

(This annex is not a mandatory part of the referring ASHRAE SSPC 300 standard or guideline. It is merely informative and does not contain requirements necessary for conformance to the standard or guideline.)

(The following informative annex is provided to illustrate, explain, or support the ASHRAE SSPC 300 commissioning process. The information presented herein represents consensus good practice but does not contain mandatory commissioning process provisions. This informative annex supports more than one ASHRAE SSPC 300 commissioning standard or guideline and is not intended to serve as a standalone document. See the referring ASHRAE SSPC 300 standard or guideline for mandatory commissioning process requirements and guidance.)

## ASHRAE SSPC 300 INFORMATIVE ANNEX 21—ROLES AND RESPONSIBILITIES

This informative annex provides an example of how to implement part of ANSI/ASHRAE/IES Standard 202, *The Commissioning Process Requirements for New Buildings and New Systems*, and ASHRAE Guideline 0, *The Commissioning Process for New Buildings and New Systems*, as well as other ASHRAE commissioning standards and guidelines. It is not intended to be a comprehensive representation or a best practice example. Practitioners applying the Cx should carefully follow ASHRAE Standard 202, Guideline 0, and applicable ASHRAE Cx standards, guidelines, and technical resources tailored to their specific projects.

Understanding and defining the role of each participant is vital to the success of the Cx. This annex provides an example of the responsibilities of each participant in a comprehensive Cx. These responsibilities should be documented in the contracts between the Owner and the contractor(s), and contracts between the Owner and the design professionals. The responsibilities of each participant should be included in the contract documents.

The responsibilities of the Owner, CxP, design professionals, construction manager, contractors, and manufacturers are detailed below.

### 21.1 Owner

- a. Include a statement regarding design professional commissioning responsibilities and scope in the request for design services.
- b. Develop and commit to the Owner's Project Requirements for the facility and its use.
- c. Assign operations and maintenance personnel and schedule them to participate in the various meetings, training sessions, and observations/inspections as follows:
  1. Design Phase coordination meetings
  2. Construction Phase coordination meetings
  3. Initial Owner training session at initial placement of major equipment
  4. Maintenance orientation and inspection
  5. System testing verification meetings
  6. Procedures meeting for testing systems
  7. Owner's training session
  8. Verification demonstrations
  9. Systems and assemblies tests
  10. Final review at acceptance meeting
- d. Review and approve any changes made to OPR.
- e. Review and approve the construction documents.
- f. Provide qualified personnel for video recording and editing of training sessions.
- g. Video record construction progress.
- h. Review and comment on the CxP's Cx Progress Reports.
- i. Review and comment on the CxP's verification reports.
- j. Review and accept the CxP's Cx Reports.

### 21.2 Cx Provider

- a. Organize and lead the CxP Team.
- b. Facilitate and document the OPR.
- c. Verify that the Cx Activities are clearly stated in all scopes of work.
- d. Integrate the Cx Activities into the project schedule.
- e. Prepare a Cx Plan that describes the extent of the Cx to meet the Owner's Project Requirements. Update the Cx Plan during each phase of the project to incorporate changes and additional information.
- f. Review and comment on the ability of the design documents to achieve the OPR for the commissioned systems and assemblies.
- g. Prepare the Cx Activities to be included as part of the project specification. Include a list of all individual trade contractor responsibilities for the Cx Activities (list contractors by name, firm, and trade specialty, if known).
- h. Execute the Cx through the writing and review of Cx Progress Reports, organization of all CxP Team meetings, tests, demonstrations, and training events described in the contract documents and approved Cx Plan. Organizational responsibilities include preparation of agendas, attendance lists, arrangements for facilities, and timely notification to participants for each Cx Activity. The CxP will act as chair at all commissioning events and ensure execution of all agenda items. The CxP will prepare minutes of every Cx Activity and send copies to all Cx Team members and attendees within five working days of the event.
- i. Review the plans and specifications (during the Predesign and Design Phases) with respect to their completeness in all areas relating to the Cx. This includes verifying that the OPR has been met, that there are adequate devices included in the design to properly test the systems and assemblies, and documenting the performance of each piece of equipment, system, or assembly.
- j. Schedule all document review coordination meetings.
- k. Attend the project's prebid meeting to detail the design professional or contractor Cx requirements.
- l. Schedule the predesign and preconstruction Cx meeting within sixty days of the award of the contract at some convenient location and at a time suitable to the attendees. This meeting will be for the purpose of reviewing the complete Cx and establishing tentative schedules for the Design Phase and Construction Phase Cx Activities.
- m. Develop the initial format to be used for issues and resolution logs throughout and for each phase of the Cx.
- n. Schedule the initial Owner training session so that it will be held immediately before the contractor training. This session will be attended by the Owner's O&M personnel, design professionals, contractor, and CxP. The CxP will review the OPR, and the design professional(s) will review the BoD.
- o. Review proposed contractor-provided training program to verify that the OPR is met.
- p. Attend a portion of the contractor-provided training sessions to verify that the OPR is met.
- q. Receive and review the Systems Manual as submitted by the contractor and verify that it meets the OPR. Insert systems descriptions as provided by the design professional(s) in the Systems Manual.
- r. Witness system and assembly testing. Verify the results and include a summary of deficiencies.
- s. Supervise the Cx Team members in completion of tests. The test data will be part of the Cx Progress Report.
- t. Periodically review record drawings for accuracy with respect to the installed systems. Request revisions to achieve accuracy.
- u. Verify that the Systems Manual and all other design and construction records have been updated to include all modifications made during the Construction Phase.
- v. Repeat implementing of tests to accommodate seasonal tests or to correct any performance deficiencies. Revise and resubmit the Cx Progress Report.
- w. Prepare the Final Cx Report.
- x. Assemble the final documentation, which includes the Cx Progress Report, the Systems Manual, and all record documents. Submit this documentation to the Owner for review and acceptance.
- y. Recommend acceptance of the individual systems and assemblies to the Owner (in accordance with the defined project requirements).

### 21.3 Design Professional

- a. Participate and assist in the documentation of the initial OPR.
- b. Document revisions to the OPR and obtain approval from the Owner.
- c. Document the BoD.
- d. Prepare contract documents, including the integration of the Cx requirements and activities provided by the CxP.
- e. Prepare contract documents that coordinate required interfaces between systems and assemblies.
- f. Attend the Predesign and Design Phase coordination and review meetings.
- g. Respond to CxP Team design submission review comments and other issues in a timely manner.
- h. Attend the prebid and preconstruction meetings as scheduled by the CxP.
- i. Specify and verify that the operation and maintenance of the systems and assemblies has been adequately detailed in the construction documents.
- j. Review and incorporate as appropriate the CxP's comments from submittal reviews.
- k. Participate in the initial operation and maintenance personnel and occupant training session by presenting the project BoD.
- l. Participate in other training as detailed in the training program.
- m. Review test procedures submitted by the contractor.
- n. Review and comment on the CxP's periodic Cx Progress Reports and issues and resolution log reports.
- o. Review and accept record documents as required by contract documents.
- p. Review and comment on the Final Cx Report.
- q. Recommend final acceptance of the systems to the Owner.

#### **21.4 Construction Manager**

- a. Include costs for Cx Activities in the contract price.
- b. Include Cx Activities and requirements in all contractors' contracts.
- c. Provide adequate accessibility as required to properly operate and maintain the facility.
- d. Provide acceptable representation with the means and authority to prepare and coordinate implementation of the Cx as detailed in the contract documents.
- e. Issue a statement certifying that all work has been completed and that the facility is operational, in accordance with contract documents.
- f. Issue the appropriate Final Cx Reports to the design professionals for review and acceptance.
- g. Remedy deficiencies identified by the CxP during verification of the installation or testing.
- h. Review and comment on the Final Cx Report.

#### **21.5 Contractor**

- a. Include costs for Cx Activities in the contract price.
- b. Include Cx Activities and requirements in each purchase order or subcontract written.
- c. Obtain cooperation and participation of all subcontractors and manufacturers.
- d. Attend the preconstruction and CxP Team meetings.
- e. Include Cx milestones in the project schedule.
- f. Implement the training program as detailed in the contract documents.
- g. Provide submittals to the Owner, design professionals, and the CxP.
- h. Notify the CxP when systems and assemblies are ready for testing.
- i. Demonstrate the performance of assemblies and/or operation of systems to the CxP.
- j. Complete the construction checklists as the work is accomplished. Provide the completed construction checklists to the CxP.
- k. Continuously maintain the record drawings and submit as detailed in the contract documents.

#### **21.6 Manufacturers**

- a. Provide all information required for the operation and maintenance of the system or assembly as part of the initial submittal.
- b. Provide the requirements to maintain the warranty as part of the initial submittal.
- c. Coordinate and accomplish factory tests as detailed in the contract documents.
- d. Provide training as detailed in the training program contained in the contract documents.
- e. Demonstrate operation and performance of the system or assembly as detailed in the contract documents.