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BY **ROSS J. SMITH, PE, LEED AP BD+C, CDT**
Wiss, Janney, Elstner Associates, Inc.

5 Keys to Understanding the Value of Building Enclosure Commissioning (BECx)

Building Enclosure Commissioning (BECx) is a comprehensive process that has evolved from decades of investigations, design peer reviews, material and system testing, and expertise compiled across the building consulting industry.

Despite standardization and growing history of proven results, many misconceptions and a general lack of understanding of BECx still plague the construction industry.

Over the past 10 to 15 years, an ongoing effort to standardize a review process resulted in the emergence of Guideline 3 by the National Institute of Building Sciences (NIBS) and was later refined into the currently recognized ASTM standards (ASTM E2813 and ASTM E2947). Despite this standardization and growing history of proven results, many misconceptions and a general lack of understanding of BECx still plague the construction industry. Here we explore five key benefits which serve to demonstrate the value of BECx.

1. BECx is more than just testing.

Many believe BECx is just about "testing" and that it only occurs at the end of the project. As such, many postpone consideration for BECx until well into the project or, unfortunately, eliminate it entirely. Though physical performance validation of roofing, windows, curtain walls and other enclosure systems are valuable parts of an overall BECx program, the testing is really the final step of a larger, integrated review process. To gain the most benefit from experts' involvement, BECx should begin early in the design, including participation in development of the Owner's Project Requirements (OPR) and evolving into periodic reviews of the Schematic Design (SD), Design Development (DD) and Construction Document (CD) iterations.

2. BECx improves the design.

Some owners and many architects of record (AORs) dismiss the BECx concept as redundant, claiming there is already a design architect on the project. The role of the AOR entity is undeniably critical, and even with BECx, the AOR maintains control of the final design product. However, while the AOR determines the *space, function, look and feel* of the project, the Building Enclosure Commissioning Agent (BECxA) ensures the *technical performance* and detailing of the selected systems satisfies the OPR. The BECxA can provide specific experience and performance-based knowledge regarding properties such as system/product/material durability and compatibility, air/moisture/thermal control, and a general holistic integration of the enclosure with pertinent mechanical and structural systems. This coordination leads to refining design decisions, integrating adjacent and dissimilar assemblies and providing insight on the most critical, and often overlooked, system details.

3. BECx can save money now and save more money later.

While often viewed as an upfront cost the project budget may not tolerate, a fully integrated BECx process can result in overall, long-term cost savings. When timed appropriately, BECx reviews of

Location:
DETROIT OFFICE
30700 Telegraph Road
Suite 3580
Bingham Farms, MI 48025

WEST MICHIGAN
101 Washington Avenue
PMB 185
Grand Haven, MI 49417

Contact:
T: 616.401.2228
E: rsmith@wje.com

www.wje.com

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS
Wiss, Janney, Elstner Associates, Inc.

BECx (CONTINUED)

the DD and CD submissions can improve the drawings and specifications minimizing potential omissions, tightening the range and reducing bid prices. Coordination with manufacturers, preconstruction conferences with relevant trade subcontractors, and periodic construction observations by the BECxA can identify and streamline resolution for difficult construction sequencing, reducing mistakes, rework, and costly schedule delays. Design reviews, mock up coordination and early performance testing by the BECxA can identify problems and provide solutions, minimize design and installation deficiencies, and mitigate the potential for enclosure-related failures that can often lead to air and moisture ingress and costly damages. Finally, improved enclosure performance can lead to long term reduction in building operational costs due to improved thermal performance.

4. BECx can increase LEED score and overall actual sustainability.

New projects targeting LEED v4.0 certification can add credits directly via BECx by pursuing the Building Enclosure Commissioning option as part of one of the Enhanced Commissioning paths in the Energy and Atmosphere (EA) credit section. Aside from this explicitly defined credit availability, BECx can also have impact on many other LEED credits including: EA – Optimize Energy Performance, Environmental Quality (EQ) – Thermal Comfort, Daylight and Quality Views; Sustainable Sites (SS) – Heat Island Roof, and Innovation (IN). Beyond the certification incentives and the accumulation of rating system credits, the BECx process provides measureable impact on the actual performance of the enclosure as well. Upgraded/refined material selection, improved system

FIGURE 1
A fully integrated BECx process can result in overall, long-term cost savings.

FIGURE 2
Design reviews, mock up coordination and early performance testing by the BECxA can identify problems and provide solutions, minimize design and installation deficiencies, and mitigate the potential for enclosure-related failures.

detailing at window and door openings, integration between adjacent dissimilar materials, and coordination with mechanical systems can lead to designs which are more air-tight for pollution and infection control and overall, more thermally efficient.

5. BECx helps improve the comfort of building users.

There is no coincidence in the industry trend of health care owners leading the way by insisting on implementing BECx in their facility designs. Health care operators recognize and are quick to highlight programming imperatives of unparalleled patient experience coupled with strict adherence to air quality and management requirements. Fortunately, the benefits are not limited to health care applications. While AOR design may provide daylighting and outdoor views for an enhanced visual occupant experience, BECx design and detailing considerations may improve thermal performance. These measures can reduce common occupant complaints: temperature, humidity, and “drafty”. A better building enclosure makes for a better interior environment, and happier building users.

About the Author

Ross J. Smith, PE, LEED AP BD+C, CDT, an associate principal with Wiss, Janney, Elstner Associates, Inc., is experienced in structural evaluation, building enclosure commissioning, unique failure investigations, repair design, and construction quality control. His work also includes structural and architectural failures related to water infiltration, fire, wind, snow, condensation and material failures. You can reach Ross at rsmith@wje.com.