

## **SECTION 01 45 00**

### **QUALITY CONTROL**

#### **PART 1 - GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Contractor's Quality Control Plan and Services
- B. Quality Control and Control of Installation
- C. Tolerances
- D. References
- E. Observation by the Owner
- F. Manufacturer's Field Services
- G. Testing Agency Services
- H. Requirements of Tests

##### **1.02 CONTRACTOR'S QUALITY CONTROL PLAN AND SERVICES**

- A. The Contractor shall develop and submit to the City, a Quality Control Plan (QCP) for all materials, equipment, and services. The QCP shall be submitted to the City for review and approval prior to the start of Contract Work.
  - 1. The QCP shall include listing of the Contractor's Testing Agency and approved personnel with certifications.
  - 2. The QCP shall include type and frequency of testing for all Work completed under the Contract. It shall also include the identification of all offsite and factory test inspections.
  - 3. Work covered by the Quality Control Plan shall not commence until approval of the QCP.
- B. Testing Services: Per General Conditions - 8.02 Tests and Inspections, all testing and inspection of the Work required by the Contract Documents shall be arranged and paid for by the Contractor. The Contractor shall provide the services of a qualified independent testing laboratory(s) or agency(s) to control the quality of Work and materials to fulfill the requirements of the Contract. No separate

payment will be made for quality control, and all costs therefore shall be included in the prices named in the Schedule of Bid Prices for the various appurtenant items of Work.

### **1.03 QUALITY CONTROL AND CONTROL OF INSTALLATION**

- A. Maintain and monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from the City Representative before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Failure of Materials and Equipment Tested or Inspected:
  - 1. Previous acceptance may be withdrawn and material may be subject to removal and replacement with material meeting Specification requirements, at no cost to the City.
  - 2. The City may require submittal and approval of a Remediation Plan, when requested, for failed materials, equipment, products, services, site conditions, and/or workmanship.

### **1.04 TOLERANCES**

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from the City and/or Owner's Agent before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

### **1.05 REFERENCES**

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.
- C. Obtain copies of standards where required by product and specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from the City and/or Owner's Agent before proceeding.
- E. See Construction Manual, latest edition, published by the California Department of Transportation (Caltrans) and available for download at [http://www.dot.ca.gov/hq/construc/constmanual/construction\\_manual.pdf](http://www.dot.ca.gov/hq/construc/constmanual/construction_manual.pdf) for Materials Accepted on the Basis of a Certificate of Compliance (Section 6-203C of Caltrans Construction Manual).

## **1.06 DOCUMENTATION**

- A. The Contractor shall maintain current quality records to provide factual evidence that all activities, including quality control activities such as inspections and tests have been performed, accepted, and comply with the Contract Documents and the Quality Control Plan (QCP). These quality records shall include the work of the Contractor, Subcontractors, Suppliers, inspection services and testing laboratories, and shall be on an acceptable form.
- B. Quality records shall include but are not limited to Certificates of Compliance checklist, QCP, Subcontractor and Supplier Quality Programs, inspection reports, receiving inspection reports, calibration test reports, material test reports, Construction Non-Conformance Report (CNCR), personnel information (qualifications, certifications, resumes, and approvals), minutes of the Preparatory Phase, Initial Phase, and Follow up Phase meetings, procedures, Submittals and RFI logs, Punch Lists, and training records.
- C. Contractor Inspector (CI) Daily Inspection Report shall include, as a minimum, the following information provided by the Contractor's Inspectors (CI):
  - 1. Contractor/Subcontractor and their area of responsibility.
  - 2. Description of the weather conditions encountered and the work performed each day, giving location, description, and by whom. Identify each phase of work performed each day by CPM schedule activity number or Work Break Structure (WBS), as applicable.

3. Test, inspections and control activities performed with results and references to specifications/drawing requirements. List of deficiencies noted, along with the required corrective actions.
4. Material and equipment received at the Site with statement as to acceptability (including verification/validation of required material identification, certifications, and quantities), storage and maintenance thereof, as required by the QCP.
5. Surveillance and audit activities, both on- and off-site, performed and documented as required by the QCP.
6. Documentation generated from the Preparatory Phase, Initial Phase, and Follow up Phase work.
7. Each Contractor/Inspector's (CI) daily report shall clearly indicated that the work performed and material and or equipment incorporated into the Contract, is acceptable or unacceptable. Unacceptable work that is considered by the QCP to be in-process, which will be brought into conformance with the Contract Documents; both within one (1) working day, or at a time deemed to be reasonable by the QCP, and subject to approval of the City Representative, shall be clearly indicated on the CI Daily Report as requiring follow –up acceptance inspection. Work that is found to be non-conforming, that can't be brought into conformance with the Contract Documents, shall be documented and processed as required by the QCP with the Contractor's Non-Conformance Report number indicated on the Daily Contractor Inspection Report.
8. Daily Inspection Reports: completed Quality Control inspection checklists or forms as described in the QCP, and related laboratory test report results for the work performed for the activities described within the Report shall be attached to the Daily Inspection Report and shall be furnished daily to the City Representative within 24 hours after the date covered by the Report. Reports need to be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 Days of no work shall be for that Day only.
9. Daily Inspection Reports shall be signed and dated by the Contractor's representative.

## **1.07 OBSERVATIONS BY THE OWNER**

- A. All work (which includes but is not restricted to materials, workmanship, and manufacture and fabrication of components) shall be subject to inspection and/or tests by the owner and by others authorized by the Owner. Any such inspection and/or test is for the sole benefit of the Owner and shall not relieve the Contractor

of the responsibility of providing quality control measures to assure that the work strictly complies with the Contract requirement. No inspection or test by the Owner shall be construed as constituting or implying acceptance. Inspections or tests shall not relieve the Contractor of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of the Owner after acceptance of the completed work.

The contractor shall make available all offsite fabrication facilities for inspection of fabricated items by the Owner.

During the course of construction, inspections may be conducted by authorized representatives of the City, various inspectors at the site, or independent agencies designated by the City.

1. The presence of inspectors or independent agencies shall not relieve Contractor of the responsibility for the proper execution of the work in accordance with the requirements of the Contract Documents. Compliance is a duty of Contractor, and said duty shall not be avoided by any act or omission on the part of the inspectors.
- B. All products, materials, and equipment furnished by Contractor may be subject to inspection by the City both on-site and at the place of manufacture.
  1. Contractor shall at all times provide access to the work for representatives of the City and other agencies designated by the City wherever Contract work is in preparation, in progress or completed.

If the Contractor does not promptly replace rejected material or correct rejected workmanship, the Owner may, by Contractor or otherwise, replace such material or correct such workmanship and deduct the cost thereof from subsequent progress payments.

- C. Inspection items include, but are not limited to, construction quality, deficiencies, and corrections thereof; technical data on materials, tests, and laboratory analysis; contract change orders, claims, and other contract administration matters; and daily logs.
- D. The Contractor shall be held responsible for delay of inspection or test due to material or work not being acceptable or ready at the time specified by the Contractor for such inspection or test, and due to re-inspection or retest necessitated by prior rejection.
- E. The Contractor shall not cover, or allow to be covered, any of the work installed under this Contract without the Owner's Agent's approval. Should any of the work be covered prior to such approval, the Owner's Agent shall have the authority to require the work to be uncovered for inspection and approval, re-

covered, and all resultant damage repaired, all at the Contractor's expense.

- F. Should it be necessary or advisable by the owner, at any time before acceptance of the entire work, to make examination of work already completed, the Contractor shall, on request, promptly furnish all necessary facilities, labor, and material requested. If such work is found to be defective or nonconforming, the Contractor shall be responsible for all the expenses of such examination and for satisfactory reconstruction. If, however, the Owner's Agent was allowed ample opportunity to inspect said work and the work is found to meet the requirements of the Contract, the Contractor will be compensated for the additional services involved in such examination and reconstruction under force account, and if completion of the work has been delayed thereby, he shall, in addition, be granted a suitable extension of time.
- G. Neither inspections nor approvals by the Owner's Agent or by others shall relieve the Contractor from the obligation to perform the work in accordance with the Contract. Contractor shall be responsible for calling Code Enforcement Agencies such as the Bureau of Building Inspection, San Francisco Fire Department, Department of Public Health, etc.

#### **1.08 MANUFACTURER'S FIELD SERVICES**

- A. When specified in the respective Specification Sections, require manufacturer or supplier to have qualified representative(s) perform on-site observations and make recommendations.
  - 1. Observe field conditions, including conditions of surfaces and installation.
  - 2. Observe quality of workmanship.
  - 3. Furnish recommendations to assure acceptable installation and workmanship.
  - 4. Where required, start, test, and adjust equipment as applicable.
  - 5. Where required, certify that work is installed, adjusted, tested, and satisfactorily performs In accordance with the requirements of the Contract Documents.
- B. Representative shall submit written report to City listing observations and recommendations.
- C. Maintain a complete set of manufacturer's instructions at the jobsite during installation and provide to the City and/or City's Agent prior to performing the work described in the instructions and again at the completion of the work as Project Record Documents.
- D. Unless otherwise, indicated or specified, perform work including, handling, installing, connecting, cleaning, conditioning, and adjusting products in strict accordance with such instructions.

## **1.09 TESTING AGENCY SERVICES**

- A. Contractor shall employ and pay for specified services of an independent firm to perform testing and inspection.
- B. The independent firm shall perform tests, inspections, and other services specified in individual specification sections and as required by the City and/or Owner's Agent.
  - 1. Laboratory: Authorized to operate in State of California.
  - 2. Laboratory Staff: Minimum full time registered Engineer on staff to review services. Testing Agency will furnish sufficient personnel to perform testing and inspection in a reasonable manner so the Contractor is not caused undue delays and expense.
  - 3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
  - 4. Testing Agency services will be performed in accordance with requirements of governing authorities and with specified standards.
- C. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by the City and/or Owner's Agent.
- D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
  - 1. Notify the City and/or City's Agent and independent firm 48 hours prior to expected time for operations requiring services.
  - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- E. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- F. Reports will be submitted to the City and Contractor giving observations and results of tests, indicating compliance or non-compliance with specified standards and with Contract Documents. Test results and reports shall be submitted to the City upon their completion within 24 hours.
  - 1. Where required, Testing Agency will submit copy of test results directly to enforcing agency.
  - 2. When test or inspection reveals nonconformance with Contract Documents, Testing Agency will orally notify City and Contractor immediately and subsequently by written report.

- G. Re-testing or re-inspection required because of unsatisfactory or non-conformance to specified requirements shall be performed by same independent firm on instructions by the City and/or Owner's Agent. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
1. Re-testing and inspections of Work revised or replaced by Contractor shall be paid by Contractor where tests were performed on original Work.
  2. Contractor shall repair and replace at no cost to the City damage to Work made necessary by re-testing in accordance with the requirements of the Contract Documents.
  3. Contractor shall reimburse City for City's inspection or separate Quality Assurance inspection fees for travel and per diem expenses, when shops or plants of fabrication are located more than 50 miles from Project site.
  4. If City has reasonable doubt that materials comply with specified requirements, additional inspections or tests will be required as directed by City.
    - a. If additional inspections or tests establish that materials comply with specified requirements, costs for such tests will be paid by City.
    - b. If additional inspections or tests establish that materials do not comply with specified requirements, costs for such tests shall be paid by Contractor.
- H. Testing Agency is **not** authorized to:
1. Release, revoke, alter, or enlarge requirements of Contract Documents.
  2. Accept any portion of Work.
  3. Assume duties of Contractor.
  4. Stop Work, except as may be required to perform testing or inspection operations.
- I. Contractor's Responsibilities:
1. Prepare a Quality Control Plan (QCP) for all materials and equipment installed under the Contract. The QCP shall be submitted to the City for review and approval prior to the start of Contract Work.
  2. Furnish a Testing Agency to provide testing and personnel necessary to comply with the Contractor's Quality Control Plan.
  3. Provide access to the Work.
  4. Obtain and handle samples of materials and equipment.
  5. Furnish storage and assistance as requested.
  6. Facilitate inspections and tests.



7. Notify the City to coordinate for City furnished special inspectors (if required) or Quality Assurance inspection (at the discretion of the City) in writing a minimum of 48 hours, excluding weekends and holidays, nor more than 72 hours prior to expected time for operations requiring testing or inspection services.
  8. Schedule Work to be tested or inspected to allow tests to be performed within reasonable time period.
  9. When a specified test or inspection is not performed due to Contractor's failure to notify the City as specified or when material or workmanship is not ready at the time specified, the City will establish remedial Work and Contractor shall bear cost of remedy.
  10. Take steps necessary to ensure no portion of the Work requiring testing or inspection is covered prior to written acceptance by authorized parties.
  11. Ensure that no testing or inspection is scheduled until such times as they are assured that all approvals for the work have been received. This includes welder's certifications, submittals, design/build engineering stamp, and certification.
  12. Contractor shall submit a Certificate of Compliance for all materials incorporated into the Work (as per Section 01 33 00 – Submittal Procedures, subsection 1.11).
- J. Completed Work: Should the City require tests and inspections for completed work that has not been tested or inspected, furnish necessary facilities, labor, and material to uncover or remove Work in question to extent necessary. Contractor shall reconstruct the work after the test or inspection in accordance with the requirements of the Contract Documents.
1. The cost of reconstructing non-conforming work or defective materials shall be at Contractor's expense.

#### **1.10 REQUIREMENTS OF TESTS**

- A. Review Specifications Sections for additional requirements for testing and inspection.
- B. Tests referenced shall not be a limitation on City's rights for testing and inspection to verify conformance with Contract Documents.
- C. The Contractor shall provide certified copies of the reports of all tests required in various sections of the Specifications or by Reference Standards. Test results on previously tested products or materials shall be accompanied by notarized certificates from the manufacturer certifying that previously tested products or materials are of the same type, quality, make, and manufacture as those proposed for use on this Contract.
- D. Test reports shall clearly state if the item is in compliance or is not in compliance

with the Contract.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 – EXECUTION**

**3.01 EXAMINATION**

- A. Verify existing site conditions and substrate surface are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

**END OF SECTION**