BUILDING ENCLOSURE COMMISSIONING EDUCATION Building Enclosure Technology and Environment Council - BETEC Wagdy Anis, FAIA, LEED AP

Lead Instructor



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BUILDING ENCLOSURE COMMISSIONING EDUCATION



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Learning Objectives

- Understand the industry standards for Commissioning and specifically Building Enclosure Commissioning (BECx)
- Understand the process for BECx and the roles of the Building Enclosure Commissioning Provider (BECxP) and the Building Enclosure Commissioning Specialist (BECxS)
- Develop an Owner's Project Requirements, a BECx Plan and a BECx specification
- Get a basic understanding of the Building Science principles in building enclosures
- Understand building enclosure systems and how they function, how they are designed and specified
- Understand the testing programs involved in the different levels of BECx



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The Course

- Day 1: BECx Process
- Day 2: Building Science
- Day 3: Building Science
- Day 4: Building Systems
- Day 5: Systems (cont'd) Testing and Sampling



RELATIONSHIPS



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TRAINING & EDUCATION

- Arranged with the Building Enclosure Councils.
- Training courses
- Train the trainer course
- Qualifications of Building Science educators
- Separated from testing and certification by ASTM
- Five day BECx training and education
- Follows core requirements of skills and competencies in ASTM E 2813 and E2947



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Day 1 Commissioning Process

- What and why of commissioning
- Commissioning in Codes and Standards
 - ASHRAE Standard 202
 - ASTM E 2813 and ASTM E2947
 - LEED 4.0
 - IgCC
 - ASHRAE 189.1
- Commissioning in the different phases
- Project delivery methods
- The BECx Plan
- The BECx Specification



Day 2 Building Science

- The indoor environment
- Heat transfer
- The outdoor environment
- The nature of air
- Psychrometrics
- Calculating surface temperatures
- The environment below grade
- Human comfort ASHRAE Standard 55
- Terminology
- Dew point analysis
- Hygrothermal analysis WUFI

Materials and their moisture content

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Day 3 Building Science

Rain wetting and Penetration

- Pressure equalization
- The drained screen approach

Air pressures in Buildings

- Air Barriers
- Testing and commissioning
- Joints in buildings
 - Control joints vs expansion joints
 - Sizing joints

Material Distress

- Electrochemical series
- Corrosion and protection of metals
- Freeze thaw damage
- Energy code compliance

Benefits and uses of THERM & WINDOW

Day 4 Building Systems

Substructures and waterproofing

Roofing

- Low slope
 - Principles of roof design and drainage
 - Roofing types
 - Assembly design
- Pitched Roofs
 - Principles of roof design and drainage
 - Roofing types
 - Assembly design



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Day 4 Building Systems

- Typical design reviews
 - Drawing reviews
 - Specification reviews
- Flashing strategies
- Insulation strategies
- Cladding strategies
- Masonry & stone
- Precast concrete and cast stone



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Day 5 Building Systems & Testing

- Wood siding, EIFS
- Windows, storefront, curtainwall
- Louvers, skylights and sloped glazing
- Glass and glazing
- Testing basics and qualifications
- Pre-construction laboratory testing
- Construction phase field testing in BECx
- Testing and sampling strategies- failure consequences



Example Projects



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Willard Elementary School - Concord



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