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Colorado Wood Design Symposium

SEPTEMBER 20, 2017
COLORADO CONVENTION CENTER
700 14TH STREET
DENVER, CO 80202

Free design and engineering support for non-residential and multi-family wood buildings

For project assistance please contact:
Janelle Leafblad, PE
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Register at woodworks.org
ROOM 1 – Architectural

MORNING SESSION 9:00 AM
Rocky Mountain Institute Innovation Center: Progressive Timber Office Design
Justin Books, LEED AP BD+C, ZGF Architects LLP

When the Rocky Mountain Institute (RMI), an entrepreneurial nonprofit think-and-do tank driving the efficient use of energy and resources, decided to build a new office building, wood was a natural choice. Completed in 2015, RMI’s new Innovation Center in Basalt, Colorado was required to meet ambitious goals: utilize sustainable construction materials while providing a net-zero, high-performance, architecturally innovative building. This presentation will explore design considerations associated with wood frame building enclosures and the role of control layers. Discussion will focus on best practices for designing durable, energy-efficient enclosures using traditional light wood-frame construction.

AFTERNOON SESSION 1:00 PM
Building Enclosure Design: Fundamentals, Components and Assemblies
Colin Shane MEng. PEng. RDH Building Science Inc

Building enclosures are responsible for controlling heat flow, air flow, vapor flow and a number of other elements. Through a combination of building science fundamentals and current research, this presentation will explore design considerations associated with wood frame building enclosures and the role of control layers. Discussion will focus on best practices for designing durable, energy-efficient enclosures using traditional light wood-frame construction.

ROOM 2 – Structural

MORNING SESSION 9:00 AM
Structural Design of Mass Timber Framing Systems
Tanya Luthi, PE, Past + Epp

This presentation will provide an in-depth look at a variety of wood-frame building enclosure assemblies and details. Beginning with a review of building enclosure design fundamentals and considerations, it will then focus on best practices with references to technical guidelines and case studies. Finally, the critical detail interfaces between different enclosure assemblies (i.e., walls, roofs, balconies, windows) will be reviewed with a focus on continuity of critical barriers. Details and case studies will be presented for each.

AFTERNOON SESSION 2:15 PM
Advanced Detailing Techniques for Building Enclosures
Colin Shane MEng. PEng. RDH Building Science Inc

This presentation will provide an in-depth look at a variety of wood-frame building enclosure assemblies and details. Beginning with a review of building enclosure design fundamentals and considerations, it will then focus on best practices with references to technical guidelines and case studies. Finally, the critical detail interfaces between different enclosure assemblies (i.e., walls, roofs, balconies, windows) will be reviewed with a focus on continuity of critical barriers. Details and case studies will be presented for each.

AFTERNOON SESSION 3:30 PM
Code Compliant Fire Resistance Design for Wood Michelle Kam-Biron, PE, SE, SECB, American Wood Council

Determining the proper code application for fire resistant wood frame assemblies and exposed wood structural members can be challenging, and is often further complicated with increases in a project’s size and scale. In a building environment where the ability to maximize height and area is key to cost effectiveness, designers must understand the gamut of fire protection considerations applicable to wood structures. This presentation will include code requirements, compliance options and nuances related to assembly selection for required fire resistance-rated floor/ceilings and roof/ceilings, interior and exterior walls, fire barriers, fire partitions, and fire walls. Topics will also include distinctions between fire-resistive elements for separation vs. type of construction.

AFTERNOON SESSION 3:30 PM
Structural CLT Floor and Roof Design
Scott Breneman, PE, WoodWorks

This presentation is intended for structural engineers and building designers seeking to familiarize themselves with the design of CLT in horizontal applications. Topics will include Manufacturing and product performance standards, structural design standards, and recognition of CLT in the International Building Code (IBC). Specific attention will be given to the design of horizontal CLT when resisting gravity loads—a, e.g., as panels of floor and roof systems—and when resisting lateral loads, acting as a structural diaphragm. Discussion will include an introduction to meeting serviceability requirements related to deflection and floor vibration design as well as important connection details.

AFTERNOON SESSION 4:00 PM
Detailed Design for Wood Shrinkage
Douglas R. Steimle, PE, Schaefer

For condominiums, apartments, hotels and dormitories, multi-story wood construction is viewed by many as a way to achieve higher density at lower cost, while reducing the project’s carbon footprint. One of the challenges in designing these taller buildings, is how to calculate and address wood shrinkage, which occurs as the wood dries from its ‘green’ state to its in-service equilibrium state. This session will examine shrinkage associated with wall and floor design, and demonstrate how to minimize effects of both shrinkage and differential movement with proper detailing. The discussion will include solutions for shrinkage induced construction issues such as drywall cracking, window frame warping, and compromised plumbing lines.

AFTERNOON SESSION 5:30 PM
Lateral Design Considerations for Mid-Rise Wood Structures
Terry Malone, PE, SE, WoodWorks

Research, full-scale testing and code requirements continue to evolve for mid-rise construction. This presentation will focus on important engineering considerations related to the lateral design of mid-rise wood buildings. Implementation of a well-considered design requires understanding of diaphragm and shear wall flexibility and their effects on the horizontal distribution of loads through the structure. In mid-rise, multi-family buildings, corridor only shear walls are becoming popular as a way to eliminate exterior shear walls. The special design issues this situation creates will be addressed.

AFTERNOON SESSION 5:30 PM
Advancements in Force Transfer around Openings for Wood-Framed Shear Walls
Jared S. Hanley, PE, APA

A joint research project of APA – The Engineered Wood Association, University of British Columbia (UBC), and USDA Forest Products Laboratory was initiated in 2009 to examine the variations of walls with code-allowable openings. Test results from the (8’ x 12‘) full-scale wall configurations, in conjunction with the analytical results from a computer model developed by UBC, were used to develop and refine national design methodologies in accordance with the IBC. This presentation provides an update of that research with a focus on asymmetric piers and multiple openings. Rational design methodologies in accordance with the IBC will be shared.
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