

Acceptance Phase: Final phase of the construction occurring after successful execution of all required Cx Procedures and Final Operational Testing during which system installation and operation is demonstrated to the Owner and Authority Having Jurisdiction for the purposes of achieving occupancy and accreditation.

Approval: Acceptance that a document, piece of equipment or system has been reviewed and found to be properly installed and is functioning in the tested modes according to the contract documents.

Architect / Engineer (AE): The prime consultant (architect) and sub-consultants who comprise the design team, generally the mechanical engineer and the electrical engineer.

Building Automation System (BAS): Central DDC control system used to control and monitor operation of the buildings mechanical systems

Commissioning Authority (CA or CxA): An independent person, company or agent retained by the owner and not otherwise associated with the AE team members or contracting team members. The CxA initiates the overall commissioning process and observes the tasks necessary to complete the commissioning process. The Contractor performs the duties associated with the commissioning for this Project.

Commissioning Plan: A document developed by the CxA and by the AE/Contractor that provides the structure, schedule, coordination and planning for the commissioning process.

Commissioning Report: The document that records the results of the commissioning process, including the as-built performance of the MEP system and the CxA documents all sign-offs.

Commissioning Specifications: The contract document, provided by the AE, that details the Contractor's role and responsibilities for execution of the commissioning (Cx) process.

Commissioning Team: Those people responsible for working together in carrying out the commissioning process.

Construction Manager (CM): The firm responsible for day-to-day overall management of the project, serving as the bridge between the Owner and the Prime Contractors.

Contract Documents: The documents binding on parties involved in the construction of this project (drawings, specifications, change orders, amendments, contracts, etc.)

Contractor: Refers to all Prime Contractors or authorized representatives and all applicable subs, vendors, and suppliers contracted through that (those) Prime Contractors as well as any vendors or suppliers contracted directly to the Owner.

Control system: systems which provide control and monitoring functions for associated mechanical, electrical, plumbing and specialty systems.

Data-logging: Monitoring flows, currents, status, pressures, etc. of equipment typically using stand-alone data-loggers separate from the control or BAS systems but may also use permanent metering/monitoring equipment.

"Debugging": Prior to CxA Witness phase of Functional Testing, a procedure or process of operating component(s) and / or system(s) in accordance with the intent of the Project's Documents. Where "debugging" appears in the Contract Documents, it requires that failures, inconsistencies, and non-conforming items be corrected.

Design Narrative or Design Documentation: Sections of the Design Intent or Basis of Design, and/or the Project Scope to describe proposed systems. A copy of this document is included as part of the Cx Plan.

Factory Testing: Testing of equipment by the equipment manufacturer's personnel usually conducted at the manufacturer's factory or assembly plant. Factory testing may be witnessed by an Owner's representative and/or other members of the Cx Team prior to releasing the equipment for delivery to the job site.

Functional Performance Checklist: the document containing a list of items provided by the CxA to record the performance of the equipment or system in question during Functional Performance Procedures.

Functional Performance Procedures/Tests (FPPs or FPTs): A series of evaluations to the CxA to verify operation of equipment and systems using manual (direct observation) or monitoring methods. FPPs or FPTs are performed after completion of the Pre-Functional Procedures (Checklists, Tests), Startup Procedures, Contractor Pre-startup and Post-startup Testing and serve as a prerequisite for execution of the ISPs.

Equipment Level FPPs: Tests that verify the capacity, performance, and efficiency of commissioned equipment relative to the manufacturer's published (submitted) equipment data and the contract documents. System-level FPPs evaluate dynamic operation of systems and sub-systems under various operating conditions (heating, cooling, etc.) as outlined in the Sequence of Operations. Emphasis in the system-level FPPs is on programming and operation of the BAS.

Integrated Systems Procedures: A series of procedures including Smoke Mode Procedures and Emergency System Procedures used to evaluate building-wide operation of commissioned systems under simulated fires and power failure conditions. During the ISP's emphasis is placed on evaluating interactions between building systems and transition of building systems between different operating modes.

Issue: (or Open Issue) A condition in the installation or function of a component or system that is not in compliance with the contract documents (that is, does not perform properly or is not complying with the design intent).

Issue Tracking Report (ITRca): Electronic database or spreadsheet tracking method used by the CxA for monitoring the status of issues raised during execution of the Cx Process.

Manual Procedures: Cx Procedures which use hand-held instruments, immediate control system readouts or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the "observation").

Monitoring: The recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data-loggers or the trending capabilities of control systems.

Non-Compliance: See Issue.

Non-Conformance: See Issue.

Over-written Value: Writing over a sensor value in the control system to see the response of a system (e.g., changing the outside air temperature value from 50F to 75F to verify economizer operation). See also "Simulated Signal."

Owner-Contracted Tests: Tests paid for by the Owner outside the Contractor's contract and for which the CxA does not oversee. These tests will not be repeated during functional tests if properly documented.

Owner's Representative: The party or firm designated by the Owner typically being the Project Manager (PM) that is responsible for oversight, administration and management during the project.

Phased Commissioning: Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues.

Pre-Functional Checklist (PFCs) or Construction Checklists (CC): An inspection list that is used to document that equipment is installed correctly and is ready for startup. These checklist templates are available from the CxA. They are completed by the Contractors and reviewed by the CxA.

Pre-Functional Procedures (PFPs): A series of static inspections, substantially developed from equipment manufacturer's Installation & Operation Manuals, used to verify equipment installation and to prepare the equipment or system for initial operation (e.g., belt tension, oil levels, etc.). The word "Pre-Functional" refers to before Startup. Contractors shall document in writing the execution of these items. Contractors shall execute the PFP. The CxA only requires that the procedures be documented in writing, and will not witness the PFP, except for larger or more critical pieces of equipment at the CxA's discretion.

Pre-Startup Testing: Consists of normally specified Contractor testing such as leak testing of ductwork and piping and megger testing of electrical equipment. The commissioning process is used to ensure that this testing is rigorously executed and documented in preparation for equipment startup.

Pre-Substantial Checklist: A pre-substantial checklist identifying Spare Parts List, Commissioning and Training Schedules, All Warranty Documents, TAB Plan each respectively has been provided to and approved by the CxA. This summary document is to be included with the Contractor's Commissioning Documents from Functional Performance testing.

Prime Contractor: Any Contractor contracted directly to the Owner and responsible for coordinating commissioning requirements the Sub-Contractors, vendors, suppliers, etc. contracted through the respective Prime Contractor.

Project Manager (PM): The contracting and managing authority for the Owner over the design and/or construction of the project.

Sampling: Functionally testing only a fraction of the total number of identical or near identical pieces of equipment. Typically used for devices such as VAV boxes.

Seasonal Performance Checkouts: Functional checkouts that are deferred until the system(s) will experience conditions closer to their design conditions.

Simulated Condition: Condition that is created for the purpose of testing the response of a system (e.g., applying a hair drier to a room temperature sensor to see the response in a VAV box).

Simulated Signal: Disconnecting a sensor and using a signal generator to send an amperage, resistance or pressure to the transducer and DDC system to simulate a sensor value.

Spare Parts / Lists: Spare parts lists are provided based on the manufacturer's recommendations.

Specifications: The construction specifications of the Contract Documents may be abbreviated as spec or specs.

Startup Plan. A set of written procedures used to prepare for and startup of a piece of equipment. Startup Plans are typically based on standard procedures and (Installation and Operation & Manuals) documentation provided by the equipment manufacturer.

Startup Procedures: Procedures followed for the initial energizing or starting of equipment, following a pre-approved Startup Plan. Startup Procedures occur after successful execution of Pre-Functional Procedures and Contractor Pre-startup Testing.

Subs: The subcontractors to the Contractor(s) or vendors who provide and/or install building components and systems.

Test and Balancing Contractor: A Sub of the mechanical and/or piping contractor, responsible for the T&B of the project.

Test and Balance Plan: the TAB Contractor is to provide their plan to the Owner.

Testing Contractors: a Sub, responsible for various contractor-required system testing (e.g., generator load tests, ATS testing, telecom loop testing, etc.).

Test Procedures: The step-by-step process which must be executed to fulfill the test requirements. Test procedures typically include documentation requirements which also must be completed to constitute a completed procedure.

Test Requirements: Requirements specifying what modes and functions, etc. shall be tested. The test requirements are not the detailed test procedures. The test requirements are specified in the Contract Documents. Examples include duct leakage, hydro, megger testing and other similar tests.

Training: Training is the responsibility of the Contractor for all equipment and systems.

Trending: Monitoring of equipment and system operation using the Building Automation System.

Utilities: Include potable water, electricity, natural gas (or fuel oil or propane), phone, cable, internet, and in certain cases compressed air.

Vendor: Supplier of equipment.

Warranty Documents: All Manufacturer's Warranties and Contractor's warranties and extended warranties as either per the Bid Documents (including addenda etc.) relevant to approved submittals and approved installation O&M manuals.

Warranty Period: Warranty period for entire project, including equipment components.