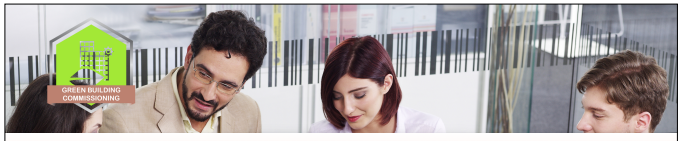
BEYOND SMART CITIES

CERTIFIED COMMISSIONING AUTHORITY CXA EXAM PREP

KRISHNAJI PAWAR, LEED AP BD+C,GSAS CGP,ISO 14001:2015,GCP
COMMISSIONING SPECIALIST CURRICULUM





COMMISSIONING SPECIFICATIONS

KRISHNAJI PAWAR, LEED AP BD+C,GSAS CGP,ISO 14001:2015,GCP
COMMISSIONING SPECIALIST CURRICULUM



LEARNING OBJECTIVES



- Commissioning Specifications
- CxA Specifications Section 00800: Supplemental Conditions
- CxA Specifications Section 01810: Commissioning
- CxA Specifications Section 01815:9: Testing, Adjusting, Balancing
- CxA Test Procedure Components
- Commissioning HVAC Systems
- CxA Air-Cooled Chiller of HVAC Systems

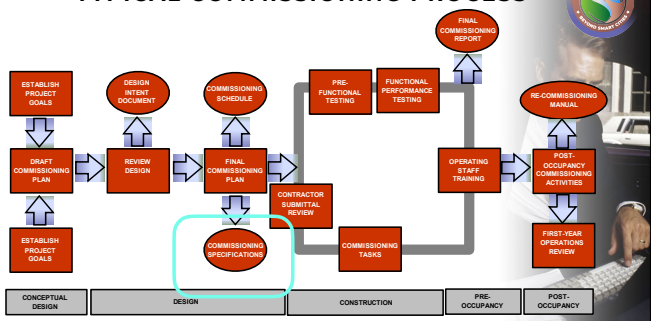
COMMISSIONING SPECIFICATIONS

The commissioning specification sections are developed by the design team with assistance of the CxP to convey details of the commissioning process, and contractor and supplier responsibilities to the construction team.

Each commissioned system should have a commissioning specification section that includes requirements and formats for drafting, application, and completion of system checklists.

A draft set of system readiness checklists and verification test procedures ideally includes the commissioning specification to communicate (to the bidding contractor and others) the processes and level of rigor expected during the system installation and testing phase of commissioning.

TYPICAL COMMISSIONING PROCESS



SECTION 00800: SUPPLEMENTAL CONDITIONS

The Commissioning Specifications Section 00800: Supplemental Conditions is a section for the Design Professional to make notes and modify the contract's General Conditions.

Supplemental conditions sections should be numbered to match the areas of the General Conditions to which they apply, and since usually not all sections of the General Conditions are usually addressed, the numbers of the Supplemental Conditions section may jump around.

Two other areas are also addresses in the Supplemental Conditions,

- How "Functional Completion" of the project will be defined, and
- The Liquidated Damages, as related to Functional Completion.

SECTION 01810:COMMISSIONING



Generally explains the requirements for Commissioning. A range of Commissioning issues common not only to the individuals involved in the construction, but to the entire Commissioning program.

Section 01810 not only delineates the Commissioning process but also the contractor's responsibilities relating to the Commissioning process, including the needed qualifications, responsibilities, and authority of the testing contractor, and makes clear that specified Commissioning work must be done even if it conflicts with the construction schedule.

this section also gives a description of how the Commissioning Authority fits into the project, such that the contractor can understand the role that the Commissioning Authority will play.

SECTION 01815:9 TESTING,ADJUSTING,BALANCING



It delineates what is needed from the Contractor to perform the services of testing, adjusting, and balancing, and defines the Commissioning process regarding testing, adjusting, and balancing (TAB) all equipment and systems.

The systems requiring TAB might include the following, among others: heating, ventilation, air cooling and air conditioning, supply air, air exhaust systems, heating hot water, centrally cooled and/or chilled water, condenser water, special piping, and high purity piping. As part of the TAB work, a clean copy of the drawings and specifications should be obtained that can be marked with the variations (and any associated problems) found during the TAB reviews.

CXA TEST PROCEDURE COMPONENTS

The Commissioning Authority will develop Commissioning Test Procedures based on the Construction Specifications and Commissioning Test Specifications.

Specifications and Commissioning Test Specifications, and each CxA Test Procedure should include the following sections:

- Objective: Objective(s) of the Test, including what specification(s) apply
- Prerequisites: Construction, Functional Performance Tests, and TABs that must have been completed with acceptable results before the current test can be conducted
- Participants: Including the Commissioning Authority or other owner-designated witness
- Tools & Equipment,Procedure and appendixes.

COMMISSIONING HVAC SYSTEMS

The Installation Quality Checklist items for the Air Handling Unit is broken down by section as follows:

- ☑ General Quality & Casing
- ☑ Filters: Pre-filter and final filter media are correct and installed, including proper racks,
- ☑ Supply Fans and Motors & Return/Exhaust Fans and Motors:
- ☑ Dampers: Control dampers are appropriate size and are configured correctly,
- ☑ Controls Components: Pneumatic tubing and all wiring for controls is correct and finished.
- ☑ Electrical Components: Power disconnects are correctly placed and adequately identified, MCC is adequately identified, motor status pilot lights are operational,



CXA AIR-COOLED CHILLER OF HVAC SYSTEMS

For Commissioning the Air-Cooled Chiller of HVAC Systems, the Pre-Quality Checklist includes several components. The items included in the Physical and Component Verification parts of the Pre-Installation Quality

- ☑ Physical Checklist –Labels and other identification and safety information are attached and readable,
- ☑ Component Verification: Manufacturer's ratings are correct and readable, the number of actual condenser.
- ☑ General Installation: Labels and other identification and safety information are attached and readable;
- ☑ Installation Controls: Check the remote building automation system communication for start and stop signals, chilled water temperature reset signals (0 -5vDC), and demand limiting signals (0 -5vDC)
- ☑ Start Up Controls: Capacity modulation is provided by the operation of slide valves and operate through the range down to 10%, lights or other types of diagnostic readouts are in place and the functioning verified

