

# GUIDE FOR DEVELOPING SUPPLEMENTARY TECHNICAL GUIDELINES FOR THE NEW BUILDING, SYSTEM, AND ASSEMBLY COMMISSIONING PROCESS

[This information is provided to assist organizations or project committees outside of ASHRAE Standing Standard Project Committee (SSPC) 300 in the development of technical guidelines that will support the application of the commissioning process to systems or assemblies not currently covered by an existing standard or guideline. This information is solely informative and is not part of any ASHRAE standard or guideline.]

## GUIDE FOR DEVELOPING SUPPLEMENTARY TECHNICAL GUIDELINES FOR THE NEW BUILDING, SYSTEM, AND ASSEMBLY COMMISSIONING PROCESS

The purpose of this guide is to provide a recommended format and content for New Building Cx Process supporting technical guidelines. The objective is to use the same format for all Cx Process application guidelines. The technical guidelines are developed to assist the Cx Team in successfully using the Cx Process for various new systems and assemblies. The goal is to use the process as defined and provided in ASHRAE Guideline 0, “The Commissioning Process for New Buildings and Systems.” Further, it is desired that each different system or assembly involved in the construction, addition to, or rehab of buildings, structures, campuses, or utilities use the Cx Process from Guideline 0 and not redefine it within the respective (topic) technical guideline.

The objective of both Guideline 0 and the technical guidelines is to provide information on implementing the Cx Process. The technical guidelines are intended to be a detailed user’s guide for specific new building systems and assemblies to provide guide specifications, commissioning plans for the specific equipment, development of specific owner’s project requirements, construction checklists, statistical or other quality tools, or other detailed requirements for implementing the Cx Process.

The format of the technical guidelines should follow the same format used in Guideline 0. The following is the general organization to be used in the development of the technical guidelines.

### 1. FOREWORD

The Foreword should provide key information or background on the Cx Process and development of the specific guideline, on what has led to success on previous projects, the role of the specific technology in a successful building or construction project, and closely related supplementary technical guidelines or topics.

### 2. SECTION 1, PURPOSE

The following should be used as the general purpose for each technical guideline:

“The purpose of this guideline is to describe the technical requirements for the application of the Cx Process described in ASHRAE Guideline 0 that will verify that the *[insert topic, for example, fire systems or envelope assembly]* achieves the OPR.”

### 3. SECTION 2, SCOPE

The following text should be used as the general scope for each technical guideline:

“The procedures, methods, and documentation requirements in this guideline describe the application of the Cx Process for each project delivery phase from Predesign through Owner Occupancy and Operation for *[insert topic]* to support the Cx Process activities described in ASHRAE Guideline 0, The Commissioning Process for New Buildings and Systems.

This includes specific technical requirements for:

- a. *[insert topic]* to fully support the New Building Commissioning Process activities
- b. integration of system and assembly into project plans, design, and documentation
- c. verification during each phase of the Cx Process
- d. acceptance at each phase
- e. documentation during each phase
- f. Systems Manual

# GUIDE FOR DEVELOPING SUPPLEMENTARY TECHNICAL GUIDELINES FOR THE NEW BUILDING, SYSTEM, AND ASSEMBLY COMMISSIONING PROCESS

- g. training for operations and maintenance personnel and occupants; and
- h. on-going commissioning process

## 4. SECTION 3, UTILIZATION

The following paragraphs should be included as the Utilization section:

- 3.1 The application of this guideline depends on the OPR and how the project will be designed, built, and operated. This guideline is supplemental to the Cx Process detailed in ASHRAE Guideline 0
- 3.2 This guideline describes specific details required to properly implement the Cx Process relative to *[insert topic]*. This includes documentation, test procedures, and checklists.

## 5. SECTION 4, DEFINITIONS

Include only definitions that are unique to the technical guideline. Do not redefine or repeat those in ASHRAE Guideline 0; instead, include a statement referring to the definitions in Section 4 of Guideline 0.

## 6. SECTION 5, PREDESIGN PHASE

The following should be included in the Pre-design-Phase section for *[insert topic]*:

- a. list of Cx Team members
- b. list and description of criteria and items to be included in the OPR document
- c. list of milestones
- d. list of specialists required for implementing the Cx Process
- e. list of items to focus on during the design reviews
- f. list of items to be included in the Cx Plan
- g. list of items to be included as part of the Issues and Resolution Log
- h. list of items required for acceptance of Pre-design-Phase commissioning
- i. list of tests that need to be performed
- j. training requirements
- k. requirements for the Systems Manual, such as parts lists, troubleshooting needs, operations and maintenance requirements, system description, and the level at which each set of material needs to be written for clear understanding (reference ASHRAE Guideline 1.4, *Preparing Systems Manuals for Facilities*)

## 7. SECTION 6, DESIGN PHASE

The following should be included in the Design-Phase section for *[insert topic]*. This will be the basis for Construction-Phase documents for contractors, vendors, and equipment/assembly manufacturers:

- a. list of items required for the BoD
- b. revision review procedure for Cx Team members and OPR
- c. list of coordination requirements and items provided by others
- d. key milestones that need to be reviewed
- e. update lists of specialists required to implement the Cx Process based on the actual design and interrelationship with other systems and assemblies
- f. list of items to be included in the construction documents
- g. lists of priority items and relate whenever possible to safety, health, energy, environmental impact, aesthetics, operations and maintenance, in addition to the OPR
- h. list of construction checklists to be used by the contractor, and other team members
- i. samples of construction checklists (examples of construction checklists are included in ASHRAE Guideline 1.1, *Application of the Commissioning Process for New HVAC&R Systems*.)
- j. list of items to be included in the Systems Manual, such as parts lists, troubleshooting needs, operations and maintenance requirements, system description, and the level at which each set of material needs to be written for

# GUIDE FOR DEVELOPING SUPPLEMENTARY TECHNICAL GUIDELINES FOR THE NEW BUILDING, SYSTEM, AND ASSEMBLY COMMISSIONING PROCESS

clear understanding

- k. list of training requirements, timing, learning outcomes.
- l. list of tests that need to be performed
- m. list of items required for acceptance of Design-Phase commissioning
- n. Instructions and documentation that should be included in on-going Cx plans

## 8. SECTION 7, CONSTRUCTION PHASE

The following should be included in the Construction-Phase section for *[insert topic]*:

- a. list of test procedures and data forms to verify achievement of OPR and BoD
- b. samples of test procedures and data forms (Examples of these are included in ASHRAE Guideline 1.1, *Application of the Commissioning Process for New HVAC&R Systems*.)
- c. list of coordination requirements and items provided by others
- d. list of specific items for the site visit procedures
- e. test needs and schedule
- f. Cx Team meetings
- g. Issues and Resolution Logs
- h. input into the final Cx Process Report
- i. lessons-learned workshop schedule during Occupancy/Operations Phase
- j. list of items required for acceptance of Construction-Phase commissioning

## 9. SECTION 8, OCCUPANCY/OPERATIONS PHASE

The following should be included in the Occupancy/Operations-Phase section for *[insert topic]*:

- a. list of training items to be accomplished during the first year of operation (reference ASHRAE Guideline 1.3, *Building Operations and Maintenance Training for HVAC&R Commissioning Process*)
- b. list of warranty items to be checked during the first year of operation
- c. list test requirements during occupancy, including periodic retesting for a successful continuous operation of the facility.
- d. list who should attend the lessons-learned workshop
- e. lessons-learned workshop schedule during Occupancy/Operations Phase
- f. list of criteria to be included in the final Cx Process Report
- g. list of items required for acceptance of Occupancy/Operations-Phase commissioning

## 10. SECTION 9, ON-GOING COMMISSIONING IMPLEMENTATION PROGRAM

The following should be included in the On-Going Cx Phase section for *[insert topic]*:

- a. introduction
- b. assemble the OCx Team
- c. update the OCx Plan
- d. verify achievement of CFR
- e. investigate unacceptable performance or outcome
- f. implement recommendations
- g. update Systems Manual
- h. update facility personnel training

# **GUIDE FOR DEVELOPING SUPPLEMENTARY TECHNICAL GUIDELINES FOR THE NEW BUILDING, SYSTEM, AND ASSEMBLY COMMISSIONING PROCESS**

- i. write/deliver OCx Report
- j. OCx Phase deliverables
- k. obtain owner acceptance

## **11. SECTION 10, REFERENCES**

Include industry-specific references that support recommendations for benchmarking, testing, and other supporting guidance in the development of the OPR, BoD, tests, and other Cx Process documents.

## **12. APPENDICES**

Include guideline-specific information that supports the implementation of the commissioning process for the building system being addressed. Providing supportive information beyond that included in the text of the guideline is encouraged. Examples of such supportive materials are found in most of the commissioning standards and guidelines published by ASHRAE.

ASHRAE SSPC 300 has developed a protocol for supportive information. Supportive content that is applicable only to the guideline in question is termed an Appendix and is published within the document. Appendices are lettered (Appendix A, Appendix B) sequentially within each individual document. Supportive information that applies to more than one guideline is termed an Annex. Annexes are numbered and are published on the SSPC 300 website under the Documents tab.

Appendices and Annexes are to be used to provide additional information, examples of documentation, examples of specifications, acceptance procedure details, and other items that are not required to achieve compliance with the technical guideline but will assist in implementing the Cx Process for the specific technical system or assembly. This is the place to illustrate best practices and to provide information on how to achieve best practice and economy in design.