Designing for Lasting Impact
The Science Behind Better Building Enclosures

Walker Art Center, Minneapolis, MN
April 25th, 2019 8:30AM – 6:00PM

The Science behind Building Enclosures – Design Principles and Elements

2 CEU (LU/HSW)
9:00AM – 11:30AM

Requirements for continuous insulation in commercial buildings are increasing in all climatic regions; effectively changing the way building enclosures must be designed and detailed. To ensure durability and avoid enclosure failures, understanding how building materials perform as a system is imperative. This presentation will review building science fundamentals, as they relate to thermal and moisture control; identify the implications of building materials selection; investigate unique issues in past projects and provide examples on how to detail enclosures with continuous exterior insulation.

Learning Objectives:

1. Understand key building science principles related to the building enclosure's function and components
2. Recognize strategies for thermal control and moisture control
3. Apply key design principles and elements for detailing continuous exterior insulation
4. Analyze past projects and case studies to understand the in-situ moisture performance of building enclosure materials and systems.

Speaker: John Straube, Principal, RDH Building Science

John Straube is a building science engineer working in RDH's Toronto and Waterloo offices. John heads forensic investigations and leads research projects in the areas of low-energy building design, building enclosure performance, hygrothermal analysis, and field monitoring of wall assemblies. He is also a prolific writer, a noted public speaker, and a sought-after "performance coach" who helps other professionals coordinate their efforts and achieve higher levels of performance in their building projects. As one blogger wrote after attending a keynote speech: "he clearly loves what he does."

In addition to his work with RDH, Dr. Straube is a cross-appointed faculty member in the School of Architecture and the Department of Civil and Environmental Engineering at the University of Waterloo. He was a Principal at Building Science Corporation from 2006 to 2013, and is the co-author, with Eric Burnett, of Building Science for Building Enclosures, one of few texts available with a specific focus on the principles of building science. Dr. Straube's leadership as a building scientist and an educator has been recognized with multiple awards, including the Lifetime Achievement Award in Building Science Education from the National Consortium of Housing Research Centers (NCHRC).

Designing for Fire Safety – Complying with NFPA 285 Test Standard for Exterior Walls

1 CEU (LU/HSW)
12:30PM – 1:30PM

When considering the building enclosure, fire safety is an important design factor and needs to be considered hand-in-hand with energy code requirements. The NFPA 285 "Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components" is a common consideration with modern building assemblies that use combustible materials.

This presentation will review the history and scope of the NFPA 285 test standard, and its adoption within the International Building Code (IBC). It will outline the criteria for compliance, as well as identify triggers and contributors under the standard. The presentation will review how the selection building components such as insulation, air/water resistive barriers and claddings, can affect the fire performance of an assembly, and identify solutions and common paths for compliance.

Learning Objectives:

1. Discuss the importance of fire and safety design considerations as it relates to the building enclosure;
2. Discuss the history, scope and testing procedure outlined in the NFPA 285 test standard;
3. Understand the requirements of NFPA 285 compliant assemblies and the implications of building materials selection;
4. Identify passive design solutions to achieve compliance and resources available with compliant designs.

Speaker: Keith Nelson, ECS Limited

Engineering Consulting Services (ECS) is pleased to announce Keith Nelson, has joined the firm as a Senior Architect based in the Richmond, Virginia office of the ECS Mid-Atlantic, LLC Facilities Group.

With a primary focus on building enclosure design and performance, Mr. Nelson will be expanding the client service offerings to include Building Enclosure Commissioning (BECx), as well as engaging in marketing and business development for ECS.

He brings over 19 years of professional experience to technical and complex building enclosure design and failure investigations. He is a Licensed Architect in the District of Columbia, Delaware and Virginia and is an ASHRAE Certified Building Commissioning Professional (BCxP).

Mr. Nelson earned a Bachelor of Science in Environmental Design and a Bachelor of Architecture from Ball State University in Muncie, Indiana. He is currently a voting member of the ASHRAE 90.1 Envelope Subcommittee, ASTM E06.55 Performance of Buildings, and ASTM E06.41 Air Barriers. He has provided training nationally on the topics of Building Science & Enclosure Performance, Air Barriers, Code Compliance, Building Enclosure Commissioning, and NFPA 285 Compliance.

Enriching Modern Living: Insulate for Health + Safety + Welfare

1 CEU (LU/HSW)
1:45PM – 2:45PM

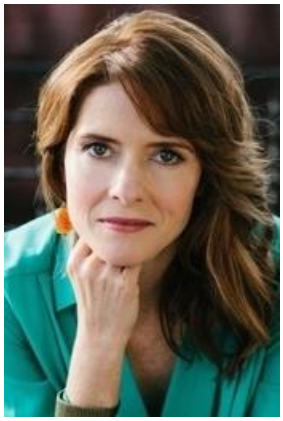
With over 90% of time spent indoors - homes, offices and places of learning building professionals must commit to creating spaces that include health, safety and welfare (HSW). This course correlates health, safety and welfare with the latest sustainability trends including transparency and resiliency. It will analyze each commitment and trend along with high performance building strategies of durability, energy efficiency, lifecycle performance and human productivity.

These topics will be explored within the infrastructure of several green building metrics such as LEED, WELL, as well as, simple good green building practices when not pursuing a green building certification. Within these strategies, the course will integrate regional sustainability initiatives and community action and will translate these trends and best practices into user-friendly tools that can be applied to future projects.

Learning Objectives:

1. Relate Health, Safety & Welfare commitments to current sustainability trends.
2. Analyse each commitment + trend related to smart building design including regional context.
3. Discover best practices + tools related to high performance buildings that accomplish both goals.
4. Translate these findings into their next building or personal project

Speaker: Holley Henderson, LEED Fellow, H2 EcoDesign



Holley is known as the Common-Sense Environmentalist making sustainable choices make sense for your business. She is author of the book Becoming a Green Building Professional. A frequent speaker on sustainable design issues, Holley has presented for many groups including Greenbuild International Conference & Expo, IFMA World Workplaces, NeoCon, Greenguard Summit, Hospitality & Design (HD) Conference, CBRE World Conference, the International Convention Center Conference, as well as, numerous professional associations, academic institutions and corporate audiences.

H2 Ecodesign grew out of Holley Henderson's passion for the sustainable consulting field. Prior to founding H2 Ecodesign, Holley was with tvsdesign for ten years and later served as Interface Carpet's Director of Creative Design. Her work in these places provided her with a unique perspective into the needs of owners, manufacturers, and design firms relative to sustainability. Holley brings a wealth of experience with sustainability and the LEED certification process.

For over a decade, Holley has served the National U.S. Green Building Council (USGBC) by chairing the Market Advisory Committee and LEED-CI Core Committee. Subsequently, she participated in the numerous leadership committees for the National USGBC such as LEED Steering, Greenbuild Special Programs, Educational Development and the International Forum. She is charter faculty for the National USGBC LEED Workshops and one of their key "go-to" subject matter experts for developing curricula.

Designing a Better Tomorrow – Experts' Take on High Performance Buildings

1 CEU (LU/HSW)
3:00PM – 4:00PM

With the need to reduce the energy impact and resource consumption of our buildings, the design and construction processes are becoming more complex. Increasing energy codes requirements, industry specific environmental schemes, and advances in building materials and technologies, all play a critical role in the overall performance of buildings.

Learning from experts, this discussion will focus on providing insight into techniques that can be used to create buildings that are fire safe, durable, and energy efficient. It will delve into the do's and don'ts of high-performance buildings based on science and experience for local climatic regions; and highlight the building enclosure's interaction with other building systems.

Learning Objectives:

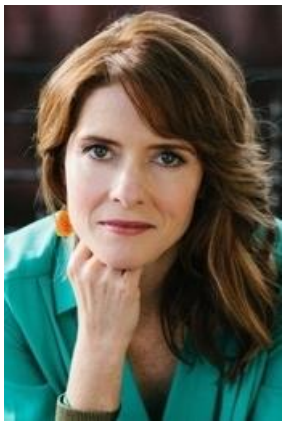
1. Understand the broad impact of buildings on the environment and key strategies to reduce that impact.
2. Identify key strategies for designing fire safe, durable and energy efficient buildings.
3. Understand the building science-informed approach to the design and construction of high-performance building enclosures.
4. Learn about the interactions between the different systems within a building.

Participants:

Moderator
Sheldon Wolfe, CSI
Distinguished Member

Panelist
John Straube, Principal, RDH

Panelist
Keith Nelson
ECS Limited



Panelist
Holley Henderson, LEED Fellow, H2 EcoDesign

Moderator: Sheldon Wolfe, Architect, FCSI, CCS, CCCA, CSC, CSI Distinguished Member

After graduating from the University of Minnesota School of Architecture in 1975, Sheldon designed geodesic domes and earth-sheltered homes, some of which incorporated solar collectors, composting toilets, and other energy-saving devices. Since 1985, he worked several years as an architect in the public sector at the University of Minnesota and the Metropolitan Waste Control Commission, and in the private sector in firms ranging in size from 40 to 150 employees.

Sheldon became a member of the Construction Specifications Institute in 1987, where he was a member of the national Technical Committee for several years, served as a Director of the Institute for three years, served as an officer and committee member in CSI's North Central Region, and served as president, committee chair, and member of several committees in the Minneapolis-St. Paul Chapter.

In 1994, he began writing articles about computers, software, construction documents, and other construction-related subjects, which have appeared nationwide in newsletters and trade magazines. At last count, he has published over 400 articles, many of which appear on his two blogs. He also has presented his popular presentation, "The Evolution and Demise of Construction Documents," at many CSI and AIA conventions and conferences.