

## 23 08 00 – MECHANICAL & CONTROL SYSTEMS COMMISSIONING

### PART 1 – GENERAL

- 1.01 The Functional Performance Testing of the mechanical systems is essential to the operation and performance of the equipment and the completion of the project. Complete all inspections and tests prior to substantial completion of the Work.

### PART 2 – PRODUCTS

#### 2.01 TEST INSTRUMENTATION:

- A. The following are suggested testing instruments that could be used but similar types of instruments are acceptable.
- B. Recommended Instruments for testing purposes
  - 1. Shortridge Instruments: Air Data – Multimeter ADM – 860, 870 or 880
  - 2. EXTECH Instruments: Digital Psychrometer + InfraRed Thermometer RH401
  - 3. ThermoWorks: MTC Mini Handheld Thermocouple

### PART 3 – EXECUTION

- 3.01 The Functional Performance Testing Procedures, approved by the Designer, will be used to document the inspection and testing of the equipment and systems. Provide all necessary manpower and have the appropriate subcontractor and/or manufacturer's representative present during the testing and demonstrate, to the Designer's satisfaction, the full operation of all mechanical and control equipment and systems. Coordinate the schedule of the testing so that the Designer and Owner can be present.
- A. Prior to starting the final testing of the systems, ensure that all equipment and systems were initially started-up and initialized as prescribed by the manufacturer's instruction or by the manufacturer's representative and that the Contractor has performed a complete operational test of all mechanical equipment and systems to ensure proper operation.
  - B. Review the Designer's inspection reports and correct all deficiencies.
  - C. Review the test and balance report and correct all deficiencies.
  - D. Demonstrate the accuracy of 20% of the air and 20% of the water readings; and, if more than 10% are incorrect by +/- 10% continue to check 50% of the reports readings. If more than 10% of the additional readings are incorrect, have the test and balance subcontractor recheck all readings.
  - E. Test and balance readings that are verified will be recorded on the Terminal Box Point Calibration Check Sheet (see Division 23 group 08 specifications). The Designer may utilize the test and balance instruments furnished by the test and balance contractor or provide their own instruments. All instruments utilized must have been calibrated within the past 12 months.
  - F. Demonstrate that all specified control equipment, software and system graphics are loaded into the operating system.

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- G. Check all control system control panels for cleanliness, neatness and that they are installed as specified.
- H. Check the accuracy of all points and recorded readings on the Sensor Point Calibration Check Sheet (see Division 23 group 08 specifications).
- I. In the event that the equipment, systems and/or sequences have been modified prior to the inspection and testing, document the modifications and correct the Performance Testing Procedures Form so that the system verification can continue.
- J. Demonstrate the proper operation of the mechanical equipment and systems using the Performance Testing Identification Form and Performance Testing Procedures Forms approved by the Designer (see Division 01 group 91 specifications). During the testing, record on the forms the system response and point values to the operation. Record deficiencies, corrected and retested.
- K. Upon completion of the performance testing procedures, the installer, Contractor and Designers representatives, who observed the testing, will sign the Functional Performance Test Certification form (see Division 01 group 91 specifications) and attach deficiency list. Systems to be addressed include but are not limited to:
  - 1. Mechanical systems
  - 2. Control system
  - 3. Domestic hot water system
- L. Provide testing instruments, at no charge or the Designer may elect to provide their own instruments.

END