Scope

Most projects, especially those with extensive mechanical and electrical systems, will undergo a U-M building commissioning (Cx) process. The U-M Cx process is similar to Cx processes promoted by several national trade organizations, but it involves more comprehensive design reviews and more extensive construction testing. Detailed U-M Cx procedures ensure consistency among projects. Become familiar with, fully participate in and fully support this process.

Related Documents

U-M Building Commissioning Documents:
- Design-Phase Commissioning
- MEP Design Coordination
- Full Project Commissioning
- Project Commissioning for Small Projects
- Generic Sample Commissioning Manual
- Generic Sample Commissioning Forms
- Commissioning Reports

U-M Design Guidelines:
- 4.2 Building Envelope
- 2.1 Owner’s Project Requirements (OPR) and Basis of Design (BOD)
- 3.2 Energy and Water Conservation
- 3.1 Sustainable Design and LEED® Requirements
- 2.3 Owner’s Review

U-M Master Specification Sections:
- MS 017823 – Operation and Maintenance Manuals
- MS 019100 – Full Project Commissioning
- MS 019110 – Project Commissioning for Small Projects

Reference Documents:
- ASHRAE Guideline 0, “The Commissioning Process”
- Building Commissioning Association, "The Building Commissioning Handbook"

General

Commissioning is a systematic quality assurance process to ensure a project is designed to meet the needs of its Owners, and is built, operated and maintained as intended by its Design Team and its Owners.

- Cx helps a project achieve its schedule, budget and quality goals by utilizing the University's vast design, construction, operation and maintenance experience to proactively identify and help resolve issues as early and inexpensively as possible.
- Cx generally begins during Programming and ends after Occupancy.
• Cx focuses primarily on the project's utilities, mechanical systems, electrical systems, plumbing systems and "powered" architectural systems. Cx of the building envelope is also important to minimize air leakage, moisture migration and heat transfer, but Cx activities related to the building envelope require different skills. Thus building envelope design and construction Cx are addressed in Design Guideline SID-4.2.

• Cx verifies conformance with the project’s design intent as documented in the Owner’s Project Requirements (OPR) and Basis of Design (BOD) documents.

• Cx verifies compliance with U-M requirements for effluent and noise studies, system efficiency and maintainability, operation and maintenance manuals, and Owner training.

• Cx verifies that completed systems and equipment perform as intended in all modes of operation and under all operating conditions. However, Cx does not duplicate or substitute for code inspection. Cx does not provide routine quality control such as routine inspections for material substitutions, point-to-point wiring checks or poor quality workmanship.

The U-M Building Commissioning Process

New buildings and major building renovations will undergo design-phase and construction-phase Cx. On a project pursuing LEED certification, the Cx process will include additional activities to earn several commissioning-related LEED points. Most smaller projects will undergo construction-phase Cx only. Cx activities will be coordinated by the AEC Commissioning and Plan Review Group who will assign a Commissioning Authority (CxA) to each project.

Design-Phase Commissioning

Design-phase Cx generally will begin during Programming and will continue until the project is bid and awarded.

On most projects undergoing design-phase Cx, the CxA will perform the activities listed in the “Design-Phase Commissioning” procedure referenced in the above list of U-M Building Commissioning Documents. The CxA will participate in the mechanical, electrical and plumbing (MEP) design meetings and Owner’s reviews. Throughout design, the CxA will clarify and insist upon compliance with U-M design requirements. Incorporate the CxA’s input into the project’s design.

During the Construction Documents (CD) design phase, determine who (A/E or CxA) will prepare the project-specific Commissioning Specification Section 019100 or 019110. Insert this section into the project’s Division 01 specifications to define the Contractors’ commissioning requirements during construction. Reference this section in the architectural, mechanical and electrical specification sections for systems and equipment requiring Cx. To avoid conflicts with this commissioning specification section, do not specify Cx requirements in the individual architectural, mechanical or electrical specification sections.

MEP Design Coordination

Some of the major projects, especially those pursuing LEED certification, will undergo an enhanced form of design-phase Cx U-M calls MEP design coordination. The CxA will perform the activities listed in the “MEP Design Coordination” procedure referenced above. The CxA will manage rather than just participate in the MEP design. Collaborate with the CxA on all MEP issues. Copy the Project Team on all communications.
Construction-Phase Commissioning

Construction-phase Cx generally will begin during Owner’s review of the Design Development phase design documents, and will continue through initial occupancy.

Construction-phase Cx will be performed by a Commissioning Team typically consisting of the U-M Project Manager, representatives from the Construction Manager or General Contractor, representatives from the Trade Contractors, Owner's representatives and Plant Operations personnel. The team will be directed by and Cx meetings will be led by the CxA. Assign an A/E Representative to this Cx Team.

Depending upon project size, the CxA will coordinate the activities listed in either the "Full Project Commissioning" procedure or the "Project Commissioning on Small Projects" procedure referenced in the list of U-M Building Commissioning Documents. Participate in and assist the CxA with these activities.

Quality Assurance

Throughout design-phase and construction-phase Cx, the CxA will request that "lessons learned" be documented in meeting minutes, RFI responses, open issues logs, construction reports, and similar project documents. As one means of continually improving the U-M design, construction and Cx processes, lessons learned will be incorporated in the appropriate U-M Building Commissioning Documents, Design Guidelines and Master Specifications. Lessons learned will be shared with the University Architect, the Associate Director of Design and Construction, and the AEC Sustainability Team.