



APPLICATION OF THE COMMISSIONING PROCESS ICC 1000-201x

**Public Comments Agenda of
Public Comments Submitted to
Public Comments Draft #1
Dated January 29, 2015
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ICC 1000- 01

Public Comments Draft 1

Proponent: Proponent: Raymond Bert, Executive Director, AABC Commissioning Group.

General:

APPLICATION OF THE COMMISSIONING PROCESS ICC 1000-201x PUBLIC COMMENTS DRAFT #1

Comment: This letter is in response to the public comment period for ICC 1000-201x Standard for the Commissioning Process. In a conference call with the major commissioning organizations on April 20 in which we made some of our issues with the proposed Standard known, Dominic Sims indicated that we could submit these in the form of a letter rather than using the comment form.

ACG has serious concerns that if released in its present form without major rewrites, ICC 1000 has significant potential to create confusion in the industry. This would have major impacts on both the required scope of commissioning services as well as the proper role of the commissioning provider.

Although we have heard on numerous occasions that the intent of ICC 1000 is to serve as guidance for code officials regarding commissioning, the fact that it is written as a standard with mandatory language, and that it is called a "Standard for Commissioning" mean that it will inevitably be seen as a standard that providers should follow and be held to. (Section 102.1 Applicability, for example, says that "The commissioning process of buildings and systems shall comply with this standard.")

In addition to that basic confusion of the document's intent and proper use, ICC 1000 conflicts with the existing ANSI standard for commissioning, *ASHRAE Standard 202-2013, Commissioning Process for Buildings and Systems*, which is accepted by all of the major commissioning organizations as the benchmark for minimum requirements for commissioning. ICC 1000's definitions, the implied minimum requirements, and its descriptions of the commissioning process are in many cases at odds with 202.

Finally, ACG has concerns that in a number of places in ICC 1000, the language can easily be interpreted to place responsibility for code compliance on the commissioning provider. In addition to being an improper role for the commissioning provider—who is an advocate for the building owner helping to ensure that the building works as intended, and not a code official—the liability issues that would be created would likely cause the cost of commissioning to increase dramatically, while driving many companies out of the business entirely.

In summary, ACG strongly urges that ICC take a fresh look at this document and revise it significantly to better reflect its intent of education and guidance for code officials with respect to commissioning. We agree that code officials are a key constituency that needs to understand commissioning's place in the construction process, and we are willing to work with you to advance this goal.

Bert1-Public Comments Draft1

Committee Action: AS AM D

ICC 1000-02

Public Comment Draft #1

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates

General Comment:

There are literally dozens of groups who already publish standards, guidelines, best practices and processes to conduct commissioning.

Several of the best ones are holistic in their scope and provide useful standards and guidelines for building lifecycle commissioning (Items 1-6 listed below), while many others are very parochial in nature - often dealing with a single discipline, system type, or purpose.

The most nationally recognized and commonly referenced / utilized building commissioning standards and best practices are:

1. Building Commissioning Association: "New Construction Building Commissioning Best Practice"
2. ASHRAE Standard 202 : "The Commissioning Process for Buildings and Systems"
3. ASHRAE Guideline - 0 - 2013: "The Commissioning Process"
4. AABC Commissioning Group: "ACG Commissioning Guideline"
5. California Commissioning Collaborative: "California Commissioning Guide: New Buildings"
6. American Society for Healthcare Engineering: "Health Facility Commissioning Guidelines"

There are additionally a host of other guidelines intended to be used in conjunction with the master guidelines above such as NETA Commissioning Guidelines, ASHRAE HVAC and ASHRAE Smoke Control System Commissioning Guidelines.

In addition, there are published guidelines for existing building commissioning; many by the same organizations listed above. These existing building requirements are often more likely to be encountered in local code requirements than in new construction. Codes such as New York City's Local Law 87 requiring energy audits and retro-commissioning once per decade is a salient example.

It is my professional opinion the building commissioning community does not need another commissioning process description or standard and would suggest the ICC board who are developing this standard consider options for inclusion of code identification requirements into the existing industry referenced standards. My professional recommendation as the most commonly utilized reference across the building commissioning community is ASHRAE Guideline - 0 - 2013.

I would also **STRONGLY** recommend that ICC include certified commissioning experts as key members on your development group going forward, to both help ensure there is a well experienced and detailed understanding of the building delivery and commissioning processes, as well as detailed understanding of the critical interfaces and responsibilities (legal and otherwise) within the building delivery project team (Owner, Engineer of Record, Contractor, Commissioning Agent, AHJ).

Dennis5-Chapter 4

Committee Action: AS AM D

ICC 1000-03

Public Comments Draft 1

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates.

General:

APPLICATION OF THE COMMISSIONING PROCESS ICC 1000-201x PUBLIC COMMENTS DRAFT #1

Comment: The purpose of this document / standard appears to be a means of placing a requirement of the CxA to back-check code compliance of installations which have already been signed and sealed by licensed / professional engineers (i.e. Engineer of Record) and installed by licensed tradesmen. While this is a noble endeavor and even potentially doable, the process defined in this document will not meet that need in my professional opinion.

Upon several read-throughs of the document, it does not appear to address the already existing contractual and legal responsibilities for code compliance by the Engineer of Record, Architect of Record, installing contractors, general contractors / construction managers, and code officials.

The primary issue that I highly recommend be addressed before this document is ever considered for release and implementation is what would stand to be conflicting liabilities for code compliance, both during and after the construction project, as well as the possible determination of code compliance by the CxA who may or may not have the necessary licensure to legally and ethically make such a determination.

To clarify this comment, below are two hypothetical but very plausible scenarios:

Example 1a:

A properly licensed Engineer of Record (EOR) seals electrical drawings and specifications for code review and submits to the Authority Having Jurisdiction (AHJ), who, after interactions and obtaining clarifications, approves the design for permit and construction. Then a properly trained and licensed trade contractor(s) installs the items, in this hypothetical example, case grounding connections, in what they understand as in accordance with the sealed and approved design plans and specifications and within code requirements.

Later in the project the Commissioning Authority (who may or may not be a licensed engineer or licensed contractor or in any way legally authorized to assess code compliance) believes the grounding connections to be out of compliance with current codes and documents the equipment / systems as not fit for acceptance, and documents the results of commissioning as requiring physical remediation before acceptance by Owner.

The EOR reviews the results of the CxA and disagrees with the interpretation of the CxA on whether the installation meets code requirements. Meanwhile project completion and AHJ inspection is delayed since commissioning is not complete and facility is not accepted by Owner; incurring additional costs to the Owner. In this scenario, to whom does the Owner appeal and who is liable for the costs associated with any schedule extension and physical rework?

Example 1b:

Using the same scenario as Example 1a, but this time the CxA (who, again, may or may not be a licensed engineer or licensed contractor or in any way legally authorized to assess code compliance) performs inspections as called for in this standard and identifies the installation as being installed per requirements of the sealed design drawings and specifications, and within code compliance, and recommends acceptance of the installation by the Owner.

The AHJ subsequently performs inspections and judges the installation as deficient and not in compliance with code, classifying this grounding as currently installed as an equipment and / or safety

hazard and will not issue the Certificate of Occupancy until substantive physical corrections to the installation are made. The Owner consequently incurs substantial additional costs due to occupant contractual delays. Who is then held fiscally liable for the delay and added costs?

There are literally dozens of combinations of these type scenarios which could occur if this document is implemented as currently written, each of which could present the same type of potential legal and fiscal issues.

Has this document been reviewed by an appropriate legal counsel with engineering, construction and building delivery experience? If not, it is strongly recommended the ICC has a thorough legal review conducted before proceeding any further with the development of this standard.

Dennis01-101.1

Committee Action: AS AM D

ICC 1000-04

Public Comments Draft 1

Proponent: Brian Perlberg, Esq., AGC Sr. Counsel of Construction Law and Contracts, The Associated General Contractors of America.

General:

APPLICATION OF THE COMMISSIONING PROCESS ICC 1000-201x PUBLIC COMMENTS DRAFT #1

Comment: Thank you for the opportunity to comment on International Code Council Standard for Commissioning ICC 1000-201x, Public Comment Draft #1 (“Standard”). We respectfully submit these brief comments on behalf of the Associated General Contractors of America (AGC). AGC is the leading association for the construction industry. AGC represents more than 26,000 firms, including over 6,500 of America’s leading general contractors, and over 9,000 specialty-contracting firms. More than 10,500 service providers and suppliers are also associated with AGC, all through a nationwide network of chapters.

In general, AGC believes in parties possessing freedom of contract. The stated purpose of the proposed Standard is to specify legal requirements for “code officials, owners, and agencies to accept, implement, enforce, and document the commissioning process established in codes and standards.” While licensure requirements for Commissioning Authority services might be something to consider, codification of prescriptive legal requirements governing commissioning authority services as it appears in the draft Standard appear inappropriate. AGC requests further dialogue to better understand ICC’s intent.

Construction industry stakeholders utilize a variety of project delivery methods. On a project, stakeholders have diverse roles, project needs and capabilities. Empowering industry professionals and companies by providing guidelines, recommended best practices, and standard contracts that are generated by industry associations groups and experts are often preferred to more legal requirements. For instance, AGC actively participates in a coalition of more than 40 leading industry organizations through an effort called ConsensusDocs. The ConsensusDocs Coalition recently published a standard commissioning authority agreement, entitled ConsensusDocs 820 Standard Agreement Between Owner and Commissioning Authority (attached). This consensus-based contract is endorsed by AGC, AABC Commissioning Group (ACG), and several other industry organizations as a fair contract to begin contract negotiations, and to arrive at the delivery of commissioning services best suited to the type of project.

Commissioning services can take many forms and functions. While it may not be ICC’s intent, as drafted, the Standard will inevitably be interpreted to be a one-size-fits all approach for commissioning services. Also, it is unclear as to what would be an acceptable equivalent standard under 103.1, because the standards for judging equivalency are not included.

Projects are increasingly employing varying degrees of collaboration among owners, constructors, specialty trades, and design professionals. The level of collaboration and input by constructors during the design and construction phases impacts the basis of design and design intent. It does not appear that this Standard adequately takes into account greater degrees of collaboration, and may actual discourage collaboration. For example, in more collaborative project delivery methods, the submittal process that is presumed in section 405 is likely to be conducted less formalistic and include a dynamic dialogue between the parties.

The Standard appears to presume that commissioning services will be performed by a separate entity from the owner, design professional or constructor. This is not necessarily the case for all projects. If, for example, a constructor were to provide commissioning services, some of the language used in regard to the relationship between the Contractor and Commissioning Provider, could prove awkward or render a desired relationship unworkable.

AGC of America1-Public Comment Draft 1

Committee Action: AS AM D

ICC 1000-05
Public Comments Draft 1

Proponent: Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

General:

APPLICATION OF THE COMMISSIONING PROCESS ICC 1000-201x
PUBLIC COMMENTS DRAFT #1

Comment: The format of the whole document is not compliant with international templates for standards from for example CEN or ISO. If this standard shall be used internationally, for example in Asia, India or Europe, the format should follow international standards.

Committee Action: AS AM D

Teisen1-Public Comments Draft 1

ICC 1000-06

Public Comments Draft 1

Proponent: Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

General:

APPLICATION OF THE COMMISSIONING PROCESS ICC 1000-201x PUBLIC COMMENTS DRAFT #1

Comment: *The format of the whole document is not compliant with requirements in sustainability certification programmes, for example DGNB-DK or LEED*

Teisen10-Public Comments Draft 1

Committee Action: AS AM D

ICC 1000-07

Public Comments Draft 1

Proponent: Proponent: Pete Unger, American Association for Laboratory Accreditation (A2LA).

General:

APPLICATION OF THE COMMISSIONING PROCESS ICC 1000-201x PUBLIC COMMENTS DRAFT #1

Comment: The draft standard makes reference to different conformity assessment activities such as testing, inspection, special inspection. No protocol or requirement seems to be added to verify competency of these activities. However, we noticed that provision number 3.0.4.6, Approved Agency, page 15, mentions “ An approved agency shall be deemed competent the agency has been trained or certified by an organization accredited by an International Laboratory Accreditation Cooperation signatory or other nationally recognized accrediting agency to IAS AC 476.”

The text above needs to be edited and clarified. The ILAC acronym should be added. This raises the question of what type(s) of agency is the Standard referencing. If it is a laboratory or inspection agency, then citing ILAC makes sense. Alternatively, if the Standard refers to a personnel certification agency, then the most appropriate venue for international recognition is the International Accreditation Forum (IAF). Also, we recommend addressing how the different conformity assessment activities such as testing, inspection and special inspection will be qualified as competent. We recommend harmonization with international conformity assessment practices and refer to conformity assessment activities that have been accredited by ILAC and IAF recognized accreditation bodies.

Unger1-Public Comments Draft 1

Committee Action: AS AM D

ICC 1000-08

101.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

101 GENERAL

101.1 Purpose: This standard provides requirements relating to the application of the overall commissioning process described in commissioning **process standards**. This provides criteria for code officials, owners, and agencies to accept, implement, enforce and document the commissioning provisions established in **codes and standards**.

Comment: Indicate what "process standards" and "codes and standards" that are being referred to.

Fischer1-101.1

Committee Action: AS AM D

ICC 1000-09

101.1

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates.

General:

101.1 Purpose: This standard provides requirements relating to the application of the overall commissioning process described in commissioning process standards. This provides criteria for code officials, owners, and agencies to accept, implement, enforce and document the commissioning provisions established in codes and standards.

Comment:

The opening purpose section as currently written is extremely vague, as follows:

1. Please define which commissioning standard(s) is being referred to in this document. In my professional opinion this standard / document does not reasonably parallel any existing commissioning standards published by BCxA or ASHRAE (or other best practice associated organizations) neither with respect to roles and responsibilities of the CxA and Cx team members nor with respect to commissioning documentation submissions.
 - a. The process application as currently defined is not consistent with the purpose and methods commissioning providers are hired to perform on behalf of their clients.
 - b. The process application is not consistent with, nor does it appear to respect, the current legal requirements governing the relationships driving those documents for liability and the practice of professional engineering. (Refer to comment RWD 01 and RWD 04).
2. This section of the standard makes mention of criteria, but in my professional opinion misunderstands the basic and primary purposes of building commissioning:
 - a. The Owners Performance / Project Requirements (OPR) by commissioning industry accepted standards, primarily define the criteria for the Commissioning Authority (CxA) to test the equipment and systems and primarily defines the “pass / fail” criteria. This standard as currently written is inconsistent with that primary objective of building commissioning.
 - b. The codes, which it is important to note are design to establish the MINIMUM standards, is not what the primary focus of building commissioning is or should be, as again the primary focus of building commissioning is to validate via testing if the OPRs have been meet, prior

to recommending acceptance of the installation by the CxA to the Owner (client).

- c. There is theoretically no overriding issue with building commissioning performed as part of the code requirement, but this standard as currently written identifies the CxA as the entity to determine code compliance for the Owner, but the standard does so without defining the necessary licensure the CxA is required to hold to be able to do so legally.

Dennis-02 101.1

Committee Action: AS AM D

ICC 1000-10

101.1

Proponent: Orry Nottingham, P.E., LEED AP CAP CCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

101.1 Purpose: This standard provides requirements relating to the application of the overall commissioning process described in commissioning process standards. This provides criteria for code officials, owners, and agencies to accept, implement, enforce and document the commissioning provisions established in codes and standards.

Comment: How will Owners find out early-on about Cx requirements, prior to the permit process?

Orry2-101.1

Committee Action: AS AM D

ICC 1000-11

101.1, 101.2

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself

General:

101.1 Purpose: This standard provides requirements relating to the application of the overall commissioning process described in commissioning process standards. This provides criteria for code officials, owners, and agencies to accept, implement, enforce and document the commissioning provisions established in codes and standards.

101.2 Scope: This standard establishes minimum requirements for the application of the process of commissioning as required by the local authority having jurisdiction.

Comment: It is not described what kind of buildings the standard is designed for. It seems like a standard for new constructions and it seems that the standard is not describing a process for existing buildings.

Committee Action: AS AM D

Eisemann11-101.1

ICC 1000-12

101.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

101.2 Scope: This standard establishes minimum requirements for the application of the process of commissioning as required by the **local authority having jurisdiction.**

Comment: The Purpose and Scope seem to be in conflict. Is this standard for establishing minimum requirements for the applications of the process to the established codes and standards or as required by the AHJ?

Committee Action: AS AM D

Fischer2-101.2

ICC 1000-13 102

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

102.1 Applicability. The commissioning process of new buildings and systems shall comply with this standard.

Reason:

The described Commissioning process is not suited for Existing Building Commissioning since it does not consider or include:

1. The CFR (Current Facility Requirements)
2. Any investigation of the facilitie(s)
3. Any analysis of data from the investigation

The purpose of this comment is to clarify the scope of the standard and to eliminated misuse or confusion.

TTJ2 102

Committee Action: AS AM D

ICC 1000-14

103.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

103 COMPLIANCE ALTERNATIVES

103.1 Compliance alternatives. Nothing in this standard is intended to prevent the use of alternatives to those prescribed by this standard, where **equivalence** is provided, and such equivalence is approved by the administrative authority adopting this standard.

Comment: It is recommended that Section 103.1 explain how "equivalence" is to be determined and who is responsible for determining "equivalence."

Committee Action: AS AM D

Fischer3-103.1

ICC 1000-15

104.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

104 REFERENCED DOCUMENTS

104.1 Reference documents. The codes and standards referenced in this standard shall be considered part of the requirements of this standard to the prescribed extent of each such reference.

Comment: It is recommended that this document include a list of referenced standards and ICC-1000 is coordinated with these standards, including but not limited to, definitions, process, documentation and timing of commissioning process deliverables.

Fischer4-104.1

Committee Action: AS AM D

ICC 1000-16
104.2 NEW

Proponent: Jacqueline R. Wilmot, representing National Fire Protection Association (NFPA).

Revise text as follows:

104.2 NFPA 3, *Recommended Practice for Commissioning of Fire Protection and Life Systems*, 2015 edition.

Reason: This comment requests the ICC to reference NFPA 3, *Recommended Practice for Commissioning of Fire Protection and Life Safety Systems* to Section 104, Reference Documents. However if the committee feels this information would be more appropriate in a different location of the standard, please make that modification.

NFPA 3 provides recommended procedures, methods, and documentation for commissioning of active and passive fire protection and life safety systems and their interconnection with other building systems. NFPA 3, as well as other system-specific commissioning documents would dovetail well with the ICC 1000 standard to provide more detailed information and clarification to the end-user.

NFPA1-104.2 NEW

Committee Action: AS AM D

ICC 1000-17
105.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following ~~shall~~ could be provided for each system for which codes require commissioning.

Reason: If this standard is meant for the AHJ as a guidance document for the multiple different Cx Codes words like SHALL should not be used in this document.

Fischer5-105.2

Committee Action: AS AM D

ICC 1000-18

105.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning. Reference your local code to confirm requirements.

Reason: None provided.

Committee Action: AS AM D

Fischer5.1-105.2

ICC 1000-19
105.2

Proponent: James Medley, representing National Security Technologies, LLC.

Revise text as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning.

1. Documentation to identify each of the applicable commissioning requirements in code according to section 402.
2. The Preliminary Commissioning Plan developed in accordance with Section 403.2.
3. A statement within the construction documents that require commissioning to be performed in accordance with ~~this standard and applicable code.~~ this standard and applicable code.

Reason: Editorial?

Medley1-105.2

Committee Action: AS AM D

ICC 1000-20

105

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

105 SUBMITTAL DOCUMENTS

105.1 General. Documentation of the commissioning process shall be submitted as described below, and shall contain the information required by the applicable codes and this standard.

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning.

1. Documentation to identify each of the applicable commissioning requirements in code according to section 402.
2. The Preliminary Commissioning Plan developed in accordance with Section 403.2.
3. A statement within the construction documents that require commissioning to be performed in accordance with this standard and applicable codes.

Comment: How early does Code Official get involved in the project planning and design?

Committee Action: AS AM D

Orry3-105

ICC 1000-21
105.2

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning.

1. Documentation to identify each of the applicable commissioning requirements in code according to section 402.
2. The Preliminary Commissioning Plan developed in accordance with Section 403.2.
3. A statement within the construction documents that require commissioning to be performed in accordance with this code standard and applicable codes.
4. Confirmation that design documents have been reviewed by the Commissioning Provider in accordance with Section 404.
5. Where an Owner's Project Requirements (OPR) document is required by an applicable code, documentation that the OPR has been provided in accordance with the requirements of Appendix B.
6. Where a Basis of Design (BOD) document is required by an applicable code, documentation that the BOD has been provided in accordance with the requirements of Appendix C.

Reason: Update 105.2 item 3 as shown.

Cyclone1-105.2

Committee Action: AS AM D

ICC 1000-22

105.2.5

Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning

Revise text as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning.

1. Documentation to identify each of the applicable commissioning requirements in code according to section 402.
2. The Preliminary Commissioning Plan developed in accordance with Section 403.2.
3. A statement within the construction documents that require commissioning to be performed in accordance with this standard and applicable codes.
4. Confirmation that design documents have been reviewed by the Commissioning Provider in accordance with Section 404.
5. ~~Where an Owner's Project Requirements (OPR) document is required by an applicable code,~~ documentation that the OPR has been provided in accordance with the requirements of Appendix B.
6. Where a Basis of Design (BOD) document is required by an applicable code, documentation that the BOD has been provided in accordance with the requirements of Appendix C.

Reason: Owner's Project Requirements (OPR) document is necessary as accept criteria for reviews and tests. It is not possible to perform any Commissioning process without accept Criteria.

OPR is also described in The International Energy Agency, IEA, ECBCS Annex 40 and Annex 47 as a part of the Commissioning Process.

IEA ECBCS Annex 40 and Annex 47 is used as foundation for standard- and guideline documents concerning Building Commissioning in Asia, India, Europe and US.

Owner's Project Requirements (OPR) document is necessary as accept Criteria for review and tests. It is not possible to perform any Commissioning process without accept Criteria.

OPR is also described in the International Energy Agency, IEA ECBCS Annex 40 and Annex 47 as a part of the Commissioning Process.

IEA ECBCS Annex 40 and Annex 47 is used as foundation for standard- and guideline documents concerning Building Commissioning in Asia, India, Europe and US.

Teisen2-105.2.5

Committee Action: AS AM D

ICC 1000-23

105.2

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S representing himself.

Revise text as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning.

1. Documentation to identify each of the applicable commissioning requirements in code according to section 402.
2. The Preliminary Commissioning Plan developed in accordance with Section 403.2.
3. A statement within the construction documents that require commissioning to be performed in accordance with this standard and applicable codes.
4. Confirmation that design documents have been reviewed by the Commissioning Provider in accordance with Section 404.
- ~~5. Where an Owner's Project Requirements (OPR) document is required by an applicable code, documentation that the OPR has been provided in accordance with the requirements of Appendix B. Owner's Project Requirement (OPR) in accordance with the requirements of Appendix B.~~
6. Where a Basis of Design (BOD) document is required by an applicable code, documentation that the BOD has been provided in accordance with the requirements of Appendix C.

Reason:

Purpose:

1. To include what the Commissioning process has to verify throughout the project.
2. To differentiate Commissioning from regular work which already has to be done.

Reason:

The base of the Commissioning process is the OPR – the OPR is the cornerstone of the Cx process. If there isn't any OPR, then there isn't purpose for the Commissioning process. The involved parties is already contractually required to control and verify that their own installations is in accordance with regulations and laws. Without the OPR the Owner has to pay twice for the same product = just the "normal" verification that his building is accordance with laws and regulations. The purpose of the OPR is to specify the functional requirements of the project and the expectations of how it will be used and operated. These requirements is mainly functional requirements, so the designers can design the building as suited by them, it just has to comply with the functional requirements/OPR. The Commissioning organization's job is throughout the project to verify that everything complies with the OPR.

Committee Action: AS AM D

TTJ2.1 OPR-105.2

ICC 1000-24

105.2

Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

Revise text as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning.

1. Documentation to identify each of the applicable commissioning requirements in code according to section 402.
2. The Preliminary Commissioning Plan developed in accordance with Section 403.2.
3. A statement within the construction documents that require commissioning to be performed in accordance with this standard and applicable codes.
4. Confirmation that design documents have been reviewed by the Commissioning Provider in accordance with Section 404.
5. Where an Owner's Project Requirements (OPR) document is required by an applicable code, documentation that the OPR has been provided in accordance with the requirements of Appendix B.
6. ~~Where a Basis of Design (BOD) document is required by an applicable code,~~ documentation that the BOD has been provided in accordance with the requirements of Appendix C.

Reason: Basis of Design (BOD) document is necessary to knowledge about installed systems for writing protocols for reviews and tests. BOD is also described in The International Energy Agency, IEA, ECBCS Annex 40 and Annex 47 is used as foundation for standard- and guideline documents concerning Building Commissioning in Asia, India, Europe and US.

Teisen3-105.2

Committee Action: AS AM D

ICC 1000-25

105.2.6

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S representing himself.

Revise text as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning.

1. Documentation to identify each of the applicable commissioning requirements in code according to section 402.
2. The Preliminary Commissioning Plan developed in accordance with Section 403.2.
3. A statement within the construction documents that require commissioning to be performed in accordance with this standard and applicable codes.
4. Confirmation that design documents have been reviewed by the Commissioning Provider in accordance with Section 404.
5. Where an Owner's Project Requirements (OPR) document is required by an applicable code, documentation that the OPR has been provided in accordance with the requirements of Appendix B.
- ~~6. Where a Basis of Design (BOD) document is required by an applicable code, documentation that the BOD has been provided in accordance with the requirements of Appendix C.~~ Basis of Design (BOD) in accordance with the requirements of Appendix C.

Reason:

Purpose:

- To ensure that the design team will include every requirement from the OPR, which will be described in the BOD.
- To ensure that the design team consider how each requirement is included in the project.
- To ensure that the Owner is having a document, which outline why the building is designed as it is.
- To enhance the Commissioning teams review of the design documents.

Reason:

- The BOD is one of the main documents in the Commissioning process, since it on an early state in the project, can enlighten the Commissioning team on how the designers will comply with the requirements and if they understood the requirements.

- By using the BOD, the Commissioning team is having a good tool to verify, that each requirement is included.
- If the Owner is going to rebuild or change systems in his building, he will always have a document, which outline why the design as it is.
- When the Commissioning team is performing a design review, the BOD will help them to identify why the design is as it is. It will help the Commissioning team to validate, that the defined solution in the BOD is equal to the final design in the design documents.

TTJ-3-105.2.6

Committee Action: AS AM D

ICC 1000-26 105.2.7 (NEW)

Proponent: Paul A. Karrer representing The American Institute of Architects (AIA).

Revise text as follows:

105.2 Commissioning documentation required at permit application. At the time of permit application, the following shall be provided for each system for which codes require commissioning.

1. Documentation to identify each of the applicable commissioning requirements in code according to section 402.
2. The Preliminary Commissioning Plan developed in accordance with Section 403.2.
3. A statement within the construction documents that require commissioning to be performed in accordance with this standard and applicable codes.
4. Confirmation that design documents have been reviewed by the Commissioning Provider in accordance with Section 404.
5. Where an Owner's Project Requirements (OPR) document is required by an applicable code, documentation that the OPR has been provided in accordance with the requirements of Appendix B.
6. Where a Basis of Design (BOD) document is required by an applicable code, documentation that the BOD has been provided in accordance with the requirements of Appendix C.
7. Where an Owner's Project Requirements (OPR) document and a Basis of Design (BOD) document are required by an applicable code, documentation that the Commissioning Agent has evaluated the BOD and determined that the BOD will more likely than not meet all of the needs and goals of the OPR.

Reason: Adds new requirement for documentation. This change adds an extra level of review and verification of the interacting requirements where OPR and BOD documentation is submitted.

Karrer1-105.2.7

Committee Action: AS AM D

ICC 1000-27

105.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise as follows:

105.3 Commissioning documentation required before issuance of the Certificate of Occupancy or final inspection. Prior to issuance of the certificate of occupancy, documentation shall be provided demonstrating that the Final Commissioning Plan was completed prior to the start of functional performance testing, and that the following commissioning work has been completed. Where no Certificate of Occupancy will be issued, this documentation shall be submitted before the final inspection.

1. Materials and equipment submittals for each system for which applicable codes require commissioning have been reviewed by the commissioning team for conformance to the contract documents ~~code requirements~~, according to Section 405.

(remaining items to remain unchanged)

Reason: It is not industry standard or practice for commissioning providers to execute, and then subsequently be responsible for, code review, verification or enforcement. This may result in additional liability being placed upon commissioning providers that is typical not industry practice. Additionally, authorities having jurisdiction may require a Professional Engineering license to practice commissioning, which is not something required by ICC-1000. Lastly, Professional Engineers practicing commissioning may have disciplinary action taken against them for code-related malfeasance unrelated to the commissioning process. Should read "conformance to the contract documents" not "code". This comment applies to all other places in the proposed standard where compliance with codes is referred to, including 105.3-5, 202, 404.2, 405.1, 405.3, 408.1, CF-6, etc.

Fischer7-105.3

Committee Action: AS AM D

ICC 1000-28

105.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

Revise as follows:

105.3 Commissioning documentation required before issuance of the Certificate of Occupancy or final inspection. Prior to issuance of the certificate of occupancy, documentation shall be provided demonstrating that the Final Commissioning Plan was completed prior to the start of functional performance testing, and that the following commissioning work has been completed. Where no Certificate of Occupancy will be issued, this documentation shall be submitted before the final inspection.

- ~~1. Materials and equipment submittals for each system for which applicable codes require commissioning have been reviewed by the commissioning team for conformance to code requirements, according to Section 405.~~
1. Commissioning Issue and Resolution Logs have been maintained in accordance with Section 406.
2. Equipment testing for each system for which code required commissioning has been performed and witnessed by the commissioning team, and is in accordance with Section 407.
3. A systems manual has been developed in accordance with Section 408
4. 1. Where training is required by an applicable code, building operations and maintenance personnel have been trained on operation and maintenance of the commissioned equipment and systems, in accordance with Appendix D.
5. 2. The preliminary commissioning report has been completed in accordance with Section 409 and provided to the owner.

Reason: By definition, the Preliminary Cx Report will confirm the that the Final Cx Plan was completed. This section seem to include duplicative requirements. OR Items 1, 2, & 3 are also required to be included in the Preliminary Commissioning Report; therefore, it seems that this section is too complicated.

Fischer8-105.3

Committee Action: AS AM D

ICC 1000-29

105.3

Proponent: Will Mak, representing Cyclone Energy Group

Revise text as follows:

105.3 Commissioning documentation required before issuance of the Certificate of Occupancy or final inspection. Prior to issuance of the certificate of occupancy, documentation shall be provided demonstrating that the Final Commissioning Plan was completed prior to the start of functional performance testing, and that the following commissioning work has been completed. Where no Certificate of Occupancy will be issued, this documentation shall be submitted before the final inspection.

1. Materials and equipment submittals for each system for which applicable codes require commissioning have been reviewed by the commissioning team for conformance to code requirements, according to Section 405.
 2. Commissioning Issue and Resolution Logs have been maintained in accordance with Section 406.
 3. Equipment testing for each system for which code required commissioning has been performed and witnessed by the commissioning team, and is in accordance with Section 407.
 4. A systems manual has been developed in accordance with Section 408
 - ~~5. Where training is required by an applicable code, building operations and maintenance personnel have been trained on operation and maintenance of the commissioned equipment and systems, in accordance with Appendix D.~~
- ~~6-5.~~ The preliminary commissioning report has been completed in accordance with Section 409 and provided to the owner.

Reason: Remove training section.

Committee Action: AS AM D

Cyclone 2-105.3

ICC 1000-30 105.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise as follows:

105.3 Commissioning documentation required before issuance of the Certificate of Occupancy or F-final inspection. Prior to issuance of the certificate of occupancy, documentation shall be provided demonstrating that ~~the Final Commissioning Plan was completed prior to the start of functional performance testing, and that~~ the following commissioning work has been completed. Where no Certificate of Occupancy will be issued, this documentation shall be submitted before the final inspection.

Reason: It is recommended for the requirement for the systems manual final development prior to a project receiving the Certificate of Occupancy or Final Inspection be removed. As most of the work is being done right up to occupancy the CxP often doesn't have time to finalize all the content for the Systems Manual. A draft or Table of Contents might be more appropriate.

Fischer6-105.3

Committee Action: AS AM D

ICC 1000-31
105.3

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

105.3 Commissioning documentation required before issuance of the Certificate of Occupancy or final inspection. Prior to issuance of the certificate of occupancy, documentation shall be provided demonstrating that the Final Commissioning Plan was completed prior to the start of functional performance testing, and that the following commissioning work has been completed. Where no Certificate of Occupancy will be issued, this documentation shall be submitted before the final inspection.

1. Materials and equipment submittals for each system for which applicable codes require commissioning have been reviewed by the commissioning team for conformance to code requirements, according to Section 405.
2. Commissioning Issue and Resolution Logs have been maintained in accordance with Section 406.
3. Equipment testing for each system for which code required commissioning has been performed and witnessed by the commissioning team, and is in accordance with Section 407.

Comment: Consider "Test submittal is to include procedure tester qualifications, and test report to be provided for review/approval by Cx Agent for systems listed in Cx Plan on the Commissioned Systems List."

Orry4-105.3

Committee Action: AS AM D

ICC 1000-32

105.3, 105.4 (NEW), 408.2

Proponent: Paul A. Karrer representing The American Institute of Architects (AIA)

Revise text as follows:

105.3 Commissioning documentation required before issuance of the Certificate of Occupancy or final inspection. Prior to issuance of the certificate of occupancy, documentation shall be provided demonstrating that the Final Commissioning Plan was completed prior to the start of functional performance testing, and that the following commissioning work has been completed. Where no Certificate of Occupancy will be issued, this documentation shall be submitted before the final inspection.

1. Materials and equipment submittals for each system for which applicable codes require commissioning have been reviewed by the commissioning team for conformance to code requirements, according to Section 405.
2. Commissioning Issue and Resolution Logs have been maintained in accordance with Section 406.
3. Equipment testing for each system for which code required commissioning has been performed and witnessed by the commissioning team, and is in accordance with Section 407.
4. ~~A systems manual has been developed in accordance with Section 408~~
5. ~~4.~~ Where training is required by an applicable code, building operations and maintenance personnel have been trained on operation and maintenance of the commissioned equipment and systems, in accordance with Appendix D.
6. ~~5.~~ The preliminary commissioning report has been completed in accordance with Section 409 and provided to the owner.

Add new text as follows:

105.3 Commissioning documentation required after final inspection. After final inspection, documentation shall be provided demonstrating that a systems manual was submitted to the owner in accordance with the requirements in Section 408.2. This documentation would be an amendment or appendix to the documentation submitted as required in Section 105.2.

Revise as follows:

408.2 Systems Manual. The systems manual shall be submitted to the owner prior to project completion and before issuance of the certificate of occupancy after final inspection as an amendment or appendix to the documentation submitted as required in

Section 105.2. The systems manual shall include the following information for all commissioned systems:

1. Table of Contents;
2. Information for each commissioned equipment element or system including:
 - Manufacturer's operation and maintenance data for installed equipment, systems and assemblies including wiring diagrams and schematics;
 - Warranties, where provided;
 - Contractor, supplier, or service agency listing and contact information;
3. Facility Operations;
 - Facility guide, including operating plan, building and equipment operating schedules, setpoints and ranges, sequences of operation, and emergency procedures;
 - Maintenance plans, procedures, checklists, schedules and records;
 - Janitorial and cleaning plans and procedures.

Reason: Modifies the requirement for the submission of a systems manual to the owner by removing the distinction that it must be submitted prior to the issuance of the certificate of occupancy and/or final inspection. The system manual contains the final Test, Adjust, and Balance (TAB) report and the control as-builds, which are typically not completed before the issuance of a certificate of occupancy or final inspection. A designer may wish to conduct a seasonal performance review after certificate of occupancy and/or final inspection but before delivering the systems manual. This would require the submission of the systems manual documentation as an amendment or appendix to the documentation submitted before certificate of occupancy and/or final inspection as required by Section 105.2.

Committee Action: AS AM D

Karrer2-105.3

ICC 1000-33

105.3

Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

Revise text as follows:

105.3 Commissioning documentation required before issuance of the Certificate of Occupancy or final inspection. Prior to issuance of the certificate of occupancy, documentation shall be provided demonstrating that the Final Commissioning Plan was completed prior to the start of functional performance testing, and that the following commissioning work has been completed. Where no Certificate of Occupancy will be issued, this documentation shall be submitted before the final inspection.

1. Materials and equipment submittals for each system for which applicable codes require commissioning have been reviewed by the commissioning team for conformance to code requirements, according to Section 405.
2. Commissioning Issue and Resolution Logs have been maintained in accordance with Section 406.
3. Equipment testing for each system for which code required commissioning has been performed and witnessed by the commissioning team, and is in accordance with Section 407.
4. A systems manual has been developed in accordance with Section 408
5. ~~Where training is required by an applicable code,~~ building operations and maintenance personnel have been trained on operation and maintenance of the commissioned equipment and systems, in accordance with Appendix D.
6. The preliminary commissioning report has been completed in accordance with Section 409 and provided to the owner.

Reason: The ICC 1000-201 Standard is more process-oriented than Guideline 4, and I see it as a good thing that the document is focused on this one part as it makes the document more robust and easier to maintain. Unfortunately, the proposed standard is not compliant with international Commissioning-related documents or templates for international standards. I have tried to explain that as well as I can within the format of your comment-document. The proposed standard contains some very useful checklists and other valuable tools in the appendixes.

Teisen4-105.3

Committee Action: AS AM D

**ICC 1000-34
203**

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates

General:

**Section 203
Definitions**

Comment: A number of the elements of building commissioning as defined in this standard are in conflict with already existing and industry accepted and implemented commissioning guidelines and best practices (i.e. ASHRAE, BCxA); in some cases distorting or re-directing the purpose and process of commissioning from one of equipment / system performance validation to one of code inspections and compliance.

Committee Action: AS AM D

Dennis3-203

ICC 1000-35 203

Proponent: Richard W. Dennis representing DLB Associates

General:

Section 203 Definitions

Acceptance: A formal action, taken by a person with appropriate authority (which may or may not be contractually defined) to declare that some aspect of the project meets defined requirements.

Comment: The definition in the ICC standard uses the term “defined requirements” but does not appear to articulate where or how those requirements are defined or where they are stated. The bulk of the already existing and industry accepted best practice doctrines calls for these requirements to be driven by the Owners Project Requirements (OPR) which are developed via an iterative process with the Owner, EOR, etc. beginning early in the design phase of the project. Recommend this definition be changed in the ICC standard for clarity and to prevent confusion regarding the purpose and role of building commissioning.

Committee Action: AS AM D

Dennis3.1-203

**ICC 1000-36
203**

Proponent: Will Mak, representing Cyclone Energy Group

Delete without substitution:

**Section 203
Definitions**

~~**Acceptance:** A formal action, taken by a person with appropriate authority (which may or may not be contractually defined) to declare that some aspects of the project meets defined requirements.~~

Reason: Suggest removing "Acceptance" definition.

Cyclone5-203

Committee Action: AS AM D

**ICC 1000-37
203**

Proponent: Will Mak, representing Cyclone Energy Group

**Section 203
Definitions**

Revise text as follows:

Basis of Design (BOD): A document that records the concepts, ~~calculations~~, decisions, and product selections used to meet the Owner’s Project Requirements and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

Reason: BOD: suggest removing “calculations” from BOD

Cyclone7-203

Committee Action: AS AM D

**ICC 1000-38
202**

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

**Section 203
Definitions**

Checklists: Project and element-specific checklists that are developed and used during all phases of the commissioning process to verify that the Owner's Project Requirements are being achieved. Checklists are used for general evaluation, testing, training, and other design and construction requirements.

Comment: Suggest Pre-Functional Test (PFT), Functional Performance Test (FPT) checklist for installation and startup. FPTs are for dynamic performance testing to verify sequence of operation.

Orry5-202

Committee Action: AS AM D

ICC 1000-39 203

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

Section 203 Definitions

Commissioning: (Cx): Commissioning Process.

Commissioning Authority (CxA): See Commissioning Provider

Commissioning Plan (Cx Plan): A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the Commissioning Process. The commissioning plan establishes the commissioning process guideline for the project and the commissioning team's level of effort by identifying the required commissioning activities to ensure that the code requirements are met.

Commissioning Process: A quality-focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that all of the commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the code requirements.

Comment: Cx Authority is not same as Cx Provider. Suggest differentiate level qualification in commissioning applications.

Orry6-203

Committee Action: AS AM D

**ICC 1000-40
203**

Proponent: Richard W. Dennis representing DLB Associates.

General:

**Section 203
Definitions**

Commissioning Plan (Cx Plan): A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the Commissioning Process. The commissioning plan establishes the commissioning process guideline for the project and the commissioning team’s level of effort by identifying the required commissioning activities to ensure that the code requirements are met.

Comment: The purpose of the commissioning plan is not to ensure codes are met. The purpose of the commissioning plan is to organize the commissioning requirements, commissioning team roles and responsibilities, and overview the testing scope and processes to be performed, so that the overall commissioning process for the project is defined and understood by all delivery team members. While criteria by the way of the Owners Project Requirements are often included in the commissioning plan as part of the requirements to set the scope of the work, even in an environment where codes are listed as something to be considered, the **overriding purpose** of the plan should never be to ensure codes are met. That is at direct odds with the basic function of the commissioning service offering. If OPR is not used, then it is recommended deleting everything after the words “commissioning activities”.

Dennis 3.2-203

Committee Action: AS AM D

ICC 1000-41

203

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S representing himself.

Revise text as follows:

Section 203

Definitions

Commissioning Plan (Cx Plan): A document that outlines the scope, organization, schedule, allocation of resources, ~~and~~ documentation requirements and activities of the Commissioning Process. The commissioning plan establishes the commissioning process guideline for the project and the commissioning team's level of effort by identifying the required commissioning activities to ensure that the code requirements are met.

Reason:

Purpose:

To ensure that the Commissioning plan is thorough and is describing the activities.

Reason:

Every involved party in the project should be able to read the Commissioning plan and identify the scope and what activities the Commissioning organization is going to perform.

Substantion:

The following standards and guidelines all include scope and activities in the Commissioning plan:

1. ASHRAE Guideline 0-2005 / 2013
2. ASHRAE Standard 202
3. NIBS Guideline 3-2012
4. ASHRAE Guideline 1.1-2007

TTJ4-203

Committee Action: AS AM D

**ICC 1000-42
203**

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

**Section 203
Definitions**

Commissioning Progress Report: A written document that details activities completed as part of the Commissioning Process and significant findings from those activities.

Commissioning Provider (CxP): An individual or agency identified by the owner that is responsible for the overall building commissioning process and who leads, plans, schedules, and coordinates the commissioning team to implement the Commissioning Process. Other commonly used terms for this individual or agency include, but are not limited to; commissioning authority or commissioning agent.

Comment: Commissioning Provider is different from Commissioning Authority Professional. Wording may mislead Owners using a registered Professional Engineer, versus an Engineering Technician. All are important but depends on level of requirements.

Orry7-202

Committee Action: AS AM D

**ICC 1000-43
203**

Proponent: Richard W. Dennis representing DLB Associates.

General:

**Section 203
Definitions**

Commissioning Process: A quality-focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that all of the commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the code requirements.

Comment: It is extremely unclear and vague in this standard as currently written what entity decides what code compliance is relevant, as well as what the licensure and certification requirements are for said entity to make these decisions. If the CxA does not value for a certain code because the equipment function does not appear relevant to that code in the CxA's opinion, which entity decides if that decision is correct and acceptable for issuance of building occupancy permit? Request it be considered that the probable reason the CxA would be involved in the first place is that the code official may not have the specific technical background to understand the testing process in question, and if the code official were to require the test anyway even though the CxA does not warrant the test as necessary, who pays for this testing?

Committee Action: AS AM D

Dennis3.3-203

**ICC 1000-44
203**

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S representing himself.

Revise text as follows:

**Section 203
Definitions**

Commissioning Process: A quality-focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that all of the commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the code requirements and the OPR.

Reason:

Purpose:

1. To include what the Commissioning process has to verify throughout the project.
2. To differentiate Commissioning from regular work which already has to be done.

Reason: The base of the Commissioning process is the OPR – the OPR is the cornerstone of the Cx process. If there isn't any OPR, then there isn't purpose for the Commissioning process. The involved parties is already contractedly required to control and verify that their own installations is in accordance with regulations and laws. Without the OPR the Owner has to pay twice for the same product = just the "normal" verification that his building is accordance with laws and regulations. The purpose of the OPR is to specify the functional requirements of the project and the expectations of how it will be used and operated. These requirements is mainly functional requirements, so the designers can design the building as suited by them, it just has to comply with the functional requirements/OPR.

TTJ5-203

Committee Action: AS AM D

**ICC 1000-45
203**

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise as follows:

**Section 203
Definitions**

Commissioning Provider (CxP): An individual identified ~~or agency~~ by the owner that is responsible for the overall building commissioning process. The CxP is an objective independent advocate of the Owner. If the CxP's firm has other project responsibilities, or is not under direct contract to the Owner, a conflict of interest exists. Whenever this occurs the CxP discloses, in writing, the nature of the conflict and the means by which the conflict shall be managed. The CxP and who leads, plans, schedules, and coordinates the commissioning team to implement the Commissioning Process. Other commonly used terms for this individual or agency include, but are not limited to; commissioning authority or commissioning agent.

Reason: Definition of "Commissioning Provider" allows for an "agency" to play this role. A CxP is job description not a company/agency/firm description. In this definition and standard it is contradictory to the requirement in section 301.3 that the Commissioning Provider to be certified by an organization accredited to ISO 17024; ISO 17024 applies only to certification of persons and not agencies. It is impossible for an agency to be certified in accordance with ISO 17024.

Fischer9-203

Committee Action: AS AM D

**ICC 1000-46
203**

Proponent: Richard W. Dennis representing DLB Associates.

General:

**Section 203
Definitions**

Commissioning Specialist: An individual who works on a project to conduct commissioning on a specific technical area or system.

Comment: This is inadequately defined as currently written, which can be interpreted as everyone / anyone who has any involvement in the commissioning process would be a commissioning specialist at some level. Recommend eliminating this distinction altogether.

Dennis3.4-203

Committee Action: AS AM D

**ICC 1000-47
203**

Proponent: Will Mak, representing Cyclone Energy Group.

Delete without substitution:

**Section 203
Definitions**

~~**Commissioning Specialist:** An individual who works on a project to conduct commissioning on a specific technical area or system.~~

~~**Commissioning Team:** The individuals and agencies that are responsible for implementing the Commissioning Process.~~

Reason: Suggest removing “cx specialist” and “cx team” definitions.

Cyclone9-203

Committee Action: AS AM D

ICC 1000-48
203

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

Section 203
Definitions

Revise as follows:

Commissioning Team: ~~The individuals and agencies that are responsible~~ A group of individuals selected by the Commissioning Provider for the sole purpose of implementing the Commissioning Process. Team members may work for the same company or for multiple companies. All members will fulfill one or more functions of the commissioning process.

Reason: Definition of "Commissioning Team" is too close to the definition of "Commissioning Provider." Also, "Commissioning Team" appears to be used in the document where "Commissioning Provider" should be used (e.g. see paragraph 105.3.1). Suggest redefining "Commissioning Team" to make it clear that the "Commissioning Provider" is ultimately responsible for implementing the Commissioning Process.

Fischer9-203

Committee Action: AS AM D

**ICC 1000-49
203**

Proponent: Richard W. Dennis representing DLB Associates

General:

**Section 203
Definitions**

Commissioning Testing: The evaluation and documentation of the equipment and assemblies, delivery and condition, installation, proper function according to the manufacturer’s specifications, and project documentation to meet the criteria in the codes.

Comment: The primary objective of building commissioning is not code criteria, but determination if the built environment meets the criteria in the contract documents and Owners Performance Requirements, with code compliance as a subset element of that test criteria. Recommend rewording the statement to end “to meet the requirements of the contract documents and the Owners Performance Requirements, including any applicable code defined performance criteria.”

Dennis3.5-203

Committee Action: AS AM D

**ICC 1000-50
203**

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

**Section 203
Definitions**

Commissioning Testing: The evaluation and documentation of the equipment and assemblies, delivery and condition, installation, proper function according to the manufacturer’s specifications, and project documentation to meet the criteria in the codes.

Comment: Suggest Contractor’s commissioning testing is component Contractor’s Quality Control (QC) responsibility. By comparison, 3rd Party Commissioning Authority applies Quality Assurance (QA) verification, Owner’s quality assurance sampling level testing-functional sequence of operations, and set points.

Orry8-203

Committee Action: AS AM D

**ICC 1000-51
203**

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

Commissioning Plan (Cx Plan): A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the Commissioning Process. The commissioning plan establishes the commissioning process guideline for the project and the commissioning team’s level of effort by identifying the required commissioning activities to ensure that the ~~code requirements~~ this section of the code are met.

Reason: Suggest updating code requirements to “this section of the code” to reference commissioning.
Cyclone8-203

Committee Action: AS AM D

ICC 1000-52
203

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

Construction Documents: Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the element of a project necessary for obtaining a building permit.

Contract Documents: Documents that detail the Owner’s needs, as well as regulations, laws, and jurisdictional requirements. Contract Documents frequently include price agreements, construction management processes, sub-contractor agreements or requirements, requirements and procedures for submittals, changes, and other construction requirements, timeline for completion, and the Construction Documents.

Comment: Important for Cx to review in DD I CD phase, verify scope of work defined for contractor during construction including test procedure, and test results defined in DD I CD phase early-on to be implemented by Contractor later-on.

Orry9-203

Committee Action: AS AM D

**ICC 1000-53
203**

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

**Section 203
Definitions**

Design Review: A review of the design documents to determine compliance with the codes, including coordination between systems and assemblies being commissioned, features and access for testing, commissioning and maintenance, and other reviews required by the commissioning plan.

Comment: How to ensure Cx reviews are done early, at right time, to be timely, versus later, after its too late to be effective?

Orry10-203

Committee Action: AS AM D

**ICC 1000-54
203**

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

**Section 203
Definitions**

Revise as follows:

Design Review: A review of the design documents to determine compliance with the Owner's Project Requirements, including coordination between systems and assemblies being commissioned, features and access for testing, commissioning and maintenance, and other reviews required by the OPR and commissioning plan. ~~A review of the design documents to determine, compliance with the codes including coordination between systems and assemblies being commissioned, features and access for testing, commissioning and maintenance, and other reviews required by the commissioning plan.~~

Reason: This definition of "Design Review" is not the industry-accepted definition for CxPs. The review of the design documents **by** the Commissioning Provider is to verify compliance with the Owner's Project Requirements and Basis of Design, **not** code requirements. The review for code compliance is the responsibility of the Designer of Record and the Authority Having Jurisdiction.

Fischer11-203

Committee Action: AS AM D

**ICC 1000-55
203**

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

**Section 203
Definitions**

Functional Test: Functional Testing is the process of verifying that a material, product, assembly, or system is properly installed and operates in accordance with design and manufacturer's specifications.

Comment: Suggest clarify intent, test is a dynamic test, aimed at control measures, sequence of operation, set points, compare to basis of design. Manufacturer's recommend installation is in Pre-functional test (PFT), and in preparation for dynamic testing.

Orry11-203

Committee Action: AS AM D

**ICC 1000-56
203**

Proponent: Anne C. Juran, Summer Consultants

Revise text as follows:

**Section 203
Definitions**

Design Review: A review of the design documents to determine the ability to be commissioned ~~compliance with the codes, including coordination between systems and assemblies being commissioned, features and access for testing, commissioning and maintenance, and other reviews required by the commissioning plan.~~

Reason: It is not the responsibility of the Cx to review the documents for code compliance, that is the responsibility of the designer of record. As an example, this would require the Cx perform the outside air calculations in order to “determine compliance with the codes”; this is a nearly impossible task to do without being heavily involved in the design and having access to the load calculations. Additionally, as “Design Review” is currently defined in the draft, the Cx certifies someone else’s work which is prohibited by our professional liability insurance.

Juran1-203

Committee Action: AS AM D

ICC 1000-57
203

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

Design Review: A review of the design documents to determine compliance with the codes and OPR, including coordination between systems and assemblies being commissioned, features and access for testing, commissioning and maintenance, and other reviews required by the commissioning plan.

Reason:

Purpose:

To ensure, that the Commissioning team verify the OPR during the Design Review.

Reason:

The OPR is the cornerstone of the Cx process and has to be verified throughout the project.

Committee Action: AS AM D

TTJ6-203

ICC 1000-58
203

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself

Revise text as follows:

Section 203
Definitions

Functional Test: Functional Testing is the process of verifying that a material, product, assembly, or system is properly installed and operates in accordance with design and manufacturer’s specifications and the OPR.

Reason:

Purpose:

To ensure, that the functional tests verify the OPR.

Reason:

The OPR is the cornerstone of the Cx process and has to be verified throughout the project.

Committee Action: AS AM D

TTJ7-203

ICC 1000-59
203

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates.

General:

Functional Test: Functional Testing is the process of verifying that a material, product, assembly, or system is properly installed and operates in accordance with design and manufacturer's specifications.

Comment: The definition should be changed to reflect the following: Functional Testing is the process of verifying if a material, product, assembly, or system is properly installed and via performance testing and evaluation of the results of that testing, is determined to operate in accordance with the performance criteria defined in the contract documents and Owner's Project / Performance Requirements.

Committee Action: AS AM D

Dennis3.6-203

**ICC 1000-60
203**

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

**Section 203
Definitions**

Owner's Project Requirements (OPR): A written document that details the requirements of a project and the expectations of how it will be used and operated. This includes project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. (The term Project Intent or Design Intent is used by some owners for their Commissioning Process Owner's Project Requirements.)

Comment: At the end of the project, intent of OPR is to be provided to Facilities Manager for use as a Facilities Project Requirements (FPR) for future benchmarking ongoing CIPs or EEMs.

Committee Action: AS AM D

Orry12-OPR-203

**ICC 1000-61
203**

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates.

Delete without substitution:

**Section 203
Definitions**

~~**Performance Test:** Performance Testing is the process of verifying that a material, product, assembly, or system meets defined performance criteria. The methods and conditions under which performance is verified are described in one or more test protocols.~~

Reason: Recommend this be deleted entirely as it is largely redundant with the Functional Test definition.

Committee Action: AS AM D

Dennis3.7-203

**ICC 1000-62
203**

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

**Section 203
Definitions**

Systems Manual: A system-focused composite document that includes the design and construction documentation, facility guide and operation manual, maintenance information, training information, commissioning process records, and additional information of use to the Owner during occupancy and operations.

Comment: Suggest Systems Manual include updated Basis of Design, criteria, metrics, and final sequence of operations, measures, and metrics.

Orry13-203

Committee Action: AS AM D

ICC 1000-63

203

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Section 203 Definitions

General:

Systems Manual: A system-focused composite document that includes the design and construction documentation, facility guide and operation manual, maintenance information, training information, commissioning process records, and additional information of use to the Owner during occupancy and operations.

Comment: Systems Manual elements: Reduce this list to: OPR, BOD, Control drawings, Sequences of Operation, special startup and shut down procedures when applications are non-typical (laboratories, etc.), fire alarm and emergency power response matrices, list of all user adjustable setpoints and resets, list of system or control loop retesting frequencies and calibration frequencies for sensors and actuators.

Fischer13-203

Committee Action: AS AM D

**ICC 1000-64
203**

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

**Section 203
Definitions**

General:

Submittal Review

Comment: Design Review is defined in this section. Suggest adding definition of Submittal Review.

Committee Action: AS AM D

Fischer12-203

**ICC 1000-65
203**

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates.

General:

**Section 203
Definitions**

Test Procedure: A written protocol that defines methods, personnel, and expectations for tests conducted on components, equipment, assemblies, systems, and interfaces among systems to verify compliance with the codes.

Comment: Code Compliance is simply not, nor should it be considered, the primary objective of Cx Testing. This definition conflicts directly with the Functional Test definition already in the standard. While Code compliance could be included as a secondary element of the commissioning process, compliance with contract documents and Owner Performance Requirements, which should in most all cases exceed the level of rigor defined in the code requirement, is the industry accepted primary objective of commissioning.

Dennis 3.8-203

Committee Action: AS AM D

**ICC 1000-66
203**

Proponent: Will Mak, representing Cyclone Energy Group

Revise text as follows:

**Section 203
Definitions**

Test Procedure: A written protocol that defines methods, personnel, and expectations for tests conducted on components, equipment, assemblies, systems, and interfaces among systems to verify compliance with the applicable codes.

Reason: Test procedure definition should reference applicable codes.

Cyclone10-203

Committee Action: AS AM D

ICC 1000-67
203

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

Test Procedure: A written protocol that defines methods, personnel, and expectations for tests conducted on components, equipment, assemblies, systems, accept criteria, and interfaces among systems to verify compliance with the codes.

Reason:

Purpose:

To include accept criteria in the Test Procedure/Test Protocol.

Reason:

By defining the accept criteria, the procedure/protocol is an independent/stand-alone document, which can be used without reference to other documents.

Committee Action: AS AM D

TTJ10-203

ICC 1000-68

203

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself

Revise text as follows:

Test Procedure/Test protocol: A written protocol that defines methods, personnel, and expectations for tests conducted on components, equipment, assemblies, systems, and interfaces among systems to verify compliance with the codes.

Reason:

Purpose:

To define Test Protocol.

Reason:

To define Test Protocol which is used multiple times in the standard.

Committee Action: AS AM D

TTJ9-203

**ICC 1000-69
203**

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates

General:

**Section 203
Definitions**

Training Plan: A written document that details the expectations, schedule, duration and deliverables of Commissioning Process activities related to training of project operating and maintenance personnel, users, and occupants.

Comment: Training requirements are defined by the Engineer of Record in the project specifications at the front end of the building delivery process. The CxA role, as is currently accepted and implemented in the industry, is checking that the vendors and installation contractors are complying with those provisions of the specifications as part of the contract documents. The Training Plan (also referred to as Training Syllabus by ASHRAE); is developed by the vendors or installing contractors as required in the contract specifications and is one element the CxA uses to help verify if compliance with those requirements is met.

Dennis3.9-203

Committee Action: AS AM D

ICC 1000-70

301

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates

General:

Section 301 Commissioning Provider and Commissioning Specialist

301.1 Commissioning Provider and Commissioning Specialist. Commissioning personnel shall perform the commissioning work as required by this section.

301.2 Commissioning. Where commissioning is required by code, it shall be performed by qualified and certified commissioning providers and commissioning specialists.

301.3 Commissioning provider and Commissioning Specialist Requirements. Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an organization accredited to the criteria set forth in International Accreditation Service (IAS) AC 476 or ISO 17024. Documentation shall be submitted to the code official verifying certification of commissioning personnel.

Comment 1: This chapter warrants a serious analysis of the legal definition of the "Practice of Engineering" and to what extent building commissioning requires a professional engineering license.

As long as the commissioning practice remains as it current is, a private "advisory" service to Owners on the performance of the built environment, and the CxA is not signing / sealing drawings and / or determining code requirements or code compliance, State Licensing Boards have agreed the CxA does not need to be a licensed engineer for the practice of commissioning.

An important aspect of this standard as currently written however is the assignment of responsibility to the CxA for validation of the built environment meeting code, but contains no requirements for the CxA to possess an engineering license; this can fairly be interpreted as practicing engineering without a license.

Every State in the Union has a public law declaring who can legally practice engineering. Since I am licensed in Colorado I have quoted their statute below:

(10) (a) "Practice of engineering" means the performance for others of any professional service or creative work requiring engineering education, training, and experience and the application of special knowledge of the mathematical and engineering sciences to such professional services or creative work, including consultation, investigation, evaluation, planning, design, and the observation of construction to evaluate compliance with plans and specifications in connection with the utilization of the forces, energies, and materials of nature in the development, production, and functioning of engineering processes, apparatus, machines, equipment, facilities, structures, buildings, works, or utilities, or any combination or aggregations thereof, employed in or devoted to public or private enterprise or uses.

(b) An individual practices or offers to practice "professional engineering" within the meaning and intent of this section if the individual, by oral claim, sign, advertisement, letterhead, card, or in any

other way, represents himself or herself to be a professional engineer, through the use of any other means implies that the individual is licensed under this part 1, or performs engineering services.

My interpretation of the standard as currently written, it would result in the following if implemented:

- Taking aspects of the legal responsibility of the duly licensed Engineer of Record (who has sealed the design documents and in doing so has certified the design is to the best of the EORs knowledge in compliance with all applicable laws, regulations and codes in the jurisdiction of the project) and assigning this responsibility to the CxA (without any requirement in the standard the CxA is licensed to legally perform this engineering work).
- Require the CxA to provide a separate certification that the built environment is or is not within compliance with code while potentially unlicensed (and potentially unqualified) to do so.
- Implementation of this standard as currently written could plausibly result in commissioning professionals across the country to be in violation of the law for practicing engineering without a license (which is a Criminal – Level 2 Misdemeanor in Colorado) resulting in fines and a criminal records against them.

Recommendation 1: To maintain the EOR's ultimate and rightful responsibility for code compliance, and avoid actions by the CxA that might be construed as a conflict with that responsibility, recommendation is as follows:

- 1) Delete all requirements dictating that the Commissioning Authority have any direct contact with the Authority Having Jurisdiction.
- 2) Require that the Commissioning Authority (CxA) develop functional test scripts that in addition to verifying built environment performance compliance with contract documents and the Owners Project / Performance Requirements (OPR), also addresses any specific performance elements of the code compliance where applicable.
 - a) Test scripts could include code reference sections and anticipated pass / fail criteria to indicate evaluation of code compliance where applicable.
 - b) Test scripts could then be provided for Engineer of Record review and Engineer of Record concurrence with code provisions and the pass / fail criteria prior to the start of Cx testing.
 - c) The Engineer of Record would then sign on the test script clearly indicating approval of the references and criteria.
- 3) During the conduct of the testing, the CxA would record the measured performance results and clearly indicate whether when compared to the pass / fail criteria, if the performance passes or fails.
- 4) Upon completion of testing, a copy of the signed and completed test scripts and test results shall be passed to the Owner and EOR for review.
- 5) Upon acknowledgement of completion of the review by the EOR, the Owner would forward the package of the completed and signed test scripts to the Authority Having Jurisdiction for review and any follow-up action as required.
- 6) Signed and completed tests scripts would be memorialized by the Commissioning Authority through inclusion in the final commissioning report.

Dennis 4.1-301

Committee Action: AS AM D

ICC 1000-71

301

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates.

General:

Section 301 Commissioning Provider and Commissioning Specialist

301.1 Commissioning Provider and Commissioning Specialist. Commissioning personnel shall perform the commissioning work as required by this section.

301.2 Commissioning. Where commissioning is required by code, it shall be performed by qualified and certified commissioning providers and commissioning specialists.

301.3 Commissioning provider and Commissioning Specialist Requirements.

Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an organization accredited to the criteria set forth in International Accreditation Service (IAS) AC 476 or ISO 17024. Documentation shall be submitted to the code official verifying certification of commissioning personnel.

Comment 2: In my professional opinion as a Licensed Professional Engineer, and having been engaged and certified in commissioning for the past twenty years, is that a professional engineering registration does not necessarily qualify one to perform commissioning, and a stand-alone commissioning certification is warranted. Commissioning, at its heart is more aligned with construction than with engineering, although it is intended to bridge across those processes.

As someone who already holds two trade organization commissioning certifications of the half dozen or so which are industry recognized and accepted, I put forward the building commissioning industry will not benefit from yet another trade organization redefining and developing commissioning certifications.

Recommendation 2: For commissioning certification, it is recommended the ICC board members that are developing this standard use the most highly regarded existing industry certification processes to verify commissioning experience and capability. In my professional opinion the BCxA commissioning certification most closely models the rigor of typical State Licensing prerequisites for testing.

The BCxA certification process requires technical summaries of the prospective commissioning agent past relevant projects, educational history, professional references on the performance of the prospective commissioning agent seeking certification, and requirement of years of experience across a significant number of commissioning projects, as well as a holistic examination on building commissioning.

It is conceivable that if ICC approached the BCxA, that collectively the groups could add code element sections to the BCxA certification requirements and also include code element questions in the certification testing, this would further the ability of the CxA to discern code. This would be a much more functional means to certify commissioning agents rather than development of another duplicative certification process.

Dennis4.2-301

Committee Action: AS AM D

ICC 1000-72

301.1

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

Section 301 Commissioning Provider and Commissioning Specialist

301.1 Commissioning Provider and Commissioning Specialist. Commissioning personnel shall perform the commissioning work as required by this section.

301.2 Commissioning. Where commissioning is required by code, it shall be performed by qualified and certified commissioning providers and commissioning specialists.

301.3 Commissioning provider and Commissioning Specialist Requirements. Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an organization accredited to the criteria set forth in International Accreditation Service (IAS) AC 476 or ISO 17024. Documentation shall be submitted to the code official verifying certification of commissioning personnel.

Comment: When would a licensed Professional Engineer be required?

Orry14-301.1

Committee Action: AS AM D

ICC 1000-73
301.3

Proponent: Joseph K. Ting, PE, CxA, representing InSynergy Engineering, Inc.

General Comments:

301.3 Commissioning provider and Commissioning Specialist Requirements.

Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an organization accredited to the criteria set forth in International Accreditation Service (IAS) AC 476 or ISO 17024. Documentation shall be submitted to the code official verifying certification of commissioning personnel.

Comment: Is our ACG certification following Accreditation Service 476 or International Standard Association 17024?

Committee Action: AS AM D

Ting3-301.3

ICC 1000-74
301.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

Revise text as shown:

301.3 Commissioning Provider and Commissioning Specialist Requirements.

Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an ANSI/ISO/IEC 17024:2012 accredited organization. This Accredited Certification guarantees a level of competence in building commissioning knowledge, experience, and ability to deliver a quality service. ~~organization accredited to the criteria set forth in International Accreditation Service (IAS) AC 476 or ISO 17024. Documentation shall be submitted to the code official verifying certification of commissioning personnel.~~

Reason: Section implies that anyone performing any step in the commissioning process on any commissioned systems must be certified. This section therefore prohibits any non-certified personnel from performing commissioning work. This it will prevent new employees from ever becoming certified. There needs to be an allowance in ICC Std. 1000 for non-certified personnel to do commissioning work – maybe a compromise with a certified CxP as the primary? This will allow the market to ramp up for this need.

Fischer14-301.3

Committee Action: AS AM D

ICC 1000-75
301.3

Proponent: Ross Montgomery, QST Inc., representing himself

Revise text as follows:

301.3 Commissioning provider and Commissioning Specialist Requirements.

Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an organization accredited to the criteria set forth in International Accreditation Service (IAS) AC 476 or ISO 17024, or a licensed professional engineer. Documentation shall be submitted to the code official verifying certification of commissioning personnel.

Reason: None provided

Montgomery1-301.3

Committee Action: AS AM D

ICC 1000-76

301.3

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Add new text as follows:

301.3 Commissioning provider and Commissioning Specialist Requirements.

Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an organization accredited to the criteria set forth in International Accreditation Service (IAS) AC 476 or ISO 17024. Documentation shall be submitted to the code official verifying certification of commissioning personnel.

301.3.1 Qualified requirements. For the Commissioning providers and Commissioning specialist to be qualified to perform code required Commissioning, they shall have performed Commissioning on:

- Two (2) buildings at minimum 5.000 sq/ft or on one (1) building at minimum 15.000 sq/ft.
- The Commissioning cost has to have been higher than \$20.000 on both projects or higher than \$50.000 on one (1) of the projects

Reason:

Purpose:

To ensure qualified persons.

Reason:

By requiring experience, it's ensuring that the Commissioning personal has tried to perform Commissioning before.

TTJ11-402.2

Committee Action: AS AM D

ICC 1000-77

301.3

Proponent: Will Mak, representing Cyclone Energy Group

Delete without substitution:

~~**301.3 Commissioning provider and Commissioning Specialist Requirements.**~~

~~Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an organization accredited to the criteria set forth in International Accreditation Service (IAS) AC 476 or ISO 17024. Documentation shall be submitted to the code official verifying certification of commissioning personnel.~~

Reason: Why should code require specific certifications? "Commissioning providers and commissioning specialists performing code required commissioning of any part of the commissioned systems shall be certified by an organization accredited to the criteria set for in International Accreditation Service (IAS) AC476 or ISO 17024."

Cyclone11-301.3

Committee Action: AS AM D

ICC 1000-78
Chapter 4

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

CHAPTER 4
COMMISSIONING PROCESS

Comment: An article describing the training requirements should be added and referenced in the Cx Process section and not just mentioned in Section1 and Appendix D.

Committee Action: AS AM D

Fischer15-Chapter4

**ICC 1000-79
401**

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

**Section 401
Commissioning Process**

401.1 Commissioning Process. Commissioning process management shall be provided as required by this section.

401.2 Commissioning Process Management. A qualified Commissioning Provider shall be designated to coordinate the commissioning process and the work of any Commissioning Specialists, and to submit the documentation required by code. Qualified Commissioning Specialists shall be designated to commission systems for which specialized technical certification or licenses are required. Where all of the commissioning work is accomplished by one commissioning specialist, that specialist is permitted to assume the duties of a commissioning provider.

Comment: Commissioning Authority Professional, or is an HVAC technician okay?

Committee Action: AS AM D

Orry18-401

ICC 1000-80 401.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

General:

401.2 Commissioning Process Management. A **qualified Commissioning Provider** shall be designated to coordinate the commissioning process and the work of any Commissioning Specialists, and to submit the documentation required by code. Qualified Commissioning Specialists shall be designated to commission systems for which specialized technical certification or licenses are required. Where all of the commissioning work is accomplished by one commissioning specialist, that specialist is permitted to assume the duties of a commissioning provider.

Comment: Section uses the terms "Qualified" Commissioning Provider and "Qualified" Commissioning Specialist. Suggest deleting the word "Qualified" before these other terms as the terms are already defined elsewhere without the qualifier. Otherwise additional definitions of what it takes to become "Qualified" may be necessary.

Fischer16-401.2

Committee Action: AS AM D

ICC 1000-81
401.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

Revise text as follows:

401.2 Commissioning Process Management. A qualified Commissioning Provider shall be designated to coordinate the commissioning process and the work of any Commissioning Specialists, and to submit the documentation required ~~by code~~ contract documents. Qualified Commissioning Specialists shall be designated to commission systems for which specialized technical certification or licenses are required. Where all of the commissioning work is accomplished by one commissioning specialist, that specialist is permitted to assume the duties of a commissioning provider.

Reason: None provided.

Fischer16.1-401.2

Committee Action: AS AM D

ICC 1000-82

401.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

General:

401.2 Commissioning Process Management. A qualified Commissioning Provider shall be designated to coordinate the commissioning process and the work of any Commissioning Specialists, and to submit the documentation required by code.

Qualified Commissioning Specialists shall be designated to commission systems for which specialized technical certification or licenses are required. Where all of the commissioning work is accomplished by one commissioning specialist, that specialist is permitted to assume the duties of a commissioning provider.

Comment: Suggest clarifying the intent of this requirement, otherwise it is possible that Qualified Commissioning Specialists will never be required for any commissioned system. And as these Specialist don't exist in the market today (at least in the way CxP currently design their team) delete and use current market terms.

Fischer17-401.2

Committee Action: AS AM D

ICC 1000-83

401.2

Proponent: Will Mak, representing Cyclone Energy Group

Revise text as follows:

401.2 Commissioning Process Management. A ~~qualified~~ Commissioning Provider shall be designated to coordinate the commissioning process and the work of any Commissioning Specialists, and to submit the documentation required by code. ~~Qualified Commissioning Specialists shall be designated to commission systems for which specialized technical certification or licenses are required. Where all of the commissioning work is accomplished by one commissioning specialist, that specialist is permitted to assume the duties of a commissioning provider.~~

Reason: What does Qualified Commissioning Provider mean? What specialized technical certification or licenses are required?

Cyclone12&13-401.2

Committee Action: AS AM D

ICC 1000-84
Section 402

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

General:

Section 402
Documentation of Code Required Commissioning

Comment: Requirements for Commissioning Documentation in section 402 are unclear and are contradictory to those clearly provided in section 105. Suggest deleting section 402 as section 402 appears to be redundant.

Fischer18-402

Committee Action: AS AM D

**ICC 1000-85
402**

Proponent: Will Mak, representing Cyclone Energy Group

Revise text as follows:

Section 402
~~Documentation of Code Required Commissioning~~ Commissioning
Documentation Requirements

402.1 Documentation of Commissioning Requirements in Applicable Codes. Code requirements for commissioning shall be documented as required by this section.

Reason: Suggest renaming title to "Commissioning Documentation Requirements"

Cyclone14-402

Committee Action: AS AM D

ICC 1000-86
Section 402.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

402.2 The following ~~documentation elements~~ shall be ~~provided~~ included within every commissioning document submittal for the code official's reference, as applicable. each instance of an applicable commissioning requirement in an applicable code or standard.

1. Applicable code requirements, with code section reference numbers and including any environmental, sustainability, or efficiency requirements of those codes;
2. Description of technical approach to compliance;
3. Equipment and systems to be commissioned;
4. Specific process requirements for the commissioning of each element, including: logs, reviews, reports, evaluation, testing and documentation requirements; and
5. Training requirements where required by code.
- ~~5-6.~~ Specifications in the Contract Document describing the requirements for commissioning.

Reason: It is recommended that this section, and document in its entirety, utilize industry standard terminology and practices.

Committee Action: AS AM D

Fischer19-401.2

ICC 1000-87

402.2

Proponent: Will Mak, representing Cyclone Energy Group

Revise text as follows:

402.2 The following documentation shall be provided for each instance of an applicable commissioning requirement ~~in an applicable code or standard.~~

1. Applicable code requirements, with code section reference numbers and including any environmental, sustainability, or efficiency requirements of those codes.
2. Description of technical approach to compliance.
3. Equipment and systems to be commissioned;
4. Specific process requirements for the commissioning of each element, including: logs, reviews, reports, evaluation, testing and documentation requirements; and
5. Training requirements where required by code.

Reason: Explanation for documentation requirements is confusing. What are applicable code requirements? Isn't the code the ICC 1000 document?

Cyclone15-402.2

Committee Action: AS AM D

ICC 1000-88

402.2

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself

Revise text as follows:

402.2 The following documentation shall be provided for each instance of an applicable commissioning requirement in an applicable code or standard.

1. Applicable code requirements, with code section reference numbers and including any environmental, sustainability, or efficiency requirements of those codes;
2. Description of technical approach to compliance;
3. Equipment and systems to be commissioned;
4. Specific process requirements for the commissioning of each element, including: logs, reviews, reports, evaluation, testing and documentation requirements; ~~and~~
5. Training requirements; ~~where required by code~~
6. OPR (Owner's Project Requirement);
7. BOD (Basis of Design); ~~and~~
8. Commissioning plan

Reason:

Purpose:

To ensure a fully documented Commissioning process.

Reason:

By requiring the training requirements, it's ensuring that the Owners facility personal is getting the right training to operate the facility.

By requiring the OPR, it's ensuring that the foundation for the Commissioning process is there.

By requiring the BOD, it's ensuring that the Design Team has evaluated and recognized all of the OPR.

By requiring the Commissioning plan, it's ensuring that the Commissioning team made a thorough plan for all the Cx activities.

TTJ11.1-402.2

Committee Action: AS AM D

ICC 1000-89

402.2.1

Proponent: Will Mak, representing Cyclone Energy Group

Revise text as follows:

Section 402 Documentation of Code Required Commissioning

402.1 Documentation of Commissioning Requirements in Applicable Codes. Code requirements for commissioning shall be documented as required by this section.

402.2 The following documentation shall be provided for each instance of an applicable commissioning requirement in an applicable code or standard.

1. ~~Applicable code requirements, with code section reference numbers and including any environmental, sustainability, or efficiency requirements of those codes;~~ Final Owner's Project Requirements and Basis of Design
2. Description of technical approach to compliance;
3. Equipment and systems to be commissioned;
4. Specific process requirements for the commissioning of each element, including: logs, reviews, reports, evaluation, testing and documentation requirements; and
5. Training requirements where required by code.

Reason: Suggest revising section to reference OPR/BOD.

Cyclone16-402.2.1

Committee Action: AS AM D

ICC 1000-90

402.2.2

Proponent: Will Mak, representing Cyclone Energy Group

Revise text as follows:

Section 402 Documentation of Code Required Commissioning

402.1 Documentation of Commissioning Requirements in Applicable Codes. Code requirements for commissioning shall be documented as required by this section.

402.2 The following documentation shall be provided for each instance of an applicable commissioning requirement in an applicable code or standard.

1. Applicable code requirements, with code section reference numbers and including any environmental, sustainability, or efficiency requirements of those codes;
2. ~~Description of technical approach to compliance;~~ Commissioning Plan
3. Equipment and systems to be commissioned;
4. Specific process requirements for the commissioning of each element, including: logs, reviews, reports, evaluation, testing and documentation requirements; and

Reason: Suggest revising section to reference the commissioning plan.

Cyclone17-402.2.2

Committee Action: AS AM D

ICC 1000-91
402.2.5

Proponent: Will Mak, representing Cyclone Energy Group

Revise text as follows:

Section 402
Documentation of Code Required Commissioning

402.1 Documentation of Commissioning Requirements in Applicable Codes. Code requirements for commissioning shall be documented as required by this section.

402.2 The following documentation shall be provided for each instance of an applicable commissioning requirement in an applicable code or standard.

1. Applicable code requirements, with code section reference numbers and including any environmental, sustainability, or efficiency requirements of those codes;
2. Description of technical approach to compliance;
3. Equipment and systems to be commissioned;
4. Specific process requirements for the commissioning of each element, including: logs, reviews, reports, evaluation, testing and documentation requirements; and
5. ~~Training requirements where required by code.~~

Reason: Please clarify what training and who is requiring training.

Cyclone18-402.2.5

Committee Action: AS AM D

**ICC 1000-92
402**

Proponent: Robin J. Rader, PE, CxA, representing Design Alaska, Inc.

Delete and replace as follows:

**Section 402
Documentation of Code Required Commissioning**

~~**402.1 Documentation of Commissioning Requirements in Applicable Codes.** Code requirements for commissioning shall be documented as required by this section.~~

~~**402.2** The following documentation shall be provided for each instance of an applicable commissioning requirement in an applicable code or standard.~~

- ~~1. Applicable code requirements, with code section reference numbers and including any environmental, sustainability, or efficiency requirements of those codes;~~
- ~~2. Description of technical approach to compliance;~~
- ~~3. Equipment and systems to be commissioned;~~
- ~~4. Specific process requirements for the commissioning of each element, including: logs, reviews, reports, evaluation, testing and documentation requirements; and~~
- ~~5. Training requirements where required by code.~~

Code requirements, Completed NFPA 13 24.1 Contractor's Material and Test Certificate for Underground Piping.

Reason: The CxA is required to sign a form certifying code compliance. Yet the code requirements for commissioning currently indicated in 402 are ambiguous. If an application is not important enough that an example certification form is published then ICC should not attempt to codify the requirement.

Examples of important applications where published forms exist are the above Certificate for Underground Piping, the similar Certification of Aboveground Piping, and Medical Gas Certification. Code officials must judge performance on a pass or fail basis. Many important systems within a building can be unique and cannot and should not be judged on a pass fail basis. Use of energy is one such item. The building model can be compared to the ASHRAE 90,1 model but actual mileage will vary.

Committee Action: AS AM D

Rader1-402

**ICC 1000-93
403**

Proponent: Will Mak, representing Cyclone Energy Group.

Delete and replace as follows:

**Section 403
Commissioning Plan**

403.1 Commissioning Plan. ~~The Preliminary Commissioning Plan and Final Commissioning Plan shall be provided as required in Sections 403.2 and 403.3 and shall be specifically created for each individual project.~~

A commissioning plan shall be developed by a registered design professional or approved agency and shall include the following items:

1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personal intended to accomplish each of the activities.
2. A listing of the specific equipment, appliances or systems to be tested and a description of the tests to be performed.
3. Functions to be tested including, but not limited to calibrations and economizer controls.
4. Conditions under which the test will be performed. Testing shall affirm winter and summer design conditions and full outside air conditions.
5. Measurable criteria for performance.

Reason: Suggest referencing IECC 2015 C408.2.1 Commissioning plan requirements in lieu of current section. Majority of line items in the section are best practices and no applicable for minimum code requirements.

Cyclone20-403

Committee Action: AS AM D

ICC 1000-94
Section 403.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

403.2 Preliminary Commissioning Plan. At the time of permit application, a Preliminary Commissioning Plan based on applicable codes shall be provided. Contents of the Preliminary Commissioning Plan shall comply with applicable code requirements and include:

(items 1-8 to remain no change)

Comment: It is recommended that requirements of the Preliminary Commissioning Plan to include schedules for commissioning activities in the design, construction and occupancy phases be removed or the requirement for the Preliminary Commissioning Plan be submitted at the time of the permit application be removed.

Section requires a Preliminary Commissioning Plan to be provided at the time of Permit application. If the Commissioning Provider is not on board at the time of Permit application, will the project be denied permits?

Fischer20_21-403.2

Committee Action: AS AM D

**ICC 1000-95
403.2**

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

**Section 403
Commissioning Plan**

403.2 Preliminary Commissioning Plan. At the time of permit application, a Preliminary Commissioning Plan based on applicable codes shall be provided. Contents of the Preliminary Commissioning Plan shall comply with applicable code requirements and include:

Reason: What is the applicable code? Who will enforce preliminary commissioning plan?

Cyclone19-403.2

Committee Action: AS AM D

ICC 1000-96

403.2

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

403.2 Preliminary Commissioning Plan. At the time of permit application, a Preliminary Commissioning Plan based on applicable codes and the OPR shall be provided. Contents of the Preliminary Commissioning Plan shall comply with applicable code requirements and the OPR and include:

1. Overview of the proposed commissioning process;
2. Scope of the Commissioning process;
- ~~2~~ 3. Schedules developed for commissioning activities in the design, construction and occupancy phases of the project;
4. Overview of the Commissioning organization and an organization chart;
- ~~3-~~ 5. Roles and responsibilities for the Commissioning Team throughout the project. The responsibilities shall delineate the duties of the commissioning provider, commissioning specialists, owner, inspectors, contractors, suppliers, and other agencies;
- ~~4-~~ 6. Documentation of communication procedures including the distribution of the Commissioning Plan and other documentation during the design and construction processes, including the development and utilization of the Issues and Resolution Logs and a preliminary listing of required reports, reviews and approvals;
- ~~5-~~ 7. Design documentation review procedures, submittal evaluation procedures and report formats;
- ~~6-~~ 8. Preliminary list of operations, systems and assemblies that will be commissioned ~~and/or inspected~~;
- ~~7-~~ 9. Format for commissioning checklists, commissioning testing forms, Issue and Resolution log and Commissioning Progress Reports;
- ~~8-~~ 10. Guidelines and formats that will be used to develop the Systems Manual, Training Plans, and Final Commissioning Report;
- ~~9-~~ 11. Procedures to be followed when evaluation results do not meet the code requirements or construction document requirements

Reason:

Purpose:

To ensure a fully Commissioning plan with all the information needed.

Reason:

The OPR is the foundation of the Cx process and it might outline requirements for the Cx plan, so it has to be included.

The scope of the Cx process has to be shown in the Cx plan, so their aint no confusion or misunderstanding on what the Cx process is including.

Commissioning is not only inspection things, so this has to be deleted. Inspection is done by either the Design team or the Contractor.

TTJ12-403.2

Committee Action: AS AM D

ICC 1000-97

Section 403.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

403.2 Preliminary Commissioning Plan. At the time of permit application, a Preliminary Commissioning Plan based on applicable codes shall be provided. Contents of the Preliminary Commissioning Plan shall comply with applicable code requirements and include:

1. Overview of the proposed commissioning process;
2. Schedules developed for commissioning activities in the design, construction and occupancy phases of the project;
3. Roles and responsibilities for the Commissioning Team throughout the project. The responsibilities shall delineate the duties of the commissioning provider, commissioning specialists, owner, inspectors, contractors, suppliers, and other agencies;
4. Documentation of communication procedures including the distribution of the Commissioning Plan and other documentation during the design and construction processes, including the development and utilization of the Issues and Resolution Logs and a preliminary listing of required reports, reviews and approvals;
5. Design documentation review procedures, submittal evaluation procedures and report formats;
6. Preliminary list of operations, systems and assemblies that will be commissioned and/or inspected;
7. Format for commissioning checklists, commissioning testing forms and Commissioning Progress Reports;
- ~~8. Guidelines and formats that will be used to develop the Systems Manual, Training Plans and Final Commissioning Report;~~
- 9 8. Procedures to be followed when evaluation results do not meet the code requirements or construction document requirements.

Reason: Section requires guideline formats for Training Plans to be included in the Preliminary Commissioning Plan. The Contractor is typically responsible for providing Training Plans. Suggest deleting "Training Plans" from this section.

Fischer22-403.2

Committee Action: AS AM D

ICC 1000-98

403.3

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself

General:

403.2 Preliminary Commissioning Plan. At the time of permit application, a Preliminary Commissioning Plan based on applicable codes shall be provided. Contents of the Preliminary Commissioning Plan shall comply with applicable code requirements and include:

1. Overview of the proposed commissioning process;
2. Schedules developed for commissioning activities in the design, construction and occupancy phases of the project;
3. Roles and responsibilities for the Commissioning Team throughout the project. The responsibilities shall delineate the duties of the commissioning provider, commissioning specialists, owner, inspectors, contractors, suppliers, and other agencies;
4. Documentation of communication procedures including the distribution of the Commissioning Plan and other documentation during the design and construction processes, including the development and utilization of the Issues and Resolution Logs and a preliminary listing of required reports, reviews and approvals;
5. Design documentation review procedures, submittal evaluation procedures and report formats;
6. Preliminary list of operations, systems and assemblies that will be commissioned and/or inspected;
7. Format for commissioning checklists, commissioning testing forms and Commissioning Progress Reports;
8. Guidelines and formats that will be used to develop the Systems Manual, Training Plans, and Final Commissioning Report;
9. Procedures to be followed when evaluation results do not meet the code requirements or construction document requirements.

Comment: This information may not be available this early in the project.

Eisemann1-403.3

Committee Action: AS AM D

ICC 1000-99

403.2

Proponent: Greg Eisenmann, KJWW, Engineering Consultants, representing himself

General:

403.2 Preliminary Commissioning Plan. At the time of permit application, a Preliminary Commissioning Plan based on applicable codes shall be provided. Contents of the Preliminary Commissioning Plan shall comply with applicable code requirements and include:

1. Overview of the proposed commissioning process;
2. Schedules developed for commissioning activities in the design, construction and occupancy phases of the project;
3. Roles and responsibilities for the Commissioning Team throughout the project. The responsibilities shall delineate the duties of the commissioning provider, commissioning specialists, owner, inspectors, contractors, suppliers, and other agencies;
4. Documentation of communication procedures including the distribution of the Commissioning Plan and other documentation during the design and construction processes, including the development and utilization of the Issues and Resolution Logs and a preliminary listing of required reports, reviews and approvals;
5. Design documentation review procedures, submittal evaluation procedures and report formats;
6. Preliminary list of operations, systems and assemblies that will be commissioned and/or inspected;
7. Format for commissioning checklists, commissioning testing forms and Commissioning Progress Reports;
8. Guidelines and formats that will be used to develop the Systems Manual, Training Plans, and Final Commissioning Report;
9. Procedures to be followed when **evaluation results do not meet the code requirements** or construction document requirements.

Comment: FPT don't check for code compliance.... Cx may be done to meet code, but CxAs are not code checkers.

Eisemann2-403.2

Committee Action: AS AM D

ICC 1000-100

403.3

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

403.3 Final Commissioning Plan: The Final Commissioning Plan shall be ~~completed~~ updated before the start of functional and performance testing. The Commissioning plan will throughout the project be updated and detailed as new issues or observations is added to the Issue and Resolution log and when reviews or tests are pointing on new or changed verification procedures. It shall update the Preliminary Commissioning Plan as required and include the following information:

1. Detailed description of Commissioning Process activities, the schedule of activities and the list of operations, systems and assemblies that will be commissioned or inspected, including evaluation procedures and performance criteria.
2. Final listing of required reports including format, reviews and approvals.
3. Detailed testing procedures and checklists for functional testing and performance testing for all commissioned systems and assemblies, including verification of sequences of operation and, where relevant, conditions under which the testing will be performed.

Reason: The Commissioning plan is a dynamic document, which is changing throughout the project to reflect changes in the project, which is within the Commissioning scope.

Committee Action: AS AM D

TTJ13-403.3

ICC 1000-101

Section 403.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

Revise text as follows:

403.3 Final Commissioning Plan: The Final Commissioning Plan shall be completed before the start of functional and performance testing. It shall update the Preliminary Commissioning Plan as required and include the following information:

1. Detailed description of Commissioning Process activities, the schedule of activities and the list of operations, systems and assemblies that will be commissioned or inspected, including evaluation procedures and performance criteria.
2. Final listing of construction checklists. The listing shall indentify any checklists which incorporate additional required reports or which require including format, reviews and approvals beyond the typical commissioning process.
3. Detailed testing procedures and checklists for functional testing and performance testing for all commissioned systems and assemblies, including verification of sequences of operation and, where relevant, conditions under which the testing will be performed.

Reason: None provided.

Committee Action: AS AM D

Fischer22.1-403.3

ICC 1000-102

Section 404.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

Section 404 Commissioning Review of Design Documents

404.1 Commissioning requirements. Construction documents shall require the commissioning procedures required by code and by this standard for all applicable systems and equipment.

Comment: Section requires that construction documents include commissioning procedures as required by code (which code) and ICC Std. 1000 but does not state who is responsible for incorporating these requirements into the construction documents. (it could be different in this stand and each code) Suggest clarifying the responsible party. This section needs to be enlarged to fully provide in detail what the Cx requirements in the specifications could/needs to include.

Fischer23-404.1

Committee Action: AS AM D

ICC 1000-103

404.1

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

404.1 Commissioning requirements. ~~Construction~~ Design documents shall require the commissioning procedures required by code and by this standard for all applicable systems and equipment.

Reason: Mistype. The review is of the Design Documents.

TTJ14-404.1

Committee Action: AS AM D

ICC 1000-104
Section 404.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

Revise text as follows:

404.3 Design Review Response. The design team shall respond to the design review report from the CxP and document the modifications made to the design documents prior to completion of the construction documents.

Reason: None provided.

Fischer24.1-404.3

Committee Action: AS AM D

ICC 1000-105 404.2

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself.

General:

404.2 Commissioning Design Reviews. The Commissioning Provider shall review equipment and systems in the design documents to evaluate compliance with **commissioning requirements in applicable codes.**

Comment: What code. This one? Energy codes?

Eisemann3-404.2

Committee Action: AS AM D

ICC 1000-106

404.2

Proponent: Paul A. Karrer representing the American Institute of Architects (AIA).

Revise text as follows:

404.2 Commissioning Design Reviews. The Commissioning Provider shall review equipment and systems in the design documents to evaluate compliance with commissioning requirements in applicable codes. The documentation provided shall include information on how many reviews will be performed and at what stage of the design each will be performed.

Reason: Adds requirement for documentation provided by the Commissioning Provider. This change provides clarification and greater certainty about when and where reviews will take place during the design process.

Karrer3-404.2

Committee Action: AS AM D

ICC 1000-107

404.2

Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

Revise text as follows:

404.2 Commissioning Design Reviews. The Commissioning Provider shall review equipment and systems in the design documents to evaluate compliance with ~~commissioning~~ requirements in ~~applicable codes~~ the OPR.

Reason: None provided

Teisen6-404.2

Committee Action: AS AM D

ICC 1000-108

404.2

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

404.2 Commissioning Design Reviews. The Commissioning Provider shall review equipment and systems in the design documents to evaluate compliance with commissioning requirements in applicable codes and the OPR.

Reason: The OPR is the foundation of the Commissioning process and the Review has to verify, that the documents is in compliance with OPR.

TTJ15-404.2

Committee Action: AS AM D

ICC 1000-109
Section 404.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

404.3 Design Review Response. The design team shall respond to the design review report and document the modifications made to the design documents prior to completion of the construction documents.

Comment: Section requires a response from the Design Team on reviews provided by the Commissioning Provider. What are the repercussions if no responses are received? Will the project not be permitted? Suggest adding clarification.

Fischer24-404.3

Committee Action: AS AM D

ICC 1000-110
404

Proponent: Will Mak, representing Cyclone Energy Group.

Delete without substitution:

~~**Section 404**~~
~~**Commissioning Review of Design Documents**~~

~~**404.1 Commissioning requirements.** Construction documents shall require the commissioning procedures required by code and by this standard for all applicable systems and equipment.~~

~~**404.2 Commissioning Design Reviews.** The Commissioning Provider shall review equipment and systems in the design documents to evaluate compliance with commissioning requirements in applicable codes.~~

~~**404.3 Design Review Response.** The design team shall respond to the design review report and document the modifications made to the design documents prior to completion of the construction documents.~~

Reason: What applicable systems and equipment will need to be reviewed on the design drawings? All? MEP only? What Code and Standard?; Who will enforce design team review response?

Cyclone21.22.23-404

Committee Action: AS AM D

ICC 1000-111
404.2, 405.1, 408.1

Proponent: Mark Kohler, P.E., CxA, LEED AP, System WorCx.

Revise text as follows:

404.2 Commissioning Design Reviews. The Commissioning Provider shall review equipment and systems in the design documents to evaluate compliance with commissioning requirements ~~in applicable codes~~ and identify any apparent code or industry standard compliance issues to the engineer-of-record.

405.1 Commissioning Submittal Reviews. A review of construction submittals for commissioned systems and assemblies shall be performed by the Commissioning Provider to evaluate compliance ~~with code~~ and identify any apparent code, construction document, or industry standard compliance issues to the engineer-of-record. ~~commissioning requirements and the commissioning plan.~~

408.1 Project Documentation. The project documentation shall include documentation needed to understand, operate, and maintain the building's equipment and systems, and shall include the documentation required by ~~applicable codes and standards~~ the contract documents and the commissioning plan.

Reason: The project engineer is required to seal the plans and specifications and is legally responsible for compliance with all applicable codes. The commissioning provider reviews design and submittal documents and provides comments for the project team's (including owner and engineer-of-record) use and consideration only. The commissioning provider identifies "potential code compliance items" for the engineer of record to respond to. Making the commissioning provider in any way responsible for code compliance could open up a battle for legal responsibility of the design of record. I have firsthand experience being deposed for 16-hours by 4 lawyers who were questioning my role and potential financial responsibilities for a faulty mechanical heat load analysis design. The commissioning provider shall not be responsible for project schedule (or delays), project costs, directives to stop-work, directives for noncompliant work, directing change orders, etc.

From our commissioning plan, this is one of the commissioning provider responsibilities: The commissioning agent is a technical professional that identifies potential issues and communicates them to the attention of the design team and construction team for their use and consideration. The CA does not have the authority to make decisions that affect the design of record, schedule commitments, or budget requirements. All change orders, design clarifications, or formal direction to stop/proceed with work must follow formal project management protocols.

Committee Action: AS AM D

Kohler1-404.2

ICC 1000-112
Section 405.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise as follows:

405.1 Commissioning Submittal Reviews. A review of construction submittals for commissioned systems and assemblies shall be performed by the Commissioning Provider to evaluate compliance with code commissioning requirements and to inform the final commissioning plan.

Reason: None provided.

Fischer24.2-405.1

Committee Action: AS AM D

ICC 1000-113

405.1

Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

Revise text as follows:

405.1 Commissioning Submittal Reviews. A review of construction submittals for commissioned systems and assemblies shall be performed by the Commissioning Provider to evaluate compliance with ~~code commissioning requirements and the commissioning plan.~~ the OPR.

Reason: The ICC 1000-201 Standard is more process-oriented than Guideline 4, and I see it as a good thing that the document is focused on this one part as it makes the document more robust and easier to maintain. Unfortunately, the proposed standard is not compliant with international Commissioning-related documents or templates for international standards. I have tried to explain that as well as I can within the format of your comment-document. The proposed standard contains some very useful checklists and other valuable tools in the appendixes.

Teisen5-405.1

Committee Action: AS AM D

ICC 1000-114
405

Proponent: Will Mak, representing Cyclone Energy Group

Delete without substitution:

405.1 Commissioning Submittal Reviews. A review of construction submittals ~~for~~to be commissioned systems and assemblies shall be performed by the Commissioning Provider to evaluate compliance with code commissioning requirements and the commissioning plan.

Reason: Reword to “A review of construction submittals to be commissioned systems and assemblies..”

Committee Action: AS AM D

Cyclone24-405.1

ICC 1000-115

405.3

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself.

General:

405.3 Submittal Report. The submittal review report shall include a listing of the submittals reviewed, the date reviewed and a summary of any **properties or procedures identified that do not meet code commissioning requirements** or the requirements of this standard.

Comment: What are “code commissioning requirements”? Reviewing submittals will comply with code, but are we actually checking them against a code? If so, this seems to be a deviation with the current standard commissioning process.

Eisemann4-405.3

Committee Action: AS AM D

ICC 1000-116

405.3

Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

Revise text as follows:

405.3 Submittal Report. The submittal review report shall include a listing of the submittals reviewed, the date reviewed and a summary of any properties or procedures identified that do not meet ~~code commissioning requirements or the requirements of this standard.~~ the OPR.

Reason: The ICC 1000-201 Standard is more process-oriented than Guideline 4, and I see it as a good thing that the document is focused on this one part as it makes the document more robust and easier to maintain. Unfortunately, the proposed standard is not compliant with international Commissioning-related documents or templates for international standards. I have tried to explain that as well as I can within the format of your comment-document. The proposed standard contains some very useful checklists and other valuable tools in the appendixes.

Teisen7-405.3

Committee Action: AS AM D

ICC 1000-117
Section 405.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

Delete without substitution:

~~**405.3 Submittal Report.** The submittal review report shall include a listing of the submittals reviewed, the date reviewed and a summary of any properties or procedures identified that do not meet code commissioning requirements or the requirements of this standard.~~

Reason: None provided.

Fischer24.3-405.3

Committee Action: AS AM D

ICC 1000-118

405

Proponent: Will Mak, representing Cyclone Energy Group.

Delete without substitution:

~~**405.1 Commissioning Submittal Reviews.** A review of construction submittals for commissioned systems and assemblies shall be performed by the Commissioning Provider to evaluate compliance with code commissioning requirements and the commissioning plan.~~

~~**405.2 List of Submittals.** The Commissioning Provider shall identify those construction submittals required to be provided by the Contractor for review of the systems being commissioned.~~

~~**405.3 Submittal Report.** The submittal review report shall include a listing of the submittals reviewed, the date reviewed and a summary of any properties or procedures identified that do not meet code commissioning requirements or the requirements of this standard.~~

Reason: Why are submittals being evaluated with code commissioning requirements and the commissioning plan? The submittals should be evaluated against the construction drawings and specifications. How will this be enforced? Why are submittals being evaluated with code commissioning requirements? The submittals should be evaluated against the construction drawings and specifications.

Cyclone25.26.27-405.1

Committee Action: AS AM D

ICC 1000-119
Section 406

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

Section 406
Commissioning Issue and Resolution Logs

Comment: Section 406-COMMISSIONING ISSUE AND RESOLUTION LOGS: The Contents of the Issue and Resolution Logs should indicate the following: **The commissioning authority provides constructive input for the resolution of system deficiencies.**

Committee Action: AS AM D

Fischer25-406

ICC 1000-120
Section 406

Proponent: Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

General:

Section 406 Commissioning Issue and Resolution Logs

Comment: The description of the very important document could be more detailed or accompanied by an example in the appendixes

Teisen8-Section406

Committee Action: AS AM D

ICC 1000-121

406.2

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself.

General:

406.2 Contents. The contents of the Issue and Resolution Logs shall include:

1. All open and continuing items, with status and responsible person or organization for resolution;
2. Procedures to maintain and distribute the issues and resolution log throughout the project until all issues are resolved or acknowledged by the Owner; and
3. Resolution(s) shall be included in the log and **acknowledged by the owner.**

Comment: Some owners are not very responsive; this could prove to be tedious.

Eisemann5-406.2

Committee Action: AS AM D

ICC 1000-122

406.2

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

406.2 Contents. The contents of the Issue and Resolution Logs shall include:

1. All open and continuing items, with status and responsible person or organization for resolution;
2. Procedures to maintain and distribute the issues and resolution log throughout the project until all issues are resolved or acknowledged by the Owner; and
3. Resolution(s) shall be included in the log and acknowledged by the owner.

Comment: There may be an acceptable resolution plan of action reviewed and approved by the Owner to be included in Cx Report.

Orry25-406.2

Committee Action: AS AM D

ICC 1000-123

406.2

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

406.2 Contents. The contents of the Issue and Resolution Logs shall include:

1. All ~~open and continuing~~ items, with status, ~~and~~ responsible person or organization for resolution and a reference to the OPR if applicable;
2. Procedures to maintain and distribute the issues and resolution log throughout the project until all issues are resolved or acknowledged by the Owner; and
3. Resolution(s) shall be included in the log and acknowledged by the owner.

Reason: The Issue and Resolution Log has to include all items – also item which is closed, so there always is a history on every item that can be found. An reference to OPR should be included if applicable.

TTJ16-406.2

Committee Action: AS AM D

ICC 1000-124
406.2

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

406.2 Contents. The contents of the Issue and Resolution Logs shall include:

1. All open and continuing items, with status and responsible person or organization for resolution;
2. Procedures to maintain and distribute the issues and resolution log throughout the project until all issues are resolved or ~~acknowledged by the Owner~~; and
3. Resolution(s) shall be included in the log and acknowledged by the owner.

Reason: Suggest removing acknowledge by the Owner.

Cyclone28-406.2.2

Committee Action: AS AM D

ICC 1000-125
406.2

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

406.2 Contents. The contents of the Issue and Resolution Logs shall include:

1. All open and continuing items, with status and responsible person or organization for resolution;
2. Procedures to maintain and distribute the issues and resolution log throughout the project until all issues are resolved or acknowledged by the Owner; and
3. Resolution(s) shall be included in the log and ~~acknowledged by the owner.~~

Reason: Suggest removing acknowledge by the Owner.

Cyclone29-406.2

Committee Action: AS AM D

ICC 1000-126

Section 406.1, 406.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

406.1 The CxP will track in a formal and ongoing record all problems or concerns and their resolutions or lack thereof, by appropriate parties that have been raised by members of the Commissioning Team during the course of the commissioning Process.

406.2 Contents. ~~The contents of the Issue and Resolution Logs shall include:~~

- ~~1. All open and continuing items, with status and responsible person or organization for resolution;~~
- ~~2. Procedures to maintain and distribute the issues and resolution log throughout the project until all issues are resolved or acknowledged by the Owner; and~~
- ~~3. Resolution(s) shall be included in the log and acknowledged by the owner.~~

Reason: None provided.

Fischer25.1-406.1_406.2

Committee Action: AS AM D

ICC 1000-127

Section 407.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

407.1 Checklists and test procedures. The following shall be established and fully documented prior to testing.

Comment: This and other sections indicate that there is not a clear distinction between what is a checklist and its purpose and what is a test. It appears in some places (e.g. 407.1-2) that the term checklist is just a place to document test results. This needs to be clarified. Checklists are not tests. Utilize definitions from ASHRAE Std 202 and use the terms consistently throughout the document.

Committee Action: AS AM D

Fischer27-407.1

ICC 1000-128

Section 407.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

407.1 Checklists and test procedures. The following ~~shall~~ could be established and fully ~~documented~~ developed prior to testing.

1. Project-specific construction checklists, functional test procedures, and performance test procedures, as outlined in the commissioning plan and commissioning testing procedures;
2. Where testing data results are required prior to the start of functional testing for ~~specific equipment or systems,~~ there shall be an item in the associated Construction Checklist requiring ~~for~~ the test data to be submitted to the Commissioning Provider;
3. A listing of the entities responsible for executing each of the tests should be documented in the commissioning plan.; and
4. ~~A uniform and effective process to document Commissioning testing of and interaction between commissioned equipment and systems.~~

Reason: None provided.

Fischer27.1-407.1

Committee Action: AS AM D

ICC 1000-129

407.1

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

Section 407 Commissioning Testing

407.1 Checklists and test procedures. The following shall be established and fully documented prior to testing.

1. Project-specific construction checklists and commissioning testing procedures;
2. Where test data results are required for specific equipment or systems, there shall be an item in the associated Construction Checklist for the test data to be submitted to the Commissioning Provider;
3. A listing of the entities responsible for executing each of the tests; and
4. A ~~uniform and effective~~ process to document Commissioning testing of and interaction between commissioned equipment and systems.

Reason: What does uniform and effective mean?

Cyclone30-407.1

Committee Action: AS AM D

ICC 1000-130

407.1

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S, representing himself.

Revise text as follows:

407.1 Checklists and test procedures. The following shall be established and fully documented prior to testing.

1. Project-specific construction checklists and commissioning testing procedures;
2. Where test data results are required for specific equipment or systems, there shall be an item in the associated Construction Checklist for the test data to be submitted to the Commissioning Provider;
3. List of instrumentation, tools, and supplies required for the test. The list should indicate which of the participants is responsible for each of the items listed. The list should be specific as to make, model, range, capacity, accuracy, calibration, and other pertinent performance requirements
4. Participants required for the test, which may include the primary contractor, secondary contractors, design professionals, the Commissioning Authority, operators, the local authority having jurisdiction, and manufacturers associated with the equipment, system, or assembly;
5. Accept criteria;
6. Prerequisites for the test performance in terms of completion of systems and assemblies and acceptable completion of other activities.
7. A listing of the entities responsible for executing each of the tests; and
8. A uniform and effective step-by-step process to document Commissioning testing of and interaction between commissioned equipment and systems.

Reason: The test must be replicable, so all assumptions and tools shall be described. The procedure for how the test must be carried out should be easy and simple and described step-by-step to ensure it includes all aspects of the system and / or the plant and is replicable.

TTJ17-407.1

Committee Action: AS AM D

ICC 1000-131

407.1.2

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself.

General:

Section 407 Commissioning Testing

407.1 Checklists and test procedures. The following shall be established and fully documented prior to testing.

1. Project-specific construction checklists and commissioning testing procedures;
2. Where **test data results** are required for specific equipment or systems, there shall be an item in the associated Construction Checklist for the test data to be submitted to the Commissioning Provider;
3. A listing of the entities responsible for executing each of the tests; and
4. A uniform and effective process to document Commissioning testing of and interaction between commissioned equipment and systems.

Comment: Defined by what?

Eisemannn6-407.1.2

Committee Action: AS AM D

ICC 1000-132

407.2.3

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself.

General:

Section 407 Commissioning Testing

407.2 Evaluation. Evaluation of the equipment and systems shall include the following:

1. Verification that the installed equipment and systems match those defined in the construction documents and approved construction submittals;
2. Verification that the equipment and systems were properly installed and are accessible for testing and maintenance; and
3. Test results for the installed equipment and systems shall be compared to the relevant requirements of the specifications, submittals and codes;

Comment: What codes?

Eisemann7-407.2.3

Committee Action: AS AM D

ICC 1000-133

Section 407.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

407.2 Evaluation. Evaluation of the equipment and systems shall include the following:

1. Verification that the installed equipment and systems match those defined in the construction documents and approved construction submittals (typically performed through construction checklists);
2. Verification that the equipment and systems were properly installed and are accessible for testing and maintenance (typically performed through construction checklists); and
3. Functional and performance Test results for the installed equipment systems shall be compared to the relevant requirements of the specifications, submittals and codes. Any discrepancies will be evaluated by the commissioning team as described in the commissioning plan and may be recorded in the issues log, if required by the commissioning plan.

~~3.~~ 4. Describe issues resolution meetings or other portions of the Cx Plan here?

Reason: None provided.

Fischer27.2-407.2

ICC 1000-134

407.2

Proponent: Ole Teisen, Grontmij A/S Denmark representing REHVA Task Force 27, Commissioning.

Revise text as follows:

Section 407 Commissioning Testing

407.2 Evaluation. Evaluation of the equipment and systems shall include the following:

1. Verification that the installed equipment and systems match those defined in the construction documents and approved construction submittals;
2. Verification that the equipment and systems were properly installed and are accessible for testing and maintenance; and
3. Test results for the installed equipment and systems shall be compared to the relevant ~~requirements of the specifications, submittals and codes;~~ accept criteria as described in the OPR.

Reason: The ICC 1000-201 Standard is more process-oriented than Guideline 4, and I see it as a good thing that the document is focused on this one part as it makes the document more robust and easier to maintain. Unfortunately, the proposed standard is not compliant with international Commissioning-related documents or templates for international standards. I have tried to explain that as well as I can within the format of your comment-document. The proposed standard contains some very useful checklists and other valuable tools in the appendixes.

Teisen9-407.2

Committee Action: AS AM D

ICC 1000-135
407.4

Proponent: Will Mak, representing Cyclone Energy Group.

Add new text as follows:

Functional performance testing. Functional performance testing specified in Sections C408.2.3.1 through C408.2.3.3 from the *International Energy Conservation Code* shall be conducted.

Reason: Where is the section about functional testing? Suggest adding IECC 2015 Section C408.2.3.

Committee Action: AS AM D

Cyclone31-407.4

ICC 1000-136

Section 407.4

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

407.4 Testing scope. Testing should demonstrate that each system is operating according to the Contract Documents. Testing should include testing each sequence in the sequence of operations, and other significant modes, sequences and control strategies not mentioned in the written sequences; including, but not limited to startup, shutdown, unoccupied and manual modes, modulation up and down the unit's range of capacity, power failure, alarms, component staging and backup upon failure, interlocks with other equipment, and sensor and actuator calibrations. All interlocks and interactions between systems should also be tested. Building automation system graphics could be confirmed. Heating equipment should be tested appropriately during winter and air conditioning equipment should be tested appropriately during summer to demonstrate performance under near-design conditions.

Reason: None provided.

Fischer 27.3-407.4

Committee Action: AS AM D

ICC 1000-137
408.1

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

408.1 Project Documentation. The project documentation shall include documentation needed to understand, operate, and maintain the building's equipment and systems, and shall include the documentation required by ~~applicable codes and standards~~ this code.

Reason: What applicable codes and standards?

Cyclone32-408.1

Committee Action: AS AM D

ICC 1000-138

Section 408.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

408.2 Systems Manual. The systems manual shall be submitted to the owner prior to project completion and before issuance of the certificate of occupancy. The systems manual shall include the following information for all commissioned systems:

1. Table of Contents;
2. Information for each commissioned equipment element or system including:
 - Manufacturer's operation and maintenance data for installed equipment, systems and assemblies including wiring diagrams and schematics;
 - Warranties, where provided;
 - Contractor, supplier, or service agency listing and contact information;
3. Facility Operations;
 - Facility guide, including operating plan, building and equipment operating schedules, setpoints and ranges, sequences of operation, and emergency procedures;
 - Maintenance plans, procedures, checklists, schedules and records;
 - Janitorial and cleaning plans and procedures.

Comment: It is recommended for the requirement for the systems manual development prior to a project receiving the Certificate of Occupancy or Final Inspection be removed.

Fischer28-408.2

Committee Action: AS AM D

ICC 1000-139

408.2

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

408.2 Systems Manual. The systems manual shall be submitted to the owner prior to project completion and ~~before~~ within 90 days of issuance of the certificate of occupancy. The systems manual shall include the following information for all commissioned systems:

1. Table of Contents;
2. Information for each commissioned equipment element or system including:
 - Manufacturer's operation and maintenance data for installed equipment, systems and assemblies including wiring diagrams and schematics;
 - Warranties, where provided;
 - Contractor, supplier, or service agency listing and contact information;
3. Facility Operations;
 - Facility guide, including operating plan, building and equipment operating schedules, setpoints and ranges, sequences of operation, and emergency procedures;
 - Maintenance plans, procedures, checklists, schedules and records;
 - Janitorial and cleaning plans and procedures.

Reason: Why should systems manual be submitted to owner prior to project completion and before issuance of certificate of occupancy? Suggest revising to within 90 days of receipt of certificate of occupancy.

Cyclone33-408.2

Committee Action: AS AM D

ICC 1000-140
408.2

Proponent: Douglas D. Hampton representing Alvine Engineering.

Revise text as follows:

408.2 Systems Manual. the systems manual shall be submitted to the owner prior to project completion and before issuance of the certificate of occupancy. Commissioning documents are not intended to be critical path preventing certificate of occupancy.

Reason: The text in 408.2 and other places where certificate of occupancy is mentioned, implies that the systems manual is a prerequisite to obtaining a certificate of occupancy. This is not advised since commissioning and certificate of occupancy may be at or near the same time in acceptance phase.

Hampton1-408.2

Committee Action: AS AM D

**ICC 1000-141
408.2**

Proponent: Douglas D. Hampton representing Alvine Engineering.

Revise text as follows:

408.2 Systems Manual. 3. Facility Operations: Janitorial and cleaning plans and procedures as required to maintain commissioned systems.

Reason: Janitorial and cleaning plans could apply to the entire facility.

Hampton2-408.2

Committee Action: AS AM D

ICC 1000-142

408.2

Proponent: Joseph K. Ting, PE, CxA, representing InSynergy Engineering, Inc.

Revise text as follows:

408.2 Systems Manual. The systems manual shall be submitted to the owner. The systems manual shall be submitted to the owner after the Final Commissioning Report. ~~prior to project completion and before issuance of the certificate of occupancy.~~ The systems manual shall include the following information for all commissioned systems:

1. Table of Contents;
2. Information for each commissioned equipment element or system including:
 - Manufacturer's operation and maintenance data for installed equipment, systems and assemblies including wiring diagrams and schematics;
 - Warranties, where provided;
 - Contractor, supplier, or service agency listing and contact information;
3. Facility Operations;
 - Facility guide, including operating plan, building and equipment operating schedules, setpoints and ranges, sequences of operation, and emergency procedures;
 - Maintenance plans, procedures, checklists, schedules and records;
 - Janitorial and cleaning plans and procedures.

Reason: None provided.

Ting1-408.2

Committee Action: AS AM D

ICC 1000-143 408.2

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

408.2 Systems Manual. The systems manual shall be submitted to the owner prior to project completion and before issuance of the certificate of occupancy. The systems manual shall include the following information for all commissioned systems:

1. Table of Contents;
2. Information for each commissioned equipment element or system including:
 - Manufacturer's operation and maintenance data for installed equipment, systems and assemblies including wiring diagrams and schematics;
 - Warranties, where provided;
 - Contractor, supplier, or service agency listing and contact information;
3. Facility Operations;
 - Facility guide, including operating plan, building and equipment operating schedules, setpoints and ranges, sequences of operation, and emergency procedures;
 - Maintenance plans, procedures, ~~checklists, schedules and records;~~
 - ~~Janitorial and cleaning plans and procedures.~~

Reason: Why are janitorial and cleaning plans and procedures required? Suggest removing "checklists, schedules and records" from Maintenance line.

Cyclone34.35-408.2

Committee Action: AS AM D

ICC 1000-144

408.2

Proponent: Joseph K. Ting, PE, CxA, representing InSynergy Engineering, Inc. and Will Mak, representing Cyclone Energy Group.

Revise text as follows:

408.2 Systems Manual. The systems manual shall be submitted to the owner prior to project completion and before issuance of the certificate of occupancy. The systems manual shall include the following information for all commissioned systems:

1. Table of Contents;
2. Information for each commissioned equipment element or system including:
 - Manufacturer's operation and maintenance data for installed equipment, systems and assemblies including wiring diagrams and schematics;
 - Warranties, where provided;
 - Contractor, supplier, or service agency listing and contact information;
3. Facility Operations;
 - Facility guide, including operating plan, building and equipment operating schedules, setpoints and ranges, sequences of operation, and emergency procedures;
 - Maintenance plans, procedures, checklists, schedules and records;
 - Janitorial and cleaning plans and procedures.
4. Recommend schedule for retesting of commissioned systems with blank test forms from original Cx Plan.

Reason: None provided.

Committee Action: AS AM D

Ting 2 -408.2

ICC 1000-145
Section 408.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Delete without substitution:

~~**408.2 Systems Manual.** The systems manual shall be submitted to the owner prior to project completion and before issuance of the certificate of occupancy. The systems manual shall include the following information for all commissioned systems:~~

~~4. Table of Contents;~~

~~5. Information for each commissioned equipment element or system including:~~

- ~~○ Manufacturer's operation and maintenance data for installed equipment, systems and assemblies including wiring diagrams and schematics;~~
- ~~○ Warranties, where provided;~~
- ~~○ Contractor, supplier, or service agency listing and contact information;~~

~~6. Facility Operations;~~

- ~~○ Facility guide, including operating plan, building and equipment operating schedules, setpoints and ranges, sequences of operation, and emergency procedures;~~
- ~~○ Maintenance plans, procedures, checklists, schedules and records;~~
- ~~○ Janitorial and cleaning plans and procedures.~~

Reason: None provided.

Fischer28.1-408.2

Committee Action: AS AM D

ICC 1000-146
Section 408.3

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

408.3 Training materials and records. Where training is provided for the owner's operating staff it should be conducted in accordance with the project documents. ~~as part of the commissioning process, the systems manual and preliminary commissioning report shall be provided prior to the training, and records of the training shall be included in the final commissioning report.~~

Reason: None provided.

Fischer28.2-408.3

Committee Action: AS AM D

ICC 1000-147
408.3

Proponent: Will Mak, representing Cyclone Energy Group.

Delete without substitution:

~~**408.3 Training materials and records.** Where training is provided as part of the commissioning process, the systems manual and preliminary commissioning report shall be provided prior to the training, and records of the training shall be included in the final commissioning report.~~

Reason: How can you guarantee systems manual and preliminary commissioning report by provided prior to training?

Cyclone36-408.3

Committee Action: AS AM D

ICC 1000-148

Section 408.5

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

408.5 Record documents. Construction record documents, including record drawings, specifications and approved submittals, shall be delivered to the owner within 90 days of issuance of the Certificate of Occupancy.

Comment: Delete this requirement or the Cx Team to provide record documents to the owner as part of the Cx process in its entirety from this Std.

Fischer29-408.5

Committee Action: AS AM D

ICC 1000-149
409

Proponent: Will Mak, representing Cyclone Energy Group.

Revise text as follows:

Section 409
Commissioning Report

409.1 Preliminary Commissioning Report. The preliminary commissioning report shall be delivered to the owner and the code official prior to the final inspection or issuance of the Certificate of Occupancy and shall include the following:

1. Table of contents.
2. Documentation of the commissioning activities included in the commissioning plan and those required by code ~~and by this standard~~, including any delayed testing.
3. The final commissioning plan, including functional test and performance test procedures used and the criteria for test acceptance.
4. The list of code-required commissioning and the design and submittal reviews required by the Commissioning Plan.
5. The results of all evaluations, start-up data, functional tests, and performance tests, and reports for code-required commissioning.
6. Issue logs and disposition of all deficiencies found during testing and evaluation, including corrective measures used or proposed.
7. A resolution plan identifying any tests that are deferred and issues that are unresolved or incomplete, plus the conditions for completion and the individuals responsible for completion.

Comment: What documentation is “required by code and by this standard”?

Cyclone37-409

Committee Action: AS AM D

ICC 1000-150

409.1

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

Section 409 Commissioning Report

409.1 Preliminary Commissioning Report. The preliminary commissioning report shall be delivered to the owner and the code official prior to the final inspection or issuance of the Certificate of Occupancy and shall include the following:

1. Table of contents.
2. Documentation of the commissioning activities included in the commissioning plan and those required by code and by this standard, including any delayed testing.
3. The final commissioning plan, including functional test and performance test procedures used and the criteria for test acceptance.
4. The list of code-required commissioning and the design and submittal reviews required by the Commissioning Plan.
5. The results of all evaluations, start-up data, functional tests, and performance tests, and reports for code-required commissioning.
6. Issue logs and disposition of all deficiencies found during testing and evaluation, including corrective measures used or proposed.
7. A resolution plan identifying any tests that are deferred and issues that are unresolved or incomplete, plus the conditions for completion and the individuals responsible for completion.

Comment: Report content will be defined in the project specifications – difficult to define after the fact. How will this be implemented without participating in the planning and scope of work during DD I CD Phase?

Orry31-409.1

Committee Action: AS AM D

ICC 1000-151

Section 409.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

409.1 Preliminary Commissioning Report. The preliminary commissioning report shall be delivered to the owner and the code official prior to the final inspection or issuance of the Certificate of Occupancy and shall include the following:

Comment: It is not practical to have the code official accept all the Cx documentation listed to be included in the Preliminary Cx Report. On a moderate sized project this could include multiple binders. Surely, the code official will not be interested in, nor ever really review all this information.

Committee Action: AS AM D

Fischer30-409.1

ICC 1000-152

Section 409.1

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

409.1 Preliminary Commissioning Report. The preliminary commissioning report shall be delivered to the owner and the code official prior to the final inspection or issuance of the Certificate of Occupancy and shall include the following:

1. Table of contents.
2. The latest version of the Cx Plan.
3. List of deviations and incomplete items from the latest Cx Plan with signature of Owner acknowledging this statute being acceptable for issuing a certificate of occupancy.
4. Detailed status of all required testing, by equipment
2. ~~Documentation of the commissioning activities included in the commissioning plan and those required by code and by this standard, including any delayed testing.~~
3. ~~The final commissioning plan, including functional test and performance test procedures used and the criteria for test acceptance.~~
4. ~~The list of code required commissioning and the design and submittal reviews required by the Commissioning Plan.~~
5. ~~The results of all evaluations, start-up data, functional tests, and performance tests, and reports for code required commissioning.~~
6. 5. Issue logs and disposition of all deficiencies found during testing and evaluation, including corrective measures used or proposed.
6. A resolution plan identifying any tests that are deferred and issues that are unresolved or incomplete, plus the conditions for completion and the individuals responsible for completion.
7. Documentation of training completion.

Reason: None provided.

Fischer30.1-409.1

Committee Action: AS AM D

ICC 1000-153

409.2

Proponent: Orry Nottingham, P.E., LEED AP CAPCCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

409.2 Final Commissioning Report. The final commissioning report shall be delivered to the owner within 30 days of final completion of the commissioning work required by code and by this standard, and shall include the Commissioning Process activities occurring after issuance of the Certificate of Occupancy and the results from those activities, together with the contents of the Preliminary Commissioning Report.

Comment: Delivery of Final Cx Report will be as specified in the Contract documents, more likely beyond 30 days.

Orry28-409.2

Committee Action: AS AM D

ICC 1000-154
Section 409.2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

409.2 Final Commissioning Report. The final commissioning report shall be delivered to the owner within 30 days of final completion and shall include the following:

1. Preliminary Cx Report.
2. Updated Issues Log and action plan to close each issue.
3. Results for trend log, other monitoring and testing since occupancy.
4. Systems Manuals.
5. Filled in construction Checklists and startup reports.
6. Filled in functional test documentation.
7. CxA's submittal reviews.
8. CxA's design reviews.

~~of the commissioning work required by code and by this standard, and shall include the Commissioning Process activities occurring after issuance of the Certificate of Occupancy and the results from those activities, together with the contents of the Preliminary Commissioning Report.~~

Reason: None provided.

Fischer30.2-409.2

Committee Action: AS AM D

ICC 1000-155

Appendix A

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

Appendix A : COMMISSIONING PROCESS COMPLIANCE CHECKLISTS AND FORMS

Templates CF-1 through CF-7 provides optional guides for collecting and documenting the information associated with the Commissioning Process activities. Other formats are acceptable.

Comment: There are seven forms provided in this appendix for completion by the Commissioning Provider. However, nothing in the main document referencing them.

Fischer31-Appendix A

Committee Action: AS AM D

ICC 1000-156

Appendix A

Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates.

General:

Appendix A : COMMISSIONING PROCESS COMPLIANCE CHECKLISTS AND FORMS

Templates CF-1 through CF-7 provides optional guides for collecting and documenting the information associated with the Commissioning Process activities. Other formats are acceptable.

Comment:

CF – 1

This Form and specifically the section “Code Requirements (402)” seems redundant and duplicative of other documentation which would have already been submitted by the Engineer of Record (EOR) and Architect of Record (AOR) in the initial plan review and approval process.

Proposing criteria which could differ from that submitted by the EOR and subsequently approved by the AHJ can lead to confusion, and more importantly legal questioning as to the CxA’s justification to change the EOR’s approved code interpretations.

CF – 2

This form seems to be unnecessarily complicating the Cx plan process. Each Cx plan should have a Table of Contents that calls out each of the items listed on this form. If this is what the code official needs, then recommend added a requirement for the CxA to list these headings in the Cx plan TOC.

CF – 3

In our professional opinion, it is inappropriate for the CxA to determine if submittals already approved by the EOR as complying with the sealed and approved plans and specifications, which necessarily includes code compliance, are in fact out of compliance with those codes. This is another area I believe would directly result in issues with the State Licensing Boards.

CF – 4

Having the CxA maintaining an issues log through the completion of all identified issues is largely impractical for a number of reasons:

The responsibility to ensure the proper completion of all project items included in the contract documents belongs to the Construction Manager / General Contractor. This is a contractually assigned responsibility that will not be legally usurped by a trade group policy or standard.

By definition, the CxA has no direct contractual relationship with the contractors, and consequently no direct control and very little leverage over the completion of these items.

Compensating the CxA to stay apprised of, and also to manage, a list of issues through completion without having any effect on actual process of completion is a cost that most owners will not be willing to assume. Since the CxA cannot assume this task without a source of compensation, it is impractical to mandate this to happen.

CF – 5

Expectation and common industry practice is these topics are covered in the Table of Contents in the Final Report. To have this data, including the evaluation materials, compiled into a report prior to the final inspection is also impractical. It does not seem to recognize the timeline of the commissioning process relative to the project completion, and the reasonable time required to assemble the materials for publication.

CF – 6

Is it ICC's intention to mandate that owners pay for the CxA development of Janitorial plans, building operating schedules and construction record documents? Most owners, while they may want these items, will not pay the CxA for them. Record Documents are better obtained from the firm with the master records (read EOR/AOR). Operating manuals are totally dependent upon the complexity and degree of automation of the building. This form probably needs significant clarification to gain acceptance with owners.

CF – 7

This form raises the same response as forms CF – 2 and CF – 5 regarding the use of a Table of Contents in the Commissioning Report. All of the listed items are generally already included in best practice documents and don't necessarily need to be duplicated here.

Dennis06-Appendix A

Committee Action: AS AM D

ICC 1000-157

Appendix A

Proponent: Orry Nottingham, P.E., LEED AP CAP CCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

Appendix A : COMMISSIONING PROCESS COMPLIANCE CHECKLISTS AND FORMS

Templates CF-1 through CF-7 provides optional guides for collecting and documenting the information associated with the Commissioning Process activities. Other formats are acceptable.

Comment: Is Appendix A forms intent to be prescriptive, or used as sample guidelines? How will these be managed in DD/CD phase?

Orry32-Appendix A

Committee Action: AS AM D

ICC 1000-158

Appendix A

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself.

General:

Appendix A: COMMISSIONING PROCESS COMPLIANCE CHECKLISTS AND FORMS

Templates CF-1 through CF-7 provides optional guides for collecting and documenting the information associated with the Commissioning Process activities. Other formats are acceptable.

CODE-REQUIRED COMMISSIONING COMPLIANCE FORM CF-1 Submitted with Permit Application		
Project Name: _____		
ITEM #	CODE-REQUIRED COMMISSIONING (CRC) ITEMS	PAGE NUMBER IN
General Commissioning Process (401)		
a	Commissioning process scope and requirements, including logs, reviews, reports and listing of equipment and systems requiring commissioning, with installation, evaluation and testing	
Code Requirements (402)		
b	Code requirements, including indoor temperature, humidity, and ventilation requirements, and other environmental, sustainability, and efficiency goals and benchmarks where required by codes or	
Documentation (408)		
c	Project documentation requirements and formats including Commissioning Plans, Commissioning Reports, and Systems	

Commissioning Provider Acknowledgement

I have reviewed the CRC document and verified that it includes all of the code required commissioning documentation listed in this form:

Name: _____

Company Name _____

Provider Signature: _____ Date: _____

Comment: Related to previous comment, does this imply CxAs will be becoming code checkers? Is the CxA now becoming liable for code? This would be a major divergence from the current Cx standard.

Eisemann8-Appendix A

Committee Action: AS AM D

ICC 1000-159
Appendix A

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

Appendix A : COMMISSIONING PROCESS COMPLIANCE CHECKLISTS AND FORMS

Templates CF-1 through CF-7 provides optional guides for collecting and documenting the information associated with the Commissioning Process activities. Other formats are acceptable.

CODE-REQUIRED COMMISSIONING COMPLIANCE FORM CF-1 Submitted with Permit Application		
Project Name: _____		
ITEM #	CODE-REQUIRED COMMISSIONING (CRC) ITEMS	PAGE NUMBER IN
General Commissioning Process (401)		
a	Commissioning process scope and requirements, including logs, reviews, reports and listing of equipment and systems requiring commissioning. <u>with installation, evaluation and testing requirements.</u>	
Code Requirements (402)		
b	Code requirements, including indoor temperature, humidity, and ventilation requirements, and other environmental, sustainability, and efficiency goals and benchmarks where required by codes or jurisdiction. <u>And Cx requirements are fully detailed in the project</u>	

(portions of table not shown remain unchanged)

Reason: None provided.

Fischer31.1-Appendix A-CF2

Committee Action: AS AM D

ICC 1000-160
Appendix A

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself

General:

Appendix A: COMMISSIONING PROCESS COMPLIANCE CHECKLISTS AND FORMS

Templates CF-1 through CF-7 provides optional guides for collecting and documenting the information associated with the Commissioning Process activities. Other formats are acceptable.

CODE-REQUIRED COMMISSIONING COMPLIANCE FORM CF-1 Submitted with Permit Application		
Project Name: _____		
ITEM #	CODE-REQUIRED COMMISSIONING (CRC) ITEMS	PAGE NUMBER IN
General Commissioning Process (401)		
a	Commissioning process scope and requirements, including logs, reviews, reports and listing of equipment and systems requiring commissioning. <u>with installation. evaluation and testing</u>	
Code Requirements (402)		
b	Code requirements, including indoor temperature, humidity, and ventilation requirements, and other environmental, sustainability, and efficiency goals and benchmarks where required by codes or	
Documentation (408)		
c	Project documentation requirements and formats including Commissioning Plans, Commissioning Reports, and Systems	
Commissioning Provider Acknowledgement		
<p>I have reviewed the CRC document and verified that it includes all of the code required commissioning documentation listed in this form:</p> <p>Name: _____</p> <p>Company Name _____</p> <p>Provider Signature: _____ Date: _____</p>		

Comment: Is the CxA now becoming liable for code? This would be a major divergence from the current Cx standard.

Eisemann9-Appendix A

Committee Action: AS AM D

ICC 1000-161
Appendix A-CF2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors

General:

COMMISSIONING PLAN COMPLIANCE FORM CF-2		
Project Name: _____		
ITEM #	PRELIMINARY COMMISSIONING PLAN ITEMS (403.2) Submitted with permit application	PAGE NUMBER IN

(portions of table not shown remain unchanged)

Comment: This section of the form includes multiple items not typically available at the time of permitting.

Fischer32-Appendix A-CF2

Committee Action: AS AM D

ICC 1000-162
Appendix A-CF2

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

Revise text as follows:

COMMISSIONING PLAN COMPLIANCE FORM CF-2		
Project Name: _____		
ITEM #	FINAL COMMISSIONING PLAN ITEMS (403.3) Submitted with permit application	PAGE NUMBER IN
a.	Detailed description of Commissioning Process activities, the schedule of activities and the list of operations, systems and assemblies that will be commissioned or inspected, including evaluation procedures and performance criteria.	
b.	Final listing of required reports including format, reviews and approvals.	
c.	Detailed testing procedures and checklists for functional testing and performance testing for all commissioned systems and assemblies, including verification of sequences of operation and, where relevant, conditions under which the testing will be	
d.	All of the Preliminary Commissioning Plan items have been updated as required to reflect any project changes.	
<p style="text-align: center;">Commissioning Provider Acknowledgement – Preliminary</p> <p>I have reviewed the Preliminary Commissioning Plan and verified that it meets the requirements of this standard for code-required commissioning.</p> <p>Name: _____</p> <p>Company Name _____</p> <p>Provider Signature: _____ Date: _____</p>		

(portions of table not shown remain unchanged)

Reason: Since the CxP verifies that the Final Cx Plan has been reviewed and verified, there is no apparent reason to verify the Preliminary Cx Plan.

Fischer33-Appendix A-CF2

Committee Action: AS AM D

ICC 1000-163
Appendix A-CF6

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

DOCUMENTATION AND SYSTEMS MANUAL COMPLIANCE FORM CF-6 Submitted before final inspection		
Project Name: _____		
Project Address: _____		Permit
Number: _____		
ITEM M #	SYSTEMS MANUAL ITEMS	PAGE NUMBER IN SYSTEMS MANUAL

(portions of table not shown remain unchanged)

Comment: CF6 should really be deleted because the AHJ won't be using because we don't. This is difficult to provide right before occupancy, as testing is just barely completed and often changes to sequences and systems operations are not clearly or fully understood until after all formal functional testing. And while consistent with ASHRAE's new standard, this is still too exhaustive a list for a Systems Manual, which is intended to be a reference manual for operators regarding system operating procedures, protocols and adjustments.

Fischer34-Appendix A-CF6

Committee Action: AS AM D

ICC 1000-164

Appendix B

Proponent: Liz Fischer, Building Commissioning Association, representing International Board of Directors.

General:

Appendix B – Owners Project Requirements

~~B.101 Owners Project Requirements~~

B.101.1 Contents. The contents of the Owner’s Project Requirements (OPR) for submission to the jurisdiction shall include the following information applicable to the code requirements:

1. Facility size, location, user requirements, including space usage, occupancy, operation and project schedules, codes, standards, and indoor environmental requirements, including temperature, humidity, and ventilation.
2. Commissioning process requirements, including logs, reviews and reports and listing of equipment, systems and assemblies requiring commissioning with installation evaluation and testing requirements.
3. Commissioned equipment, systems and assemblies requirements, including maintainability, access, and operational performance requirements.
4. Environmental, sustainability, and efficiency goals and benchmarks for code requirements.
5. Project documentation requirements and formats including; Basis of Design, Commissioning Plans and Reports, and the Systems Manual.
6. Training requirements for owner’s operation and maintenance personnel and occupants.

Comment: Delete requirement for including the OPR in the preliminary report.

Committee Action: AS AM D

Fischer35-AppendixB

ICC 1000-165

Appendix B

Proponent: Richard W. Dennis representing DLB Associates.

Delete without substitution:

Appendix B — Owners Project Requirements

~~B.101 Owners Project Requirements~~

~~**B.101.1 Contents.** The contents of the Owner's Project Requirements (OPR) for submission to the jurisdiction shall include the following information applicable to the code requirements:~~

- ~~7. Facility size, location, user requirements, including space usage, occupancy, operation and project schedules, codes, standards, and indoor environmental requirements, including temperature, humidity, and ventilation.~~
- ~~8. Commissioning process requirements, including logs, reviews and reports and listing of equipment, systems and assemblies requiring commissioning with installation evaluation and testing requirements.~~
- ~~9. Commissioned equipment, systems and assemblies requirements, including maintainability, access, and operational performance requirements.~~
- ~~10. Environmental, sustainability, and efficiency goals and benchmarks for code requirements.~~
- ~~11. Project documentation requirements and formats including: Basis of Design, Commissioning Plans and Reports, and the Systems Manual.~~
- ~~12. Training requirements for owner's operation and maintenance personnel and occupants.~~

Template CF-1B provides an optional guide for collecting and documenting the information associated with the Commissioning Process activities. Other formats are acceptable.

OWNER'S PROJECT REQUIREMENTS COMPLIANCE FORM CF-1B Submitted with Permit Application		
Project Name: _____		
ITEM #	OWNER'S PROJECT REQUIREMENTS ITEMS	PAGE NUMBER IN
Project Program		
a	Facility size, location, user requirements, including space usage, occupancy, operation and project schedules and codes, standards and indoor environment requirements, including temperature, humidity, and ventilation.	
Commissioning Process		
b	Commissioning process requirements, including logs, reviews, reports and listing of equipment, systems and assemblies requiring commissioning with installation evaluation and testing requirements.	
Systems and Assemblies		
c	Commissioned equipment, systems and assemblies requirements, and warranty provisions including maintainability, access, and operational performance requirements.	
Environmental Quality and Efficiency Requirements		
d	Environmental, sustainability, and efficiency goals and benchmarks for code requirements.	
Documentation		
e	Project documentation requirements and formats including: Basis of Design, Commissioning Plans and Reports, and Systems Manual.	
Commissioning Agency Acknowledgement		
I have reviewed the OPR document and verified that it meets the owner's project requirements.		
Name: _____		
Company Name: _____		
Agency' Signature: _____ Date: _____		

Reason: OPR Contents

Recommend you delete this requirement, and the form itself, as it is redundant with documents already created and submitted by the licensed Engineer or Architect of Record to the AHJ (and in most cases already approved by the AHJ).

As an example, items such as facility size, space usage, and similar building details are the purview of the licensed Architect and Engineer of Record.

Requiring the CxA to transpose and resubmit this information provides no appreciable value add to the project, and can pose liability questions as to the CxA's legality to do so if this information is subsequently incorrectly documented by the CxA.

Committee Action: AS AM D

Dennis7-Appendix B

ICC 1000-166
Appendix C

Proponent: Orry Nottingham, P.E., LEED AP CAP CCP, Certified Commissioning Professional, Energy Measurement & Verification, representing himself.

General:

Appendix C – Basis of Design

BASIS OF DESIGN COMPLIANCE FORM CF- 1C Submitted with permit application		
Project Name: _____		
ITEM #	BASIS OF DESIGN ITEMS	PAGE NUMBER IN BOD DOC.
Technical Approach		
a	Description of the design team’s technical approach to each of the Owner’s requirements.	
Codes and Commissioning		

Comment: Appendix C appears to be more prescriptive regarding OPR, which conflicts with intent of OPR and BOD to be a living document throughout project design, construction, and delivery with updated OPR and BOD provided at conclusion of construction phase.

Orry33-Appendix C

Committee Action: AS AM D

ICC 1000-167
C.201.2

Proponent: James Medley, representing National Security Technologies, LLC

Revise text as follows:

C.201.2 Contents. The BOD document shall include compliance with the requirements of the applicable code and the following:

1. Description of the design team’s proposed technical method to meet the requirements;
2. Coordination of applicable technical and code requirements as well as the commissioning requirements for systems and assemblies being commissioned;
3. Design criteria and design assumptions in agreement with the OPR and code requirements;
4. Requirements for sustainable design and other certifications when required; and
5. Requirements that systems, assemblies, and equipment be located, installed, commissioned and ~~maintainable~~, maintainable and that training be provided to operations and maintenance staff.

Reason: Editorial?

Medley2-C.201.2

Committee Action: AS AM D

ICC 1000-168

Appendix C

Proponent: Richard W. Dennis representing DLB Associates

Delete without substitution:

~~Appendix C – Basis of Design~~

~~C.201 Basis of Design~~

~~**C.201.1 Basis of Design (BOD).** The BOD shall be completed at the start of the design phase of the building project, and updated as necessary during the design and construction phases.~~

~~**C.201.2 Contents.** The BOD document shall include compliance with the requirements of the applicable code and the following:~~

- ~~1. Description of the design team's proposed technical method to meet the requirements;~~
- ~~2. Coordination of applicable technical and code requirements as well as the commissioning requirements for systems and assemblies being commissioned;~~
- ~~3. Design criteria and design assumptions in agreement with the OPR and code requirements;~~
- ~~4. Requirements for sustainable design and other certifications when required; and~~
- ~~5. Requirements that systems, assemblies, and equipment be located, installed, commissioned and maintainable, and that training be provided to operations and maintenance staff.~~

Template CF-1C provides an optional guide for collecting and documenting the information associated with the Commissioning Process activities. Other formats are acceptable.

BASIS OF DESIGN COMPLIANCE FORM		
CF- 1C		
Submitted with permit application		
Project Name: _____		
ITEM #	BASIS OF DESIGN ITEMS	PAGE NUMBER IN BOD DOC.
Technical Approach		
a	Description of the design team's technical approach to each of the Owner's requirements.	
Codes and Commissioning		
b	Coordination of applicable technical and code requirements as well as the commissioning requirements for the systems and assemblies being commissioned.	
Assumptions		
c	Design criteria and design assumptions in agreement with the OPR and code requirements.	
Sustainability and Related Criteria		
d	Requirements for sustainable design and other certifications when required.	
Maintenance and Training		
e	Requirements that systems, assemblies, and equipment be located, installed, commissioned and maintainable, and that training be provided to operations and maintenance staff.	
Commissioning Agency Acknowledgement		
I have reviewed the Basis of Design and verified that it meet the owner's project requirements.		
Name: _____		
Company Name: _____		
Agency' Signature: _____ Date: _____		

Reason: OPR Contents

Recommend you delete this requirement, and the form itself, as it is redundant with documents already created and submitted by the licensed Engineer or Architect of Record to the AHJ (and in most cases already approved by the AHJ).

As an example, items such as facility size, space usage, and similar building details are the purview of the licensed Architect and Engineer of Record. It would be inappropriate for the CxA to list these in a document apart from the approval of the EOR. And requiring the CxA to transpose and resubmit this information provides no appreciable value add to the project, and also can pose liability questions as to the CxA's legality to do so if this information is subsequently incorrectly documented by the CxA.

Dennis8-Appendix C

Committee Action: AS AM D

ICC 1000-169

Table CF-1C

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself.

General:

BASIS OF DESIGN COMPLIANCE FORM CF- 1C Submitted with permit application		
Project Name: _____		
ITEM #	BASIS OF DESIGN ITEMS	PAGE NUMBER IN BOD DOC.
Technical Approach		
a	Description of the design team’s technical approach to each of the Owner’s requirements.	
Codes and Commissioning		
b	Coordination of applicable technical and code requirements as well as the commissioning requirements for the systems and assemblies being commissioned	
Assumptions		
c	Design criteria and design assumptions in agreement with the OPR and code requirements.	
Sustainability and Related Criteria		
d	Requirements for sustainable design and other certifications when required.	
Maintenance and Training		
e	Requirements that systems, assemblies, and equipment be located, installed, commissioned and maintainable, and that training be provided to operations and maintenance staff.	
Commissioning Agency Acknowledgement		
<p style="background-color: yellow;">I have reviewed the Basis of Design and verified that it meet the owner’s project requirements.</p> <p>Name: _____</p> <p>Company Name: _____</p> <p>Agency’ Signature: _____ Date: _____</p>		

Comment: How can CxA sign off on and accept the BOD if they are not the EOR?

Eisemann11

Committee Action: AS AM D

ICC 1000-170
Table CF-1C

Proponent: James Medley, representing National Security Technologies, LLC.

Revise as follows:

BASIS OF DESIGN COMPLIANCE FORM CF-1C Submitted with permit application		
Project Name: _____		
ITEM #	BASIS OF DESIGN ITEMS	PAGE NUMBER IN BOD DOC.
Technical Approach		
a	Description of the design team’s technical approach to each of the Owner’s requirements.	
Codes and Commissioning		
b	Coordination of applicable technical and code requirements as well as the commissioning requirements for the systems and assemblies being commissioned.	
Assumptions		
c	Design criteria and design assumptions in agreement with the OPR and code requirements.	
Sustainability and Related Criteria		
d	Requirements for sustainable design and other certifications when required.	
Maintenance and Training		
e	Requirements that systems, assemblies, and equipment be located, installed, commissioned and maintainable , <u>maintainable</u> and that training be provided to operations and maintenance staff.	
Commissioning Agency Acknowledgement		
I have reviewed the Basis of Design and verified that it meet the owner’s project requirements.		
Name: _____		
Company Name: _____		
Agency’ Signature: _____ Date: _____		

Reason: Editorial?

Committee Action: AS AM D

Medley3-Table CF

ICC 1000-171

Table CF-3

Proponent: Greg Eisemann, KJWW, Engineering Consultants, representing himself.

General:

COMMISSIONING REVIEW OF SUBMITTALS COMPLIANCE FORM CF-3 Submitted before final inspection		
Project Name: _____		
ITEM #	COMMISSIONING SUBMITTAL REVIEW ITEMS	PAGE NUMBER IN Cx REVIEW DOC.
General Project Submittal Information (405.2)		
a	Commissioning Provider shall identify construction submittals to be provided by the Contractor for the systems being commissioned. The Commissioning Provider shall review the construction submittals concurrently with the designers and provide comments to	
Systems To Be Commissioned and Documentation Process (405.3)		
b	The submittal review report shall include a listing of the submittals reviewed, the date reviewed and a summary of the submitted equipment/materials properties that appear not to meet code requirements.	
Commissioning Provider Acknowledgement		
I have reviewed the submittals documents and verified that they meet the applicable code requirements.		
Name: _____		
Company Name: _____		
Provider Signature: _____ Date: _____		

Comment: Related to previous comments, isn't this the responsibility of the EOR?

Eisemann10-TableCF

Committee Action: AS AM D

ICC 1000-172

Table CF-1C

Proponent: Anne C. Juran, Summer Consultants

Revise text as follows:

BASIS OF DESIGN COMPLIANCE FORM CF- 1C Submitted with permit application		
Project Name: _____		
ITEM #	BASIS OF DESIGN ITEMS	PAGE NUMBER IN BOD DOC.
Technical Approach		
a	Description of the design team’s technical approach to each of the Owner’s requirements.	
Codes and Commissioning		
b	Coordination of applicable technical and code requirements as well as the commissioning requirements for the systems and assemblies being commissioned.	
Assumptions		
c	Design criteria and design assumptions in agreement with the OPR and code requirements.	
Sustainability and Related Criteria		
d	Requirements for sustainable design and other certifications when required.	
Maintenance and Training		
e	Requirements that systems, assemblies, and equipment be located, installed, commissioned and maintainable, and that training be provided to operations and maintenance staff.	
Commissioning Agency Acknowledgement		
<p><u>In my professional opinion, and to the best of my professional knowledge, information and belief, I have reviewed the Basis of Design is in general conformance to and verified that it meet the owner’s project requirements.</u></p> <p>Name: _____</p> <p>Company Name: _____</p>		

Reason: Our professional liability insurance does not allow us to go beyond the standard of care by making a certification, guarantee, or warranty. The statement, as written in the draft, makes a guarantee.

Committee Action: AS AM D

Juran2-TableCF

ICC 1000-173
D301.3

Proponent: James Medley, representing National Security Technologies, LLC

Revise text as follows:

D.301.3 Records. Archival of instruction, delivery of ~~instruction~~, instruction and training materials shall be provided as specified in the Contract Documents and per the OPR and commissioning plan. A copy of the Training Plan, training materials, and records shall be included in the final Systems Manual.

Reason: Editorial?

Committee Action: AS AM D

Medley4-D301.3

ICC 1000-174

Appendix D

Proponent: Proponent: Richard W. Dennis, PE, LEED AP (BC&D), CCP, CPMP, DLB Associates

General:

Appendix D - Training

Comment: Training requirements are specified by the Engineer of Record (EOR) in the contract documents. The CxA does not specify the training requirements, although the CxA may oversee aspects of the training to help verify the training delivered is in compliance with the contract documents.

Also, it must be appreciated that common in the building industry the owner will contract with a third party facility management firm for the actual day-to-day operations. The operations contract will almost always require the facility management firm to staff the facility with experienced, knowledgeable and trained individuals who typically will not require basic facility operations training.

While I support the concept and value of a training plan, as well as comprehensive training in the cases of technologically complex projects, it must also be considered to what level the facility staff needs to be trained based on their experience and knowledge level (which is often project specific) and who is going to pay for this training.

Committee Action: AS AM D

Dennis09-Appendix 3

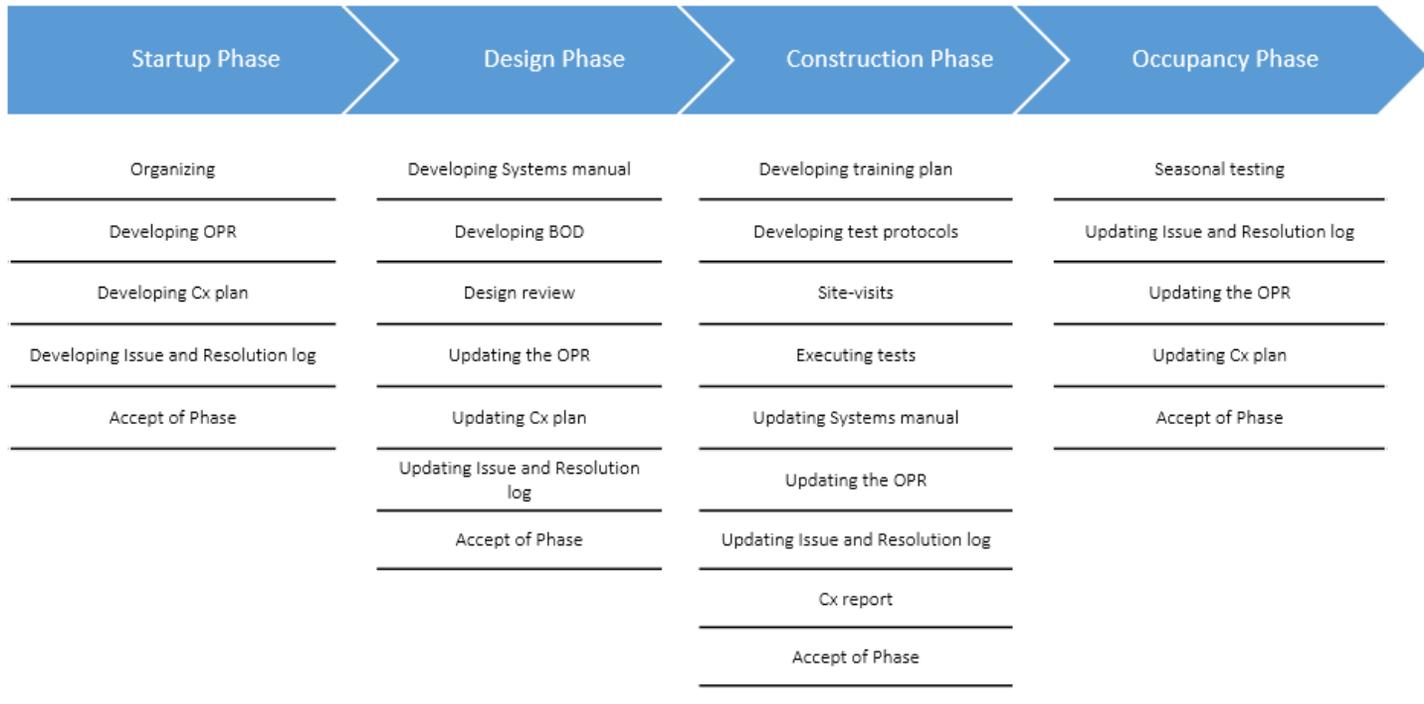
ICC 1000-175

Appendix E

Proponent: Thomas Toftgaard Jarlov, Commissioning consultant at Grontmij A/S representing himself.

Add new text as follows:

APPENDIX E



Reason: To get at better overview of the standard, there should be a process chart or a flowchart.

TTJ18-Appendix E

Committee Action: AS AM D