

SECTION 01 4500 QUALITY REQUIREMENTS

PART 1 – GENERAL

1.1 GENERAL

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

Section includes administrative and procedural requirements for quality assurance and quality control.

Testing Services are required to verify compliance with specified requirements. Individual requirements are specified within the applicable Sections.

Inspections and Observations are required to verify code compliance and contract compliance. Specific requirements are included in this Section. Code inspection requirements are further described on the Building Permit.

1.3 DEFINITIONS

The definitions below are in addition to the basic definitions provided in the General Conditions of the Contract.

- A. Quality Assurance Services: Activities, actions and procedures performed before and during execution of the Work to guard against defects and to ensure that the finished construction will comply with the specified requirements.
- B. Quality Control Services: Tests, inspections, procedures and related actions during and after execution of the Work to evaluate that the completed construction is compliant with specified requirements.
- C. Mockups: Full size physical assemblies that are constructed on site. Mockups are required in order to verify material selections, to demonstrate aesthetic effects, to show interface between dissimilar materials, and to demonstrate compliance with specified installation tolerances. Approved mockups establish the standard by which the Work will be judged.
- D. Product Testing: Tests and inspections that are conducted by an independent organization or agency qualified to conduct such testing/inspection, and acceptable to authorities having jurisdiction, for the purpose of establishing product performance and compliance with specified requirements.
- E. Source Quality Control Testing: Tests and inspections that are performed at the source, e.g. plant, mill, factory or shop.
- F. Field Quality Control Testing: Tests and inspections that are performed on site during installation and of completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing Laboratory shall have the same meaning as Testing Agency.
- H. Installer/Applicator/Erector: A contractor or entity engaged by the General Contractor as a vendor, subcontractor or sub-subcontractor to perform a particular construction operation.

- I. Experienced: When used to describe an entity of individual, experienced means having successfully completed a minimum of five (5) previous project similar in nature, size and scope to this Project, being familiar with special requirements indicated, and having complied with the requirements of the Authorities Having Jurisdiction (AHJ).

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with more than one standard is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the greater quantity or more stringent standard of quality. When the requirements of standards differ, but otherwise appear to be equivalent, defer to the Design Professional for a decision before proceeding with the Work.
- B. Specified Requirements: If the plans and specifications cite different or conflicting requirements for minimum quantities or quality levels, comply with the greater quantity or more stringent standard of quality. When the requirements of the documents differ, but otherwise appear to be equivalent, defer to the Design Professional for a decision before proceeding with the Work.

1.5 SUBMITTALS

- A. Quality Control Plan: Submit quality control plan within 10 days of Notice to Proceed and not less than 5 days prior to the Preconstruction Meeting, to include the following:
 - 1. Personnel, procedures, controls, instructions, and forms to be used to carry out the Contractor's quality assurance and quality control responsibilities
 - 2. Procedure and name of responsible party to ensure compliance with specified requirements through review of submittals and shop drawings. Indicate qualifications of personnel responsible for review of submittals and shop drawings
 - 3. Written qualifications for:
Contractor's quality control personnel
Testing Agency(s)
 - 4. Schedule of Tests and Inspections, including both contractor-performed tests and owner-provided tests and inspections as required by the Contract Documents
- B. Shop Drawings: For mockups, provide plans, sections and elevations indicating materials and size of mockup. Indicate manufacturer and model number of individual components.

1.6 REQUIREMENTS

- A. Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality control procedures similar in nature and extent to those required for Project.

Project quality control manager may also serve as Project Superintendent

- B. Continuously inspect the Work for compliance with the specified requirements and with approved shop drawings and submittals.
- C. Maintain testing and inspection reports including a log of approved and rejected results. Include a record of work that the Design Professional has indicated as nonconforming or defective.

- D. Maintain daily job-site sign-in sheets and provide copies to the Design Professional and Owner at regular intervals to exhibit that the requirement for full time supervision is met, and proper manpower is provided to meet schedule milestones.

1.7 REPORTS AND DOCUMENTS

- A. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address and telephone number of the technical representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- B. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address and telephone number of factory-authorized service representative making report.
 - 2. Statement that equipment complies with requirements.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 4. Statement whether conditions, products, and installation will affect warranty.
 - 5. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE

- A. Qualifications below establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
 - 1. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

2. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
 3. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
 4. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
 5. Specialists Qualifications: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 6. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections.
 7. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
 8. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- B. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by the Design Professional.
 2. Notify the Design Professional seven days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Design Professional's approval of mockups before starting work, fabrication, or construction. Allow seven (7) days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

7. Demolish and remove mockups when directed unless otherwise indicated.
- C. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.
- D. Factory Mockups: Comply with requirements of individual Specification Sections.

1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where testing services and code inspection services are specifically indicated as Owner's responsibility, Owner will engage a qualified testing agency and qualified Building Code Inspector to perform these services.
 1. Owner will furnish Contractor with contact information for the testing agencies and Building Code Inspector.
 2. The Contractor is responsible to coordinate directly with the Owner to schedule testing and Building Code Inspections.
 3. Payment for these services will be made by the Owner.
 4. Costs for retesting and reinspection of construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Design Professional Responsibilities: basic services include the following:
 1. Design Professional and each sub-consultant shall observe the Work at appropriate intervals and shall exercise due diligence to safeguard the Owner's interests.
 2. Design Professional shall distribute field reports to the Owner and Contractor within 7 days of each observation. Field Reports will note defects, deficiencies, noncompliance with the Contract Documents and/or unsatisfactory workmanship.
 3. In addition to regularly scheduled field observations, the Design Professional will specifically observe and report on the following components of the project. The Contractor is required to schedule these observations directly with the Design Professional a minimum of 48 hours in advance:
 - (a) Bearing surfaces of excavations before concrete is placed;
 - (b) Reinforcing steel after installation and before concrete is placed;
 - (c) Structural concrete;
 - (d) Laboratory reports on all concrete;
 - (e) Structural steel during and after erection and prior to its being covered or enclosed
 - (f) Steel welding;
 - (g) Mechanical and plumbing work following its installation and prior to its being covered or enclosed;
 - (h) Electrical work following its installation and prior to its being covered or enclosed.
- C. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 3. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 4. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 5. Where quality-control services are indicated as Contractor's responsibility, submit a written report of each quality-control service.
 6. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
- D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 3300 "Submittal Procedures."
- E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- F. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- G. Testing Agency Responsibilities: Cooperate with Design Professional and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Design Professional and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.

- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

PART 2 – PRODUCTS

Not Applicable

PART 3 – EXECUTION

3.1 TESTING AND INSPECTION LOG

- A. Testing and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to testing and inspection log for Architect's reference.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 4500