

SECTION 230430 - HVAC TEST & BALANCE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. All work specified in this Section is governed by the Mechanical General Section 230100.
- B. This Section 230430 and the accompanying drawings cover the provision of all labor, equipment, appliances, and materials and performing all operations in connection with the testing and balancing (T&B) of the heating, ventilating and air conditioning (HVAC) systems as specified herein and as shown. These systems include, but are not limited to, the following:
 - 1. Supply distribution systems
 - 2. Return and exhaust air systems
 - 3. Heating, ventilating and air conditioning equipment (all scheduled equipment as a minimum)
 - 4. Hydronic systems.

1.2 INTENT

- A. It is the intent of this Section of the specifications to provide a complete operable and balanced HVAC system as shown and specified which is reasonably airtight, comfortable and free of objectionable noise and vibration.

1.3 SCOPE OF WORK

- A. HVAC test and balance shall be performed by an independent agency certified by the Associated Air Balance Council (AABC) or National Environmental Balancing Bureau (NEBB) under direct contract to the General Contractor. All work performed by this agency shall be performed by qualified technicians under the direct supervision of an AABC or NEBB certified test and balance engineer. The agency shall be independent and shall not be associated in any way with the installing HVAC subcontractor.
- B. HVAC Test and Balance shall be performed in accordance with the 6th edition of the AABC National Standards, 2002 for Total System Balance or the NEBB Procedural Standards for TAB of Environmental Systems, 7th Edition, 2005 together with the NEBB TAB Manual for Technicians, 2nd Edition.
- C. The final Test and Balance report shall serve to substantiate compliance with the intent of the Contract Documents, specifically the HVAC systems.
- D. HVAC Test and Balance shall not begin until the systems are substantially complete.
- E. Upon the completion of the Test and Balance work, the Agency shall submit four (4) copies of the complete HVAC Test and Balance Report directly to the Architect.
- F. The Agency, as a part of its contract with the General Contractor, shall act as an authorized inspection agency, responsible to the General Contractor and the Architect and shall, during the test and balance, list those items which require correction or have not been installed in accordance with the Contract Documents.
- G. The Agency shall plainly mark the settings of all valves, dampers and other adjustable devices.

If a balancing device is provided with a memory stop, it shall be set, locked and marked.

- H. The Agency shall record all of the final set points on all variable speed drives.

1.4 SUBMITTALS

- A. The name and certification of the Agency, along with the name and certification of the Certified Test and Balance Engineer, shall be submitted to the Architect for review within 30 days after the award of the general contract.
- B. The selected Agency shall submit to the Owner:
 - 1. Procedural Manual
 - 2. Report Forms
 - 3. AABC or NEBB Performance Guaranty
 - 4. Instrument List and Calibration Dates
 - 5. Schedule
- C. A reviewed copy of each of the above shall be returned to the Agency before the HVAC Test and Balance begins.
- D. If a complete submittal in accordance with these requirements is not received within 60 days from award of the general contract, then the Architect reserves the right to select the Agency.

PART 2 - PRODUCTS

- 2.1 (Not applicable).

PART 3 - EXECUTION

3.1 GENERAL CONTRACTOR'S DUTIES

- A. The General Contractor shall provide the following, within 10 days after his receipt, to the Agency:
 - 1. Contract drawings
 - 2. Contract applicable specification Division 23 (others as applicable)
 - 3. Addenda
 - 4. Change orders
 - 5. Reviewed submittals
- B. The General Contractor shall start-up and maintain the HVAC systems and shall continue the operation of the HVAC systems during each day of testing and balancing. Start-up and operation shall include, as a minimum, the following:
 - 1. All equipment operable and in safe condition.
 - 2. Temperature control system complete.
 - 3. Proper thermal overload protection in place for electrical equipment.
 - 4. Ductwork leakage rates not exceeding those specified and all duct systems clean of debris.
 - 5. Air transfer systems shall have:

- a. Correct fan rotation and RPM.
 - b. Coil fins cleaned and combed.
 - c. Filters clean and in place.
 - d. Access doors closed.
 - e. All dampers in place and open.
 - f. All grilles, registers and diffusers installed.
- C. Provide sufficient time before final completion date so that testing and balancing can be accomplished. Coordinate the submitted T&B schedule.
- D. Provide immediate labor and tools to make required corrections and repairs without undue delay.
- E. The General Contractor and his subcontractors shall cooperate fully with the Agency to provide the following:
 - 1. Access to HVAC system components.
 - 2. The right to adjust the systems.
- F. Any conditions which prevent a proper HVAC Test and Balance shall be reported by the Agency to the General Contractor and Architect within 7 days of their discovery.
- G. If it is determined by the Agency and confirmed by the Architect that drive changes or additional balancing dampers are required, the Contractor shall obtain and install all necessary components.
- H. The Agency shall cooperate with the Architect and the Contractor and all his subcontractors to perform the work in such a manner as to meet the job schedule.
- I. The Agency shall verify that all system components are in place and in proper working order prior to leaving the project.
- J. All reported, recorded data shall represent true measured conditions.

END OF SECTION 230430