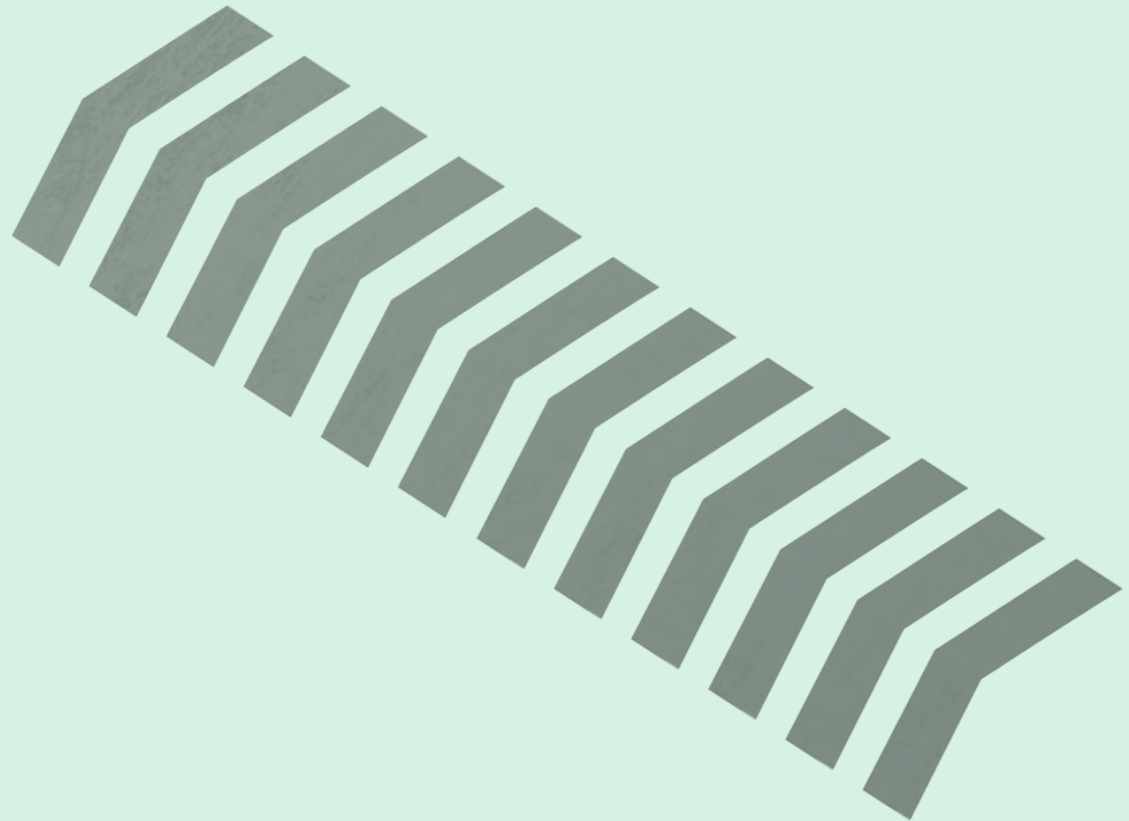


NEBBinar: **ASHRAE 202: What Owners, Contractors and Providers Need to Know**

November 6, 2013



Moderator



Jim Huber

NEBB President-Elect and President of Complete Commissioning

Jim Huber is the President of Complete Commissioning. He has over 29 years of industry experience, is a Certified Energy Manager, and has extensive experience with BACNET, LON, MODBUS, and other building automation protocols and communication networks. He has programming, tuning, and testing experience with multiple systems and applications, as well as building systems commissioning, sound and vibration measurement, and testing and balancing.

Speaker



Steve Wiggins

NEBB's Building Systems Commissioning Committee and Associate Partner at Newcomb & Boyd

Steve Wiggins has more than 30 years of experience in optimizing building operations. His work has involved Commissioning, Retro-Commissioning, and operations and training activities on educational, research, cultural, health care, and corporate projects.

Steve has been responsible for more than 140 projects for over 17,000,000 square feet of facilities. Widely published and a sought after speaker, he often teaches certification seminars for Commissioning and Retro-Commissioning professionals. Whether a complex facility on a health care campus, in academia or private industry, or on a military base, he has expertise in making buildings perform at their best.

Agenda

Commissioning Industry Development

Standard Versus Guideline

ASHRAE 202: Highlights

Question and Answers

Commissioning Industry Development



1982 – ASHRAE forms committee

1985 – ASHRAE coins the term “Commissioning”

1989 – Guideline 1 HVAC & R Technical Requirements for the Commissioning Process Published

1990 – NEBB established Building Systems Commissioning (BSC) Committee and publishes NEBB BSC Procedural Standards and starts BSC Certification Program for Commissioning

1996 – First revision of Guideline 1

1999 – BCA started

2000 – ASHRAE and NIBS join together to develop industry standard process for commissioning

Commissioning Industry Development (Continued)

2004 – BCA begins certification process

2005 – Guideline 0 – The Commissioning Process

(ASHRAE/NIBS) published

2007 – Guideline 1 revised, existing building committee formed

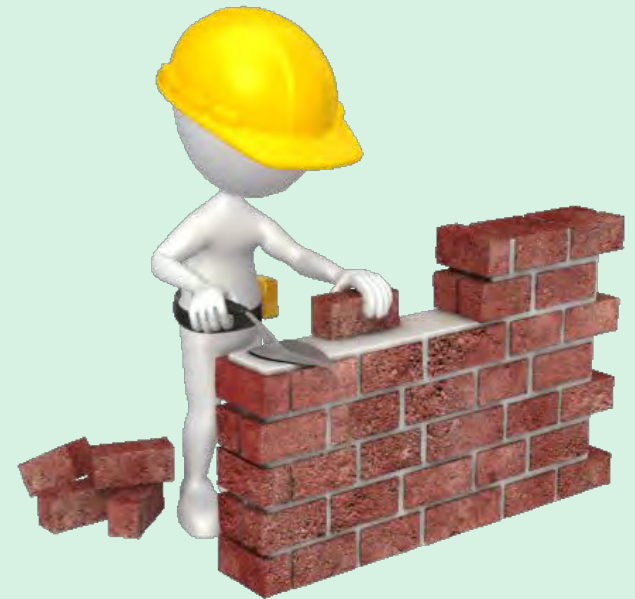
2013 – Standard 202 adopted



Selected Commissioning Industry Documents

NEBB:

- ❖ Procedural Standards for Whole Building Systems
- ❖ Procedural Standards for Retro-Commissioning of Existing Buildings
- ❖ Procedural Standards for Building Enclosure Testing
- ❖ Design Phase Commissioning Handbook
- ❖ Environmental Systems Technology



Selected Commissioning Industry Documents (Continued)

ASHRAE:

- ❖ Standard 202
- ❖ Guideline 0-2005, The Commissioning Process
- ❖ Guideline 1.1-2007 HVAC Commissioning
- ❖ Guidelines 0.2 and 1.2, Existing Buildings (under development)
- ❖ Guideline 1.3, Training of Building Staff (under development)
- ❖ Guideline 1.4, Systems Manual (under development)
- ❖ Guideline 1.5, Commissioning Smoke Control
Systems (being published)



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ASHRAE: Standards versus Guidelines

Standards are typically written in Code Language and are frequently adopted into code. Developed to establish MINIMUM industry requirements. Frequently utilized by the US legal system. Are developed to ANSI requirements and are consensus in nature.

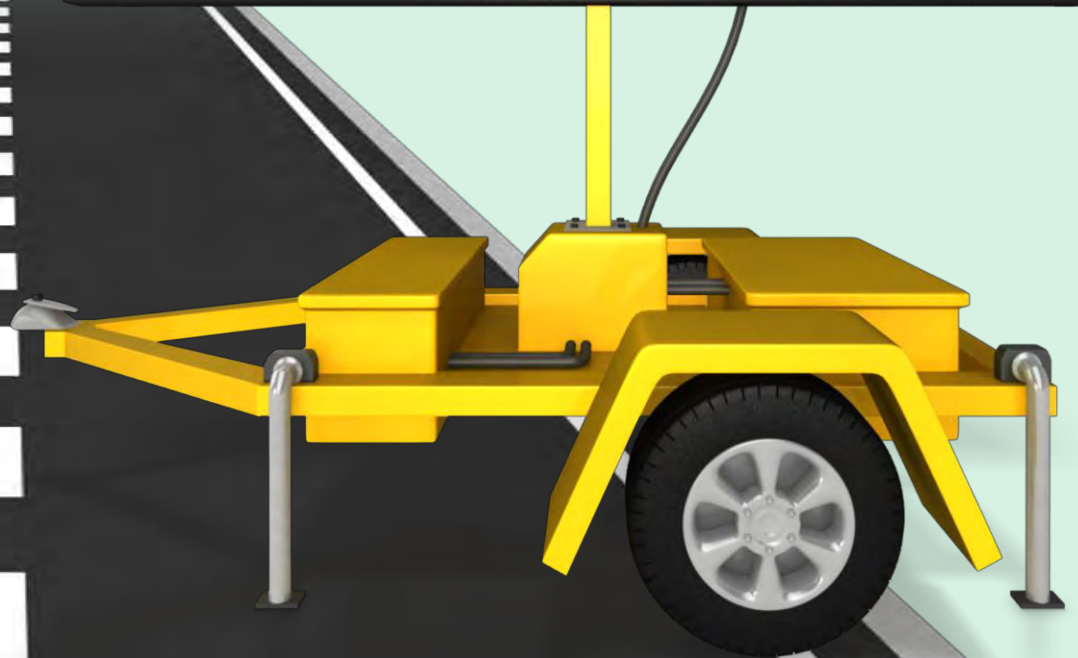
Guidelines are written to establish what ASHRAE believes to be the best practices for a subject



ASHRAE

STANDARD

202



ASHRAE Standard 202

- Establishes MINIMUM requirements for commissioning process
- It Is a PROCESS document
- It was a Consensus Development
- Does not address technical issues
- It will be adopted into law in different localities
- Does not address project specific issues
 - Project types
 - Qualifications of Cx providers
 - Particular systems
 - Enforcement provisions



ASHRAE Standard 202

- Document arranged by steps not phases
- Has 13 steps
- Each step has identifiable deliverables
- The standard has 17 chapters
- There are a number of annexes

Moving
toward Cx
being
business as
usual





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8. BASIS OF DESIGN

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10. DESIGN REVIEW

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ASHRAE 202

ACTIVITY

DELIVERABLE

Owner Responsibilities

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(OPR)

Develop Cx Plan

Cx Plan

Design Approach Requirements

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CD verification requirements

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Contractor Submittals Review

Submittal Review Report

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Construction Checklists & Report



ASHRAE 202

ACTIVITY

DELIVERABLE

Issues Resolution

Issues Log

Assemble Systems Manual

Systems Manual

Training

Training Plan and Report

Commissioning Report

Cx Report

Post Occupancy Operation
Verification

Post Occupancy Report



ASHRAE Standard 202 Annexes

- Annex A: Contracting the Commissioning Process
- Annex B: Commissioning Process Documentation Matrix and Flowcharts
- Annex C: Roles and Responsibilities
- Annex D: Owner's Project Requirements
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- Annex G: Construction Documents and Specifications



ASHRAE Standard 202 Annexes (continued)

- Annex H: Construction Document Verification Report
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- Annex J: Construction Observation and Testing Checklists and Reports
- Annex K: Issues Log
- Annex L: Systems Manual
- Annex M: Training Plans and Records
- Annex N: Commissioning Report
- Annex O: Post Occupancy Report



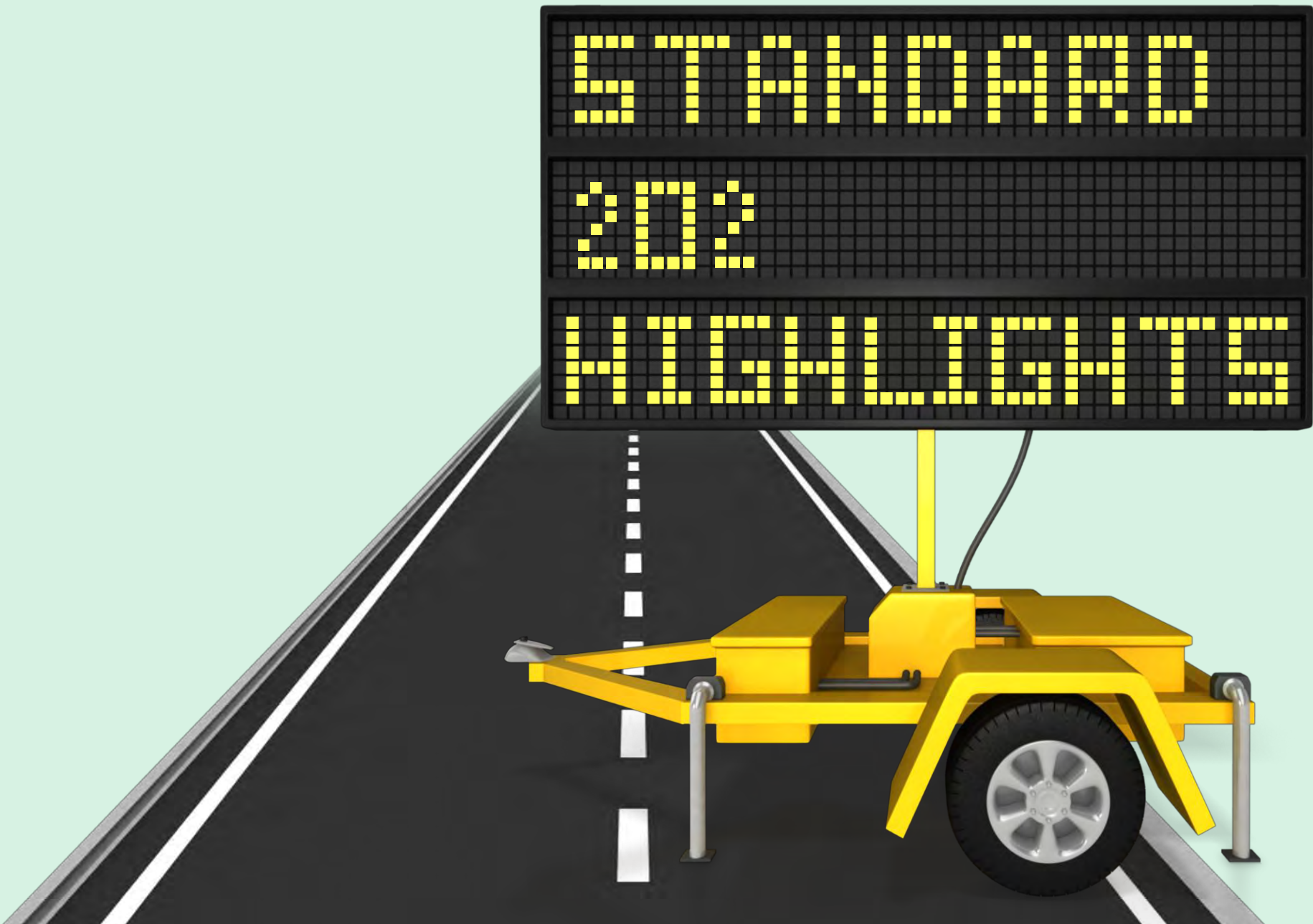
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Commissioning Industry Development

Standard Versus Guideline

ASHRAE 202: Highlights

Question and Answers



Standard 202 - Purpose

The purpose is to identify the minimum acceptable Commissioning Process for Buildings and Systems.

- ❖ NEBB Building Systems Commissioning Procedural Standards meets or exceeds these requirements.
- ❖ Will be used in the legal community.



Standard 202 - Scope

This standard provides procedures, methods, and, documentation requirements for each activity for project delivery from pre-design through occupancy and operation, including:

- Overview of Commissioning Process activities
- Description of each process step's minimum activities
- Minimum documentation requirements
- Acceptance requirements



Standard 202 – 4. Utilization

4.1 Introduction

The application of this standard can be for the delivery of all or selected systems and assemblies in a project..... The scope shall be defined in the Owner's Project Requirements and the Cx Plan, and performed based on the extent of commissioning effort defined and procured The process described in this standard is written for a generic project and must be adapted to each project.



Standard 202 – 4. Utilization

4.3 Acceptance

*The process for each activity and deliverable shall include an acceptance step as defined in the OPR and Cx Plan. This step shall formalize the acceptance of the commissioning deliverable by the owner or client. Under this Standard, **the CxA is not required to "accept" designers or contractors work on behalf of the owner or jurisdiction.***



Standard 202 – 5. Initiating The Commissioning Process

5.1.1 Introduction

Does NOT address the “Party” of the provider.

5.1.2 Project Team Selection – Commissioning Process Providers

The Owner is *responsible* to select *qualified* Cx process professionals.



Standard 202 – 6. OPR

6.2.1 Requirements

During Pre-Design, the Owner, along with the Cx Team, shall facilitate development and documentation of the OPR.

6.2.4

The OPR shall be included in the Contract Documents as an information only attachment or as required by owner's contract requirements.



Standard 202 – 7. Commissioning Plan

7.1 Introduction

During Pre-Design, the Owner, along with the Cx Team, shall facilitate development and documentation of the OPR.

7.2.1

The CxA shall, with input from the Owner's project team, develop the initial Cx Plan at the initiation of the project.

The Cx Plan shall be updated and expanded during design and construction as the project evolves.



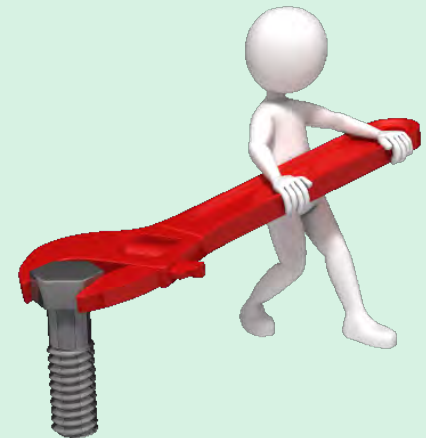
Standard 202 – 8. Basis of Design

8.2.1

The BOD shall be developed by the design team in accordance with the OPR. The BOD shall be updated and expanded during design and construction as the project evolves.

8.2.2

The design team shall submit the BOD to the Owner and CxA for review at each milestone defined by the OPR and Cx Plan.



Standard 202 – 10. Design Review

10.1

A Cx design document review shall be performed to verify compliance with the OPR.

10.2.1

The CxA shall perform a review of the commissioned systems and assemblies in the design documents to evaluate compliance with the OPR. Design review shall be completed prior to the issuing of construction documents for systems being commissioned. The OPR, and the Cx Plan, or the contract documents shall define any sampling strategies for design review.



Standard 202 – 10. Design Review

10.2.2

The CxA shall provide a design review - commissioning report with comments, questions, and observations to the Owner and design teams for compliance with the Owner's Project Requirements. This design review-commissioning shall not be considered a design PEER or Code Review.

10.2.3

The design team, owner, and/or other responsible party shall respond to the CxA document review report with necessary answers and document modifications for the project.....



Standard 202 – 12. Construction Observation and Testing

12.1

The proper installation, coordination, Commissioning testing, and interaction among commissioned systems and assemblies shall be evaluated.

12.2.1

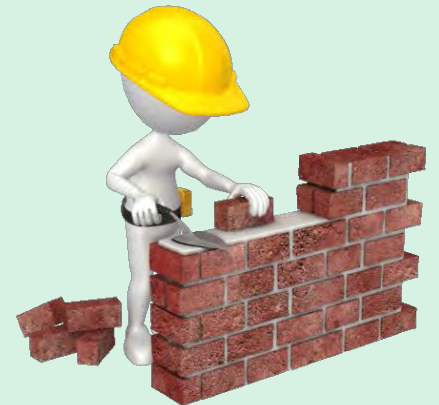
The systems and assemblies identified in the OPR and Cx Plan shall be confirmed to comply with the OPR and with the contract documents.

12.2.4

The CxA shall conduct a commissioning kick-off and scoping meeting with the Commissioning team to explain Cx procedures and coordinate commissioning activities at the beginning of the construction process and at other times as necessary.

Standard 202 – 12. Construction Observation and Testing

- Does not specify which party performs construction checklists.
- Checklist data must be submitted to the Cx provider for review.
- Does specify that the Cx provider must witness all testing.



Standard 202 – 13. Issues and Resolutions Documentation

13.2.3

A formal Issues and Resolutions Log shall be maintained throughout the project until all issues are resolved or accepted by the Owner.



Standard 202 – 14. Systems Manual

14.2.2

.....The Cx Team shall be responsible for updating the Systems Manual during the Cx Process including design construction and operation as required in the OPR, Cx Plan and contract documents.

Does not specify who develops the Systems Manual

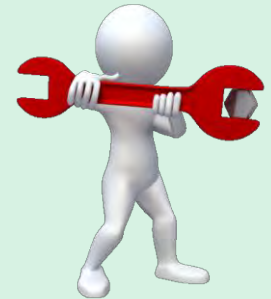


Standard 202 – 16. Post Occupancy

16.1

Post occupancy operation commissioning, including delayed and seasonal testing and warranty issues, shall be provided to deliver buildings and construction projects that meet the Owner's needs, prior to the time of warranty completion.

Mandatory!





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Question and Answers



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