

(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 22—COMMISSIONING PROCESS FLOWCHART

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.

The flowcharts shown in Figures 22-1 through 22-5 depict examples for an Owner who has adopted the Cx from the Predesign Phase from project inception. If the Owner adopts the Cx after project inception, then the tasks shown are still accomplished in whatever phase the Cx begins. The Ongoing Cx is shown in the flowchart as ongoing tasks during the Occupancy/Operations Phase after the last acceptance block.

### 22.1 Predesign Phase

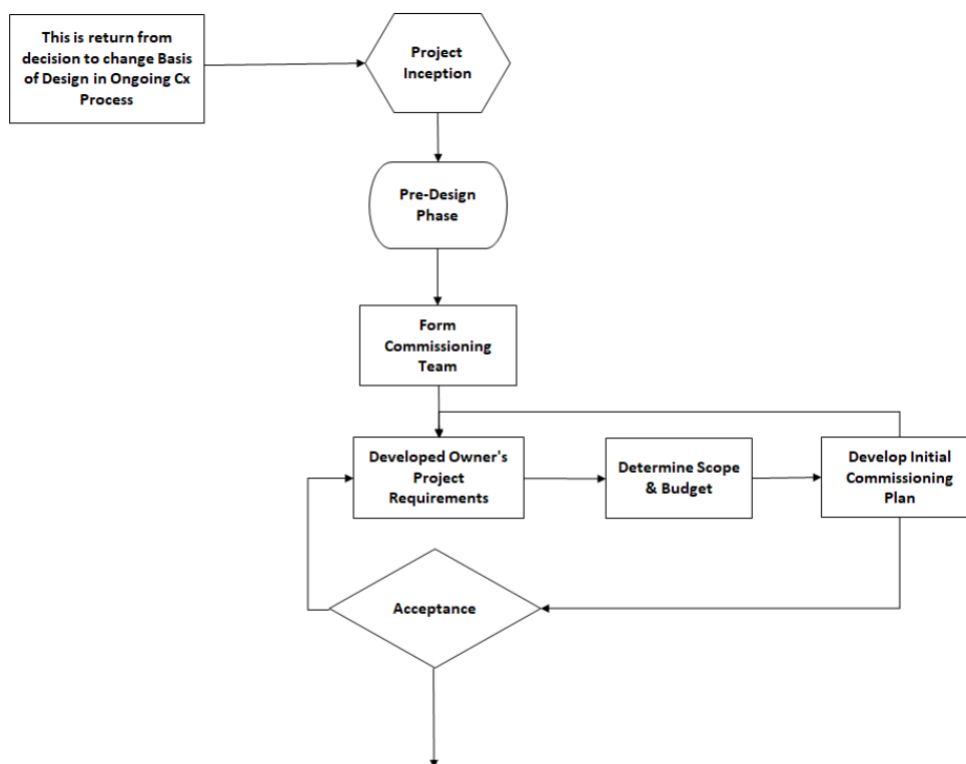


Figure 1

### Typical Acceptance Plan for Predesign:

The OPR and the Cx Plan are formally accepted by the Owner during the Predesign Phase, after the review and comment by the CxP.

The general process for accepting these documents is as follows:

- The CxP develops a draft of each document and provides it to the CxP Team.
- The CxP Team provides comments on the draft documents.
- The CxP provides with the CxP Team to resolve any issues.
- The CxP recommends acceptance of the documents to the Owner and provides copies for review.
- The Owner reviews the modified documents and accepts.

## 22.2 Design Phase

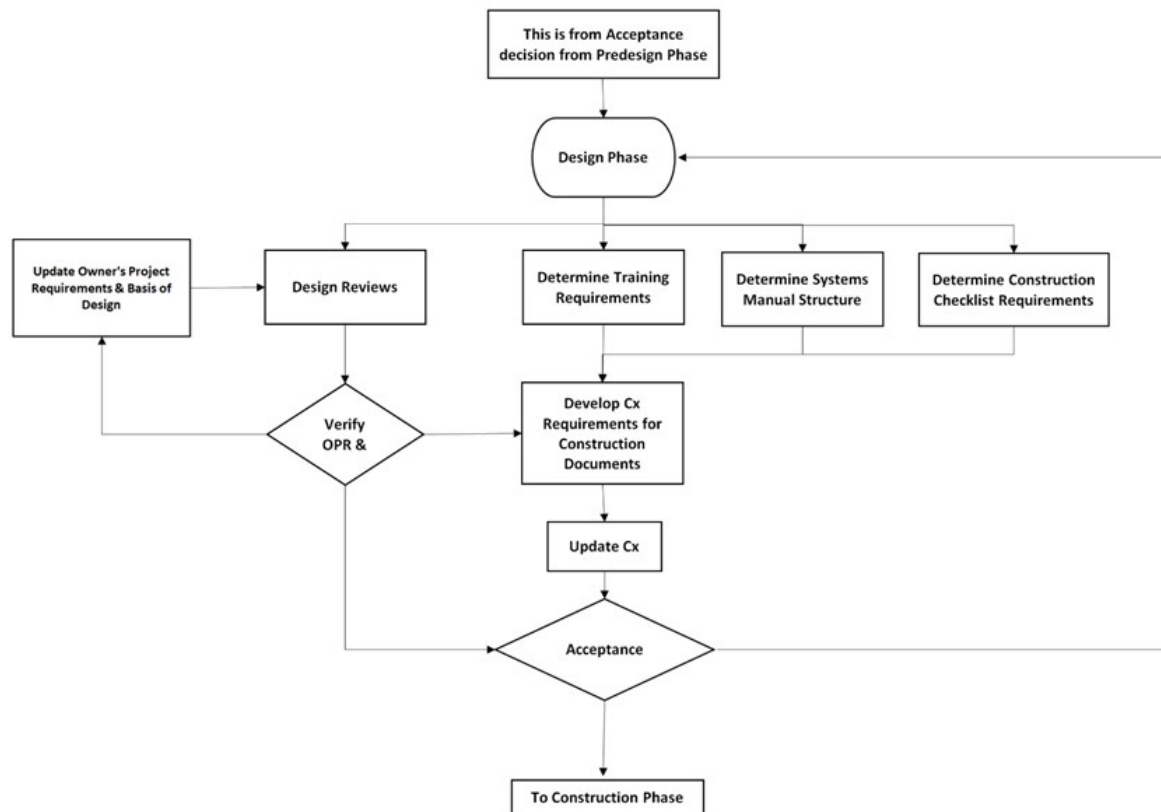


Figure 2

### Typical Acceptance Plan for Design:

The updated OPR, updated Cx Plan, BoD, and contract documents are formally accepted by the Owner during the Design Phase. The OPR and the Cx Plan follow the same process as detailed in the Predesign Phase.

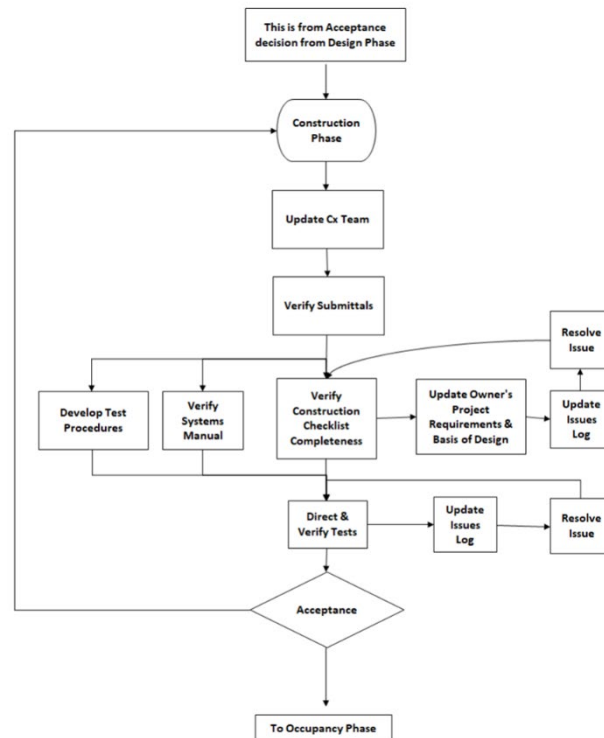
The general process for accepting the BoD is as follows:

- The CxP provides a list of information required and the format for the BoD to the design professionals prior to the start of design.
- The design professionals gather and organize the information during the creation of the design.
- The design professionals submit the BoD to the Owner and CxP for review and comment with each design submittal.
- Upon correction and resubmittal, the Owner accepts the BoD based on the recommendation of the CxP.

The general process for accepting the contract documents is as follows:

- The design professionals submit the final package to the Owner and CxP for review.
- The CxP evaluates the contract documents using random sampling to determine their ability to achieve the OPR.
- The CxP meets with the design professionals to discuss and resolve comments.
- Upon resolution of comments, the CxP recommends that the Owner accept the documents.
- The Owner reviews the comments and resolutions, and accepts the contract documents.

## 22.3 Construction Phase



**Figure 3**

### Typical Acceptance Plan for Construction:

The updated OPR, updated Cx Plan, updated BoD, Systems Manual, training program, and a preliminary and a final Construction Phase Cx Report are formally accepted by the Owner during the Construction Phase. The OPR, Cx Plan, and BoD follow the same process as previously detailed.

The general process for accepting the Systems Manual is as follows:

- The CxP tracks the contractor submittals for the required documentation.
- Within XX days of submittal acceptance for a system or assembly, the contractor submits a draft Systems Manual to the Owner, CxP, and design professionals.
- The CxP consolidates the reviews and meets with the design professionals to discuss and resolve.
- The contractor submits to the CxP changes to the accepted submittals throughout construction.
- XX days prior to the first training session, the contractor submits the final Systems Manual to the Owner, CxP, and design professionals.
- The Owner accepts the final Systems Manual based on the recommendations of the CxP.

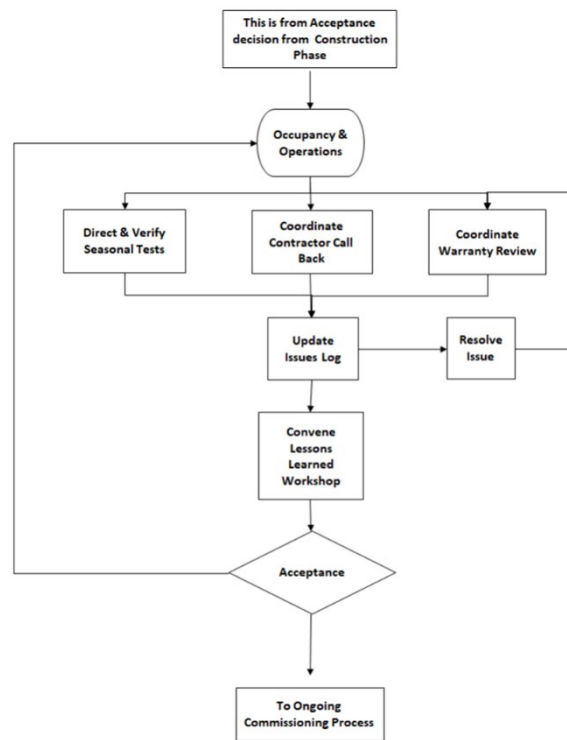
The general process for accepting the training program is as follows:

- a. The CxP provides the training agendas to the contractor.
- b. The contractor develops the training program, including identifying the trainer, the schedule of sessions, and the material to be developed. This information is submitted to the Owner, CxP, and design professionals for review and comment.
- c. Based on the recommendations of the CxP, the Owner accepts the training program.
- d. The contractor then develops the training material and submits it to the Owner, CxP, and design professionals for review and comment XX days before the first training session.
- e. Based on the recommendation of the CxP, the Owner accepts the training materials.
- f. The contractor implements the training program.
- g. The CxP randomly quizzes the trainees two weeks after the completion of a session.
- h. The contractor submits copies of all training materials and edited videos of the sessions.
- i. The CxP recommends acceptance of the completed training program to the Owner

The general process for accepting the facility is as follows:

- a. Throughout construction the CxP randomly samples the completion of the construction checklists for meeting the OPR.
- b. The CxP directs the completion of system and assembly testing by the contractor and documents the results.
- c. The CxP works with the contractor in resolving any issues identified during testing.
- d. The CxP verifies that all system documentation is received from the contractor.
- e. The CxP presents a preliminary Construction Phase Cx Process Report prior to occupancy that provides an evaluation of meeting each element of the OPR, including recommendations to the Owner for acceptance/rejection of the facility.
- f. The CxP provides a final Construction Phase Cx Process Report with details on the Cx Activities completed during the Construction Phase.

## 22.4 Occupancy and Operations Phase



**Figure 4**

### Typical Acceptance Plan for Occupancy and Operation:

The updated OPR, updated BoD, updated Systems Manual, seasonal test results, and Cx Report are formally accepted by the Owner during the Occupancy and Operations Phase. The OPR, BoD, and Systems Manual follow the same process as previously detailed.

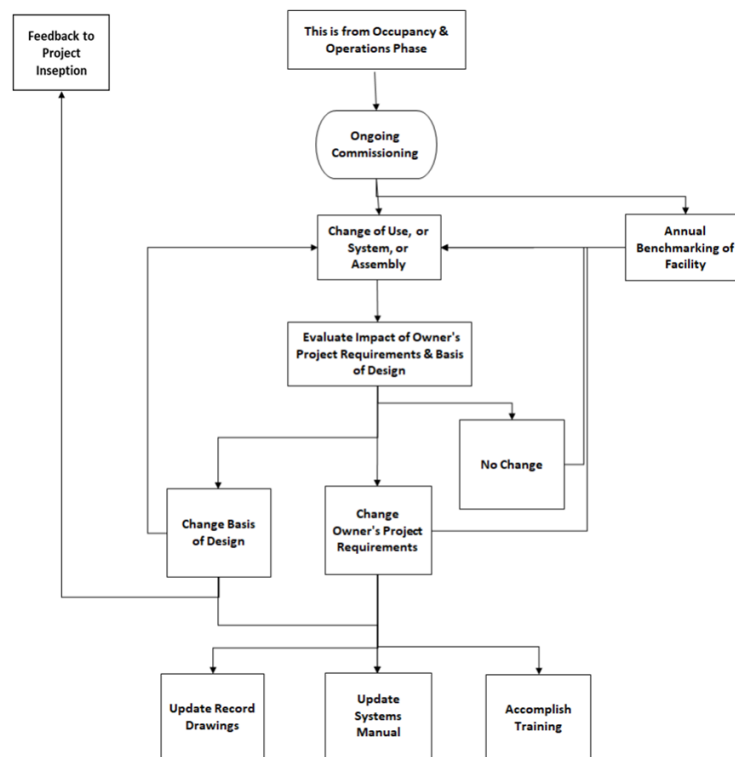
The general process for accepting the seasonal test results is as follows:

- The CxP directs the completion of seasonal system and assembly testing by the contractor and documents the results.
- The CxP works with the contractor in resolving any issues identified during testing.
- The CxP verifies that all updated system documentation is received from the contractor.
- The CxP recommends to the Owner acceptance of the seasonal testing results.

The general process for accepting the Final Cx Report is as follows:

- The CxP provides the Final Cx Report to the Owner, design professionals, and contractor for review and comment.
- The CxP incorporates comments and provides a final copy to the CxP Team members.
- The Owner accepts the Final Cx Report, ending the CxP's responsibilities.

## 22.5 Ongoing Cx



**Figure 5**

### Typical Acceptance Plan for Ongoing Cx:

Ongoing Cx is a continuation of the Cx well into the Occupancy and Operations Phase to verify that a project continues to meet current and evolving Owner's Project Requirements.

Ongoing Cx Activities occur throughout the life of the facility; some of these will be nearly continuous in implementation, and others will be either scheduled or unscheduled (as needed).