

CHAPTER 7

'DO' PHASE - CONSTRUCTION QUALITY

7-1. General. Obtaining quality construction is a combined responsibility of the construction contractor and the Government. The Construction element and Area/Resident Offices, as applicable, plan, coordinate, and manage the Construction Quality Management Program, plan and coordinate partnering of construction contracts, manage the Resident Management System (RMS), and monitor and evaluate CMR performance. Many of these tasks are accomplished using the RMS. In accordance with ER 1180-1-6, Construction Quality Management, Construction Branch and Area/Resident Office PDT members perform quality assurance of construction products.

7-2. Engineering Support. The PDT will give priority to supporting construction contract activities, as response time is critical to ensure cost effective contract execution. The PM will ensure that the engineer support to construction is adequately resourced. An Engineering Considerations and Instructions for Field Personnel (ECIFP) document will be prepared in accordance with Appendix G, ER 1110-2-1150. Field visits by the appropriate PDT members are encouraged to verify conditions assumed during the design phase and offer technical support to the field staff relative to design intent. Needed changes to the contract documents will be formalized and initiated by field personnel with the appropriate coordination and review by the designers.

a. Engineering Considerations and Instructions for Field Personnel (ECIFP). An ECIFP is a brief document outlining the engineering considerations used to formulate and design. It should include the project discussions on why specific designs and materials were selected and any features requiring special attention. The document should provide insight and background necessary to review submittals and resolve minor construction problems without compromising design intent. ECIFP is used to transmit special design concepts, assumptions and instructions on how to construct unique design features and is the means of communication and coordination between design and construction personnel for preconstruction and preparatory meetings, submittal reviews, shop drawings, samples, certifications, and test results.

b. Contractor Submittal Requirements. [ER 415-1-10](#) provides guidance on Contractor Submittal Procedures. Submittals, which require approval, are: extensions of design, critical materials, deviations, O&M manuals, or equipment that must be compatible with the entire system. The designer prepares the Submittal Register using SpecsIntact indicating the list of submittals required and further designating submittals require Government Approval (G) by the District Office (DO) or A-E (AE). The number of G submittals should always be kept to minimum. Submittal items not designated with a G are considered as being for information only (FIO) for Army projects, which is the default classification. SpecsIntact provides a submittal data file for RMS import. All submittals are tracked in RMS. G submittals requiring DO or AE review and approval include:

(1) Critical construction features are expressed in terms of performance standards with design details responsibility of contractor.

(2) Any deviation prior to construction requires documentation per ER 1110-1-8152, Changing USACE/A-E Designs.

(3) Fire Protection Systems – refer to ER 1110-1-260.

(4) Structural Steel Connections – refer to ER 1110-345-53.

(5) HVAC Commissioning – refer to ER 1110-345-723.

(6) Pre-manufactured metal buildings and other special systems.

c. Site Visits. A schedule of visits to the construction site by design personnel should be established. Site visits are made to verify that field conditions match those envisioned during project design and to discuss any issues concerning construction with appropriate field personnel. Guidance for construction site visits by design personnel is in ER 1110-2-112.

d. Design Modifications. Engineering will review all construction changes that have a significant impact on design, including VECP, waivers and system changes, to ensure that design intent, safety, health and environment requirements are not compromised. Modifications will be reviewed for design deficiencies that may require changes in design criteria.

7-3. Operation and Maintenance (O&M) Plans, Manuals and Training. A major component of the user's overall impression of the quality of the facility received is its operability. An O&M manual is a comprehensive plan for properly operating and maintaining a facility. Onsite training of base/sponsor O&M personnel may also be included to shorten the learning curve and provide familiarization of complex systems as the new facility comes on line. ER 1110-345-723, Systems Commissioning Procedures, provides requirements for MILCON projects. At the pre-design conference, the need for an O&M plan or systems commissioning should be discussed on projects such as: power plants; water treatment plants; sewage treatment plants; mechanical equipment and electrical systems; medical facilities; and Air Force projects. Preparation of the O&M manuals and training should be included as an option in an associated A-E contract. The Corps' project engineer/architect has the responsibility to exercise this option at the proper time during the final stages of design. The A-E must also ensure the plan and manuals are properly prepared and completed in the timeframe specified in the A-E contract. The Corps' project engineer/architect must coordinate with construction representatives to determine the optimum time to exercise this option. The A-E must also, to some extent, help facilitate the flow of data from the contractor to the A-E and help coordinate training dates with personnel to be trained. For in-house designs, normally the contractor is tasked with preparing the Systems Commissioning Plan, related manuals and conducting training.

7-4. As-Built Drawings. The Construction contractor generally prepares final as-built drawings in the specified electronic format. As-built drawings should be included on the submittal register as necessary to incorporate extensions of design by the construction contractor. Engineering provides QA review of working as-built drawings and approves the final drawings.

7-5. Resident Management System (RMS). The Government module of RMS is the automated construction management/quality assurance information system that shall be used for monitoring and administration of all construction contracts. The Contractor uses the Government furnished Quality Control System (QCS) module of RMS to record, maintain, and submit various information throughout the contract period. Unified Facilities Guide Specification (UFGS) Section, Quality Control System (QCS), is the guide specification that covers the requirements of the QCS for contract monitoring and administration. QCS is not required for small, simple, short duration construction contracts or for contracts where its use would not be beneficial overall. The joint Government-Contractor use of RMS and QCS facilitates construction planning, contract administration, quality assurance, payments, correspondence, submittal management, safety and accident administration, modification processing, and management reporting. QCS is included in the construction solicitation, when needed.

7-6. Transfer and Warranties. Transfer and warranties will be conducted in accordance with [ER 415-345-38](#). The UFGS Section, Closeout Submittals, outlines several additional items, which should be considered for inclusion in the contract documents.