

SECTION 01 45 00 - PROJECT QUALITY CONTROL

PART 1 - GENERAL

1.1. RELATED DOCUMENTS

- 1.1.1. Drawings and general provisions of the Contract, including Uniform General and Supplementary General Conditions for University of Texas System Building Construction Contracts (UGC) and other Division 1 – Division 33 Specification Sections, apply to this Section. In the event of conflict between specific requirements of the various documents, the more restrictive, more extensive (i.e., more expensive) requirement shall govern.

1.2. DEFINITIONS

1.2.1. QUALITY CONTROL

- 1.2.1.1. 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 and general conditions.
- 1.2.1.2. The Contractor shall assign one employee, not the project superintendent, to be responsible for Quality Control. This individual can have other responsibilities, but shall not be the project superintendent or the project manager.

1.2.2. QUALITY ASSURANCE

- 1.2.2.1. Quality Assurance is performed by the Owner or their delegated representatives. These procedures may include observations, inspections, testing, verification, monitoring and any other procedures deemed necessary to ensure compliance with the contract documents.
- 1.2.2.2. The Contractor shall cooperate with and provide assistance to the Owner for all aspects of this endeavor. This shall include providing 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.

1.3. SUMMARY

- 1.3.1. This section provides administrative and procedural requirements for Contractor quality control on the project.
- 1.3.2. 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.

- 1.3.3. Specified tests, inspections, and related actions do not limit Contractor's quality control obligations to comply fully with the Contract Document requirements in all regards.
- 1.3.4. 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.
- 1.3.5. The following quality issues are addressed in detail in this Section:
 - 1.3.5.1. Quality Control
 - 1.3.5.2. Quality Assurance
 - 1.3.5.3. Testing Agency
 - 1.3.5.4. Testing
 - 1.3.5.5. Inspections
 - 1.3.5.6. Pre-installation Meetings
 - 1.3.5.7. Mock-ups

1.4. TESTING AGENCY

- 1.4.1. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- 1.4.2. Owner will employ services of independent testing agencies to perform certain specified testing, as it deems necessary.
- 1.4.3. The Contractor shall employ and pay for services of an independent testing agency to perform all specified testing requiring an independent agency, unless noted otherwise.
- 1.4.4. Employment of agency in no way relieves the Contractor of the obligation to perform Work in accordance with requirements of Contract Documents.
- 1.4.5. The Contractor Employed Agency:
 - 1.4.5.1. Testing agency shall comply with requirements of ASTM E 329, ASTM E 548, ASTM E 543, ASTM C 1021, ASTM C 1077, and ASTM C 1093.
 - 1.4.5.2. Laboratory shall maintain a full time Engineer on staff to review services. Engineer shall be licensed in the state of Texas.
 - 1.4.5.3. Testing Equipment: Calibrate devices at reasonable intervals (minimum yearly) with accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

- 1.4.6. The Contractor shall not employ the same testing entity engaged by the Owner for the project, unless agreed to in writing by the Owner.

1.5. TESTING

- 1.5.1. 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 they are specifically stated to be paid by the Owner.
- 1.5.2. 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.
- 1.5.3. The Owner's Construction Inspector (CI) will schedule the Owner's testing services unless otherwise directed in writing by the Owner. The Contractor is required to coordinate with the CI to facilitate timeliness of such testing services.
- 1.5.4. The Owner may engage additional consultants for testing, air balancing, 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 requirements. The Contractor must cooperate with persons and firms engaged in these activities in accordance with the Contract.
 - 1.5.4.1. The Contractor is required to self-perform various tests to verify performance and/or operation of various systems. These test reports shall be consecutively numbered and defined by scope and extent of test. Copies of the test report forms can be obtained from the PM/CI. The following UTHHealth test report forms shall be used for this purpose and shall not be altered in any manner:
 - 1.5.4.1.1. Pipe Test Report
 - 1.5.4.1.2. Duct Test Report
 - 1.5.4.1.3. Equipment Start-up Request Form
 - 1.5.4.1.4. Contractor's Request for Utility Shutdown
 - 1.5.4.1.5. Domestic Water Sterilization and Flushing Report

1.6. INSPECTIONS

- 1.6.1. It is the intent of the Contract Documents that all work be subjected to inspection and verification of correct operation prior to 100% payment of the line item(s) pertaining to that aspect of the Work.
- 1.6.2. The Contractor shall incorporate adequate time for performance of all inspections and correction of noted deficiencies into the Work Progress Schedule for the project.

1.6.3. During the course of construction, the Owner, Architect and/or other Owner representatives may visit the site for observation of the work in place. The Contractor shall provide all necessary equipment for safe access to the work to be inspected or observed. 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. The following are typical project inspections:

1.6.3.1. Informal Daily Reviews of project conditions by the Construction Inspector and/or members of the Owner's and/or Design Consultant's team(s). When considered appropriate, results of these reviews will be documented via Observation Report or Memorandum. In addition to cooperating with, and providing safe access for the Owner's agents, the Contractor shall provide a system of tracking all field reports, describing items noted and resolution of each item. This printed report shall be reviewed as necessary, at least on a monthly basis.

1.6.3.2. Concealed Space Inspections are to be formally scheduled in advance through the Construction Inspector by submitting written notification at least five (5) workdays in advance. Subject areas 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.

1.6.3.3. Progress Inspections for piping, ductwork, and other systems are to be scheduled with the Construction Inspector as appropriate portions, or sections, of the work are completed. This is in addition to "system-wide" performance verification and tests. These tests are to be scheduled and documented using the standard UTHHealth Pipe Test and Duct Test report forms. The forms shall be filled out and signed as meeting contract requirements prior to submission for verification by the CI. The Contractor shall conduct the tests and the CI will witness and approve the results.

1.6.3.3.1. The Contractor shall coordinate their intended "apportioning" of systems tests with the Construction Inspector immediately following formal submission of their Work Project Schedule so that all parties are aware of the intended work and inspection sequence.

1.6.3.4. Overhead and Above Ceiling Inspections are similar in nature and requirements to the Concealed Space Inspections. Where ceilings are to be fixed in place, such as gypsum board or plaster, it would constitute a Concealed Space. Where ceilings are of "lay-in" type, or where no finish ceiling is scheduled, it would be considered an "overhead" inspection. Such inspections are to be included in the Contractor's Detailed Construction Schedule. Contractor shall provide written inspection request notice to the CI and Architect at least five (5) workdays in advance.

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

1.6.3.4.2. Work in place necessary for an overhead inspection shall include:

- 1.6.3.4.2.1. Ceiling grid or framework installed
- 1.6.3.4.2.2. All above ceiling electrical work, including light fixtures, installed and operational
- 1.6.3.4.2.3. All HVAC and plumbing work above ceiling complete with diffusers installed and connected
- 1.6.3.4.2.4. Fire sprinkler heads installed
- 1.6.3.4.2.5. All required tests for above ceiling work completed and approved
- 1.6.3.4.2.6. Contractor generated punchlist of all areas being requested for inspection
- 1.6.3.5. Inspections of Building Systems and Equipment are required to confirm acceptable operation and are to be formally scheduled through the Construction Inspector with the Architect. Refer to Section 01 91 00 for additional requirements pertaining to system start-up, operation, demonstration and acceptance.
- 1.6.4. On systems/equipment requiring a manufacturers representative to verify installation/operation, the Contractor is required to perform a thorough check-out of operations with the manufacturer's representatives prior to requesting formal inspection by the Owner be scheduled. Notify the CI, in advance, as to when the manufacturer's representative is scheduled to arrive.
- 1.6.5. Inspection of individual equipment and/or system(s) must be accomplished prior to requesting Substantial Completion Inspection for any area affected by that equipment and/or system.
- 1.6.6. For "building-wide" and/or life safety systems, such as fire alarm, fire sprinkler systems, smoke evacuation systems, toxic gas monitoring, captured exhaust systems, etc., completion and acceptance of Functional Testing is required prior to requesting Substantial Completion Inspection for any area of the Project.
 - 1.6.6.1. The manufacturer's representatives and the installing contractor will be expected to 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.
 - 1.6.6.2. The Contractor is responsible for requesting that the Construction Inspector and Architect 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 such other times as may be required.
- 1.6.7. For any requested inspection, the Contractor shall make prior inspection to ensure that items are ready for inspection and acceptance by the Owner and/or Architect.

The Contractor will 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.

- 1.6.8. The Contractor shall coordinate the work and schedule the inspections in advance so as not to delay the work. All major inspections should be indicated on the Work Progress Schedule for advance planning and the Contractor should allow a minimum of five (5) working days to confirm schedule of requested inspections with Owner and its consultants.
- 1.6.9. The contractor shall list and track all punchlist items on the UTHealth Project Inspection Matrix (refer to Attachment A). The matrix shall be kept up-to-date reflecting status of work in place and inspections on the project. Copies of this populated and updated matrix shall be supplied to the A/E and the CI for use during the course of the project.

1.7. PRE-INSTALLATION MEETINGS

- 1.7.1. The Contractor shall coordinate and conduct meetings to review the installation of major systems/equipment on the project.
- 1.7.2. 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. The Owner and Architect shall be notified in writing at least five (5) days in advance of the meeting.
- 1.7.3. 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 meeting.
- 1.7.4. The Contractor shall chair and take minutes of this meeting and distribute to all attending parties.
- 1.7.5. Whether required in the technical section or not, a pre-installation meeting shall be conducted for the following work, if included in the project:
 - 1.7.5.1. Concrete
 - 1.7.5.2. Masonry
 - 1.7.5.3. Large Steel Fabrications/Erection
 - 1.7.5.4. Waterproofing
 - 1.7.5.5. Roofing
 - 1.7.5.6. Exterior Glazing (including storefront and curtain wall)
 - 1.7.5.7. Door Hardware

- 1.7.5.8. Security
- 1.7.5.9. Audio/Visual Equipment
- 1.7.5.10. Air Handling Units
- 1.7.5.11. Medical Gas Systems

1.8. MOCK-UPS

- 1.8.1. Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required, using materials indicated for the completed Work.
- 1.8.2. Build mockups in location and of size indicated or, if not indicated, as directed by Architect. The mock-up may be work in place that is intended to remain, unless otherwise directed by the Owner.
- 1.8.3. Notify Architect and Owner five (5) working days in advance of dates and times when mockups will be constructed.
- 1.8.4. Demonstrate the proposed range of aesthetic effects and workmanship. Include anticipated repairs in mockup, such as stone veneer.
- 1.8.5. Obtain Architect's and Owner's approval of mockups before starting work, fabrication, or construction.
- 1.8.6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
- 1.8.7. Demolish and remove mockups when directed, unless otherwise indicated.
- 1.8.8. For any of the following work items included in the project, a mockup shall be prepared whether required by the technical section or not:
 - 1.8.8.1. Exterior wall system to include: substructure, masonry/stone veneer, plaster, architectural concrete and windows.
 - 1.8.8.2. Roof system
 - 1.8.8.3. Interior lab room
 - 1.8.8.4. Interior patient care room
 - 1.8.8.5. Interior wall finishes
 - 1.8.8.6. Ceramic tile
 - 1.8.8.7. Finished flooring

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 45 00

ATTACHMENT A – UTHealth-Houston PROJECT INSPECTION MATRIX



OFPC PROJECT INSPECTION MATRIX

Office of Facilities Planning & Construction

Project Number:

Project Name:

OFPC Construction Inspector:

Contractor Inspector:

PROJECT AREA & SYSTEM INSPECTION LIST									
Item #	Inspection Type	Location	Date Initiated	Date of Follow Up Inspection	Date of Final Sign-Off	OFPC Final Sign-Off			Comments
1	Above Ceiling	Corridors East of Interaction 6/3005	06/28/05	07/13/05	07/28/05	Jane Smith			
2	Hydronic Hot Water	Mech. Space	06/28/05	07/13/05	07/28/05	Jane Smith			
3	Pre-Final all AHU	Mech. Space	06/29/05	07/14/05	07/29/05	Jane Smith			
4	Chilled water	Mech. Space	06/30/05	07/15/05	07/30/05	Jane Smith			
5	Exhaust Fans	Mech. Roof	07/07/05	07/22/05	08/06/05	Jane Smith			
6	Pre-Final Electric System	Various	07/09/05	07/24/05	08/08/05	Jane Smith			
7	R.O. Water System	Mech. Room	07/12/05	07/27/05	08/11/05	Jane Smith			
8	Roof	Roof system	07/21/05	08/05/05	08/20/05	Jane Smith			
9	Exterior Bldg	All	07/25/05	08/09/05	08/24/05	Jane Smith			
10	Hardscape	All	07/29/05	08/13/05	08/28/05	Jane Smith			
11	Substantial Completion	All	08/04/05	08/19/05	09/03/05	Jane Smith			
12	Point to Point	All	08/16/05	08/31/05	09/15/05	Jane Smith			
INDIVIDUAL INSPECTION ITEM LIST									
Item #	Level	Room	Item Description	Date Inspected	Responsible Sub	Contractor Sign-Off	OFPC Final Sign-Off		Comments
1	1	1.304B.5	Cut drops on fire sprinkler.	05/11/05	Simplex	John Doe	Jane Smith		
2	1	1.304B.5	Adjust hangers on fire sprinkler pipe to meet spec.	05/11/05	Simplex	John Doe	Jane Smith		
3	1	1.304B.4	Support wires for ceiling need to be moved where touching other work.	05/11/05	MBS	John Doe	Jane Smith		
5	1	1.304B.4	Complete installation of conduit and boxes for electrical.	05/11/05	Design	John Doe	Jane Smith		
6	1	1.304B.4	Complete installation of conduit and boxes for controls.	05/11/05	Siemens	John Doe	Jane Smith		
7	1	1.304B.4	Cut drops on fire sprinkler.	05/11/05	Simplex	John Doe	Jane Smith		
8	1	1.304B.4	Adjust hangers on fire sprinkler pipe to meet spec.	05/11/05	Simplex	John Doe	Jane Smith		
9	1	1.304B.4	Support cables for remote damper adjustment.	05/11/05	Todd-Ford	John Doe	Jane Smith		
10	1	1.304B.5	Plug ball valve above ceiling.	05/11/05	Simplex	John Doe	Jane Smith		
11	1	1.304B	Support wires for ceiling need to be moved where touching other work.	05/11/05	MBS	John Doe	Jane Smith		
12	1	1.304B	Seal all holes in masonry floor.	05/11/05	Todd-Ford	John Doe	Jane Smith		
13	1	1.304B	Complete installation of conduit and boxes for electrical.	05/11/05	Design	John Doe	Jane Smith		
14	1	1.304B	Complete installation of conduit and boxes for controls.	05/11/05	Siemens	John Doe	Jane Smith		
15	1	1.304B	Cut off all-thread on hangers to one inch.	05/11/05	Various	John Doe	Jane Smith		
16	1	1.304B	Cut drops on fire sprinkler.	05/11/05	Simplex	John Doe	Jane Smith		
17	1	1.304B	Adjust all-thread on hangers to prevent touching other work or isolate	05/11/05	Various	John Doe	Jane Smith		
18	1	1.304B.2	Remove unused all-thread above East wall.	05/11/05	Todd-Ford	John Doe	Jane Smith		
19	1	1.304B.2	Remove or re-attach metal stud corner brace.	05/11/05	MBS	John Doe	Jane Smith		
20	1	1.304B.2	Cut drops on fire sprinkler.	05/11/05	Simplex	John Doe	Jane Smith		
21	1	1.304B.1	Cut drops on fire sprinkler.	05/11/05	Simplex	John Doe	Jane Smith		
22	1	1.304B.1	Adjust all-thread on hangers to prevent touching other work or isolate	05/11/05	Todd-Ford	John Doe	Jane Smith		
23	1	1.304A	Complete shower chase and ceiling framing.	05/11/05	MBS	John Doe	Jane Smith		
24	1	1.304A	Complete installation of conduit and boxes for electrical.	05/11/05	Design	John Doe	Jane Smith		
25	1	1.304A	Complete installation of conduit and boxes for controls.	05/11/05	Siemens	John Doe	Jane Smith		
26	1	1.304A	Cut drops on fire sprinkler.	05/11/05	Simplex	John Doe	Jane Smith		
27	1	1.304A	Cut off all-thread on hangers to one inch.	05/11/05	Various	John Doe	Jane Smith		
28	1	1.304A	Remove or re-connect loose all thread.	05/11/05	Simplex	John Doe	Jane Smith		
29	1	1.304A	Label copper lines.	05/11/05	Todd-Ford	John Doe	Jane Smith		
30	1	1.304A	Cut off all-thread on hangers to one inch.	05/11/05	Various	John Doe	Jane Smith		

REVISION LOG

The following is provided for convenience to the Owner, Architect/Engineer and Contractor to track changes between annual document issuances and is not to be considered by any party to be contractual or 100% complete.

Date	Paragraph Revised
02/01/08	Added section 1.6.9 - The contractor shall list and track all punch list items on the Project Inspection Matrix...
02/01/08	Added Attachment A