

Chapter 6. Quality Assurance

When a quality assurance or quality control program is required by a specification or code, the plan outlined in this chapter, or a plan meeting the specification or code requirements, may be instituted.

Quality assurance (QA) is the planning and organizing of a system or program to maintain a required level of quality or reliability. This includes auditing the system's operation and related controls to assure that they are being executed properly and functioning as expected. Quality control (QC), as part of quality assurance, implements the latter by examining physical characteristics and comparing them to established and acceptable standards, specifications, drawings, and codes as stated in the quality assurance program or plan.

General

Prior to the start of procurement, the quality assurance department should have a definition of the inspection criteria for the project, the magnitude of the inspection work for each class of material and equipment, and the extent of the inspection work to be performed by the department, which reviews all specifications and drawings for those factors affecting quality. Procedures should be established for the conduct of the quality assurance program and the

subsequent implementation of these procedures by quality control.

Quality control inspectors should determine the accuracy, completeness, and acceptability of materials and workmanship at the manufacturer's, vendor's, or subvendor's plant and at the project site. Their inspection should be made in accordance with written procedures designed to assure that the work meets applicable specifications. The frequency and depth of inspection are determined by contract requirements. The vendor or contractor's quality control program should be reviewed; the results of this review establish the depth and frequency of inspection for each vendor or contractor.

A quality control program may be implemented as a separate program; i.e., without a quality assurance program. In this event, quality control specifications and procedures should be written for the inspection criteria for the project.

Organization Requirements

Administration of the quality program is vested in a responsible element of the organization with direct access to management. The organization should be staffed with competent technical personnel qualified to make decisions with regard to compliance with specifications and procedures.

26 / WELDING INSPECTION

Procedures

Quality assurance and quality control perform nondestructive testing and destructive testing in accordance with current established procedures.

Welding Procedures and Qualification Records

Welding procedures should be reviewed prior to use to ensure that the procedures meet the specification requirements. Audits should be performed during production to ascertain that the correct procedures are being implemented. Welder performance records should be audited periodically to determine that welders are properly qualified to procedures being used for fabrication. If required by specifications, permanent identification or records of welders should be maintained. It should be noted that a decision to inspect only after welding is complete is not the best way to ensure quality.

Program

When required by code or client specifications, the following are representative areas that may be included in the quality assurance program.

Control of Purchased Material: QA should maintain an approved list of those vendors who comply with the specified QA and QC program for the project. This list should be maintained in conjunction with procurement to ensure ven-

dors are selected who have an approved quality control program. In the event a quality assurance program is not being used, the quality control program should encompass the qualifications of vendors.

Identification and Control of Material: The quality assurance procedures should specify the performance of surveillance checks and audits and provide record retention to assure that identification and control of items are in accordance with the QA procedures.

Document Control: Document control of project documents relating to engineering, procurement, and construction should be maintained in a related document control center. The primary responsibilities of the DCC are the receipt, reproduction, distribution, storage, and retrieval of contract documents.

Nonconforming Materials or Items: The quality assurance program should establish detailed written procedures that describe the controls used for the identification, documentation, segregation, and disposition of nonconformance items, material deficiencies, and procedural requirements. Individuals having the responsibility and authority to approve the disposition of nonconforming items or deficiencies should be identified in the procedures.

Audits: A system should be established in QA and QC procedures for internal and external audits. The audit procedures should include the requirements for training and qualifying auditors, the planning and scheduling of audits, preparation of audit reports, and resolution of audit results.