

# **CONTRACTOR QUALITY CONTROL**

## **Section: 01 45 16.13**

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### **PART 1 – GENERAL**

#### **1.1 SUMMARY**

- A. Implement a Quality Control Program to ensure that all work is performed in accordance with the Contract Documents and that substantiating documentation is provided.

#### **1.2 RELATED REQUIREMENTS**

- 1. Section 01 31 01, Building Information Modeling
- 2. Section 01 78 39, Project Record Documents

#### **1.3 SUBMITTALS**

- A. Submit Quality Control Program Manual in accordance with PART 3 of this Section B. Submit detailed Project Quality Control Program for each Construction Contract.
- B. Submit the Contractor's Quality Control Program to the Owner's Authorized Representative in Unifier ten (10) days prior to construction activities.

#### **1.4 QUALITY ASSURANCE**

- A. The Owner's Authorized Representative will perform periodic reviews and observations of the implementation of the Contractor's Quality Control Program. The Owner's testing and inspection efforts are conducted for the sole purpose of facilitating the Owner's acceptance of the constructed Work. Contractor retains total responsibility for Work.

### **PART 2 - PRODUCTS**

Not Used.

### **PART 3 – EXECUTION**

#### **3.1 GENERAL**

- A. Implement a Quality Control Program including review and approval of shop and/or working drawings, inspection of materials and workmanship, and coordinating testing by the Owner's Materials Testing Agency.
- B. Establish and maintain an effective quality control (QC) program in compliance with the Contract Clause titled "Inspection of Construction." QC consist of plans, procedures, and organization necessary to produce an-end product which complies with the contract requirements. Cover all construction design and construction operations, both onsite and offsite, and be keyed to the proposed construction design and construction sequence. The QC Administrator will be held responsible for the quality of work and is subject to removal by the OAR for non-compliance with the quality requirements specified in the contract. In this context the highest-level manager responsible for the overall construction activities at the site, including quality and production is the project superintendent. The QC Administrator must always maintain a physical presence at the site and is responsible for all Quality Control related activities at the site, except as otherwise acceptable to the OAR.

**3.2 OWNER'S AUTHORIZED REPRESENTATIVE'S ROLE**

- A. The Owner's Authorized Representative will approve the Contractor's Quality Control Program and monitor the activities of the Contractor to ensure its effectiveness and compliance with the stipulations within this Section. The Owner's Authorized Representative review does not relieve the Contractor of responsibility for development and implementation of a Quality Control Program or for full compliance with the provisions of the Contract Documents

**3.3 QUALITY CONTROL SYSTEM**

A. Submittal:

1. Submit no later than ten (10) days after receipt of notice to proceed, the Quality Control (QCP) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." DFW will consider an interim plan for the first 10 days of operation. Construction Design and construction will be permitted to begin only after acceptance of the QC Program or acceptance of an interim plan applicable to the feature of work to be started. Work outside of the accepted interim plan will not be permitted to begin until acceptance of a QC Program or another interim plan containing the additional work.
2. The Quality Control Program must be approved prior to the commencement of construction activities.

B. Content of the QC Plan:

1. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the QC Administrator/Manager will implement the three-phase control system for all aspects of the work specified.
2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.
3. A copy of the letter to the QC Administrator/Manager signed by an authorized official of the firm which describes the responsibilities and delegates enough authority to adequately perform the functions of the QC Administrator/Manager, including authority to stop work which is not in compliance with the contract. Letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities will be issued by the QC Administrator/Manager. Copies of these letters must be furnished to the DFW.
4. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
5. Reporting procedures, including proposed reporting formats.
6. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a section. This list will be agreed upon during the coordination meeting.

**C. Organization:**

1. Designate one individual as the Quality Control Administrator/Manager. The Quality Control Administrator/Manager will have responsibility for the implementation of the Quality Control Program for the Contractor on all construction contracts. The Quality Control Administrator/Manager shall have full authority to represent the company with respect to quality of the work and the Quality Control Program and shall have no duties assigned other than quality control activities.
  - a. Quality Control Administrator/Manager shall be a full-time employee and be totally dedicated to quality control. The Quality Control Administrator/Manager shall refer to construction contract general provisions, Section 100-3, and The DFW Quality Assurance Manual for further details. Please visit [www.dfwairport.com](http://www.dfwairport.com) solicitation page to access the Quality Assurance Manual for further details.
2. Provide qualified personnel to inspect the work and perform other Quality Control Program duties as required. Submit the qualifications and work experience of all QC personnel to the Owner's Authorized Representative for review and approval. Refer to Construction Contract General Provisions, Section 100-3, Quality Control Organization, and The DFW Quality Assurance Manual for further details on qualifications of the Contractor's Quality Control personnel.
3. Designate an alternate for the Quality Control Administrator/Manager to serve in the event of the designated Quality Control Administrator's/Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate Quality Control Administrator/Manager shall be same as for the Quality Control Administrator/Manager.
4. These personnel shall be either engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field.
5. The Quality Control Administrator/Manager, Quality Control Inspectors, and Quality Control testing personnel are not production staff with clear lines of authority for Quality Control outside the production staff.

**D. Approval:**

1. The Owner's Authorized Representative will review the submission and respond within seven calendar days of receipt. Experience and qualifications will be evaluated on a case-by-case basis to determine acceptability of individuals. If approval is conditional, the Contractor will comply with the direction of the Owner's Authorized Representative.
2. Once approved, the Quality Control personnel may not be replaced, nor any changes made without prior written consent from the Owner's Authorized Representative.

**E. Activities:**

1. Provide Quality Control personnel to perform the following duties:
  - a. Field Activities:

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1. Inspect all field work in progress for compliance with the Contract Documents. Inform the Contractor and the Owner's Authorized Representative of any work that is in non-compliance immediately.
  2. Document all work activities by completing a Quality Control Daily Construction Report for every contract day using the Oracle Unifier (Skier) software program as designated by DFW. Provide written reference to the Work that was in non-compliance. In addition, all Quality Control documentation including but not limited to photos, tickets, quantity sign off etc.... shall be submitted within 24hrs of the activity for that day.
  3. Contractor must arrange for all required material testing and retesting of work with the Contractor's testing laboratory. The Quality Control staff shall witness and review the tests and reports for conformance with the Contract Documents. The Owner reserve the right to use their independent testing laboratory to validate results.
  4. Formulate work lists for items requiring completion for any interim or substantial completion.
  5. Approve all concrete placements using approved concrete placement cards.
  6. Note any deficiency discovered, maintain records of all deficiencies and corrective action Provide prompt notification of any deficiency to the Owner's Authorized Representative and provide an updated file of the log at the weekly construction update meeting. Enter all deficiency information using the Oracle Unifier (Skier) software program as designated by DFW.
  7. Participate in all inspections per General Provisions 100-9 in reference to surveillance by the Engineer (OAR).
  8. Participate in all meetings with the (Engineer) Owner's Authorized Representative as required in the Quality Control Program.
  9. Provide the Owner's QA Department with a weekly schedule of work activities showing QC staff coverage for each construction activity.
- b. Building Information Modeling (BIM)
1. Capture all Asset / Feature data for facilities data and Airfield, landside, and FAA features.
  2. Perform Contractors coordination and model sign off for clash detection and trade subcontractors integrated model development.
  3. Refer to Section 01 31 01 Building Information Modeling (BIM), if applicable for BIM-related procedures.

F. Office activities:

1. Review all submittals for compliance with the Contract Documents. Maintain record of all submittals day using the Oracle Unifier software program as designated by DFW.

2. Review as-built conditions on the Contract Documents as per requirements of Section 01 78 39, Project Record Documents.
3. Provide all documentation of the Quality Control Program activities to the Owner's Authorized Representative.
4. Review Contractor's pay requests and maintain appropriate documentation for quality and acceptance of work being claimed.

### 3.4 QUALITY CONTROL PROCESS

#### A. QC Meetings:

1. After the start of construction, the Quality Control Administrator/Manager shall conduct Quality Control meetings. These meetings shall occur once every two weeks with the following individuals:
  - a. General contractor's superintendent
  - b. General contractor's foreman
  - c. DFW Quality Assurance OAR
  - d. DFW Project Management Representative
  - e. Contractor's Testing/Inspection agency
  - f. DFW's Testing/inspection agency
2. The Quality Control Administrator shall prepare the minutes of the meeting and provide a copy to the DFW Quality Assurance Department within two working days after the meeting. As a minimum, the following shall be accomplished at each meeting:
  - a. Review the minutes of the previous meeting.
  - b. Review the schedule and the status of work and rework;
  - c. Review the status of submittals;
  - d. Review the work to be accomplished in the next two weeks and documentation required.
  - e. Resolve QC/QA and production problems (RFIs, etc.);
  - f. Address items that may require revising the QC plan; and
  - g. Review Accident Prevention Plan (APP).

#### B. Phases of Control

Quality Control is how the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control must be conducted by the QC Administrator/Manager for each definable feature of the construction work as follows:

##### 1. Preparatory Phase

This phase is performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase includes: The Contractor's Quality Control

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Program objectives and stated Documentation and records required for implementing the Quality Control Program.

- a. A review of each paragraph of applicable specifications, reference codes, and standards. Make available during the preparatory inspection a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field. Maintain and make available in the field for use by DFW personnel until final acceptance of the work.
  - b. Review of the contract drawings.
  - c. Check to assure that all materials and/or equipment have been tested, submitted, and approved.
  - d. Review of provisions that have been made to provide required control inspection and testing.
  - e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
  - f. Examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
  - g. Review of the appropriate activity hazard analysis to assure safety requirements are met.
  - h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
  - i. Check to ensure that the portion of the plan for the work to be performed has been accepted by the OAR.
  - j. Discussion of the initial control phase.
  - k. The OAR must be notified at least 48 hours in advance of beginning the preparatory control phase. Include a meeting conducted by the QC Administrator/Manager and attended by the superintendent, other QC personnel (as applicable), and the foreman responsible for the definable feature. Document the results of the preparatory phase actions by separate minutes prepared by the QC Administrator/Manager and attach to the daily QC report. Instruct applicable workers as to the acceptable level of workmanship required to meet contract specifications.
2. Initial Phase
  3. This phase is performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase includes:
    - a. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
    - b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

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- c. Establish a level of workmanship and verify that it meets acceptable 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 the activity analysis with each worker.
- f. The OAR must be notified at least 48 hours prior to the beginning the initial phase. Prepare separate minutes of this phase by the QC Administrator/Manager and attach to the daily QC report. Indicate the exact location of initial phase for future reference.
- g. The initial phase should be repeated for each work site, or any time acceptable specified quality standards are not being met.

#### 4. Follow-Up Phase

Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the feature of work. Record the checks in the QC documentation. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

#### 5. Additional Preparatory and Initial Phase

Conduct additional preparatory and initial phases on the same definable features of work if: The quality of on-going work is unacceptable; if there are changes in the applicable QC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

#### C. Sample Forms

As required per Technical and General Provisions

#### D. Notification of Noncompliance

The OAR and or QC Administrator/Manager will notify the Contractor of any detected noncompliance with foregoing requirements. Take immediate corrective action after receipt of such notice. Any notice, when delivered by the Engineer or his/her authorized representative (OAR) at the site of the work, shall be considered sufficient notice. If the Contractor fails or refuses to comply immediately, the OAR may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such orders will be made the subject of the claim extension of time or for excess costs or damages by the Contractor.

### 3.5 QUALITY CONTROL PROGRAM

- A. Prepare a Project Specific Quality Control Program that shall be neatly organized, typed, and shall include but not be limited to the following:
  - 1. The Contractor's Quality Control Program objectives and stated policy.

2. Organization and delegation of Quality Control authority to various Contractors' representatives.
3. Documentation and records required for implementing the Quality Control Program
4. Reports and forms to be submitted.
5. Inspection requirements, arrangements, coordination, control and reporting.
6. Contractor has sole responsibility of performing all Quality Control testing on all materials requiring verification and approval. Contractor must coordinate with Contractor's material testing agency to ensure all materials are tested and approved. Owner retains the right to randomly test any and all project materials used for construction of the project utilizing the Owner's independent testing agency.
7. Internal audits to ensure the personnel of the Contractor and subcontractors are completing tasks per Quality Control Program
8. Procedures for indoctrination and training of employees.
9. Procedures for receiving and storage of permanent materials for the Quality Control Program.
10. Identify the Quality Control Administrator/Manager to be assigned to the project
11. Identify the Quality Control Technicians to be assigned to the project.
12. Organization and delegation of Quality Control authority to various Contractors' representatives.
13. Tabulation of all tests and inspections anticipated for the Project, and the anticipated schedule for these tests.
14. Procedures for Clash detection and Coordination and reporting documentation of corrective action processes.
15. Procedures for model review for Asset Data and Feature Data.
16. Procedures for 4D and 5D model generation and management throughout construction.
17. Provide project schedule updates on monthly basis on activities scheduled for the upcoming month.
18. Specific documentation and records that are required for implementing the Quality Control Manual/Plan for the Project.

### 3.6 QUALITY CONTROL VALIDATION

- A. Upload and maintain the following documents in Unifier. These documents shall be readily available to the DFW's Quality Assurance Department during all business hours and turned in to DFW at the completion of the project.
  1. All completed Preparatory and Initial Phase Checklists, arranged by specification section.
  2. All milestone inspections arranged by Activity/Event Number.



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3. A current up-to-date copy of the Testing and Plan Log with supporting field test reports, arranged by specification section.
4. Copies of all contract modifications arranged in numerical order. Also, include documentation that modified work was accomplished.
5. A current up-to-date copy of the Rework Items List.
6. Maintain up-to-date copies of all punch lists issued by the QC Staff on the Contractor and Sub-Contractors and all punch lists issued by DFW.

#### 3.7 FAILURE TO PROVIDE QUALITY MANAGEMENT SERVICES

##### A. Lack of Personnel

The Contractors Quality Control Administrator/Manager shall provide the OAR a schedule to reflect the construction efforts (scheduled work activities) which will also include all personnel scheduled for the next two weeks of construction. Failure to provide this information shall result in a back charge to the Contractor for work to be completed on scheduled day. The OAR shall determine the amount back charged to the Contractor based upon personnel and work schedule changes. The contractor must notify the OAR immediately of any schedule and personnel changes.

##### B. Work Deficiencies

All work deficiencies shall be addressed by the Quality Control staff. Items that are deemed non-compliant will be documented on the forms that are included in the Quality Control plan. These forms shall be attached to the daily Quality Control reports until the item(s) is compliant. Failure to document items that are non-compliant will result in a penalty which may include being removed from the project. The OAR shall determine what actions will take place if this and other requirements are not met by the General Contractors appointed Quality Control staff.

**Repeated failures to comply with the requirements herein shall result in the Owner's Authorized Representative implementing their own Quality Control Program. Such action will be at the sole discretion of the OAR. Cost implementing the Quality Control Program will be deducted from the contract price.**

**For additional information regarding NCR Dollar Assignments, please refer to the QA Manual Section 2.5 NCR Dollar Assignments.**

**- END OF SECTION -**