SECTION 01 45 00 - PROJECT QUALITY CONTROL

PART 1- GENERAL

1.1. RELATED DOCUMENTS

1.1.1. The Contractor's attention is specifically directed, but not limited, to the Uniform General and Supplementary General Conditions for University of Texas System Building Construction Contracts (UGC) for other requirements.

1.2. SUMMARY

1.2.1. This Section provides administrative and procedural requirements for Contractor quality control on the Project.

1.2.2. Specific quality-control requirements for individual construction activities are specified in the Sections that govern those activities. Requirements in those Sections may also cover production of manufactured products.

1.2.3. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures to fully comply with the Contract Document requirements in all regards.

1.2.4. Provisions of this Section do not limit the requirements for the Contractor to provide quality-control services required by the Contract Documents or the Authority Having Jurisdiction.

1.2.5. The following quality issues are addressed in detail in this Section:

1.2.5.1. (1.3) Quality Control

1.2.5.2. (1.4) Quality Assurance

1.2.5.3. (1.5) Contractor Employed Testing Agency

1.2.5.4. (1.6) Testing

1.2.5.5. (1.7) Inspections

1.2.5.6. (1.8) Preinstallation Meetings

1.2.5.7. (1.9) Mock-ups

1.3. QUALITY CONTROL

1.3.1. Quality Control shall be the sole responsibility of the Contractor, unless specifically noted otherwise. The Contractor shall be responsible for all testing, coordination, start-up, operational checkout, and commissioning of all items of Work included in the Project, unless specifically noted otherwise. All costs for these services shall be included in the Contractor's cost of work.

1.3.2. The Contractor shall assign one employee to be responsible for Quality Control. This individual may have other responsibilities, but may not be the Contractor's Project superintendent or the Contractor's Project manager.

1.4. QUALITY ASSURANCE

1.4.1. The Owner or Owner's designated representative(s) will perform quality assurance. Owner's quality assurance procedures may include observations, inspections, testing, verification,

monitoring and any other procedures deemed necessary by the Owner to verify compliance with the Contract Documents.

1.4.1.1. The Owner's quality assurance testing and inspection program is separate from Owner's commissioning program, as defined in Section 01 91 00 –General Commissioning Requirements.

1.4.2. The Contractor shall cooperate with and provide assistance to the Owner related to Owner's quality assurance procedures. Contractor shall provide to Owner ladders, lifts, scaffolds, lighting, protection, safety equipment and any other devices and/or equipment (including operators if required) deemed necessary by the Owner to access the Work for observation/inspection.

1.4.3. Owner may employ independent testing agencies to perform certain specified testing, as Owner deems necessary. The Contractor shall integrate Owner's independent testing services within the Baseline Schedule and with other Project activities.

1.4.4. Owner's employment of an independent testing agency does not relieve the Contractor of the Contractor's obligation to perform the Work in strict accordance with requirements of the Contract Documents.

1.5. TESTING AGENCY

1.5.1. The Contractor shall employ and pay for services of an independent testing agency to perform all specified testing requiring an independent agency, unless specifically noted otherwise.

1.5.2. Contractor's employment of an independent testing agency does not relieve the Contractor of the Contractor's obligation to perform the Work in strict accordance with requirements of the Contract Documents.

1.5.3. The Contractor Employed Testing Agency:

1.5.3.1. The testing agency must have the experience and capability to conduct testing and inspecting indicated by ASTM standards and that specializes in the types of tests and inspections to be performed.

1.5.3.2. The testing agency shall comply with requirements of ASTM E 329, ASTM E 543, ASTM E 548, ASTM C 1021, ASTM C 1077, ASTM C 1093, and other relevant ASTM standards.

1.5.3.3. The testing agency's laboratory must maintain a fulltime engineer on staff to oversee and review the services. The engineer must be licensed in the State of Texas.

1.5.3.4. The testing agency must calibrate all testing equipment at reasonable intervals (minimum yearly) with accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.5.4. The Contractor shall not employ the same testing entity engaged by the Owner for the Project, without the Owner's written approval.

1.6. TESTING

1.6.1. Where specific testing is specified in a technical section of the Specifications or indicated in the Contract Documents, the Contractor shall bear all costs of such tests unless the Owner has expressly agreed in writing to pay for the tests.

1.6.2. Testing specifically identified to be conducted by Owner, will be performed by an independent entity and will be arranged and paid for by the Owner unless otherwise indicated in the Contract Documents. Should the test return unacceptable results, the Contractor shall bear all costs of retesting and reinspection as well as the cost of all material consumed by testing, and replacement of unsatisfactory material and/or workmanship.

1.6.3. The Contractor in cooperation with the Owner's Construction Inspector shall schedule the Owner's testing services.

1.6.4. The Owner may engage additional consultants for testing, air balancing, commissioning, or other special services. The activities of any such Owner consultants are in addition to Contractor testing of materials or systems necessary to prove that performance is in compliance with Contract requirements. The Contractor must cooperate with persons and firms engaged in these activities.

1.6.4.1. The Contractor shall self-perform various tests to verify performance and/or operation of various systems. Test reports that document the tests shall be consecutively numbered and defined by scope and extent of the test. Copies of the test report forms can be obtained from the Owner. The following Owner test report forms are examples of forms that shall be used for this purpose and shall not be altered in any manner:

1.6.4.1.1. Pipe Test Report.

1.6.4.1.2. Duct Test Report.

1.6.4.1.3. Equipment or System Start-up/Request for Inspection.

1.6.4.1.4. Contractor's Request for Utility Shutdown.

1.6.4.1.5. Domestic Water Sterilization and Flushing Report.

1.7. INSPECTIONS

1.7.1. All of the Work is subject to inspection and verification of correct operation prior to 100% payment of the line item(s) pertaining to that aspect of the Work.

1.7.2. The Contractor shall incorporate adequate time for performance of all inspections and correction of noted deficiencies into the Work Progress Schedule for the Project.

1.7.3. During the course of construction, the Owner, Architect/Engineer, and/or other Owner representatives may visit the Site for observation of the Work in place. The Contractor shall provide all necessary personnel and/or equipment for safe access to the Work to be inspected or observed, regardless of frequency. This requirement shall extend to all Owner personnel and their representatives. Some of these inspections will be informal and some will require formal notification by the Contractor.

1.7.4. For any requested inspection, the Contractor shall complete prior inspections to ensure that items are ready for inspection and acceptance by the Owner and/or Architect/Engineer. The Contractor shall be responsible for any and all costs incurred by Owner and/or Owner representatives, including consultants, resulting from a review or inspection that was scheduled prematurely.

1.7.5. The Contractor shall submit written notification to the Owner and Architect/Engineer a minimum of three (3) days and a maximum of eleven (11) days in advance of all requested inspections. Confirm advance notification time period with Owner for scheduling inspections.

1.7.6. The Contractor shall provide a system of tracking all field reports, describing items noted, and resolution of each item. The Owner will review reports on a monthly basis, or as necessary. Owner may require Contractor to track all inspection field reports within Owner's internet-based project management system.

1.7.7. The following are typical Project inspections:

1.7.7.1. Informal Daily Reviews of Project conditions by the Owner's Construction Inspector and/or members of the Project Team. When considered appropriate, results of these reviews will be documented via Observation Reports or Memorandum.

1.7.7.2. Concealed Space Inspections for subject areas that include partitions, structural walls, chases, crawl spaces, ceiling spaces, and any other Work, which will be difficult or impossible to examine once concealed in the final construction.

1.7.7.2.1. Contractor shall not enclose partitions, structural walls, chases, crawl spaces, ceiling spaces, and any other Work which will be difficult or impossible to examine once concealed in the final construction until Contractor has received written approval from Owner's Construction Inspector.

1.7.7.3. Progress Inspections for piping, ductwork, and other systems shall be scheduled by the Contractor through the Owner's Construction Inspector as appropriate portions, or sections, of the Work are completed. This is in addition to "system-wide" performance verification and tests. The Contractor shall schedule and document the tests using the standard Owner Pipe Test and Duct Test report forms. The Contractor shall conduct the tests and the Owner's Construction Inspector will witness and approve the results.

1.7.7.3.1. The Contractor shall coordinate their intended "apportioning" of systems tests with the Owner's Construction Inspector immediately following formal submission of their Work Progress Schedule so that all parties are aware of the intended Work and inspection sequence.

1.7.7.4. Overhead and Above Ceiling Inspections are similar in nature and requirements to the Concealed Space Inspections. Ceilings that are fixed in place, such as gypsum board or plaster, constitute a Concealed Space Inspection. Ceilings that are of "lay-in" type or where no finish ceiling is scheduled are considered an "overhead" inspection. Contractor shall include Overhead and Above Ceiling Inspections on the Work Progress Schedule.

1.7.7.4.1. No finish ceiling material shall be installed until all overhead Punchlist items have been resolved to the satisfaction of the Owner.

1.7.7.4.2. Completed Work in place necessary for an Overhead Inspection shall include all required infrastructure and appurtenances, inclusive of, but not limited to the following.

1.7.7.4.2.1. Installation of ceiling grid or framework.

1.7.7.4.2.2. Installation and operation of all above ceiling electrical Work, including light fixtures.

1.7.7.4.2.3. Installation of all HVAC and plumbing Work above ceiling with installation and connection of terminal units and air devices.

1.7.7.4.2.4. Installation of fire sprinkler heads.

1.7.7.4.2.5. Completion and Owner approval of all required tests for above ceiling Work.

1.7.7.5. Inspections of Building Systems and Equipment are intended to confirm acceptable operation. Contractor shall formally schedule inspections through the Owner's Construction Inspector and Architect/Engineer utilizing Owner's Inspection Request Form. Refer to Section 01 91 00 – General Commissioning Requirements and to Technical Specifications for additional requirements pertaining to system start-up, commissioning, operation, demonstration, and acceptance.

1.7.7.5.1. The Contractor shall perform a thorough checkout of operations with the manufacturer's representatives prior to requesting the formal inspection by the Owner. Contractor must notify the Owner's Construction Inspector, in advance, as to when the manufacturer's representative is scheduled to arrive at the Site.

1.7.7.5.2. For "building-wide" and/or life safety systems, such as emergency lighting, emergency power, uninterruptible power supply systems, fire alarm, fire sprinkler systems, smoke evacuation systems, toxic gas monitoring, captured exhaust systems, etc., the formal start-up inspection shall be completed prior to requesting Substantial Completion Inspection for any area of the Project.

1.7.7.5.3. The manufacturer's representatives and the installing contractor shall demonstrate both operation and compliance to the Owner's agents and consultants. If coordinated and scheduled appropriately by the Contractor, these equipment and/or systems inspections may also serve to provide the required Owner training, if approved in advance by the Owner.

1.7.7.6. A building systems final inspection with documented approval of individual equipment and/or system(s) must be accomplished prior to requesting Substantial Completion Inspection for any area affected by said equipment and/or system.

1.7.8. The Contractor is responsible for requesting that the Owner's Construction Inspector and Architect/Engineer arrange for the inspection of materials, equipment, and Work prior to assembly or enclosure that would make the materials, equipment, or Work inaccessible for inspection and at other times as may be required.

1.7.9. The Contractor shall coordinate the Work and schedule all inspections in advance so as not to delay the Work. All major inspections shall be indicated on the Work Progress Schedule for advance planning. Contractor shall allow a minimum of five (5) calendar days to confirm schedule of requested inspections with Owner's representatives.

1.8. PREINSTALLATION MEETINGS

1.8.1. The Contractor shall coordinate and conduct meetings to review the installation of major systems/equipment on the Project. As a minimum, Contractor shall schedule and conduct the Preinstallation Meeting(s) for the Work of each major building system. The Preinstallation Meeting(s) shall be convened following approval of system submittals and prior to commencement of system installation Work.

1.8.2. The purpose of the Preinstallation Meeting(s) is for the Contractor and all applicable subcontractors and/or suppliers and/or factory representatives to discuss all aspects of the installation of the particular system. Contractor shall direct special attention to the scheduled order of Work and any impact on or by any other building systems. Contractor shall develop a strategy acceptable to the Owner for start-up, inspection and acceptance, based on Contractor's Prefunctional Checklists, so that all parties are aware of what is expected and/or acceptable.

1.8.3. The Contractor shall ensure attendance of the installing subcontractor, manufacturer and/or supplier (if appropriate), supporting subcontractors involved in the installation, and any other parties involved in the phase of Work to be reviewed. Contractor shall notify the Owner and Architect/Engineer in writing at least five (5) days in advance of the Preinstallation Meeting(s).

1.8.4. Each party shall be prepared to discuss in detail the staging, installation procedure, quality control, testing/inspection, safety and any other pertinent items relating to the Work being reviewed. Submittal approval shall be a prerequisite of the Preinstallation Meeting(s). At this meeting(s), Contractor shall review and discuss the Commissioning Plan, test procedures, scheduling, and logistics. Contractor shall bring the following to the Preinstallation Meeting(s), as a minimum, for review and discussion:

1.8.4.1. Portion of the Initial Equipment Matrix applicable to the system under discussion.

1.8.4.2. Draft of the Prefunctional Checklists.

1.8.4.3. Current work schedule data pertaining to the beginning, start-up, inspection, and turnover phases anticipated for the particular system.

1.8.4.4. Copy of all approved submittals for the system.

1.8.5. The Contractor shall take minutes of the Preinstallation Meeting(s) and distribute to all attending parties.

1.8.6. Whether required in the Technical Specifications or not, a Preinstallation Meeting(s) shall be conducted for the following Work, if included in the Project:

1.8.6.1. Concrete.

1.8.6.2. Masonry.

1.8.6.3. Large Steel Fabrications.

1.8.6.4. Waterproofing.

1.8.6.5. Roofing.

1.8.6.6. Exterior Glazing (including storefront and curtain wall).

1.8.6.7. Door Hardware.

1.8.6.8. Audio / Visual Equipment.

1.8.6.9. Air Handling Units.

1.8.6.10. Medical Gas Systems.

1.8.6.11. All Other Mechanical and Electrical Systems.

1.9. MOCK-UPS

1.9.1. Before installing portions of the Work requiring mock-ups, Contractor shall build mock-ups for each form of construction and finish required, using materials indicated for the completed Work.

1.9.2. Build mock-ups in location and of size indicated or, if not indicated, as directed by Architect/Engineer. The mock-up may be work in place that is intended to remain, unless otherwise directed by the Owner.

1.9.3. Notify Architect/Engineer and Owner five (5) days in advance of dates, times, and locations of when and where mock-ups will be constructed.

1.9.4. Demonstrate the proposed range of aesthetic effects and workmanship. Demonstrate anticipated repairs in the mock-up, such as for stone veneer.

1.9.5. Obtain Architect/Engineer's and Owner's approval of mock-ups before starting work, fabrication, or construction.

1.9.6. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed Work.

1.9.7. Demolish and remove mock-ups when directed by Owner, unless otherwise indicated.

1.9.8. As a minimum, Contractor shall prepare a mock-up for the following Work, if applicable to the Project. Owner may define additional mock-ups at the Pre-bid or Preconstruction Meeting.

1.9.8.1. Exterior wall system to include: substructure, masonry/stone veneer, plaster, architectural concrete and windows.

1.9.8.2. Roof system.

1.9.8.3. Interior laboratory room; utilities serving laboratory casework.

1.9.8.4. Interior patient care and prevention room.

1.9.8.5. Interior wall finishes.

1.9.8.6. Ceramic tile.

1.9.8.7. Finished flooring.

1.9.8.8. Plumbing battery for multiple-use toilet rooms.

1.9.8.9. Medical gas headwalls.

PART 2- PRODUCTS (NOT USED)

PART 3- EXECUTION (NOT USED)

END OF SECTION 01 45 00