
USACE / CESAJ

DEPARTMENT OF THE ARMY CESAJ 01 45 04 (Apr 2006)
U.S. ARMY CORPS OF ENGINEERS

JACKSONVILLE DISTRICT LOCAL MASTER GUIDE SPECIFICATION

SECTION 01 45 04

CONTRACTOR QUALITY CONTROL
11/08

NOTE: This guide specification covers requirements for Contractor Quality Control and is to be used by in-house and A/Es for construction projects or design-build construction projects. DO NOT USE FOR DREDGING/SHORE PROTECTION/BEACH EROSION CONTROL PROJECTS.

Comments and suggestions are welcome. Using e-mail for feedback is encouraged. Comments should be directed to:

Engineering Division, Design Branch, Specifications Section.

-- or --

Construction-Operations Division, Construction, Quality Assurance Section POC Mr. Bruce Pastorini
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(bruce.b.pastorini@saj02.usace.army.mil).

PART 1 GENERAL

1.1 QUALITY CONTROL SYSTEM (QCS)

Contractor shall use Government-furnished "Quality Control System (QCS)" software. There is no separate payment for using QCS. Include all costs in pricing work. Download Quality Control System software, user manual, and updates from web site <http://www.rmssupport.com>. Software and hardware requirements and download instructions are indicated in the QCS Manual on this web site. Upon download, provide "QCS Site ID" number to Contracting Officer (Area Office RMS Administrator). QCS is used to share information with the Government in the following areas:

- Administration
- Quality Control
- Import/Export of Data

QCS/RMS data file imports and exports are how all payments, schedule changes, transmittal tracking, submittal review, quality control reporting, requests for information (RFI) and punch list items are processed.

1.1.1 QCS Forms and Signatures

QCS generates electronic forms and reports. For ease and speed of communications, both Government and Contractor will, exchange these documents in electronic format. Provide signed and dated paper copies of transmittals, pay requests and other contract records when directed. Signed paper documents will govern, when there is a conflict with electronic version.

1.1.2 QCS Software

QCS is Windows-based application that can be run stand-alone or be networked. At Notice Of Award, download QCS software from website. See download tutorial at <http://www.rmssupport.com>. Download QCS updates when notified. Download "power user" default user name is "SYSDBA" and password is "masterkey".

1.1.3 Help Support

Contractor should contact following help phone numbers for assistance.

Step 1 - Call your Area Office RMS Administrator:

Area Office RMS Administrators:

- North Florida - 904-232-3818
- Gulf Coast - 813-840-0824
- South Florida - 561-472-3533
- San Juan - 787-707-6165 x3008

Step 2 - Call RMS Help Desk 760-247-0217

1.1.4 Contract Database

Prior to pre-construction conference, Contracting Officer will provide Contractor with an initial RMS export file RMS_K3_____QCS.rxf. This will appear as "full export" file for Contractor to "add" and create a QCS contract file. Contracting Officer will provide "QA Data" export updates to Contractor on a regular basis. In order to correctly link QCS data and schedule Contractor must first build "Features" and "Subcontractor" and then use these to link Pay Activities. Within 14 days after receiving the initial RMS export, fill in data for Administrations; Prime Contractor, Subcontractors, Pay Activities, Activity Schedule, Features Schedule, and export it to Contracting Officer.

1.1.4.1 Schedule Standard Data Exchange

Currently only Primavera P3 Project Planner allows direct import of computer schedules into QCS. Primavera will provide a utility called P3SDEF that will convert a P3 file export SDEF.txt file. An SDEF.txt file directly imports P3 schedule into QCS. Required Primavera P3 Activity Code Structure is as follows:

Field #	Code	Length	Field Description
1	WRKP	3	Workers per day
2	RESP	4	Responsibility
3	AREA	4	Area
4	MODF	6	Modification or Claim #
5	BIDI	6	Bid Item

6	PHAS	2	Phase
7	CATW	1	Catagory of Work
8	FOW1	10	Feature of Work (Segment 1)
9	FOW2	10	Feature of Work (Segment 2)
10	FOW3	10	Feature of Work (Segment 3)

1.1.5 Database Maintenance

Establish, maintain, and update contract data for duration of contract. Update QCS database each workday. Ensure sufficient resources are available to maintain QCS database, and to provide regular database updates. QCS shall be an integral part of the Contractor's management of quality control. At least monthly, generate and submit an export file to Government with schedule update and progress payment request.

1.2 DEFINITIONS

1.2.1 Contractor's Representative (Site Superintendent or Project Manager)

Highest level manager located onsite and responsible for site construction and related activities, including quality, safety, environmental protection and production.

1.2.2 Definable Features of Work

Construction task separate and distinct from other tasks and having separate control requirements. A definable feature of work may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. An example for Concrete would be: formwork, placement, finish, curing.

1.2.3 Quality Control System Manager

A person assigned duties to manage Contractor's Quality Control (CQC) system. CQC System Manager shall have written delegated authority sufficient to stop non-conforming work.

1.2.4 Quality Control Staff

Persons assigned CQC functions and performing quality control activities. CQC Staff members may be employees of Contractor, subcontractors, testing laboratories, product representatives; however, CQC Staff are working under direction of CQC System Manger.

1.2.5 Safety Officer

Person assigned responsibility for site safety management.

1.3 REFERENCES

NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest change to this guide specification. During the reference reconciliation process, SPECSINTACT will automatically remove references from this paragraph that have been removed from the text. THEREFORE, IT IS NOT NECESSARY TO EDIT THIS PARAGRAPH, IT IS DONE

AUTOMATICALLY.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM C 1077 (2002) Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
- ASTM D 3666 (2001) Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
- ASTM D 3740 (2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- ASTM E 329 (2000b) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

U.S. ARMY CORPS OF ENGINEERS (USACE)

- ER 1110-1-12 (1993) Quality Management
- ER 1110-1-261 (1999) Quality Assurance of Laboratory Testing Procedures
- ER 1110-1-263 (1998) Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities
- ER 1180-1-6 (1995) Construction Quality Management

Corps of Engineers publications Internet location site is:
<http://www.usace.army.mil/inet/usace-docs/>.

1.4 SUBMITTALS

NOTE: Refer to Section 01330 SUBMITTAL PROCEDURES for Government office identifier designations. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submittals shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Laboratory Qualifications; G|RO

Submit laboratory qualifications as specified in subparagraph "Testing Laboratories" below.

Contractor Quality Control (CQC) Plan; G|RO

NOTE: Delete CQC Plan submittal item for small, simple, short duration projects; i.e., under \$500,000 and under 180 days. Contracting Officer will request a proposed CQC Plan to be reviewed jointly at Coordination Meeting specified in Section 01310 ADMINISTRATIVE PROCEDURES.

Contractor's plan describing proposed Quality Control System including organization and procedures to plan and execute quality control activities.

Letter of Authority

Letter to CQC System Manager signed by an authorized Contractor official which describes responsibilities and delegates sufficient authorities to perform functions of the CQC System Manager, including authority to stop work not in compliance with contract.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 GENERAL

NOTE: Select appropriate reference; first bracket to be used for construction projects; second bracket to be used for design-build construction projects.

Contractor is responsible to plan and execute quality control in accordance with ER 1180-1-6. Establish and maintain an effective quality control system in compliance with the Clause INSPECTION OF CONSTRUCTION of Section 00700 CONTRACT CLAUSES in Volume 1. Quality control system consists of plans, procedures, and organization necessary to produce a quality end product that complies with contract. Quality control system shall cover all [construction] [design and construction] operations, both onsite and offsite activities, and be keyed to definable features of work, construction sequence and schedule. Project Manager/Superintendent is responsible for quality of work and is subject to removal by Contracting Officer for non-compliance with contract quality requirements. Project Manager/Superintendent shall be onsite at all times, except as otherwise approved by the Contracting Officer.

3.2 CONTRACTOR QUALITY CONTROL (CQC) PLAN

NOTE: Use the following paragraph for small,

simple, short duration projects; i.e., under \$500,000 and under 180 days. For these projects, Contracting Officer will review Contractor's CQC Plan at Coordination Meeting specified in Section 01310 ADMINISTRATIVE PROCEDURES.

Upon receiving Notice of Award, prepare a CQC Plan specific to project organization, site, and features of work. Describe proposed procedures to implement requirements of Clause INSPECTION OF CONSTRUCTION of Section 00700 CONTRACT CLAUSES in Volume 1. After a Preconstruction Conference, Contracting Officer will schedule a Coordination Meeting (see paragraph COORDINATION MEETING below). Contractor's CQC Plan will be discussed in detail by onsite personnel from Contractor and Contracting Officer. Contracting Officer may accept an "interim CQC Plan" under a "conditional acceptance" for first 30 days of operation when CQC Plan first applicable definable features of work are acceptable. Contractor shall furnish, not later than 30 calendar days after commencement of work, an acceptable overall CQC Plan.

3.2.1 General

NOTE: Select appropriate reference.

Use 20 days after NOA as default time unless there is a longer mobilization period allowed.

Use 30 days under an "interim plan" as default. When initial construction definable features of work are longer duration, consider allowing 45 - 60 day "interim plan".

ALSO, SELECT APPROPRIATE REFERENCE IN SIXTH SENTENCE BELOW; FIRST BRACKET TO BE USED FOR CONSTRUCTION PROJECTS; SECOND BRACKET TO BE USED FOR DESIGN-BUILD CONSTRUCTION PROJECT.

Within [20] [] calendar days after Notice of Award, submit a written CQC Plan for review and acceptance by Contracting Officer. CQC Plan submittal will be reviewed by Contracting Officer and discussed in detail at the Coordination Meeting. See paragraph COORDINATION MEETING below. Fully describe proposed procedures to implement requirements of Clause INSPECTION OF CONSTRUCTION of Section 00700 CONTRACT CLAUSES in Volume 1. CQC Plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. Contracting Officer may accept an "interim CQC Plan" under a "conditional acceptance" for first [30] [] calendar days of operation when [construction] [design and construction] quality control planning for first definable features of work are acceptable. Contractor shall furnish, not later than [30] [] calendar days after commencement of work, an acceptable overall CQC Plan.

3.2.1.1 CQC Plan Resubmittal

No construction will be allowed to start until an "interim CQC Plan" is "conditionally accepted". When an "interim CQC Plan" is "conditionally accepted", revise and resubmit overall project CQC Plan for Contracting Officer's acceptance. When Contractor is working under an "interim CQC

Plan", until Contractor submits an acceptable final CQC Plan, Contracting Officer will retain funds from progress payments in accordance with Clause PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS of Section 00700 CONTRACT CLAUSES in Volume 1. When no acceptable CQC Plan is resubmitted within a reasonable time, as determined by Contracting Officer, Contracting Officer may order Contractor to stop work until such time as a CQC Plan is accepted. Such a directed stop work order shall not be considered a suspension of work under Clause SUSPENSION OF WORK of Section 00700 CONTRACT CLAUSES in Volume 1. No pay or construction period adjustments will be allowed as a result of a directed stop work order based on Contractor inability to plan quality control in a manner acceptable to Contracting Officer.

3.2.1.2 Failure

Failure to comply with above requirements within time prescribed will be considered a condition endangering contract performance and may be considered grounds for termination of contract in accordance with Clause DEFAULT (FIXED-PRICE CONSTRUCTION) of Section 00700 CONTRACT CLAUSES in Volume 1.

3.2.2 Content of CQC Plan

NOTE: Select appropriate reference; first bracket to be used for construction projects; second bracket to be used for design-build construction projects.

CQC Plan shall cover all [construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:] [design and construction operations, both onsite and offsite, including work by subcontractors, designers of record, consultants, architect engineers (A/E), fabricators, suppliers, and purchasing agents:]

a. Describe Quality Control Organization: Include an Organization Chart with lines of authority and reporting. CQC Staff shall include a CQC System Manager who shall perform his duties in tandem with those of Project Manager/Site Superintendent. For CQC matters, CQC System Manager shall directly report to Contractor other than Project Manager/Site Superintendent. [Project Manager/Site Superintendent may also be CQC System Manager.]

NOTE: For above subparagraph, Project Manager/Site Superintendent may have dual roles as CQC System Manager for small, simple jobs. DELETE BRACKETED INFORMATION IF NOT APPLICABLE.

b. Definable Features of Work: Although each section of specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. A definable feature of work list will be agreed upon during the Coordination Meeting.

c. CQC Staff Qualifications: Names, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function. If included, see paragraph LIMITATIONS ON

SUBSTITUTIONS FOR CERTAIN POSITIONS AND/OR SUBCONTRACTORS of Section 00800 SPECIAL REQUIREMENTS in Volume 1.

d. Letter of Authority: Copy of Letter of Authority to CQC System Manager. CQC System Manager shall issue letters of direction to other quality control staff describing duties, authorities, and responsibilities.

e. Submittal Control: Procedures for scheduling, reviewing, certifying, and managing submittals, including submittal items from [subcontractors, offsite fabricators, suppliers, and purchasing agents.] [subcontractors, designers of record, consultants, architect engineers (A/E), offsite fabricators, suppliers, and purchasing agents.] Procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

NOTE: For above subparagraph, select appropriate reference; first bracket to be used for construction projects; second bracket to be used for design-build construction projects.

f. Testing: Control, verification, and acceptance testing procedures. Provide a list of specific tests. Provide information including test type or testing standard, specification paragraph requiring test, feature of work being tested, test frequency, and identify who (i.e., Contractor, subcontractor, Testing Laboratory) is responsible for each test. (Laboratory facilities must be approved by the Contracting Officer.)

g. Three-Phase Control: Procedures to implement three-phase quality control system. Procedures to plan and document preparatory, initial, and follow-up control phases.

h. Deficiency Tracking: Procedures for tracking [construction] [design and construction] deficiencies from identification through acceptable corrective action. Establish procedures that verify deficiencies have been corrected and document correction.

NOTE: For above subparagraph, select appropriate reference; first bracket to be used for construction projects; second bracket to be used for design-build construction projects.

i. Reports and Forms: Reporting procedures, including proposed reporting formats and sample forms.

3.2.3 Additional Requirements for Design Quality Control (DQC) Plan

NOTE: This paragraph applies only to design-build construction projects; delete if not applicable.

The following additional requirements apply to the Design Quality Control (DQC) Plan:

(1) The Contractor's QCP Plan shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design-build contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, all documents shall be technically reviewed by competent, independent reviewers identified in the DQC Plan. The same element that produced the product shall not perform the Independent Technical Review (ITR). In addition, the DQC Plan shall incorporate the Lessons Learned Databases provided by the Contracting Officer. The Contractor shall correct errors and deficiencies in the design documents prior to submitting them to the Contracting Officer.

(2) The Contractor shall include the design schedule in the master project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This should be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. The schedule shall include review and correction periods associated with each item. This should be a forward planning as well as a project monitoring tool. The schedule reflects calendar days and not dates for each activity. If the schedule is changed, the Contractor shall submit a revised schedule reflecting the change within 7 calendar days. The Contractor shall include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. These completed checklists shall be submitted at each design phase as part of the project documentation. Example checklists can be found in ER 1110-1-12.

(3) The DQC Plan shall be implemented by an Design Quality Control Manager who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated. This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. The Contractor shall notify the Contracting Officer, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

The Contracting Officer will notify the Contractor in writing of the acceptance of the DQC Plan. After acceptance, any changes proposed by the Contractor are subject to the acceptance of the Contracting Officer.

3.2.4 Acceptance of Plan

NOTE: Select appropriate reference; first bracket to be used for construction projects; second bracket to be used for design-build construction projects.

"Conditional acceptance" of a Contractor's "interim CQC Plan" is required prior to start of [construction.] [design and construction.] Within a specified period after commencement of work, Contractor's overall CQC Plan requires Contracting Officer's acceptance or work is subject to a stop work

directive. Contracting Officer's acceptance is conditional and is contingent on satisfactory performance during the construction [design and construction]. Contracting Officer reserves the right to require Contractor to make changes in his CQC Plan and construction operations, including removal of personnel, in order to obtain required contract quality.

3.2.5 Notification of Changes

Notify Contracting Officer in writing a minimum of 7 calendar days prior to new proposed personnel or CQC Plan procedure changes. Proposed changes are subject to Contracting Officer acceptance.

3.3 COORDINATION MEETING

NOTE: Select appropriate reference; first bracket to be used for construction projects; second bracket to be used for design-build construction projects.

Refer to Section 01 30 00 ADMINISTRATIVE PROCEDURES. Contracting Officer will schedule a Coordination Meeting where Contractor, CQC Staff, and Contracting Officer will develop a mutual understanding of Contractor's CQC Plan with Contracting Officer's Quality Assurance. CQC Plan will be discussed in detail, including forms for recording CQC [operations,] [operations, design activities,] control activities, testing, administration of the system for both onsite and offsite work. Contractor's quality control both onsite and offsite, safety and environmental protection and supervision by Quality Control personnel will be discussed. Meeting minutes will be prepared by Contracting Officer and signed by both parties. Minutes will become part of contract files. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings or address deficiencies in CQC system or procedures requiring corrective action.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 General

NOTE: Select appropriate reference; first bracket to be used for construction projects; second bracket to be used for design-build construction projects.

CQC Organization shall have a [CQC System Manager] [CQC System Manager, a Design Quality Manager,] and sufficient number of additional qualified personnel to ensure contract quality control for workmanship and materials, including safety and environmental protection compliance. Designate a Safety Officer who shall serve as a member of CQC Staff. Personnel identified in other contract sections as requiring specialized skills to assure work is performed properly shall also be included as part of CQC Organization. Contractor's CQC Staff shall be present onsite during work and shall have authority and responsibility to ensure contract compliance. CQC Staff shall be subject to acceptance by Contracting Officer. Provide office space, filing systems and other resources as necessary to maintain an effective and functional CQC Organization. Complete records of letters, transmitted submittal items, shop drawings, progress schedules, changes to

contract drawings, test results, and other project documentation shall be given promptly furnished to CQC Organization by Contractor. CQC Organization shall be responsible to maintain these documents and records onsite, unless otherwise approved by Contracting Officer.

3.4.2 CQC System Manager

NOTE: The Lead Designer must evaluate the project to determine minimum level of CQC requirements and select options accordingly. Specify minimum needed qualifications. For most Jacksonville District jobs, practical experience in type of work is more important than academic credentials.

Require graduate and registered persons for complex or difficult construction or for specialized type jobs. FDOT requires a Professional Surveyor and Mapper (PSM) to perform post-construction survey in ROW on State road system.

Select appropriate reference.

Appoint a CQC System Manager, an individual employed by Contractor, within onsite organization who shall be responsible for CQC management. CQC System Manager shall have authority to act in all CQC matters for Contractor. CQC System Manager shall be [an experienced construction person with a minimum of [5] [8] [] years in related work.] [a graduate engineer, graduate architect, or graduate of a college level construction management course of study, with a minimum of [3] [] years construction experience on construction similar to this contract.] In the CQC Plan identify an alternate for CQC System Manager to manage CQC during CQC System Manager's absences. Designated alternate shall be a construction person with a minimum three years experience on similar projects and shall meet CQM-C Training requirement below. CQC System Manager or designated alternate shall be onsite during construction. CQC System Manager shall be [assigned no other duties.] [assigned as CQC System Manager but may have duty as Site Superintendent in addition to quality control.]

3.4.3 CQC Personnel

NOTE: Lead Engineer/Specifier must evaluate project and determine when specific personnel are necessary to provide the required level of CQC or meet regulatory requirements.

Use first bracketed paragraph below for earthwork and simple projects.

Use second bracketed paragraph below for complex construction and select from Matrix for specialty CQC Staff as required. Keep in mind additional costs for more registered professionals and more experienced staff, specify "minimum need".

ALSO, IN "EXPERIENCE MATRIX" TABLE BELOW, DELETE REQUIREMENT FOR "DESIGN QUALITY CONTROL MANAGER";

**REQUIREMENT APPLICABLE ONLY TO DESIGN-BUILD
CONSTRUCTION PROJECTS.**

[In addition to CQC personnel specified elsewhere in contract, Contractor shall provide as part of CQC Organization specialized personnel to assist CQC System Manager. CQC Staff shall be under direction of CQC System Manager to perform CQC activities. CQC Staff must be of sufficient size to ensure adequate CQC coverage of work phases, work shifts, and work crews involved in construction. Personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned CQC responsibilities. CQC personnel shall be allowed sufficient time to carry out CQC responsibilities. CQC Plan shall describe duties and responsibilities of CQC Staff positions.]

[In addition to CQC personnel specified elsewhere in contract, Contractor shall provide as part of CQC Organization specialized personnel to assist CQC System Manager for the following areas: Safety, including confined space; [electrical;] [mechanical;] [civil;] [structural;] [hazardous materials, including lead paint or asbestos abatement site competent persons;] [environmental;] [architectural;] [materials technician;] [submittals clerk;] []. Individuals may be employees of Contractor, Supplier Product Representative or subcontractor employee as needed; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility; have necessary education and experience in accordance with experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the CQC Plan.

Experience Matrix

Area	Qualifications
a. Surveyor	Persons with 3 yrs survey experience currently working under direct supervision of Professional Surveyor and Mapper (PSM).
b. Civil	Graduate Civil Engineer with 2 yrs related experience or person with 5 yrs related experience.
c. Mechanical	Graduate Mechanical Engineer with 2 yrs experience or person with 5 yrs related experience.
d. Electrical	Graduate Electrical Engineer with 2 yrs related experience or person with 5 yrs related experience.
e. Structural	Graduate Structural Engineer with 2 yrs experience or person with 5 yrs related experience.

- f. Architectural Graduate Architect with 2 yrs experience or person with 5 yrs related experience.
- g. Environmental Graduate Environmental Engineer with 2 yrs experience.
- h. Submittals Submittal Clerk with 1 yr experience.
- i. Concrete, Pavements and Soils Materials Technician with 2 yrs experience for the appropriate area.
- j. Testing, Adjusting and Balancing (TAB) Personnel Specialist must be a member of AABC or an experienced technician of the firm certified by the NEBB.
- k. Design Quality Control Manager Registered Architect or Professional Engineer.]

3.4.4 CQM-C Training Requirement

CQC System Manager and alternate shall have completed U.S. Army Corps of Engineers (COE) course "Construction Quality Management For Contractors" within the previous 5 years. A completion certificate from any Corps District or Naval Facilities Command is acceptable. In event proposed CQC System Manager has not completed CQM-C training, Contractor shall take this course within 60 days after Notice of Award. CQM-C is periodically offered by Jacksonville District. Information regarding course can be obtained from the following web site:
<http://www.saj.usace.army.mil/Divisions/Construction> or by contacting Chief, Quality Assurance Section at 904-232-1128.

3.4.5 [Professional Surveyor and Mapper (PSM)] [Registered Land Surveyor (RLS)]

NOTE: BASED ON CONTEXT OF PARAGRAPH, EDIT PARAGRAPH TITLE ACCORDINGLY.

Lead/Engineer/Project Manager need to provide guidance to specifier. Hiring professional survey services can add excessive contract expense for small and/or simple construction jobs.

Renovations, rehabs, most Civil Works earthwork, simple buildings in rural areas do not require professional survey for layout; most Contractors can do the layout. PSM stamp is required by FDOT for layout and as-built survey State road system ROWs.

Require direct supervision of licensed surveyor for building layout where property lines are tight, floor plan is complex and interior equipment

requires precision (i.e., pump stations).

DELETE IF NOT APPLICABLE.

Contract requires survey quality control performed by [PSM registered in State of Florida.] [RLS registered in Commonwealth of Puerto Rico.] This person shall directly supervise layout and post-construction survey. [PMS] [RLS] shall stamp field notes, computations, and other records relating to surveys and layout of work.

3.4.6 Organizational Changes

When CQC Staff changes are needed, revise CQC Organization Chart in CQC Plan to reflect changes and submit changes to Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

NOTE: Deleted bracketed sentence in its entirety if not applicable OR edit accordingly.

Submittals shall be prepared and transmitted as specified in Section 01 33 00 SUBMITTAL PROCEDURES. CQC Organization shall certify submittals comply with contract requirements. Items delivered to Contracting Officer shall be controlled, packaged, transported and stored in a manner to prevent damage or loss. Deliverables including quality control documentation, invoices, correspondence shall be controlled to prevent loss or delays. [When Sections 23 09 33 HEATING, VENTILATING AND AIR CONDITIONING (HVAC) CONTROL SYSTEMS; 23 09 23 DIRECT DIGITAL CONTROL FOR HVAC; 23 05 93 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS; or, 23 08 00 COMMISSIONING OF HVAC SYSTEMS are included in the contract, the submittals required by those Sections shall be coordinated with Section 01 33 00 SUBMITTAL PROCEDURES to ensure adequate time is allowed for each type of submittal required.]

3.6 CONTROL

Contractor Quality Control is the means by which Contractor ensures construction, including that of subcontractors and suppliers, complies with contract. Conduct Preparatory Phase and Initial Phase meetings for each definable feature of work. (Refer to Section 01 30 00 ADMINISTRATIVE PROCEDURES.) At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

Preparatory Phase shall be performed prior to beginning work on each definable feature of work. Notify Contracting Officer at least 24 hours in advance of beginning preparatory control phase. Ensure proposed plans, activity hazard analyses, permits and submittals, are approved and copies are onsite. Conduct a Preparatory Phase meeting headed by CQC System Manager and attended by Superintendent, other CQC personnel, and foremen responsible for supervising workmanship for definable feature of work. Document Preparatory Phase actions using "Preparatory Phase Checklist" and meeting minutes prepared by CQC System Manager. Sample Preparatory Phase

Checklist is on any of the web sites indicated at the end of this Section. Attach checklist and minutes to Contractor's Quality Control (CQC) Report (sample CQC form is on any of the web sites indicated at the end of this Section). Preparatory Phase actions include:

- a. Review each paragraph of specifications, reference codes, and standards. Review copies of referenced codes and standards applicable to work to be accomplished. Make copies available for use by Contracting Officer personnel and Contractor CQC Staff at Preparatory Phase meeting. Maintain copies available until final acceptance of work.
- b. Review of contract drawings.
- c. Check to assure that all materials and equipment have been tested, submitted, and approved.
- d. Review provisions that have been made to provide required control inspection and testing.
- e. Examine work area to assure required preliminary work is complete and in compliance with contract.
- f. Inspect materials, equipment, and sample work to assure that they are on hand, conform to approved or information only submittal items, and are properly stored.
- g. Review of activity hazard analysis to assure safety requirements are met.
- h. Discuss procedures for controlling quality of the work including preventing repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- i. Check to ensure that portion of plan for work to be performed has been accepted by Contracting Officer.
- j. Discuss initial control phase.

3.6.2 Initial Phase

Notify Contracting Officer at least 24 hours in advance of beginning the Initial Phase. Initial Phase is workmanship oriented and shall be accomplished at the beginning of physical work on a definable feature of work. CQC Staff, testing personnel, foremen, workers shall attend an "Initial Phase Meeting" conducted by CQC System Manager. Exact location of Initial Phase actions shall be indicated for future reference and comparison with follow-up phases. Document "Initial Phase Meeting" using an Initial Phase Checklist and minutes prepared by CQC System Manager. Sample Initial Phase Checklist is on any of the web sites indicated at the end of this Section. Attach checklist and minutes to Contractor's Quality Control (CQC) Report (sample CQC form is on any of the web sites indicated at the end of this Section). Initial Phase actions include:

- a. Check preliminary work to ensure that it complies with contract. Review minutes of preparatory meeting.
- b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable contract workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review activity analysis with each worker.

f. Initial Phase shall be repeated for new crews working onsite, and when contract workmanship quality standards are not being met.

3.6.3 Follow-up Phase

Follow-up Phase consists of daily checks performed to assure quality control activities, including testing, to provide continued compliance with contract requirements, until feature of work is complete. Record inspection and check results in CQC documentation. Complete follow-up checks and inspections and correct deficiencies prior to starting features of work which may be affected by deficient work. No non-conforming work shall be concealed to build upon.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on same definable features of work when: quality of on-going work is unacceptable; there are changes in applicable CQC Staff, production supervision or work crews; work on a definable feature is resumed after a period of inactivity; or, when other problems develop. Contracting Officer may direct additional phase meetings as needed to assure contract compliance.

3.7 TESTS

3.7.1 Testing Procedure

NOTE: Paragraph requires ALL construction contracts to use a Corps of Engineers validated lab. New policy eliminates a designer option to allow non-validated labs for short/small duration jobs or CMEC inspection for FDOT jobs. Reason for more stringent change is USACE CEMP and CECW are requiring District compliance with ER 1110-1-261 to keep WES-MTC funded.

Perform specified or required tests to verify that control measures are adequate and provide an end product conforming to contract. When requested, Contractor shall furnish Contracting Officer duplicate samples of test specimens for possible testing by Contracting Officer. Testing includes operation and acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

NOTE: Delete Water Quality and HTRW labs if not in project.

Cost to Government for material testing lab inspection and validation is \$4500 per lab in PR, and \$3000 per lab in Florida.

Material Testing Laboratories are required to be validated by Corps' Waterways Experimental Station (WES) - Material Testing Center (MTC).

Chemistry Labs and Water Quality are required to be validated by WES ERDA - Chemical Quality Assurance Branch in accordance with COE ER 1110-1-261.

Environmental Labs doing Hazardous Toxic Radioactive Waste (HTRW) testing are required to be certified by Omaha District - HTRW Technical Center of Expertise in accordance with COE ER 1110-1-263.

In FY 2002 Omaha District TCX will adopt new National Environmental Laboratory Accreditation Conference/Program (NELAC/NELAP) for approval in addition to inspections currently only done by District request for active contracts. State of Georgia DEP requires State certification or NELAC/NELAP accreditation for environmental labs sending test data thru GA-DEP.

Contractor's proposed material testing labs, [water testing chemistry labs,] [environmental testing labs] require Contracting Officer approval. Contractor shall provide:

Material Testing Laboratories validated by Corps of Engineers Materials Testing Center in accordance with ER 1110-1-261. Labs used for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM C 1077, ASTM D 3666, ASTM D 3740, and ASTM E 329.

[Water Testing Laboratory approved by Corps of Engineers - ERDA - Chemical Quality Assurance Branch in accordance with ER 1110-1-261.]

[Environmental Labs doing Hazardous Toxic Radioactive Waste (HTRW) testing are required to have National Environmental Laboratory Accreditation Conference/Program (NELAC/NELAP) approval or be certified by Omaha District - HTRW Technical Center of Expertise in accordance with ER 1110-1-263. [State of Georgia DEP requires State certification or NELAC/NELAP accreditation for environmental labs sending test data through GA-DEP.]]

Submit laboratory qualifications including:

- a. Laboratory name, address, point of contact and phone number.
- b. Experience and background of technical personnel in resume format.
- c. Provide most recent external inspection report.

3.7.2.1 Laboratory Validations

NOTE: Delete lab types not in project.

ALSO, SELECT APPROPRIATE LAB COST.

a. Materials Testing Labs: A list of currently Corps validated material laboratories is available at the following Internet website: <http://www.wes.army.mil/SL/MTC/ValStatesTbl.htm>. If Contractor proposes a material testing lab not currently validated by Corps of Engineers, Contractor shall pay costs for Corps lab inspection and validation. Cost will be deducted from contract amount due Contractor. Inspection and validation for material testing labs required onsite inspection and audit of quality control records and costs [\$6,500 per lab in Puerto Rico.] [\$5,500 per lab in Florida.] Validation process requires labs to describe deficiency correction and respond within 30 days after receiving inspection report. Reinspection costs will be deducted from contract.

b. Onsite Laboratory: Onsite laboratory shall meet inspection validation requirements outlined above. Contracting Officer reserves the right to use Contractor's onsite testing lab and equipment to make quality assurance tests, check Contractor's testing procedures, techniques, and test results at no additional cost to the Contracting Officer.

[c. Water Quality Labs: Water testing labs usually only require quality control record inspection to assure capability to perform contract tests in accordance with testing standards listed in Appendix A of ER 1110-1-261. Contracting Officer reserves right to inspect lab, equipment and personnel qualifications in proposed water quality labs for compliance with standards specified in contract specifications. An

inspection will include checking lab technician's testing procedures and techniques. Contracting Officer will pay for first inspection; reinspection costs will be deducted from contract.]

NOTE: Use the following for jobs with water testing, sediment chemical analysis.

Effective 1 Jul 01 for work in St. Mary River Basin and Kings Bay, Georgia State law (O.C.G.A. 12-2-9) requires commercial environmental labs submitting data to Georgia Environmental Protection Division (GEPD) for regulatory purposes to be approved or accredited as specified in GEPD's rules and regulations. National Environmental Laboratory Accreditation Conference/Program (NELAC/NELAP) is acceptable.

[d. Environmental Testing Labs: Environmental Testing Labs for HTRW projects will be inspected for Chemical Data Quality Management for HTRW remedial activities as described in ER 1110-1-263. Omaha District - HTRW Technical Center of Expertise inspections are only done by Contracting Officer request on active contracts. Contracting Officer will pay for first inspection; reinspection costs will deducted from contract.]

3.7.3 Samples for Contracting Officer Testing

NOTE: Select appropriate reference.

Costs incidental to obtaining and transporting samples and materials for Contracting Officer testing are Contractor's responsibility. Samples of materials for test verification and acceptance testing by Contracting Officer shall be delivered to lab designated by Contracting Officer. Contractor shall coordinate obtaining specific samples and delivery location with Contracting Officer. Routine soil, concrete, asphalt testing is usually done within [Florida] [Puerto Rico]. Special construction products or components are usually sent to a Corps of Engineers lab located in Vicksburg, Mississippi or Champaign, Illinois. Jacksonville District chemical analysis, rock petrographic, metallurgy samples are usually sent to Atlanta, Georgia or Jacksonville, Florida for testing.

3.8 COMPLETION INSPECTIONS

3.8.1 Punch-Out Inspection

Near end of project, or phase of work established for beneficial occupancy, Contractor shall conduct a "Punch-Out Inspection" jointly inspecting completed work with subcontractors. Contractors shall develop a "punch list" of work which does not conform to contract. Provide punch list to Contracting Officer. Punch list shall include estimated date by which deficiencies will be corrected. Contractor shall make a second inspection to ensure deficiencies have been corrected. Once this is accomplished, notify Contracting Officer that work is ready for Contracting Officer Pre-Final Inspection.

3.8.2 Pre-Final Inspection

Contracting Officer will jointly perform a "Pre-Final Inspection" with Contractor to verify work is complete and ready for acceptance or occupancy. New punch list items may be developed as a result of Pre-Final Inspection. Contractor shall ensure items on this punch list have been corrected before notifying Contracting Officer to schedule a Final Inspection with Owner. Items on a Pre-Final punch list shall be corrected in a timely manner. Complete inspections and correct any deficiencies within construction period for completion of work or for a particular phase of work when contract has separate completion dates.

3.8.3 Final Acceptance Inspection

NOTE: Select appropriate reference (Military is Base/Post etc.,) (Civil is User, Customer, or Owner).

Contractor, Project Manager/Superintendent, CQC System Manager shall attend Final Inspection. Contracting Officer, and additional persons including, but not limited to, those from [Base/Post Civil Facility Engineer user groups] [Sponsor, User, Customer, or Owner], and other agencies may also attend. Final Inspection will be scheduled by Contracting Officer based upon results of the Pre-Final Inspection and Contractor's notification. Notify Contracting Officer at least 14 days prior to Final Inspection. Include a statement assuring deficiencies will be corrected and work will be acceptable by date proposed for Final Inspection. Contractor's failure to correct deficiencies and have work complete for Final Inspection will be cause for Contracting Officer to deduct from Contractor for Contracting Officer's additional reinspection cost from contract payment in accordance with Clause INSPECTION OF CONSTRUCTION of Section 00 70 00 CONTRACT CLAUSES.

3.9 DOCUMENTATION

NOTE: Delete bracketed reference to Section 01320 PROJECT SCHEDULE if NAS is not applicable.

Contractor shall maintain records for each construction day documenting quality control activities that have been performed. Records shall include testing record, work of subcontractors and suppliers. A CQC report with supporting attachments shall be prepared daily on an acceptable form that includes the following information:

- a. Contractor/subcontractor and their area of responsibility.
- b. Equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. [When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number. (Refer to Section 01 32 01 PROJECT SCHEDULE.)]
- d. Testing and control activities performed with results and references to specifications or drawings requirements. Identify control phase (Preparatory, Initial, Follow-up). List deficiencies noted, along with corrective action.

- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications or drawings requirements.
- f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- g. Offsite surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given or received and conflicts in plans or specifications.
- j. Contractor's verification statement.

Describe trades working on the project; number of personnel working; weather conditions encountered; and delays encountered. Records shall cover both conforming and deficient work and shall include a statement that equipment and materials incorporated into work and workmanship comply with contract. Original and one copy of these records shall be furnished to Contracting Officer daily within 24 hours after the date covered by report. No CQC daily report is required for days on which no work is performed; however, next report shall document weather during those days and note possible effects on restarting work. Submit a report for a minimum every 7 days of no work and on the last day of a no work period. All contract calendar days shall be accounted for. CQC System Manager or Alternate shall sign and date reports. CQC System Manager's reports shall include copies of test reports, phase checklists, meeting minutes, inspector notes, and copies of reports prepared by other quality control personnel.

3.10 NOTIFICATION OF NONCOMPLIANCE

Contracting Officer will notify Contractor of noncompliance with contract requirements. Take corrective action immediately after receipt of noncompliance notification. Contractor personnel notified at work site is sufficient for the purpose of Contractor notification. If Contractor fails to comply promptly, Contracting Officer may issue an order stopping all or part of work until satisfactory corrective action has been taken. Such stop orders shall not be made a basis of a Contractor's claim for time extension or other damages.

3.11 SAMPLE FORMS

Forms are available for Contractor use at the following web sites:
<http://www.saj.usace.army.mil/Divisions/Construction>, and
<http://www.usace.army.mil/inet/usace-docs/>,
See paragraph QUALITY CONTROL SYSTEM (QCS) above for construction forms to be completed in the QCS program.

-- End of Section --