

## **Programs for the Chicago Meeting (January, 2012):**

### **Seminar 21 (Intermediate)**

Monday, January 23, 2012, 9:45 AM-10:45 AM

#### **Maximizing the Benefits of Commissioning: Incorporating Design Reviews and the Building Envelope into the Commissioning Scope**

*Sponsor: 7.9 Building Commissioning*

*Track: Installation, Operation & Maintenance of HVAC Systems*

*Room: Wabash*

*Chair: Gerald J. Kettler, P.E., Life Member, AIR Engineering and Testing, Carrollton, TX*

Functional performance testing and post-occupancy evaluation of HVAC systems are commonly thought of tasks in the commissioning process. However, commissioning is most beneficial when it is begun early in the design process, and if it includes other building systems beyond HVAC. This seminar covers design phase commissioning and commissioning of the building envelope. Design phase commissioning tasks are discussed, as are suggestions for realizing maximum benefits from commissioning design reviews. The seminar also reviews envelope commissioning, the unfortunate state of the envelope quality if envelope commissioning is not done, and the resulting impact on HVAC operation.

#### **Learning Objectives:**

1. Describe the methodology and process of meaningful design reviews;
2. Apply presentation strategies to enable the designer and owner to seriously consider suggestions;
3. Describe how to support optimized system performance through design review;
4. Identify typical air barrier deficiencies observed during construction of new buildings and how these were resolved;
5. Describe rated air barrier materials and material compatibility issues;
6. Identify common air barrier transition deficiencies and how to avoid them.

#### **1. Strategies for a Meaningful Commissioning Design Review**

Thomas Anderson, Member, Cx Associates, Burlington, VT

Design review (DR) by the commissioning service provider is part of the commissioning process that can provide the owner with significant value. Done well, a commissioning design review can help the team control construction costs while ensuring that building systems and equipment are optimized to meet the owner needs. This presentation teaches attendees how to conduct meaningful design reviews to help the design team to meet the Owner's Project Requirements. The presentation addresses the financial benefits of design review, scheduling design review for maximum benefit, the mechanisms of the DR process, and presentation and communication strategies that enable the design team and owner to fully consider alternative approaches proposed in the design review process.

Common difficulties one experiences in the DR process are discussed and solutions to deal with these are presented. This presentation draws heavily on Cx Associates' extensive design review experience.

## **2. Air Barrier Design and Commissioning: Details for Success**

Meghan McDermott, Member, Southern Energy Management, Morrisville, NC

Air Barrier testing required by the US Army Corps has created a large data set of strategies and performance results with air barrier construction. Diagnostic investigations have identified typical deficiencies in design and implementation that can be grouped into several categories. Even when construction documents specify air barrier materials, common transitions are often not completely detailed or are omitted entirely. Proper installation of air barrier materials and transitions are key to success, but are typically not part of quality control practices. Easily achievable air barrier improvements are reported to save significant heating and cooling energy and provide additional building performance benefits. Air barrier improvements are applicable for all types of both new and existing buildings. Air Barrier Commissioning meeting approved criteria can also earn a LEED building credit under the Innovation in Design section.

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### **Seminar 52 (Intermediate)**

Wednesday, January 25, 2012, 11:00 AM-12:30 PM

### **Commissioning: Integrated Design and Commissioning on the Same Building: Collaboration or Collision?**

*Sponsor: 7.9 Building Commissioning*

*Track: Integrated Design*

*Room: Wabash*

*Chair: David Shipley, P.Eng., Member, ICF Marbek, Ottawa, ON, Canada*

Integrated building design (IBD) and building commissioning are both strategies for improving a new building's ability to meet the needs of the owner and occupants. IBD involves getting all the participants in the design process together to work out common issues. Commissioning that (appropriately) starts early in the design process drives participants to coordinate a commissioning plan and design activities. How do the two interact? This seminar includes presentations from an IBD professional that included commissioning in a project and presentations from commissioning authorities who were involved in projects that included IBD.

#### **Learning Objectives:**

1. Describe how the owner's goals and objectives are characterized and communicated in an integrated building design (IBD);
2. Explain how commissioning (Cx) interprets and implements the the owner's objectives in an IBD process;
3. Determine how IBD and Cx interact at the intersection between building design and operation;

4. Describe techniques for ensuring that IBD and Cx are coordinated and that the professionals involved collaborate effectively;
5. Describe how IBD may have to be adapted to include a Cx process that starts during the design phase of the building;
6. Explain how Cx may have to be adapted to integrate itself into an IBD process.

### **1. The Commissioning Process and Integrated Building Design Process**

Bradley Brooks, Ph.D., Member, PECEI, Portland, OR

During the IBD process, the commissioning goals and objectives can be determined and the Owners Project Requirement (OPR) are defined, which guides the development of the Basis of Design. The initial commissioning plan is developed to guide the commissioning of the project, which outlines various Cx activities that include design review, submittal review, installation observation, equipment start-up, functional testing, issue resolution, system manual development, training of building staff, reporting, project closeout and warranty. The cohesion of the integrated design process and commissioning allows for an enhanced verification that the project meets the project goals and objectives.

### **2. Commissioning in an Integrated Building Design Process: Case Study of an Industrial Research Facility**

Stephen Pope, Member, Natural Resources Canada, Ottawa, ON, Canada

Integrated building design proposes a specific facilitated design process where all design disciplines plus the owner's representatives work in common to develop the project goals and solutions for their realization. This process has formal quality assurance activities that confirm project directions and design decisions. In general those activities take the form of internal peer reviews across disciplinary boundaries. Energy modeling and commissioning previews are the two principal QA activities. Using the example of a pilot scale metals casting and forming research facility, the role of the Commissioning specialist in an integrated building design process will be explored.

### **3. IBD of a Multi-Phased Commercial Office Remodel: A Case Study with the CxA as Commissioning Advocate**

Barry B. Bridges, P.E., Member, Sebasta Blomberg, Roseville, MN

The different relation of Commissioning Authority (CxA) as either the design process leader or as the advocate for commissioning within another design professional's leadership is a large difference in responsibility, but a smaller difference in focus. The role of a commissioning agent can be refined in the scope of work and described in the specifications regarding responsibility. Using the sections in GPC-0 the CxA can assure each section of commissioning is included in the agenda of the IBD. This involvement is illustrated using examples from a recent IBD project to include team building exercises and integration of systems.