

CHAPTER 3

'DO' PHASE - QUALITY CONTROL

3-1. General. Quality Control (QC) is that part of quality management focused on fulfilling the project quality requirements defined in the PMP. It includes those processes used to ensure performance meets agreed upon customer requirements that are consistent with law, regulations, policies, sound technical criteria, schedules, and budget. Quality control of products and services consists of a number of processes and procedures to ensure quality products are realized. Basic quality control tools include a Quality Control Plan providing for seamless review; quality checks and reviews, PDT reviews, independent technical reviews (ITR); Biddability, Constructability, Operability and Environmental (BCOE) review; and quality control certification.

3-2. Products. Districts produce a broad variety of products including, but not limited to:

- a. Civil Works Program – studies, engineering technical appendices for planning reports, design documentation reports, design analyses, and plans and specifications.
- b. Military Program – full spectrum of military planning documents, studies, programming estimates, and design documents.
- c. Environmental Program – various environmental studies, remedial investigations, and remedial designs.
- d. Controlling guidance and regulations include ER 1110-345-100 and ER 1110-345-700 for military construction. ER 1110-2-1150 and ER 1110-2-1200 provide engineering guidance for civil works projects. ER 1105-2-100 provides guidance for conducting civil works planning studies, ER 1110-1-1300 specifies cost engineering policies for all programs, and ER 1110-1-8155 governs the preparation of specifications for all programs. ER 200-2-2 provides procedures for implementing NEPA. ER 200-1-5 provides guidance for implementing the Environmental Operating Principles. The PDT must ensure that it is applying the latest USACE policy to meet a project's quality objectives.

3-3. QCP Implementation. The QCP prepared by the PDT during the planning phase will be implemented during project execution. The PDT will update the QCP as required for changing project conditions. The PDT may also prepare additional QCPs for different phases and products, depending on nature of the associated work.

3-4. Field Investigation. A thorough examination of a project site and the collection of data on existing conditions (including existing structures and other features, topographic surveys, geotechnical data, utility information, and HTRW) are essential for the development of accurate construction plans. Ideally, the PDT should obtain all field investigation data to maintain continuity of responsibility. When existing data is provided to a designer, the designer must be allowed sufficient time and effort to assess the accuracy of the data.

3-5. Project Coordination. Regular coordination among the PM; PDT members; other Districts, government agencies, and A-E contractors (if applicable); ITR members; and customer or sponsor representatives is essential for a quality project. Coordination is necessary to ensure that the PMP is being followed and the quality objectives are being achieved, and to make adjustments as needed. The coordination includes frequent in-person, telephonic, written and e-mail communications, as well as pre-design conferences, progress and design review meetings, meetings on special issues, and visits to the project site. The PM is responsible for coordination with the customer and higher authority on the scope, schedule, funding and changes, and documenting as appropriate. Project scopes will be developed in accordance with [Project Scope and Customer Requirements Definition - PROC2010](#). The PM will hold periodic meetings to discuss project issues, progress, production needs, and commitments. The appropriate management staff and technical lead should participate to offer technical guidance and direction to the team.

3-6. Quality Checks and Reviews. Quality checks and reviews are technical checks and reviews occurring during the development process. A quality check begins with the selection of qualified individuals to perform detailed review and check work. Quality checks must be carried out as routine management practice. Such review includes checking basic assumptions and calculations. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel and performed prior to ITR of the deliverable.

3-7. Project Delivery Team (PDT) Review. The PDT will normally include a variety of stakeholders, each with his/her own important project requirements and a different, but interlocking, review responsibility. All PDT members shall be knowledgeable about the critical project requirements of all their PDT counterparts, understand how their own particular project elements and work relates to and affects those requirements, and conduct their reviews to insure consistency and effective coordination across all project disciplines. The PDT review should include a comprehensive evaluation of: correct application of methods, validity of assumptions, adequacy of basic data, correctness of calculations (error free), and completeness of documentation, compliance with guidance and standards, and BCOE considerations. Also included as part of the CW PDT review is a plan-in-hand review at the end of development. Some typical reviewer roles include:

- a. Major commands personnel should put their focus on space allocation provisions and compliance with project construction cost and delivery parameters (functional).
- b. Installation—DPW and BCE—operability/maintainability personnel focus on the question – “Can the project be effectively and efficiently operated and maintained by base personnel?”
- c. Using Agency Users and Civil Works Sponsors focus on function “Does the project fulfill the intended purpose?”
- d. Special Interests Personnel (i.e., Chief of Chaplains, food service, Health Facilities Office, centers of expertise, etc.) ensure that their particular specialty is properly designed.

- e. Fire Marshall checks for compliance with locally established fire protection requirements that supplement standard fire protection criteria.
- f. Provost Marshall checks for security measures and requirements.
- g. The Project Manager reviews the project for progress in accordance with the PMP (i.e., scope, schedule, and budget commitments).
- h. Office of Counsel is responsible for legal sufficiency and identifying legal issues.

3-8. Independent Technical Review (ITR). All decision and implementation documents for a project will be subjected to an ITR. ITR procedures are addressed in Chapter 4.

3-9. Biddability, Constructability, Operability and Environmental (BCOE) Review. All implementation documents being finalized for a construction contract advertisement will be submitted to the Construction and Operations organizations for a BCOE review consistent with ER 415-1-11. Ideally BCOE reviews should occur after the ITR is complete and all ITR comments resolved.

3-10. Design Review and Checking System (DrCheckssm). DrCheckssm is a module in the ProjNetsm suite of tools developed and operated at ERDC-CERL (www.projnet.org). DrCheckssm facilitates and documents the formal review of project documents. DrCheckssm will be used by the PDT to manage all project reviews. Guidance for DrCheckssm implementation is provided in ER 1110-1-8159.

3-11. Documentation. The technical team leader will maintain a file of quality control records for the project. Documents to be stored in the project quality control file will include, but not be limited to: the QCP; annotated comments in DrCheckssm for reviews; and QC certifications.