

FACILITIES STANDARD

NAME : Acceptance Testing of HVAC Systems
NUMBER : 15990

ORIGINAL DATE : 03-01-94
REVISION DATE : 10-12-99

PURPOSE:

1. The general purpose of each Facilities Standard is to provide minimal criteria for construction materials at University facilities regarding code compliance, warranty, approved products, execution and uniformity.
2. To protect the health and safety of patients, visitors, students, faculty and staff, in addition to protecting non-project UAB property, all construction must be in accordance with: NFPA 241 safeguarding construction, alteration and demolition operations; Standard Building Code, Chapter 33, regarding site work, demolition and construction; NFPA 101 Life Safety Code.
3. Construction safety is the responsibility of the contractor in accordance with the regulations and codes of the agency having jurisdiction, and according to the guidelines adapted by OSHA.
4. The **Acceptance Testing of HVAC Systems Facilities Standard** establishes a series of guidelines for specifying this particular item on any construction project at the University. ***This Facilities Standard is not to be regarded as a specification.***

GENERAL:

1. In addition to requirements of the construction contract, Acceptance Testing of the HVAC systems and related auxiliary equipment shall be performed at the Owner's discretion and expense. The Acceptance Testing Team will be coordinated by the HVAC Design Engineer as stipulated in the O/A agreement, Project Manager and the Acceptance Testing Coordinator. The Acceptance Testing Coordinator will typically be a Department of Energy Management representative.
2. Acceptance Testing shall apply to any projects deemed appropriate by the Project Manager or Maintenance Director. This determination will be based on the scope of HVAC work in the project and will be determined during the design phase.

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3. The Acceptance Testing Team can consist of several individuals in addition to the Acceptance Testing Coordinator, the HVAC Design Engineer, and Project Manager. Those individuals could include UAB Maintenance personnel,

Commissioning Contractors, and other Consultants as needed for the specific scope and schedule.

4. The Acceptance Testing Team shall be involved in all stages of the design and shall have sufficient access to the project to inspect the installation of the HVAC Systems during construction.
5. The time allocated for Acceptance Testing will be determined during design development based on the complexity of the project.
6. The General Contractor, in his original bid, shall allow for the cost required to cover all work which may be necessary for the successful completion of the project, including all work resulting from Acceptance Testing.
7. A final inspection will not be scheduled for the project without written notification from the Acceptance Testing Coordinator that performance of HVAC systems is acceptable.

EXECUTION:

1. In order to ensure that all systems are installed and operating as required by the Specifications, the General Contractor shall operate the systems at his expense for the length of time necessary to properly verify their completion. This requires that equipment be successfully operated in all seasonal and emergency modes, that a Final Test and Balance (TAB) Report be prepared by a qualified firm and that the contractor correct all deficiencies identified in the TAB Report.
2. The General Contractor shall provide and coordinate the services of qualified, responsible subcontractors, suppliers and personnel as required to install the system as designed. Additionally, the General Contractor shall provide the necessary personnel to correct, repair, and/or replace any and all deficient items or conditions found during the course of the project.
3. Any malfunction encountered during the Acceptance Testing period will be reported to the Project Architect.
4. The Contract Drawings and Specifications indicate valves, dampers, and miscellaneous devices for the purpose of making adjustments to obtain operating conditions. It will be the responsibility of the General Contractor to

install these devices, at his cost, in a manner that will leave them accessible and readily adjustable. Should any such device not be readily accessible, the General Contractor shall provide access as requested.

5. If any check or test cannot be accomplished due to building structure or other building system deficiencies outside the scope of the HVAC systems work, these deficiencies should be resolved by the Project Architect and corrected by the appropriate parties.
6. Members of the Acceptance Testing Team shall have the authority to observe activities on the job site at all times.
7. The General Contractor shall notify the Project Architect, in writing, of upcoming tests and startup procedures allowing adequate time to communicate those tests and procedures to the Acceptance Testing Team. This shall include all pressure tests of the HVAC piping and duct systems.
8. UAB personnel associated with the operation and maintenance of the facility will have access to the site during construction to observe installation of the HVAC system and to learn about its installation and operation. These personnel should be present for all start-up procedures. The General Contractor shall conduct training for these individuals, with the installed equipment and controls, in addition to factory training. This training shall be video taped by the General Contractor.
9. The Acceptance Testing Coordinator will perform testing, as deemed appropriate for the job, and shall notify the HVAC Design Engineer of problems identified by those tests and observations. The HVAC Design Engineer and Acceptance Testing Coordinator will work together to communicate needed revisions or repairs with the Project Architect and/or General Contractor.
10. If any check or test cannot be accomplished for seasonal reasons, lack of occupancy, or for other reasons, this fact should be noted along with an indication of when the test will be scheduled.
11. The Project Schedule shall identify and allow for sufficient time to permit completion of all services prior to the General Contractor's Notification of System Readiness (NOSR). This shall include delivery of all required documentation. Documentation required with the NOSR includes:

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- A. Final TAB Report
- B. HVAC Equipment Submittals
- C. Control Schematics and Wiring Diagrams
- D. Control Sequence of Operations
- E. Installation, Operation, Programming and Maintenance Manuals for Controls

- F. As-Built Drawings
- G. Training documentation and materials

12. The Acceptance Testing period will begin after NOSR.
13. Should the Acceptance Testing Team determine the NOSR to have been premature, all associated costs shall be reimbursed to the Owner by the General Contractor through a credit Change Order. The initial Acceptance Testing shall be at the Owner's expense. When the acceptance tests are repeated, the testing shall be at the Contractor's expense.
14. Every check or test for which acceptable performance was not achieved should be repeated after the necessary corrective measures have been completed. This re-testing process should be repeated until acceptable performance is achieved. If acceptable performance cannot be achieved, then the necessary corrective measures should be carried out. The Project Architect should issue appropriate directions in this regard.
15. The Acceptance Testing Coordinator shall notify the Project Manager, Project Architect and Director of Maintenance in writing after successful completion of all testing. At that time, the Contractor may schedule the Final Inspection. A two week notice is desired for scheduling a final inspection at UAB.

END OF STANDARD

Prepared by: _____ Revised by:

Larry K. Little

Reviewed and Recommended by: _____

Mark A. Goska
Director, Architecture & Engineering

Approved :

Brooks H. Baker III
Associate Vice President – Facilities

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