

## Quality Control

### Short description

This section describes the means and methods for maintaining high levels of quality on our projects and operating an efficient Quality Control Program.

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## 1 Objective and area of application

The determination and evaluation of quality is an important requirement for avoiding potentially negative monetary and reputation impacts that can be caused by Centennial's business activities. This section therefore, represents an important element in the framework of Centennial's management values.

The objective of this section is to present the system of determining and evaluating relevant quality control aspects associated with each individual project and to present an acceptable method of complying with local, state and federal regulations.

## 2 Superior and additional applicable documents

1000\_GP\_11\_01\_en\_7.0 Group Policy on Health, Safety, Environment and Quality (HSEQ)

USACE Construction Quality Control Program

This procedure applies to all Centennial employees and subcontractors who are performing work on a Centennial project site. There may be more stringent requirements than this procedure as defined by specific state or local regulations or contract specific environmental specifications. If there is a conflict between this section and other applicable regulations or requirements, the most stringent shall apply.

## 3 Definitions

The following definitions of terms are important for an understanding of this procedure.

Term	Definition
Centennial	All Centennial employees, joint venture employees, subcontractors and business partners
HSEQ Director	Leads the HSEQ Team
QCM	Quality Control Manager
USACE	United States Army Corps of Engineers

## 4 Quality system

As a key component of our Health, Safety, Environment and Quality (HSEQ) Program, Centennial is dedicated to a process of continuous improvement of its services to its clients and will carry out this process in its day-to-day activities in every part of the organization to ensure a quality product for its clients.

We are committed to the success of the services ordered. We provide our clients with products and services in a timely manner which meet or exceed the contractually agreed levels of quality

and legal requirements as well as the value benchmarks of our society. We collaboratively develop optimized solutions with our clients.

## **5 Management system**

Centennial has developed a Quality Control Plan (Appendix 1) for use on most contracts. As part of our Health, Safety, Environment and Quality (HSEQ) management system, this plan addresses the secured services, labor, and material for construction, maintenance and alterations provided by Centennial at various buildings, facilities and structures under contract with Centennial Contractors. The Quality Control Plan is a comprehensive plan in accordance with ISO 9001, ISO 9000 and the USACE Quality Control program and tailored to contract requirements.

Centennial recognizes and acknowledges that it is responsible for ensuring that all supplies and services procured or provided conform to the Contract. Additionally, it recognizes the Owner's right to inspect and reject at the source any supplies furnished or services rendered under the Contract.

The objective of this plan is to provide timely response to the Owner's construction needs. Projects for construction tasks are expected to be issued on a continuous basis. The projects will be comprised of virtually any combination of construction tasks for facilities consisting of, but not limited to office buildings, shops, laboratories, storage areas, utility buildings, utility systems and site improvements on an as needed basis. The work extends beyond the conventional single construction effort in that it involves the management, coordination and supervision of multiple subcontractors on multiple projects simultaneously. The work is often time critical and requires the contractor to respond rapidly with high quality craftsmanship while maintaining awareness of configuration control and operational readiness. The contractor and subcontractors must provide a flexible and multi-disciplined work force of the highest quality.

Based on the above, the quality objectives for this contract are as follows:

- Assurance that all materials and services required under the contract conforms to contract requirements, whether construction is performed by Centennial or procured from subcontractors.
- Elimination of non-compliances to the greatest extent possible through the communication of clear and concise technical requirements (design work, drawings, specifications, codes, standards, etc.) to those performing the work.
- Execution of the tasks required with workmanship which meets the requirements of the specifications and drawings, and at least equal to industry standards.
- The generation of full and complete as-built drawings, that accurately reflects the as-built structure and systems when requested by Owner.
- The ability to operate the systems and equipment reliably and in accordance with the designers' and manufacturers specifications.
- Development of, and adherence to, cost and schedule targets for each project.

Activities, programs and procedures not covered in this Quality Control Plan, or proposed revisions or additions to these standards will be discussed at meetings held for that purpose at such times and places as the Quality Control Officer may select. Such meetings will be held for the purpose of reviewing and modifying the Quality Control Plan as required by changes in the

contract specifications. The Quality Control Officer will request approval from the Owner's Project Manager to incorporate such revisions as deemed necessary. Accepted revisions will be incorporated in the Plan as first revision, second revision, etc. A revised Log of Revisions page will be included.

## **5.1 USACE Three Phase Quality Control System**

The USACE Three Phase Quality Control System consists of the Preparatory, Initial and Follow-up phases. This system requires the following:

- Develop, schedule and implement procedures for tracking control phase meetings for definable features of work
- Notify appropriate personnel of time, date and agenda
- Conduct Meetings (preparatory and initial)
- Safety considerations and Activity Hazard Analysis (AHAs) documentation
- Document actual discussions and provide minutes to attendees (if required)
- Monitor work in place through the follow-up phase
- Conduct additional control phase meetings, as needed

The Preparatory Phase shall be performed prior to beginning work on each definable feature of work as follows:

- Review of the applicable specifications and references
- Review of contract plans and scope of work
- A check to assure that all materials and/or equipment have been tested, submitted and approved, if required
- A check to assure that provisions have been made to provide required control inspections and testing
- A physical examination of required materials, equipment, and sample work to assure that they are on hand and conform to project drawings and specifications
- A review of the appropriate activity hazard analysis
- Discussion of procedures for constructing the work including the review of repetitive deficiencies
- Examination of the work area to ensure that all required preliminary work has been completed before starting a new element of work

The Initial Phase will verify that control of the work developed in the Preparatory Phase is implemented and the work is performed to the level of workmanship mutually agreed to. The initial phase should be repeated for each new crew or any time established level of workmanship is not being met as follows:

- Review minutes of preparatory meeting
- Check preliminary work to verify adequacy of controls to ensure full contract compliance
- Establish level of workmanship and resolve all deficiencies
- Check safety to include compliance with the safety plan
- Review the activity hazard analysis documents with the onsite personnel

The Follow-up Phase is an ongoing process to ensure that all the standards established in the preparatory and initial phases are being followed as listed below:

- Daily checks shall be performed to ensure continuing compliance with contract requirements, including safety and control testing, until the completion of the feature of work.
- Final follow-up checks should be conducted, and all deficiencies corrected prior to the start of additional features of work.
- Typically, final inspections occur during this phase.
- Comprehensive record keeping and information exchange from the beginning and throughout the entire project is an essential quality management tool.
- In addition to identifying specific deficiencies, careful report analysis will also detect patterns in the team's performance.

## **6 Personnel Roles and Responsibilities**

Quality, which is defined as the adherence to established requirements, is the responsibility of each individual and organization associated with the project. The Senior Site Representative is responsible for organizing and administering the project in such a manner that each individual is able to meet his responsibility. The personnel who have quality control responsibilities are as follows.

### **6.1 Personnel**

#### Centennial Senior Site Representative / Site Project Manager:

Centennial's Senior Site Representative has primary responsibility for the construction management and execution of this contract. The Senior Site Representative is responsible for ensuring that project construction objectives are reached. He coordinates the procurement and construction effort. He is responsible for interacting with the Owner, assisting the Project Managers in resolution of project construction problems that may arise. He ensures compliance with the requirements of the Quality Control Program and contract requirements. He supports the QCM or, if required, the Job-Site QCM in a manner which will enable that manager to effectively execute the specified duties. He authorizes immediate action to correct workmanship and materials which do not conform to the Contract. He reviews the quality control procedures with supervisors, foremen, subcontractors, and suppliers and assures their compliance. In addition, he actively participates in Quality Control meetings and cooperates with the Owner's Quality Assurance representatives.

#### Centennial Project Manager:

The Project Manager is responsible for the complete management and execution of task orders assigned to him by the Senior Site Representative. This responsibility includes design review support, estimating support, schedule preparation, subcontractor award and administration, site superintendence, purchasing materials and equipment, invoicing, and task order closeout. He attends the pre-construction meeting with the Owner representative and the user of the facility as required. The Centennial Project Manager is responsible for directing the day-to-day task order design and construction activities. He ensures that those performing the work have full and current design information to guide their activities.

**Centennial Superintendent:**

The Centennial Superintendent is responsible for executing the trade tasks in accordance with specifications. This individual is the first line of quality control and is responsible for instructing and training craftsmen in proper means, methods and techniques necessary to achieve quality requirements. It is Centennial's objective to build quality into the work from the start rather than redoing work to achieve our high standards of quality. The Superintendent coordinates the work of subcontractor supervisors.

The site project superintendent will be held responsible for the quality of work on the job. At remote sites and special projects, they will be the highest level manager, responsible for overall construction activities at the site, including production and quality control.

He closely coordinates upcoming and on-going field activities with the QCM or, if required, the Job-Site QCM and the Owner's representative to enable timely inspections of the Work. He will immediately take corrective actions on conditions and practices that are adverse to quality and report these incidents as soon as is feasible to the QCM or, if required, the Job-Site QCM who shall incorporate these incidents and the action taken in the appropriate quality control reports. He supports the QCM or, if required, the Job-Site QCM and assist, in the implementation of the Quality Control Program on the project. In addition, he will convene Special Quality Control meetings and cooperate with the Owner's Quality Assurance representatives.

**Subcontractor Job Foremen:**

The Subcontractor Job Foreman shall be responsible for the quality of the Work assigned to the personnel under them; instruct personnel regarding good Work practices and methods when Work is assigned; furnish and enforce the use of tools appropriate for the job as well as appropriate protective equipment; continuously assure that their personnel accomplish quality Work in accordance with the Contract and the Quality Control Program; determine the reason for, and implement measures to preclude reoccurrence of rejected Work; promptly supply information for the QCM's or, if required, the Job-Site QCM's quality control reports; inspect products and materials prior to being used; document and certify tests where applicable. They shall convene Weekly Quality Control meetings with their personnel to discuss recent Work well done, as well as unsatisfactory Work, and how to prevent reoccurrence of the latter; provide instructions and precautionary measures to be taken regarding new Work about to be undertaken; arrange for training when needed and encourage their personnel to suggest methods to improve quality and report the suggestions to the QCM or, if required, the project site designated QCM.

**Subcontractor Job Superintendent:**

The Subcontractor Job Superintendent shall plan and execute the Work in accordance with the Contract and the Quality Control Program; report conditions adverse to quality and violations of the Contract to the Contractor's QCM or, if required, the Job-Site QCM and Project Manager; attend, as applicable to given responsibilities, the Weekly Quality Control meetings and the Special Quality Control meetings; make recommendations for improving quality and cooperate with the Owner's Quality Assurance representatives.

**Construction Quality Control Manager / Job-Site Quality Control Manager (QCM) & Alternate QCM:**

The Construction Quality Control Manager reports directly to the Regional Operations Manager (ROM) to assure that the quality control program is granted the required autonomy and organizational freedom to carry out the quality control functions. The QCM will be dedicated to the surveillance and inspection of the quality of the work (factory and installation) throughout the progress of the work, to assure that all work is performed in accordance with this Contract, approved drawings, and acceptable workmanship standards, be dedicated to quality for the surveillance and inspection of the work required to develop and design the system design

drawings for the System and assure that all work is performed in accordance with this Contract; develop, implement and supervise a Quality Program; be highly visible around the construction site daily and be innovative in raising quality consciousness of all personnel working on the Project; inspect and audit the Work daily. He shall immediately act to eliminate unacceptable materials, equipment, and workmanship and recommended immediate corrective action and report the action in the appropriate Quality status report to the Owner. The QCM shall furnish job foremen with material enabling them to conduct Weekly Quality Control meetings; attend and participate in both Weekly Quality Control meetings and Special Quality Control meetings and evaluate the effectiveness of these meetings and submit an evaluation to the Owner and, when appropriate, recommend improvements.

The QCM shall prepare a Weekly Quality Control Summary Report of all quality control activities including but not limited to:

- briefly outline the activities and actions of the QCM
- summarize test activities, including tests which resulted in actions taken to correct or preclude activities of the Contractor or subcontractor which are contrary to the Contract
- describe subcontractor quality control performance and, if applicable, improvements needed
- record off-site inspections and audits, highlighting quality control measures in effect and to be implemented which will assure that quality requirements will be met
- reports, at a minimum, contain areas for the date, inspection locations, and inspector's signature
- summarize activities which resulted in actions taken to correct or preclude activities related to the design activities of the Contractor or subcontractor which are contrary to the Contract
- identify Contractor and subcontractor activities or conditions adverse to quality, the corrective action taken, and actions taken to preclude recurrence during the design and installation of the System

## **7 Managment Review**

Review triggers will be set in order to maintain the suitability and effectiveness of each contract Quality Control Program. A review would be carried out when triggers such as the following are met:

- As a minimum annually
- If required as a corrective and/or preventative action in response to a quality incident or the outcomes of a quality audit
- If required by a regulatory body
- When unique or specialty items are included on a project, the Centennial Project Manager, in conjunction with project superintendent, shall review the related approved submittals against the delivered product to ensure that customer specifications have been addressed. This will typically be dynamic equipment such as Air Handling Units, Boilers, Fire Control Panels, etc.).
- Centennial Superintendent will conduct an onsite inspection of the material/equipment and record this on the daily report or on a site inspection form. Any noted non-conformances must be reported to the Project Manager who is responsible for coordination of remediation efforts with the relevant subcontractor(s). Subsequent re-inspections by the Centennial Superintendent will take place as directed by the Project Manager.

- Material delivery and installation events shall be identified on the project schedule. The Centennial Project manager, utilizing the project schedule, shall verify that appropriate inspection evidence has been completed and retained in the project file.

## 8 Training and Awareness

Centennial recognizes that it is imperative to train all field staff members in quality control. All Centennial field staff are required to take the USACE Construction Quality Control Program course every five years. In addition, other specific quality control courses may be necessary for a certain project or required by a customer.

Specific training on Quality items will be addressed during the following:

- New Employee Orientation
- Subcontractor Orientation
- Quarterly on the All-Hands Call
- Field Operation Conference
- OSHA 30 Refresher

## 9 Amendment history

Date	Version	Revised content
01.01.2018	1.0	Initial Preparation
01.01.2020	2.0	Updates to Superior Documents and the addition of 5.1 USACE Three Phase Quality Control System
04.01.2022	2.1	Update to Paragraph 2 Superior Documents (Group Policy version), Paragraph 7 Management Review (added material inspections) and Paragraph 8 Training and Awareness (included training opportunities)

## 10 Appendix

Appendix 1: Quality Control Plan (0206500\_CP\_11\_30\_en\_A1.1)

## Quality Control Plan



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## 1 Quality system

As a key component of our Health, Safety, Environment and Quality (HSEQ) Program, Centennial Contractors is dedicated to a process of continuous improvement of its services to its clients and will carry out this process in its day-to-day activities in every part of the organization to ensure a quality product for its clients.

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## 2 Management system

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- The ability to operate the systems and equipment reliably and in accordance with the designers' and manufacturers specifications.
- Development of, and adherence to, cost and schedule targets for each project.

Activities, programs and procedures not covered in this Quality Control Plan, or proposed revisions or additions to these standards will be discussed at meetings held for that purpose at such times and places as the Quality Control Officer may select. Such meetings will be held for the purpose of reviewing and modifying the Quality Control Plan as required by changes in the contract specifications. The Quality Control Officer will request approval from the Owner's Project Manager to incorporate such revisions as deemed necessary. Accepted revisions will be incorporated in the Plan as first revision, second revision, etc. A revised Log of Revisions page will be included.

### **3 Resources**

Quality, which is defined as the adherence to established requirements, is the responsibility of each individual and organization associated with the project. The Senior Site Representative is responsible for organizing and administering the project in such a manner that each individual is able to meet his responsibility. The personnel who have quality control responsibilities are as follows.

#### **3.1 Personnel**

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##### Centennial Superintendent:

The Centennial Superintendent is responsible for executing the trade tasks in accordance with specifications. This individual is the first line of quality control and is responsible for instructing and training craftsmen in proper means, methods and techniques necessary to achieve quality requirements. It is Centennial's objective to build quality into the work from the start rather than redoing work to achieve our high standards of quality. The Superintendent coordinates the work of subcontractor supervisors.

The site project superintendent will be held responsible for the quality of work on the job. At remote sites and special projects, they will be the highest level manager, responsible for overall construction activities at the site, including production and quality control. He closely coordinates upcoming and on-going field activities with the QCM or, if required, the Job-Site QCM and the Owner's representative to enable timely inspections of the Work. He will immediately take corrective actions on conditions and practices that are adverse to quality and report these incidents as soon as is feasible to the QCM or, if required, the Job-Site QCM who shall incorporate these incidents and the action taken in the appropriate quality control reports. He supports the QCM or, if required, the Job-Site QCM and assist, in the implementation of the Quality Control Program on the project. In addition, he will convene Special Quality Control meetings and cooperate with the Owner's Quality Assurance representatives.

Subcontractor Job Foremen:

The Subcontractor Job Foreman shall be responsible for the quality of the Work assigned to the personnel under them; instruct personnel regarding good Work practices and methods when Work is assigned; furnish and enforce the use of tools appropriate for the job as well as appropriate protective equipment; continuously assure that their personnel accomplish quality Work in accordance with the Contract and the Quality Control Program; determine the reason for, and implement measures to preclude reoccurrence of rejected Work; promptly supply information for the QCM's or, if required, the Job-Site QCM's quality control reports; inspect products and materials prior to being used; document and certify tests where applicable. They shall convene Weekly Quality Control meetings with their personnel to discuss recent Work well done, as well as unsatisfactory Work, and how to prevent reoccurrence of the latter; provide instructions and precautionary measures to be taken regarding new Work about to be undertaken; arrange for training when needed and encourage their personnel to suggest methods to improve quality and report the suggestions to the QCM or, if required, the project site designated QCM.

Subcontractor Job Superintendent:

The Subcontractor Job Superintendent shall plan and execute the Work in accordance with the Contract and the Quality Control Program; report conditions adverse to quality and violations of the Contract to the Contractor's QCM or, if required, the Job-Site QCM and Project Manager; attend, as applicable to given responsibilities, the Weekly Quality Control meetings and the Special Quality Control meetings; make recommendations for improving quality and cooperate with the Owner's Quality Assurance representatives.

Construction Quality Control Manager / Job-Site Quality Control Manager (QCM) & Alternate QCM:

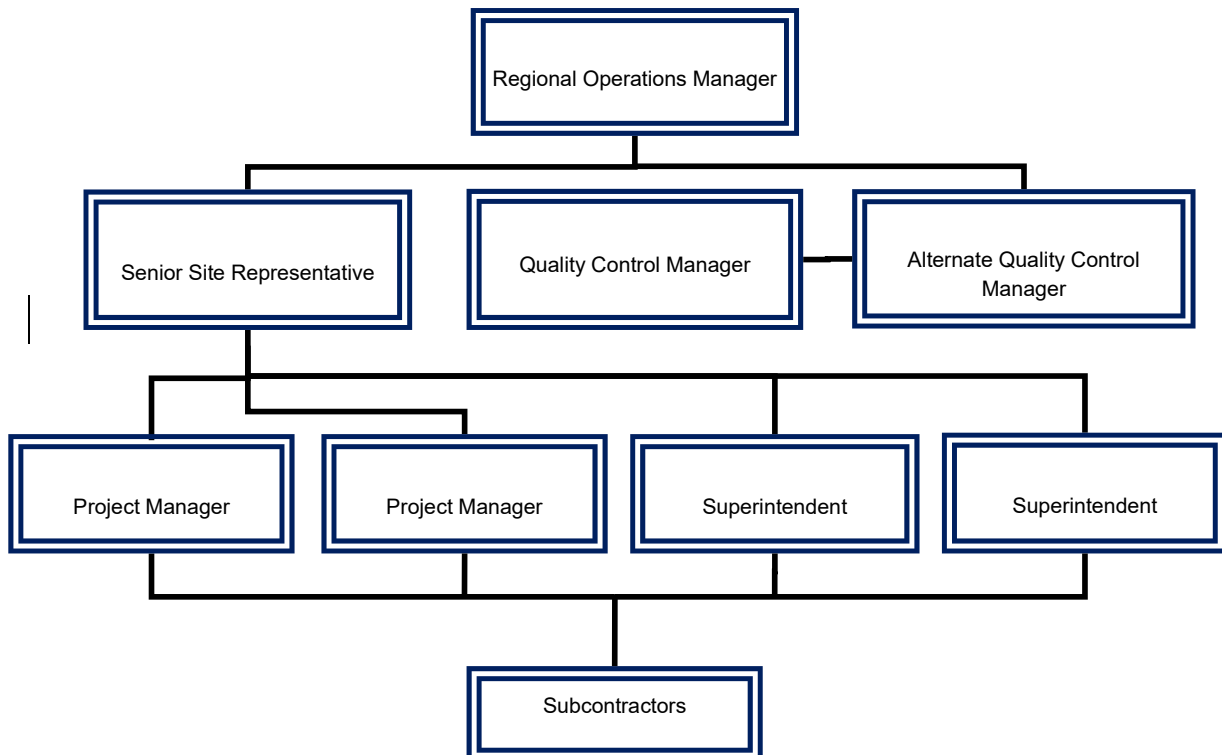
The Construction Quality Control Manager reports directly to the Regional Operations Manager (ROM) to assure that the quality control program is granted the required autonomy and organizational freedom to carry out the quality control functions. The QCM will be dedicated to the surveillance and inspection of the quality of the work (factory and installation) throughout the progress of the work, to assure that all work is performed in accordance with this Contract, approved drawings, and acceptable workmanship standards, be dedicated to quality for the surveillance and inspection of the work required to develop and design the system design drawings for the System and assure that all work is performed in accordance with this Contract; develop, implement and supervise a Quality Program; be highly visible around the construction site daily and be innovative in raising quality consciousness of all personnel working on the Project; inspect and audit the Work daily. He shall immediately act to eliminate unacceptable materials, equipment, and workmanship and recommended immediate corrective action and report the action in the appropriate Quality status report to the Owner. The QCM shall furnish job foremen with material enabling them to conduct Weekly Quality Control meetings; attend and participate in both Weekly Quality Control meetings and Special Quality Control meetings and evaluate the effectiveness of

these meetings and submit an evaluation to the Owner and, when appropriate, recommend improvements.

The QCM shall prepare a Weekly Quality Control Summary Report of all quality control activities including but not limited to:

- briefly outline the activities and actions of the QCM
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- describe subcontractor quality control performance and, if applicable, improvements needed
- record off-site inspections and audits, highlighting quality control measures in effect and to be implemented which will assure that quality requirements will be met
- reports, at a minimum, contain areas for the date, inspection locations, and inspector's signature
- summarize activities which resulted in actions taken to correct or preclude activities related to the design activities of the Contractor or subcontractor which are contrary to the Contract
- identify Contractor and subcontractor activities or conditions adverse to quality, the corrective action taken, and actions taken to preclude recurrence during the design and installation of the System

The QCM shall cooperate with the Owner's Quality Assurance representatives and **the QCM has stop work authority**. The implementation and enforcement of this Quality Control Plan will be the QCM's responsibility for the duration of this contract. The organization and staffing of the quality control organization will provide clear lines of authority and responsibility, definition of scopes of responsibilities, and adequate technical levels of personnel.



### 3.1.1 Qualifications

The Construction Quality Control Manager (QCM) / Job-Site Quality Control Manager (QCM) & Alternate QCM will have minimum of 5 years of construction experience, will have completed the USACE 3-Phases of Quality Control certification and will have completed OSHA 30 Safety training.

#### Add contract specific qualifications

The QCM for this contract will be *Insert Name*. Attached is a copy of *Insert Name* qualifications.

The Alternate QCM for this contract will be *Insert Name*. Attached is a copy of *Insert Name* qualifications.

Both the QCM and Alternate QCM may have other duties assigned as allowed by the project terms.

### 3.1.2 Quality control activities

The Construction Quality Control Officer (QCO) reports to and receives his authority directly from Regional Operations Manager. The QCO shall formulate and implement the written procedures and instructions contained in this plan. Actual practices are not limited to this plan and where a discrepancy exists between this plan and the contract requirements, the contract requirements shall prevail. He shall consult with project supervisory personnel to assure compliance with the quality control requirements of the contract. Also, he will coordinate the quality control efforts of subcontractors and suppliers to correspond with the overall Quality Control Plan. He shall develop, implement and supervise a Quality Control Program for the Contractor's and subcontractors' forces; have sufficient, well defined responsibility, authority and the organizational freedom to identify and evaluate quality conditions and to initiate, recommend or provide solutions; ensure good workmanship, the use of proper construction materials and equipment, and correct installation procedures are followed; and implement quality controls that will ensure meeting the Contract requirements. He shall provide direct feedback and advise the Owner's representative regarding the effectiveness of the quality control effort, including but not limited to adherence to plans and specifications coordination, field engineering, office engineering, and accounting for Owner-furnished property. He will be highly visible around the construction site daily. He will review and coordinate submittals and approvals for both Centennial procured items and subcontractor procured items. He will conduct tests, inspections and follow-ups of Centennials work and subcontractors' work as required ensuring compliance with contract plans and specifications. In addition, he will perform all duties as outlined in Section 3.1.

All duties / activities in the Quality Control Plan assigned to the Quality Control Manager, may be delegated as required to Project Managers, Project Safety Officers and Superintendents as allowed by contract terms.

### 3.1.3 Outside organizations

Centennial will employ the services of outside organizations as required to meet project specific requirements. Organization types may include: concrete testing services, soils engineers / testing services, non-destructive testing services, air monitoring services, manufacturer's representatives, etc.

#### 3.1.4 Appointment letters

Appointment Letters for the QCM and Alternate QCM are a contract requirement in many cases and the format is dictated by the contract.

#### 3.1.5 Letters of direction

Letters of direction for the QCM and Alternate QCM are a contract requirement in many cases and the format is dictated by the contract.

#### 3.1.6 Leadership evaluation

Centennial reviews and evaluates the performance of the QCM and Alternate QCM at a minimum yearly. This includes a thorough review of their job performance, technical ability and personal skills. In addition, Centennial training department identifies training needs, provides resources for such training and tracks completion and re-qualification of each required training identified.

### **3.2 Facilities**

Centennial provides all QC team members with adequate resources to ensure a successful QC program; this includes the appropriate software, access to appropriate references, individual workspace, and access to necessary equipment required.

Centennial will acquire the appropriate software, access to appropriate references, individual workspace, and access to necessary equipment required from the local / regional support office.

Centennial will maintain the appropriate software, access to appropriate references, individual workspace, and access to necessary equipment required through the local / regional support office.

### **3.3 Environment**

Construction is inherently complex and the factors that influence quality may vary from project to project; however, the following factors are common to the majority of projects: safety, job site cleanliness, sustainability of processes, atmosphere (air quality, temperature, etc.), storage, access and proper tools and equipment.

Managing the work environment is critical to influencing quality. Adherence to a comprehensive Health, Safety, Environment and Quality (HESQ) program will ensure sustainable processes are being implemented. Centennial's HESQ program manages all factors both human and physical that can influence the quality in every project.

## **4 Production**

In order satisfy Owner requirements Centennial's Quality Control Program will comprehensively manage all project activities, to include: design, engineering, procurement, construction, inspections, testing and turn over.

## 4.1 Production planning and submittals

Upon the issuance of a project, the Quality Control Manager (QCM) will initiate use of approved tracking system. The QCM will be responsible for the accuracy, completeness and coordination of all submittals. Each submittal will bear the QCM's stamp of approval indicating that it is correct and is in conformance with the contract documents, unless specifically noted otherwise.

Submittals will be processed prior to the installation of any materials referenced by the technical specifications unless otherwise noted.

### 4.1.1 Submittal types

The types of submittals to be submitted and / or reviewed are as follows:

- Shop Drawings: As used in this section, drawings, schedules, diagrams, and other data prepared specifically for a project, by the Contractor or through the Contractor by way of a subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate a portion of the work and/or demonstrate compliance to the applicable sections of the technical specifications. Shop Drawings shall include the following, as applicable:
  - Dimensions
  - Notation of dimensions established by field measurement
  - Identification of products
  - Notation of coordination requirements
  - Relationship to adjoining construction clearly indicated
  - Seal and signature of professional engineer as appropriate for the jurisdiction.
  - Stamp and Signature of Contractor, certifying review and coordination of information submitted
- Product Data: Preprinted materials that illustrate a portion of the work and/or demonstrate compliance to the applicable sections of the technical specifications, but not prepared exclusively for this Contract or a specific project. Examples of product Data include, but are not limited to:
  - Manufacturer's written recommendations
  - Manufacturer's product specifications including available color and finishes
  - Manufacturer's installation instructions
  - Manufacturer's catalog cuts
  - Original Equipment Manufacturer's part number
  - Wiring diagrams showing factory-installed wiring
  - Printed performance curves
  - Operational range diagrams
  - Compliance with specified referenced standards
  - Testing by recognized testing agency
- Samples: Physical examples of products, materials, equipment, assemblies, or workmanship, physically identical to a portion of the work or establishing standards for evaluating the appearance of the finished work or both. Samples shall be submitted for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed. Samples that contain multiple, related components such as accessories shall be submitted together in one submittal package. Sample shall include an attached label on unexposed side that includes the following:
  - Generic description of Sample
  - Product name and name of manufacturer
  - Sample source
  - Number and title of appropriate specification section

- Approved Samples shall be maintained on the project site and available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set
- Field Samples and Mockups: Locate field samples and mockups in Owner designated location. Contractor shall notify the Owner a minimum of 48 hours prior to requirement of Owner's review and shall obtain Owner approval prior to commencement of additional related work
- Certificates:
  - Certificate of Compliance: may be submitted in lieu of specified sampling and testing when certificate states that product complies with Contract Documents. Certificate shall be accompanied by certified copy of test results. Submittal of Certificate of Compliance does not relieve Contractor from conforming to requirements of Contract Documents. A certificate shall be provided with each shipment of materials and products.
  - Certificate of Qualification: written information that demonstrates capabilities and experience of firm or person. A list of completed projects with project names and addresses and Owner contact information shall be included as applicable.
  - Certificate of Completion: upon Substantial Completion, a certificate indicating to the best of Contractor's knowledge and belief, work has been performed in accordance with the Contract Documents shall be submitted to the Owner.
  - Welding Certificates: written certification that welding procedures and personnel comply with requirements in the Contract Documents. Contractor shall submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on forms to include names of firms and personnel certified.
- Reports:
  - Product Test Reports: reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Reports shall be based on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
  - Shop and Field Test Reports: reports from a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product are installed in its final location, for compliance with requirements in the Contract Documents.
- Notices and Requests:
  - Notice of Work in Utility Area: Notify utility owners and municipality's fire services a minimum of 14 days prior to commencing work in an area where utilities may be located. Confirm notification of utility companies and Owner 72 hours prior to commencement of work.
  - Notice of Variance from legal requirements: Submit in writing, observed variances between Contract Documents and legal requirements.
  - Notify municipal inspecting authorities of work requiring inspection a minimum of 7 days prior to work ready for inspection.
  - Schedule of Work: submit schedule of work to be performed between dawn and dusk.
  - For work not involving utility companies submit a schedule of work to be performed at times other than during normal 8-hour workday, daylight hours, and 5-day work week, a minimum of 24 hours in advance.
  - For work involving utility companies: Submit schedule of work to be performed other than during the normal 8-hour workday and 5-day work week, a minimum of 72 hours in advance.

- Submit a schedule of work showing all work to be performed within the track envelope.
- Notice of Damaged and Defective Products: Notify Owner if products delivered by Owner, or indicated by Owner as available and ready for pickup by Contractor at Owner's Storage Facility, are found to be damaged or defective.
- Notice of Need for Land Parcels: Submit notice of need for land parcel in writing a minimum of 60 days prior to need for each parcel.
- Notice of Relinquishing Facility: For projects where owner provides property or a facility to the Contractor for use during the project, submit written notice of intent to relinquish occupancy to Owner's Real Estate Division, a minimum of 30 days prior to vacating.
- Delegated Design: Where professional design services are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated. Delegated Design Drawings and associated calculations shall be prepared, sealed and signed by a design professional licensed in the State. In addition to Drawings, Product Data, Calculations, and other required submittals, submit copies, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services. Grid coordinate system to locate all stations in CAD shall be used. Plans, reflected ceiling plans, elevations, building sections, and details, as may be required by the Owner in review of the design, in order to adequately communicate the proposed design intent and its relationship to existing conditions (lighting, signage, cameras, sprinkler systems, line-of-sight clearance, etc.).
- Working Drawings: Where professional design services are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated. Working Drawings and associated calculations shall be prepared, sealed and signed by a design professional licensed. In addition to Drawings, Product Data, Calculations, and other required submittals, submit copies, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

#### 4.1.2 Submittal format and quality

Transmittals: All submittals shall be transmitted, except sample installations and sample panels, to the Owner's representative. All submittals will be uploaded, logged and track utilizing the approved tracking system. Transmittal form will be used to record actions regarding sample panels and sample installations.

The transmittal / submittal shall identify:

- Project title and number
- Name and address of Contractor
- Name and address of subcontractor
- Name and address of supplier
- Name of manufacturer
- Submittal number and title with unique identifier, including revision identifier
- Number and title of appropriate specification section
- Drawing number and detail references, as appropriate

- Other necessary identification

Subsequent submittals shall be identified as resubmittals using the same identification number followed by an alphabetic suffix (A, B, C).

A total of four copies plus those copies required for Centennial will be submitted to the Owner, unless otherwise specified in an individual specification section or as agreed upon. Deviations shall be highlighted, encircled or otherwise specifically identified as a deviation from the Contract Documents and shall include an explanation of the deviation.

#### 4.1.3 Identification of submittals

Submittals shall be identified, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on the transmittal form. Each copy of each submittal shall be marked identically, with the following:

- Project title and number
- Name and address of Contractor
- Name and address of subcontractor
- Name and address of supplier
- Name of manufacturer
- Submittal number and title with unique identifier, including revision identifier
- Number and title of appropriate specification section
- Drawing number and detail references, as appropriate
- Other necessary identification

Subsequent submittals shall be identified as resubmittals using the same identification number followed by an alphabetic suffix (A, B, C).

#### 4.1.4 Coordination

Coordinate preparation and processing of submittals with performance of construction activities. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that requires sequential activity. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

#### 4.1.5 Basis of design submittals

When submittal indicates Centennial's intent to utilize the Basis of Design materials or equipment, the Owner may elect to take no further action on that portion of the submittal. By submitting Basis of Design materials, or equipment, Centennial may proceed with procurement of materials. When submittals, including Basis of Design material or equipment, do not comply with requirements, Owner will return submittal with comments.

#### 4.1.6 Processing time

Centennial shall allow enough time for submittal review, including time for resubmittals. Time for review shall commence on Owner's receipt of submittal. Owner will return reviewed submittals to Contractor within 15 days of receipt. When revision is required based on Owner's review comments, revise and resubmit within 10 days of receipt of comments.

- Shop Drawings, Samples, and Product Data: Submit sufficiently in advance of schedule commencement of work to satisfy review requirements (minimum of 15 days).
- Certificates and Reports: Submit sufficiently in advance of scheduled commencement of work to satisfy review requirements (minimum of 15 days).
- Notices and Requests: Submit within time indicated in individual Specification Section.
- Working Drawings and Associated Calculations: Submit sufficiently in advance of schedule commencement of work to satisfy review requirements (minimum of 15 days).
- Warranty: Submit unexecuted (sample) warranty forms a minimum of 90 days prior to projected Substantial Completion date. Submit executed warranty forms within 45 days after Substantial Completion.

## **4.2 Customer requirements**

Specific owner requirements will be incorporated in the QC Plan in accordance with all contract documents.

## **4.3 Product development**

Centennial's product development will be in accordance with contract requirements and will include:

- Review of all drawings and specifications
- Development and review of detailed scopes of work
- Verification for materials and processes
- Change management

## **4.4 Purchasing**

Centennial's procurement activities will be carried out so that materials and equipment are supplied in accordance with the applicable contract documents including technical specifications and drawings.

The Project Manager is responsible for writing requisitions for subcontracts, materials and equipment which incorporate all applicable requirements of the contract documents including drawings and specifications.

The Subcontractor may be made responsible for procurement of permanent plant material, equipment or services to complete the subcontractor's scope of work as defined in the subcontract issued by Centennial. The subcontractor is fully responsible for such procurements.

The Project Manager is responsible for procuring equipment and materials and subcontracts and will ensure that materials purchased and received meet specified requirements. The Construction Quality Control Manager (QCM) is responsible for inspecting material and equipment received to confirm that requirements are met.

### **4.4.1 Requirements**

- Selection of procurement source shall be based on Centennial's list of prequalified subcontractors and vendors.

- When the initial delivery of the material and/or equipment occurs, the QCM will check the delivered materials against any approved submittals or against contract documents including specifications and drawings if no submittal exists.
- Subcontractors are responsible for procuring the items or services they have contracted to supply. Centennial's QCM is responsible for verifying that materials and equipment provided by subcontractors meet contract requirements.

#### 4.4.2 Off-site control

Facilities of off-site fabricators and suppliers will be surveyed as required to assure that all requirements of the contract drawings and specifications are met and maintained and to assure delivery of quality products. The results of such survey will be recorded on the Contractor Quality Control Report and will be made available to the Owner. The fabricator or supplier will be notified of any deficiencies and will be required to submit a report of corrective actions taken. The contractor will inform the Owner of off-site surveys.

#### 4.4.3 Receiving and warehousing

Inspection of permanent construction materials received will be performed by the Construction Quality Control Manager or a member of his staff. Visual inspection will be made for:

- Identification
- Damage
- Completeness
- Evidence of compliance with approvals
- Proper documentation

Results of receiving inspection will be recorded on an appropriate report form and will be made available to the Owner.

#### 4.4.4 Materials certification/verification

The Project Manager will provide copies of all purchase orders or subcontracts requiring receiving inspection to the Quality Control Manager for receiving and record purposes. When the purchase order requires vendor certification of materials, equipment, or supplies, such certification will be verified as to accuracy and conformance and may be used in lieu of a test for those properties covered by the certification. Copies of all certifications received will be attached to the Contractor Quality Control Report or submitted for the Owner review/approval and maintained in the approved tracking system and will be available to the Owner.

When the initial delivery of the material occurs, the Quality Control Manager will retrieve the approved submittal and check the delivered material for conformance with the submittal. If the material does not conform to the specification and submittal requirements it will be marked with a red tag with the word REJECT printed in large black letters. A Noncompliance Notice will be issued for each item of material so identified. Rejected material shall not be installed without the written authorization of the Project Manager and the appropriate Owner representative.

## 4.5 Operations

The Quality Control Manager will employ the 3-Phases of Quality system and perform inspections and tests of all Definable Features of Work and Elements of Installation, including that of subcontractors, to ensure conformance to applicable specifications and drawings with respect to the materials, workmanship, construction, finish, functional performance, and identification. Actual Definable Features of Work / Elements of Installation will be amended to suit the specific needs of the project.

The three basic phases (Preparatory, Initial and Follow-up) of control will be basis for:

- Positively identifying the inspection status of work
- Outlining the procedures and forms that will be used to implement the QC Program
- Controlling nonconforming material, including its identification, segregation and disposition
- Ensuring that inspection, measuring, and test equipment are appropriate for their use and how their accuracy will be ensured by calibration
- Assuring that foremen, subcontractors and others are inspecting the Work adequately and in a timely manner
- Tracking system procedure to assure timely actions are taken
- Assuring compliance with testing requirements in the Contract
- Documenting and monitoring test results
- Outlining the quality and testing of subcontractor Work
- Providing a procedure for documented Inspection and Test System
- Systematically monitoring and evaluating the project to ensure that standards of quality are being met and followed
- Ensuring personnel performing special processes (e.g., welding, brazing, soldering, nondestructive testing, and plating), inspection and test shall be qualified by prior experience, training and certification

## 5 Performance measurement

In order to access the health of the Quality Control Program, Centennial has developed procedures for the systematic monitoring and evaluation of the project to ensure that standards of quality are being followed. The Quality Control Manager will review all quality incidents. Deficiencies will be noted, and their root cause(s) will be determined and categorized to allow analysis and corrective actions.

A comprehensive system of planned and periodic audits will be carried out to verify compliance with all aspects of the Quality Program and to determine the effectiveness of the program. Audits shall be performed at pre-determined intervals by qualified personnel not having direct responsibilities in the areas audited. Audit results shall be documented and reviewed by management personnel having responsibility in the area audited. Follow-up actions, including re-audit of deficient areas shall be determined and reported to the Owner within 30 days after the audit has been conducted. The Owner may conduct independent audits of the Quality Program for program effectiveness. Rejection of the program or major portions thereof may be the cause for withholding acceptance of products, system design, contractor drawings, installation drawings and other elements as described in the Contract.

Centennial conducts trend analysis to identify recurring problems. Senior project management will review the Inspection log and the categorization of causes of deficiencies for each individual contract, and across all of Centennial's contracts. The nature of all deficiencies will be reviewed and categorized accordingly. All deficiencies that indicate a repetitive quality problem will be closely examined and sorted into the appropriate problem

category. An appropriate response will be developed, including revised processes or procedures to eliminate them from future work.

Regular Quality Improvement Meetings with the project team will be conducted to find ways to reverse unfavorable trends and eliminate deficiencies. Subcontractors will attend if a deficiency involves their work.

## **5.1 Planned measurements/document control**

The Quality Control Manager will maintain current records of all control activities and tests. Centennial's Quality Control Report will be the primary means for documenting all aspects of the project quality control activities. These will include factual evidence that the required control phases and tests have been performed including the number and results, nature of defects, causes for rejection, etc.; proposed remedial action; and corrective actions taken. Centennial's records will cover both conforming and defective features and will include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records on an appropriate form will be furnished to the Owner.

Contract drawings documents and change orders issued for construction will maintained in Centennial's Project Management system or approved equal and will be issued to the Quality Control Manager. It is the responsibility of the Project Manager to ensure that all technical information is provided to the Quality Control Manager. It is the responsibility of the Quality Control Manager to maintain this technical information and keep it current and recorded as it is revised. No technical information will be replaced or revised without receipt of a properly authorized change notice. All current documents will be stored and available to all personnel via the Project Management system.

The Quality Control Manager has the responsibility of keeping quality control records current by preparing and submitting the Daily Construction Quality Control Report, Exhibit 6. This report will be provided to the Owner.

### **5.1.1 Daily construction quality control report**

The Daily Construction Quality Control Report will be completed in its entirety as appropriate for the day's activities on each delivery order in progress and shall include, but not be limited to the following:

- Project and delivery order identification
- Weather conditions with effects on project
- Subcontractors working
- Labor count by craft for both Centennial and Subcontractors
- Equipment on-site and equipment used
- Work performed
- Results of any inspections, control activities and tests performed. Copies of each are to be attached to the report
- Statements as to the nature of any reported defects, causes of rejection for work performed, notices of non-compliance, etc.
- Conflicts noted in the plans and specifications
- Verbal instructions received
- HSEQ inspections performed with violations noted
- Copies of inspection reports will be attached

Field inspection reports and independent testing laboratory results required for work, as appropriate, for the daily activities performed by an independent laboratory will also be included in attachments to the Daily Construction Quality Control Report.

Daily Construction Quality Control Reports will be signed by Quality Control Manager. Copies of the Daily Construction Quality Control Report will be provided to Centennial's Project Manager for his review and action as necessary.

#### 5.1.2 Request for information (RFI)

The approved tracking system will be used to submit, track and answer all Requests for Information (RFI). The Project Manager or QCM shall submit each RFI and shall, at a minimum, review its status weekly. The QCM may supplement tracking utilizing the Request for Information Log, Exhibit 7. The Project Manager shall notify the Owner of all outstanding RFIs impacting or potentially impacting the project schedule.

#### 5.1.3 Definable features of work (DFOW)

Actual Definable Features of Work / Elements of Installation will be amended to suit the specific needs of the project. The QCM will complete and submit a project specific Definable Feature of Work / Element of Installation form provided as Exhibit 4.

#### 5.1.4 Preparatory phase

Perform prior to beginning each definable feature of work:

- Review contract requirements
- Check to assure that all materials and/or equipment are on hand and have been tested, submitted, and approved as required
- Check to assure that provisions have been made to provide required control testing
- Examine work area to assure that all preliminary work has been accomplished
- Review the qualifications of personnel performing special processes
- Review AHA

#### 5.1.5 Initial phase

Performed at the beginning of a definable feature of work:

- Check preliminary work
- Check new work for compliance with contract documents
- Review control testing
- Verify workmanship meets required standards
- Check for use of defective or damaged materials
- Check for omissions and resolve any differences of interpretation with the Owner representative
- General check of dimensional requirements
- Check HSEQ compliance

#### 5.1.6 Follow-up phase

Perform daily checks to assure continued compliance with workmanship established at the initial phase:

- Assurance of continuous compliance with contract drawings and specifications
- Identify nonconforming work
- Daily control testing
- Final punch list completion
- Record drawings submitted
- Operations and Maintenance Manuals submitted
- Job records satisfied
- The QCM will use the Contractor Quality Control Report to document adherence to the three phases of control

#### 5.1.7 Compliance inspections

As work on a project nears completion, or at designated hold points, the Quality Control Manager (QCM) will thoroughly inspect the project and identify nonconforming items on a Pre-Final Punch List. The list shall be generated in time for corrections to be made within the time frame allotted for completion of the work.

A Pre-Final Inspection will be performed by the QCM and his or her staff and be guided by the job-specific specification requirements. The QCM will not allow construction work to progress if such work is being built upon or covers nonconforming work. The QCM will document the inspection on the Centennial Quality Control Report and will identify all nonconforming work. After receiving notification that corrections have been made, the QCM and his or her staff will make a final inspection to confirm completion. When the work on a particular project is accepted, the QCM will notify the Owner.

Items which will be embedded in concrete placements or areas which will be covered up by a following operation will be inspected by the Quality Control Manager. The Quality Control Manager will verify by signature that all items installed are in accordance with the contract drawings and specifications prior to the placement of concrete or covering. Any corrective action required will be recorded. The Owner will be given adequate notice prior to concealing such work to ensure they are afforded the opportunity for inspection.

The Pre-Final Punch List shall contain the location and nature of each nonconforming item, the date nonconforming work was discovered, the responsibility code of the individual or organization responsible for correction, the date by which the correction must be made to support further inspection or testing or work completion and the date the work was corrected.

#### 5.1.8 Factory inspection

Centennial will arrange for and perform all factory inspections required by the specifications. These inspections will be reported to the Owner on an appropriate form.

#### 5.1.9 Concealed work inspection

Items which will be embedded in concrete placements or areas which will be covered up by a following operation will be inspected by the Quality Control Manager. The Quality Control Manager will verify by signature that all items installed are in accordance with the contract

drawings and specifications prior to the placement of concrete or covering. Any corrective action required will be recorded. The Owner will be given adequate notice prior to concealing such work to ensure they are afforded the opportunity for inspection.

#### 5.1.10 Final inspection

Upon the QCM's verification that all Pre-Final Punch List items have been corrected and at least 48 hours prior to final Owner inspection and acceptance, Centennial will submit a certification, signed by the QCM, stating that all work has been inspected and that all work, except as specifically noted, is complete and in compliance with the contract plans and specifications. In the event the Owner identifies any item during the Final Inspection those items will be identified on the Final Inspection report, tracked and corrected.

Prior to final inspection or start of tests, installation of all systems being inspected or tested will be completed and accepted by the Quality Control Manager. After this acceptance, the final inspection or test may proceed in accordance with the following steps:

- Verify that test personnel have a working knowledge of the special characteristics of the instruments being used
- Note the particular inspection or test requirements and criteria for successful completion of the required inspection or test
- Upon satisfactory verification of these requirements the test may proceed. Each reading will be verified and documented by the Construction Quality Control Officer. No functional test will be accepted without properly authorized and approved test procedures

The general requirements of final acceptance will include, but not be limited to, the following:

- General appearance
- Workmanship
- Cleanliness of areas and equipment
- Identification of equipment
- Painting
- Removal of unused material and temporary facilities
- Condition of job files and completion of paperwork

#### 5.1.11 Measuring and monitoring customer satisfaction

On a Bi-annual basis Centennial will request the Owner to complete a Customer Satisfaction survey to include quality. Centennial will follow up with the Owner based on the responses received and will develop a comprehensive plan to address the concerns.

#### 5.1.12 Turnover procedure

Prior to the project's Final Inspection, Centennial will arrange for all required turnover documents, testing and training to be provided at or prior to the Final Inspection. Typical turnover documents include:

- Warranty information
- Operations and Maintenance Manuals
- System operation and verification documentation
- Final testing documentation

- As-built drawings

All required instructional and training procedures / classes will be coordinated with the Owner and scheduled per their direction. All extra material spares parts and keys will be delivered as directed by the Owner.

## 5.2 Non-conformance

Objectives of Centennial's Quality Control Plan include preventing problems from developing to a point where they are serious; ensuring that deficiencies that do occur are corrected; and minimizing recurrence of non-compliances. Recognizing that there are different levels of non-compliances, Centennial has established different ways of noting non-compliances.

### 5.2.1 Responsibilities

The Quality Control Manager is responsible for identifying, recording and ensuring the resolution of deficient conditions and minimizing their recurrence.

### 5.2.2 Requirements

Deficiencies exist when requirements established by applicable drawings, specifications, codes and standards are not met. To preclude recurrence it is necessary to identify the probable cause of the condition being identified. The following are the condition cause codes that are to be used:

OC - Owner Change	VE - Vendor Error
DE - Designer Error	VO - Vendor Omission
DO - Designer Omission	VC - Vendor Change
DC - Designer Change	CE - Constructor Error
TE - Transporter Error	CO - Constructor Omission
OT - Other	CC - Constructor Change

NOTE: Prefix "S" is to be substituted for prefix "C" if the Constructor is a Centennial subcontractor.

To identify the type of corrective action taken to correct a condition the following corrective action codes are to be listed.

RW - Rework	SC - Scrap	UA - Use As Is
RP - Repair	RT - Return	OT - Other

In an effort to quantify the level of seriousness of deficiencies, the following level codes will be assigned.

#### Level 1:

Rework involves less than five effort-hours; less than five effort-hours are required to develop a use-as-Is disposition; an item being scrapped costs less than \$100 or an item being returned will be replaced without schedule impact.

#### Level 2:

Rework should involve less than ten effort-hours; repair should take less than ten effort-hours to design and complete; less than ten hours are required to develop a use-as-Is condition; an item being scrapped costs less than \$500; or replacement of deficient item may impact the schedule.

Level 3:

Conditions described by levels 1 and 2 are exceeded or the condition is of such a serious nature that work is stopped.

Level 1, 2 & 3 deficiencies shall be recorded on the Centennial Quality Control Report and included on the Rework Item Log. In addition, a Non-Compliance Notice shall be issued for all Level 3 deficiencies. An approved tracking system shall be used to track the status of all Nonconforming items. In all cases the deficiency codes described above will be listed.

**5.2.3 Corrective action**

The Quality Control Manager shall increase the level of surveillance for those inspection codes where discrepancies are being identified. This will be part of the effort to identify root causes of the deficiencies and eliminate them.

**5.3 Data collection and analysis**

The Quality Control Manager has the responsibility of maintaining quality control records current by preparing and submitting the Daily Construction Quality Control Report. This report will be provided to the Owner Representative on a weekly basis.

The Daily Construction Quality Control Report will be completed in its entirety as appropriate for the day's activities on each project in progress and shall include, but not be limited to the following:

- Project and delivery order identification
- Weather conditions with effects on project
- Subcontractors working
- Labor count by craft for both Centennial and Subcontractors
- Equipment on-site and equipment used
- Work performed
- Results of any inspections, control activities and tests performed. Copies of each of the above are to be attached to the report
- Statements as to the nature of any reported defects, causes of rejection for worked performed, notices of non-compliance, etc.
- Conflicts noted in the plans and specifications
- Verbal instructions received
- Safety inspections and violations
- Copies of inspection reports will be attached

Field inspection reports and independent testing laboratory results required for work as appropriate for the daily activities as performed by an independent laboratory will also be included in attachments to the Daily Construction Quality Control Report.

Daily Construction Quality Control Reports will be signed by the Quality Control Manager. Copies of the Daily Construction Quality Control Report will be provided to Centennial's Project Manager for his or her review and action as necessary.

Centennial will analyze the quality of its management data by periodically reviewing the procedures that encompass all phases of the system including, but not limited to, surveillance of subcontractors' production techniques, production and process control, functional testing, discrepancy control, measuring and test equipment calibration, drawing control, quality records, shipping, inspection, and other quality provisions to meet Contract requirements.

The effectiveness and suitability of the quality management efforts will be evaluated through review of data collected via Centennial's internal quality reporting program.

#### **5.4 Improvement**

Centennial will continually seek improvements to its quality program, will ensure all non-conformities are corrected and will prevent potential nonconformities through ensuring all aspects of its quality program are strictly adhered to.