



The Commissioning Process for Delivering Quality Constructed Projects ***Detailed Topic Agenda: Online Courses***

Day 1

Topic #	Title
1	Introduction and Course Orientation
2	Overview of the Commissioning Process (CxP) <ul style="list-style-type: none">• What is the ASHRAE Guideline 0 commissioning process?• Current best practice• What is a quality delivery process?• Benefits of the commissioning process• What occurs in each phase of project delivery?
3	Pre-Design Phase Commissioning Tasks (Part 1) <ul style="list-style-type: none">• Developing the owner's project requirements (OPR)• Owner's workshop: preparation and participants, nominal group technique, procedures and results
4	The Owner's Project Requirements Workshop <ul style="list-style-type: none">• Executing an OPR workshop• Determining which questions to ask – project success criteria• Group activity: OPR workshop in action (continues on Day 2)

Day 2

4	The Owner's Project Requirements Workshop continued
5	Pre-Design Phase Commissioning Tasks (Part 2) <ul style="list-style-type: none">• Planning the CxP effort• Commissioning plan fundamentals, key milestones, structure• Evaluating the benefits of pre-design phase involvement• The CxP as a strategic quality plan
6	Group Workshop: Defining CxP Needs
7	Developing the OPR Document <ul style="list-style-type: none">• Review of key OPR concepts• Typical information required to develop needs• Steps in document creation• Group Activity: discussion of example document

- 8 CxP Activities in the Design Phase (continues on Day 3)
- Pre-design meetings
 - Design checklists
 - Basis of design development
 - CxP design review process
 - CxPlan update

Day 3

- 8 CxP Activities in the Design Phase continued
- 9 Design Review Workshop
- Group workshop using the four steps of a CxP design review procedure
- 10 Commissioning Specifications
- Format options
 - Types of requirements: contractor participation; maintainability; checklist implementation; shop drawings, training, and systems manual; testing and verification
 - Group specifications activity
- 11 Commissioning Process Checklists
- Purpose, goals
 - Use in all project phases
 - Construction checklists: development, tracking methods, verification, statistical sampling
 - Group checklist work session

Day 4

- 12 Systems Manual and Training
- Role of the Systems Manual in all project phases
 - Structure and content
 - Role of training in all phases
 - Types of training; timing
- 13 Construction Phase CxP Tasks
- Pre-construction activities (pre-bid, workshops, partnering)
 - Cx meetings and coordination, role of the CxA
 - Tracking commissioning activities
 - Cx schedule
 - Testing
 - Commissioning reports
 - Benefits/issues log
- 14 Commissioning Process Tests
- Developing test protocols
 - Confirmation of readiness
 - Implementation steps
 - Documentation
 - Test procedure group workshop

Day 5

- 15 Integrating CxP with Contractor Efforts
- Quality processes
 - Overlaps and gaps
- 16 Acceptance Phase, First Year of Operation, and Beyond
- Training
 - Systems manual
 - Project CxP report(s)
 - Warranty review and seasonal testing
 - On-going commissioning
- 17 Electronic and Web-Based Commissioning Tools
- Computer tools for site tracking
 - Electronic systems manuals
- 18 Analyzing the Benefits of Commissioning: Case Studies
- Scope of commissioning
 - Detailed cost analysis
 - Benefits and lessons learned
- 19 Special Topics in the CxP
- Review of LEED Cx process
 - Review of existing building Cx process