

Approach

Keithline Engineering's approach to Quality Control is to have a Quality Control Plan that encompasses all aspects of a project's life cycle, from conception to start up and ensures that customer expectations are clearly understood and executed. KE believes it is critical to establish milestone check points throughout the project to assure that **we deliver a quality project that addresses the original purpose and need identified by the customer, is delivered on time and within budget, and exceeds expectations.** Each plan is developed specifically for the particular project at hand and is driven by the design requirements and extends as required to include manufacturing and construction phases of the project. KE utilizes quality control planning in all phases of a project including assessment, conceptual planning, engineering and design, fabrication (if required), material procurement, delivery and inventory control, construction sequencing, construction and project management, safety, inspection & start up. KE Quality Control Managers are USACE CQM (Construction Quality Management) 784 certified. All projects are peer reviewed to assure that designs and specifications meet applicable standards, and requirements.

Assessment

Quality control starts in the assessment phase during which it is critical that a **thorough understanding of project purpose, need and available budget** via an extensive review of project requirements with our customer. Project purpose, goals, requirements and budget are reviewed and understood, plans and specifications are identified, and site conditions are evaluated both above and below the ground or water.

Conceptual

Primary and alternative solutions are identified in the conceptual / preliminary design phase. Quality control planning consists of **identifying solutions** which will meet the client's goal of a successfully designed and implement project that comes in on time and within the budget constraints. Conceptual designs and alternatives are presented to the client to confirm that it meets expectations, is functional and within budget.

Engineering and Design

In the engineering and design phase quality control consists of **ensuring that design meets the specifications as mutually agreed upon in joint conceptual and preliminary customer meetings.** KE utilizes peer review procedures to ensure design accuracy and quality with project specific checklists that verify connectivity to specific codes, regulations, standards and permits. Both construction and operational sequence are identified and included in the plans and specifications.

Construction

KE utilizes a three phase quality control system that includes preparatory, initial and follow-up which are the core of the Construction Quality Management System to be implemented during construction. The goal is to ensure that the **final installation is in compliance with the requirements** set forth in the original engineered plans and specifications. Safety, coordination, schedules, engineering/environmental construction documents, detail submittal reviews and approvals, procurement of approved materials per requirements, fabrication, travel and delivery logistics, site logistics, installation sequence with operations of the facility, calibration, startup and payment processing are all included to provide for timely, accurate and efficient management of the project activities.

Inspection

Utilizing the 3 phase quality control systems ensures that **proactive prevention is taken to minimize any rework activity rather than reactive inspections.** Preparatory, initial and follow-up meeting are held throughout the process with daily CQM – Construction Quality Management reports, feedback and status of any corrective actions required. Effective team communications are essential both internally and with customer stakeholders and assigned Quality Assurance personnel.

One Goal: Deliver a quality project, on time and within budget that exceeds expectations.