DESIGN GUIDELINES 4.3.4
REDUCED SCOPE CONSTRUCTION-PHASE COMMISSIONING PROCEDURE

Scope

This procedure defines the scope of work for the Commissioning Authority (CxA) when a project is identified as requiring reduced scope construction-phase commissioning (Cx). Such projects are expected to require a low number of commissioning man-hours, often less than 50, because they involve a small number of systems or equipment needing commissioning.

Related Sections

U-M Design Guideline Sections:
DG 4.3 – Building Commissioning
DG 4.3.3 – Full Construction-Phase Commissioning Procedure
DG 4.3.5 – Commissioning Plan Procedure
DG 4.3.6 – General Commissioning Procedures

U-M Master Specification Sections:
MS 017823 – Operation and Maintenance Manuals
MS 019100 – Project Commissioning

General

All project systems and equipment shall be commissioned, including but not limited to the systems and equipment listed in the project's commissioning specification and MS 019100 – Project Commissioning.

Perform the following construction-phase Cx activities. Refer to Design Guideline 4.3.3 for a thorough description of each Cx activity.

Core Cx Activities

Develop pre-start check sheets and functional test Cx forms for contractor completion and return.

- Review installation manuals and incorporate manufacturers' requirements into the forms.
- Distribute the forms to the General Contractor/Construction Manager for distribution to contractors in advance of the Cx activities.
- Identify equipment requiring factory testing or manufacturer startup and assure it occurs.
- Collect factory test, start-up and field services reports from the contractors.
- Require each contractor to complete the portion of each form that relates to their work.

Conduct at least two Cx meetings; an introductory meeting at the start of construction and a second meeting during construction. Conduct the meetings as part of the project's regular construction meetings. Add more meetings when required due to project complexity.

- Introduce yourself to the contractors and describe the Cx requirements for the project.
- Indicate that all Cx issues discussed at the meetings shall be documented in the construction meeting minutes.
- Indicate the CxA is to be copied on all construction meeting minutes.
- Indicate what items are required in the Operation and Maintenance (O&M) manual and when the O&M manual is to be submitted to the CxA for approval.

Witness 100 percent of the functional testing of systems and equipment requiring Cx.

- Document the Cx activities performed, the issues identified, and the Cx still outstanding.
- When special tests are required, verify the tests are performed. Collect the documentation.
- Establish expected "ready for re-commissioning" dates. Verify contractor readiness prior to re-commissioning identified issues. Return and verify all identified issues have been resolved.

Additional Cx Activities

In addition to the core Cx activities, perform the following activities as applicable to the project. When Cx is being performed by an External Cx Firm, only the additional activities identified in the project's Request for Proposal are required.

1. Review contractor submittals which are critical to the Cx process and submit review comments to the A/E.

2. Participate in and document the initial energization of major power distribution system equipment.

3. Participate in and document the startup of equipment.

4. Validate proper flushing, cleaning and water treatment of plumbing and hydronic piping systems. Collect all water treatment reports.

5. Witness and document a "pull the plug" test of new or renovated power distribution systems.

6. Validate the test and balance (TAB) procedures and review the TAB report.

7. Review and approve the O&M manuals.

8. Manage and conduct Owner training.

Cx Reports and Closeout

Verify all project Cx requirements have been met.

After each functional test, email to the U-M Project Manager a summary report documenting the Cx activities performed, problems identified, and Cx activities still outstanding. Include any quality control deficiencies found during the Cx process.

Immediately before Substantial Completion, provide the U-M Project Manager with an overall report documenting all Cx activities performed, problems identified and Cx still outstanding. Clearly identify any OPR or BOD requirements not met. Include completed Cx forms and documents related to the Cx effort. These compiled documents serve as the commissioning plan. Provide this plan as a scanned PDF. Also send an electronic copy of the Cx report and plan to Laura North (lanorth@umich.edu).

If Cx activities will occur after Substantial Completion, issue an updated commissioning plan when all Cx activities are complete.