

SECTION 23 08 00
MECHANICAL GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general requirements that apply to implementation of the required commissioning process without regard to specific systems, assemblies, or components. This scope of work expands upon and is in addition to the scope of work and testing required and indicated on the contract drawings and individual specification sections.
- B. Follow commissioning procedures and provide support throughout standard level 2, 3, 4 and 5 commissioning procedures as outlined in the contract documents.
- C. Coordinate and provide appropriate technicians and manufacturer's representatives, including pre-purchased equipment, as required to meet the schedule and contract requirements.
- D. Receive, inventory and check against shop drawings and contract drawings all material and equipment received on site including Owner pre-purchased equipment.
- E. Complete required paperwork for each commissioning level in a timely manner and provide copies to the General Contractor and Commissioning Authority (CxA). Compliance and completeness of paper work will be reviewed regularly and a condition for approval of monthly requisitions.
- F. Systems to be commissioned and performance benchmarked include all systems related to the data center including but not limited to:
 - 1. Refrigerant Based Precision Cooling Systems
 - 2. Make up Air Units
 - 3. UPS Room Exhaust Fans and associated devices
 - 4. Humidification System
 - 5. BMS and associated devices.
 - 6. PBB RTUs and FPTs
 - 7. PBB Exhaust fans
 - 8. Unit Heaters
- G. Provide personnel, cooperate and assist with all testing and commissioning of project systems.
- H. Provide certified qualified personnel to perform start up of equipment and systems and for testing required or specified.
- I. Provide personnel to support full time, the level 5 testing schedule indicated in Section 019100. Personnel shall include the project foreman and additional personnel as required to operate equipment and support commissioning and integrated testing and the proposed schedule.

1.2 RELATED SECTIONS

- A. Section 23 00 10 – Basic Mechanical Requirements is an integral part of this Section. Requirements and work indicated in Section 23 00 10 are not repeated in this Section.
- B. Section 01 91 00 – General Data Center Commissioning Requirements, is an integral part of this section. Requirements and work indicated in 01 91 00 are not repeated in this Section.

- C. Owner's Project Requirements (OPR) and Basis of Design (BOD) documentation are included by reference for information only.

1.3 DEFINITIONS

- A. Refer to Section 01 91 00 – General Data Center Commissioning Requirements.
- B. Levels of Commissioning
 1. Level One – Factory Testing
 2. Level Two – Component Verification
 3. Level Three – System Installation Verification
 4. Level Four – Individual System Operation Verification (Acceptance Testing to verify all contract requirements have been completed and the system operates as specified).
 5. Level Five – Integrated System Testing – optional testing to verify and document system operation.

1.4 COMMISSIONING TEAM

- A. Appoint Individual(s) to be part of the commissioning team, each having the authority to act on behalf of the entity he or she represents, and explicitly organized to implement the commissioning process through coordinated action with all of the project team.
- B. These representatives shall review and comment where appropriate on all commissioning documents, attend all meetings and coordinate scopes of work with all team members.

1.5 OWNER'S RESPONSIBILITIES

- A. Refer to Section 01 91 00 – General Data Center Commissioning Requirements.

1.6 THIS SECTION'S RESPONSIBILITIES

- A. Assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
 1. Attend commissioning team meetings held on a weekly basis at the normal meetings and more frequently as level 4 and 5 commissioning get closer and daily during level 4 and 5 commissioning.
 2. Integrate and coordinate commissioning process activities with the construction schedule.
 3. Review and accept construction checklists provided by the Commissioning Agent (CxA).
 4. Complete paper and electronic construction checklists as Work is completed and provide to the Design Team and the Commissioning Authority on a weekly basis.
 5. Review, comment and accept commissioning process test procedures provided by the Commissioning Authority.
 6. Complete commissioning process test procedures.
 7. Assure compliance with the commissioning schedule by organizing and planning to have appropriate personnel, equipment and material available when required. Coordinate vendor's personnel for all furnished and assigned owner's pre-purchased equipment. Provide as much advanced notice to vendors as possible.
 8. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
 9. Cooperate with the CxA for resolution of issues recorded in the Issues Log.

1.7 COMMISSIONING AGENT'S (CxA'S) RESPONSIBILITIES

- A. Refer to Section 01 91 00 – General Data Center Commissioning Requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL TESTING REQUIREMENTS

- A. Provide technicians, instrumentation, and tools to perform commissioning test at the direction of the CxA.
- B. Scope of HVAC&R testing shall include entire HVAC&R installation, from central equipment for cooling through distribution systems to each conditioned space. Testing shall include measuring capacities and effectiveness of operational and control functions.
- C. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.
- D. The CxA along with the HVAC&R Installer, testing and balancing vendor, and HVAC&R Instrumentation and BMS installer shall prepare detailed testing plans, procedures, and checklists for HVAC&R systems, subsystems, and equipment.
- E. Tests will be performed using design conditions whenever possible.
- F. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.
- G. The CxA may direct that set points be altered when simulating conditions is not practical.
- H. The CxA may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical.
- I. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to the Owner. After deficiencies are resolved, reschedule tests.
- J. If the testing plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests.

END OF SECTION