCP have been/are being performed and that the results are being implemented effectively.

c. Verification that designers and checkers are the same technically-qualified staff identified in the QCP or a fully technically-qualified substitute--as proposed by the other District, Government agency, or A-E's SF 330 and identified in the QCP.

d. Verification that ITR reviewers of the engineering and design documents are the same technically-qualified staff as identified in the QCP or a fully technically-qualified substitute.

e. Assurance that an ITR is conducted in accord with Chapter 4, with emphasis on a determination that the ITR was appropriate to the level of risk and complexity inherent in the engineering and design aspects of the project; that the ITR verified compliance with established policies and procedures; that it utilized justified and valid assumptions; and that it reviewed methods, procedures, alternatives, and reasonableness of results, including whether the product meets customer's needs.

f. Verification that appropriate technically-qualified staff in another District, Government agency, or A-E have completed and signed the required engineering and design QC certifications.

g. Assurance that all engineering and design QA review comments have been adequately resolved in future submittals.

h. Verification that the engineering and design products received from A-Es and D-B contractors satisfy the contract's technical requirements.

i. Frequent dialog/communication with other District, Government agency, or A-E staff to assure that the project will satisfy USACE's and its customer's engineering and design requirements and avoids lost design effort.

5-11. Documentation. When another District, Government agency, or A-E develops engineering and design documents, copies of the following project documents will be kept with the project file: QAP; QCP; annotated comments in DrChecks^{sm} for QA reviews; another District, Government agency or A-E statement of technical review; and QA Certifications (refer to Appendix F).