BUILDING ENCLOSURE COMMISSIONING EDUCATION

Building Enclosure Technology and Environment Council - BETEC

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Lead Instructor
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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
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

NIBS / BETEC → MOA → ASTM

Guideline 3 - BECx → ASTM E 2813

TRAINING & EDUCATION → ASTM E 2947

TESTING & CERTIFICATION
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
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
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
Day 4 Building Systems

- Typical design reviews
  - Drawing reviews
  - Specification reviews
- Flashing strategies
- Insulation strategies
- Cladding strategies
- Masonry & stone
- Precast concrete and cast stone
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
Spaulding Rehabilitation Hospital
Harvard Business School – Tata Hall
Willard Elementary School - Concord