



Tuesday, November 6, 2018
Vancouver Convention Centre – West

Presentation Outlines and Speaker Bios

1/ North American Wood Design Awards: A showcase of Wood Design Award winners from 2017-18

Marianne Berube, Executive Director, Ontario Wood WORKS!, North Bay, ON and Lynn Embury-Williams, Executive Director, Wood WORKS! BC, North Vancouver, BC

Description: Wood is an extraordinary building material. It is strong, lightweight and safe. It is durable, versatile and adaptable. It is also sustainable and, as new products and advancements in manufacturing continue to come on-line, the applications for wood products and building systems are almost unlimited. Through design innovation, architects and engineers can create larger wood buildings of diverse occupancies that meet or exceed the requirements for safety and performance. Yet wood is also an intimate, precious material well-suited to smaller projects and thoughtfully crafted installations. The best of all these buildings are showcased here. This presentation showcases award-winning projects from the Wood Design Award programs held across Canada and in the US in the past year, shining a light on wood design and building excellence in both structural and architectural applications.

Learning Outcomes: Discover new and innovative structural uses for wood from the award-winning projects; Discover new and innovative architectural uses for wood from the award-winning projects; Compare design characteristics of projects from various regions of Canada; Determine which award winning designs suit your geographical area.

Track/Seminar: T1/S1 **Theme:** Architectural/Design

Bio: Marianne Berube: Marianne lives and works in North Bay, Ontario. She graduated from Nipissing and York Universities with degrees in environmental science and business. She has extensive experience within the finance, construction and wood industries. Marianne sits on several boards and is currently chair of Nipissing University's Board of Governors.

Bio: Lynn Embury-Williams: Lynn is a Registered Professional Forester in the province of BC and has an MBA from the University of Western Ontario. She joined the Wood WORKS! BC program as executive director in 2014. Previously the director of marketing and business development at Canfor, Lynn has brought a wealth of experience and expertise in the areas of marketing and business development to Wood WORKS! BC. For six years, until the end of the program, Lynn chaired the NEWBuildS Forestry Network Program, whose primary goal was to advance scientific knowledge and construction technologies that will enable wood-based products to be used in mid-rise and non-residential construction. Lynn was a forester for Crestbrook and its predecessor companies in the East Kootenays during the early 1980's where she managed the largest private land holding in forests in BC.

2/ CLT classrooms: A pilot project in Washington State

Joe Mayo, AIA LEED AP Associate, Mahlum Architects Inc., Seattle, WA

Description: A pilot project in Washington State tests the use of CLT to design and construct three modular classroom buildings in Western Washington. Funded by the Washington State Legislature, the project investigated the viability of CLT as a means to build quality K-3 classrooms to accommodate increased population and new WA State education laws. By using CLT, the project team designed a building that could be deployed on almost any existing school site and be built over a summer break without impacting ongoing operations. Compared to traditional portable classrooms, the CLT classroom buildings are longer lasting, more functional, and aesthetically superior.

Learning Outcomes: Building a broad-based CLT coalition and the unified strategies for securing legislative state support and funding (\$5.5 mil USD); Architectural design and detailing strategies used to create an innovative learning environment by using CLT; Project scheduling, costing, construction and lessons learned through building the modern classrooms at these three schools; Utilizing a design-build delivery method.

Track/Seminar: T1/S2 & T5/S5 Theme: Architectural/Design

Bio: Joe Mayo: Joseph Mayo is an architect in Seattle at Mahlum and author of *Solid Wood: Mass Timber Architecture, Technology and Design*, the first book devoted solely to mass timber commercial buildings. He recently completed three CLT classroom buildings in Washington State, is currently designing modular CLT townhomes and is working with a broad coalition to allow taller mass timber buildings in Washington State.

3/ STGM Architectes Head Office + award-winning wood design projects: An example of achieving platinum LEED in Canada

Stéphan Langevin, Principal, STGM ARCHITECTES, Quebec City, QC

Description: Join us for a showcase of STGM's head office in Québec City. This light-frame building is the only private LEED platinum building in the province of Quebec. Using a virtual visit, Mr. Langevin will present the building's features such as wood structure principles, mechanicals systems, rain water management, natural light control, etc. Mr. Langevin will also present an overview of STGM wood project production such as the reconstruction of the Quebec Armoury, the Naskapi Hospital, the customs facilities of Lacolle and Armstrong, and some other projects using wood.

Learning Outcomes: Non-residential light-frame building's potential; Low budget high performance building; Quebec's wood construction; Rare presentation and images of the Québec's armoury reconstruction.

Track/Seminar: T1/S3 & T1/S5 Theme: Architectural/Design

Bio: Stéphan Langevin: Founded in 2001, STGM ARCHITECTES is one of Quebec's leading architecture firms, with an integrated team of over 115 architecture, engineering and interior design professionals. The diversity and complexity of its projects and the many awards and distinctions it has earned stand testimony to its outstanding work on both small and broad scope mandates.

4/ British Columbia Building Code 2018

Don Pedde, Senior Codes Administrator, Building and Safety Standards Branch, Office of Housing and Construction Standards, Ministry of Municipal Affairs and Housing, Government of BC, Victoria, BC

Description: Learn about the Province of BC's commitment to housing and how the Building and Safety Standards Branch develops the BC Building Code to support safe, affordable, and functional housing for all British Columbians. This session will provide an overview of the comprehensive evaluation and public consultation that helped inform the new requirements within the BC Building Code 2018. The presentation will include a summary of the new code requirements for accessibility, energy-efficiency standards, stairs, seismic, with a focus on mid-rise combustible construction.

Learning Outcomes: Building regulatory framework; Code development; Key code changes; New mid-rise wood requirements

Track/Seminar: T4/S1 & T1/S4 **Theme:** Codes, Standards and Building Performance

Bio: Don Pedde: Don Pedde is a senior codes administrator with the Building and Safety Standards Branch. Don has 33 years of experience in the building industry including work as a journeyman carpenter, as an architectural technician, and as a chief building official. He is a minister's appointee to the executive committee of the Building Officials' Association of BC.

5/ The creative process in Passive Houses - from idea to design to construction

Gernot Vallentin, Dipl. Ing. Architekt, Architektur-Werkstatt Vallentin GmbH, Germany

Description: The construction world is leaning towards sustainability; socially, environmentally and economically. Socially and economically, housing should be affordable and cost-effective for everyone. Environmentally, a building design should be focusing on building physics, materials and construction methods, as the Passive House Standard for example suggests. An emphasis should also be given to aesthetics, which can improve our living conditions. Gernot Vallentin will showcase examples of Passive House buildings all around the northern hemisphere and how using replenishable materials like timber in his designs positively influences the design process to construction and expands creativity.

Learning Outcomes: How sustainability positively influences the creative process; How can a Passive House be affordable and cost-effective; Why and how timber can be sustainably used.

Track/Seminar: T2/S1 & T1/S4 **Theme:** Sustainability/Passive House

Bio: Gernot Vallentin: Gernot Vallentin is an architect from Munich, Germany. Since 1993 his office has been working towards climate sensitive and energy-efficient buildings in Southern Germany, China, Korea and Estonia. Until today, daycare centers, schools, office buildings and commercial buildings have been developed and managed by him and his team, offering to their users a natural design and high quality living conditions.

6/ Wood Innovation Research Laboratory, an industrial Passive House

Dr. Guido Wimmers, Associate Professor, Chair of the Master of Engineering Program, University of Northern British Columbia, Prince George, BC

Description: The University of Northern British Columbia has built a new laboratory building to advance research in wood and timber design. This industrial-certified Passive House features a superstructure with glulam, very well-insulated truss walls and sets a new North American record in airtightness, even though a large dust extraction system and a bay door for semi-trucks was installed.

Learning Outcomes: Cost efficient PH design; PH for first timers; Air-tight construction; Lessons learned throughout project.

Track/Seminar: T2/S2 & T2/S5 **Theme:** Sustainability/Passive House

Bio: Dr. Guido Wimmers: Dr. Guido Wimmers holds a master's degree in architectural engineering and a Ph.D. in engineering science. Guido is one of the initiators of Canada's first Passive House, Canada's first CLT and DLT applications and has worked on sustainable projects across Canada. Since 2014 Guido has led the unique, 12-month, Master of Engineering program; an interdisciplinary approach of modern timber engineering with building physics, Passive House and "hands-on" experience.

7/ Office building with cross-laminated timber structure and Passive House energy performance

Graeme Verhulst, Founder and Principal, Waymark Architecture, Victoria, BC and Mike Marshall, Partner and CEO, Kinsol Timber Systems, Mill Bay, BC

Description: This will be a case study of the Charter Telecom Head Office, a four-storey, 15,000 square-foot project that will be the first office to meet the Passive House standard in Western Canada. This project also features a uniquely challenging and innovative engineered mass timber structure. Presenters will be the project's architect and the projects' timber specialist contractor. It is common that in a design process the work of different disciplines are siloed. This approach, especially in a Passive House building, risks cost and schedule overruns, or failure to meet the standard. In the Charter Telecom Building, the additional challenge of a complicated seismic design was added to the mix. The design decision to use a mass timber structure will be discussed, including its benefits for achieving the required seismic performance, mitigating thermal bridging, life cycle energy/carbon balance, and the benefits for the building's end users. The experience of working in an integrated and collaborative way between architects, engineers, and tradespeople will be discussed. The Charter Head Office building project broke ground in March 2018. By the time of this conference, the timber structure will be complete and construction lessons learned can be shared as part of the presentation.

Learning Outcomes: Building with mass timber; Innovative design in high seismic zones; Designing for life cycle.

Track/Seminar: T2/S3 **Theme:** Sustainability/Passive House

Bio: Graeme Verhulst: Graeme Verhulst is a founder and principal at Waymark Architecture. With the realization that to make change we have to build differently, Graeme decided to pursue a career in

architecture with the goal of improving people's relationships with our fellow humans and the environment through better buildings. He is a keen advocate for advanced building science and the need to move our new and existing buildings towards net zero and beyond.

Bio: Mike Marshall: Mike Marshall is partner and CEO at Kinsol Timber Systems, a specialized carpentry firm based on Vancouver Island, BC. Mike and his team collaborate with architects, engineers, and general contractors to develop and rationalize challenging and complex timber structures throughout North America and Asia. Their work ranges from remote access adventure infrastructure, to innovative and daring mass timber structures.

8/ Fire protection and NRC & BCIT-tested sound control solutions for the 2018 BCBC

Robert (Bob) Marshall, P. Eng., BDS, LEED AP, BD+C, Building Science Manager, CertainTeed SAINT-GOBAIN, Mississauga, ON

Description: Learn about firewall and fire separation system solutions that prevent the spread of fire and smoke while also providing Apparent Sound Transmission Class (ASTC) smart acoustics for healthy well-being. Both objectives are essential for occupant fire burn and smoke safety and sound control as required by the NBC, BCBC and City of Vancouver. Implementing smart solutions in Part 9 and Part 3 multi-unit mid-rise and tall buildings will result in sustainable habitat.

Learning Outcomes: Highlight fire safety and sound control requirements in codes between dwelling units and secondary suites; Understand the attributes required to achieve fire resistance and acoustic performance; Identify innovative acoustic building materials and assemblies that have been third-party tested by NRC and meet or exceed code STC and ASTC requirements.

Track/Seminar: T3/S1 Theme: Structural/Engineering/Seismic/Fire

Bio: Robert (Bob) Marshall: Bob has 40 years of experience as a building specialist. He is co-author of LEED Durable Building with Dr. Ray Cole. He's appointed to NRC's NECB Standing Committee, as an expert for ISO standards and understands litigation. He was retained by the BC Ministry of the Attorney General as an expert on the \$1.5B Leaky Condominium Class Action that was dismissed. His passion is to share code and building knowledge for sustainable habitat.

9/ Encapsulated Mass Timber: A new construction type for the 2020 NBC

Marc Alam, Technical Specialist - Fire, Codes & Standards, Canadian Wood Council, Ottawa, ON

Description: This seminar will discuss the fire-related national building and fire code changes related to a new construction type called Encapsulated Mass Timber Construction (EMTC) to be used for wood buildings up to twelve storeys. As well, it will provide an overview of ongoing fire research at the National Research Council of Canada into various performance aspects of mass timber construction and tall wood buildings.

Learning Outcomes: Proposed new construction type EMTC; Proposed new ULC encapsulation rating test; Proposed additions for EMTC in the 2020 NBC and NFC; Mass timber fire testing.

Track/Seminar: T3/S2 & T3/S4 Theme: Structural/Engineering/Seismic/Fire

Bio: Marc Alam: Marc Alam is a technical specialist in the fire division of the Canadian Wood Council. He contributes to CWC's building code and standards fire-related initiatives and the development of CWC's fire design tools, as well as code-related fire research projects.

10/ Mid-rise engineering considerations for engineered wood products

Jeff Olson, P.E., P.Eng., EWP Technical Services Manager, Boise Cascade Engineered Wood Products, White City, OR

Description: While many designers are familiar with engineered wood products such as I-joists and structural composite lumber, it is important to understand the structural requirements associated with each in order to achieve proper performance—especially in mid-rise construction. With an emphasis on products used in commercial and multi-family buildings, this presentation will cover engineered wood product acceptance, testing requirements, lateral design, and proper detailing.

Learning Outcomes: Testing requirements and acceptance of wood I-joists and structural composite lumber (SCL) products; Dimension stability in regards to moisture content changes and the differences between solid wood products; Lateral design, including information on I-joist diaphragm capacities and the detailing of rim board connections; Fire resistance design, including wood I-joist assembly requirements and SCL char rate equivalency to solid wood.

Track/Seminar: T3/S3 Theme: Structural/Engineering/Seismic/Fire

Bio: Jeff Olson: Currently the technical services manager for Boise Cascade, Engineered Wood Products Division. Licensed as a professional engineer in several western Canadian provinces and US states.

11/ Effective R-value calculator for walls: A free tool to demonstrate compliance with prescriptive wall provisions of the Vancouver Building By-law and BC Building Code

Robert Jonkman, Director Codes and Standards - Structural Engineering, Canadian Wood Council, Ottawa, ON

Description: The Canadian Wood Council's (CWC) interactive Effective R-value Calculator is a free tool to help designers comply with the prescriptive energy provisions in any code that references effective thermal insulation values, including the Vancouver Building By-law and the BC Building Code. The calculator enables designers to explore options, compare features, and determine a suitable wall assembly that can perform across a range of Canadian climates. This free online tool www.effectiver.ca provides effective R-values for wall assemblies and includes a durability assessment that considers computer modeling and field experience.

Learning Outcomes: The NECB and BCBC 9.36 have been in effect for a while in British Columbia, with prescriptive requirements for the effective insulation (Reff) values of walls; Calculating Reff using the isothermal planes method is the current accepted practise. You will learn exactly how to calculate the Reff of a wall using this method; Canadian Wood Council's free web-based Wall Thermal Calculator assists designers and builders in choosing code-compliant wall construction. You will learn how it works and how to use it to choose from over 350 unique walls; The durability of wall assemblies increases in

importance as wall airtightness is improved, and insulation levels increase. You will learn how the calculator provides guidance on the durability of walls.

Track/Seminar: T4/S3 & T3/S5 Theme: Codes, Standards and Building Performance

Bio: Robert Jonkman: Completing a Bachelor of Civil Engineering and management degree at McMaster University in Hamilton in 1994, Rob worked for one year at a structural engineering consulting firm and over nine years at Normerica Building Systems, a Canadian manufacturer of post-and-beam / timberframe buildings as the design and engineering supervisor. Rob joined the Canadian Wood Council's Codes and Standards division in September 2005 as manager of structural engineering. Concentrating on structural engineering, building science, and energy issues, Rob managed the ongoing development of the Woodworks® Engineering Software, participated on the Technical Research Committee of the Canadian Home Builder's Association, participated on building code committees (structural and energy) and is the secretary/associate for the Technical Committee on the Engineering Design in Wood (CSA O86) Standard.

12/ Acoustics of wood-frame buildings: All you need to know

André Rioux, Vice President, Sales and Development, AcoustiTECH a division of FINITEC CANADA, St. Lambert-de-Lauzon, QC

Description: This presentation defines building code requirements and outlines acoustic principles in addition to discussing efficient means of acoustic insulation using multiple floor/ceiling assemblies for light wood-frame and mass timber buildings. You will be able to hear the difference between different sound/acoustic ratings. This presentation will benefit any building and design professionals such as architects, designers, acoustic engineers, builders/developers and general contractors.

Learning Outcomes: Basic acoustic principles and definitions; Impact and airborne sounds in wood-frame buildings; Means of soundproofing wood-frame buildings; The do's and don'ts for acoustics in buildings (through case studies and examples).

Track/Seminar: T4/S2 Theme: Codes, Standards and Building Performance

Bio: André Rioux: Since the creation of AcoustiTECH in 2000, Andre has been traveling all over Canada, the United States and the UAE to make presentations to groups of architects, project managers, general contractors, flooring contractors and more. Andre's experience combined with the expertise of his team has resulted in AcoustiTECH being the number one reference in the field of acoustics for new and existing buildings. After over 15 years, Andre continues to enjoy meeting with professionals and collaborating in the success of their projects.

13/ Application of CLT in high-end custom homes and mixed-use residential buildings

Mehrdad Jahangiri, Partner, ASPECT Structural Engineers, and Allison DenToom, Project Engineer, ASPECT Structural Engineers, Vancouver, BC

Description: Follow our journey of introducing CLT into high end-custom homes and mixed-use residential projects in the Greater Vancouver Area. We'll explore the differences between light wood-frame and CLT construction from the design and detailing phase right through to the end of construction. You'll learn

how the coordination, supply, and installation processes differ from conventional light wood-frame projects and how our two examples were received by the design and construction teams.

Learning Outcomes: Design and detailing considerations; Coordination process with design team; Supply consideration; Response of the industry.

Track/Seminar: T5/S3 Theme: Contractors/Developers/Owners/Builders

Bio: Mehrdad Jahangiri: Mehrdad has over 25 years of international experience on notable, architecturally-oriented projects. His experience enables him to integrate European codes and practices with the North American market, creating new ways for architects and owners to reach their project aspirations. Mehrdad understands the challenge to create carefully detailed, yet efficient structural designs and provides exceptional service to achieve them.

Bio: Allison DenToom: Allison's expertise is with the design of high-end single-family residences and multi-family residential buildings. From cozy cabins to 30,000+ sf estates, she is well-versed in projects of all shapes, sizes, and materials. She is passionate about architecturally expressive structures and prides herself on providing the high level of attention that is required to create the finished project.

14/ Freeform structures in timber

Lucas Epp, P.Eng., Head of Engineering, StructureCraft Builders Inc., Abbotsford, BC

Description: While it is exciting to see the mass timber market exploding around North America, this session will explore more architecturally unique timber projects, which are challenging geometric, engineering, fabrication and construction boundaries. Projects highlighted will include long-span doubly curved roofs, a 100m clear span glulam gridshell dome, and free-form cladding structures. The case studies will focus on bringing these timber structures from an architectural vision, to practical reality through hands-on structural engineering, parametric geometry generation using tools like Grasshopper, and digital fabrication techniques.

Learning Outcomes: What are key constraints in timber design; Cost efficiencies of complex timber structures; Structural engineering techniques for complex timber structures; Formfinding and geometric optimization for freeform structures.

Track/Seminar: T4/S5 Theme: Codes, Standards and Building Performance

Bio: Lucas Epp: Lucas is a structural engineer with 10 years of experience working in Canada, the UK, and New Zealand. While in London he designed a range of projects and sculptures with world-class architects, and developed an expertise in complex geometry and challenging structures. Lucas leads the engineering department at StructureCraft where he has been involved in large-scale timber structures including the 2010 Vancouver Olympics Speed Skating Oval, and more recently as lead engineer for the T3 Minneapolis office building.

15/ Fire spread and mitigation measures in combustible mid-rise buildings

Keith Calder, M.Eng., P.Eng., Vice President, Technical Services, Jensen Hughes, Vancouver, BC

Description: The presentation will address common modes of fire spread in mid-rise buildings of combustible construction and the measures implemented into building codes to limit fire spread. The presentation will look at several case studies and quantify the impact of key mitigation measures that have been implemented into building codes following these fires.

Learning Outcomes: Knowledge of key fire spread modes and mechanisms in combustible mid-rise buildings; Knowledge of key building code requirements to limit fire spread; The importance of fire stopping and blocking; Methods to limit fire spread.

Track/Seminar: T5/S1 Theme: Contractors/Developers/Owners/Builders

Bio: Keith Calder, P.Eng., has almost 20 years' experience in fire engineering, fire modelling, building and fire code consulting and fire investigation. He has developed a vast knowledge of the application of current and historical building codes and has provided analysis and advice on the development of several wood initiatives.

16/ How Passive House principles will influence future wood-frame projects

Scott Kennedy, P.Eng, B.Arch, Principal, Cornerstone Architecture, Vancouver, BC

Description: The presentation will explore the influence of the following issues on design looking at Cornerstone's early and current Passive House projects. Topics will include; large vs. small buildings, compactness, thermal bridging details, window percentage, orientation, internal heat gains actual, climate change, need for cooling and primary energy targets.

Learning Outcomes: The need to make early design decisions with Passive House principles in mind; The effect of climate change in the Lower Mainland on energy models; The monitored performance of a local Passive House project; Lessons learned

Track/Seminar: T5/S2 & T5/S4 Theme: Contractors/Developers/Owners/Builders

Bio: Scott Kennedy: Scott is a principal of Cornerstone Architecture. He is a professional engineer with a degree from University of Alberta and holds a Bachelor of Architecture from UBC. Scott is past chair and a board member of Passive House Canada. Scott has committed Cornerstone Architecture to start the conversation about Passive House and its principles with each new client. The firm has currently has completed an 85 suite mixed use six-storey wood-frame Passive House in Vancouver, 19 suites in Smithers, and has numerous additional Passive House projects at various stages of development.

17/ HAUT: Building tall in timber

Do Janne Vermeulen, Architect, Director and Founding Partner, Team V Architecture, Amsterdam, The Netherlands

Description: Architect Do Janne Vermeulen (Team V Architecture) talks about HAUT, a 73-meter tall timber apartment building to be built in Amsterdam. After completion in 2018 it will be the tallest wooden building of The Netherlands and, depending on construction schedules, it is a contender for the title of

tallest timber tower in the world. How is a project like this initiated? How do you inspire developers and municipalities to invest in innovation? That is what Do Janne Vermeulen will talk about. She will tell you about the important role of the municipality of Amsterdam, who set out a tender with high ambitions on sustainability and environmental quality. She will also will elaborate on how Team V and Arup made a convincing design by involving a cost expert and doing thorough market research. HAUT's timber construction was chosen for its sustainable nature: over three million kilos of carbon dioxide will be stored in the cross-laminated timber panels. The application of CLT panels for its main structure and the experimental use of energy-generating facades make HAUT a prototype of sustainable and innovative architecture. On top of that, the wooden structure makes the building design very flexible, allowing first buyers to have many options in the design and lay out of their apartment. This makes the future residents' fellow-clients, creating more engagement with the project's goals.

Learning Outcomes: How to initiate an ambitious and innovative project like HAUT; How to design and engineer timber high-rise; Specific construction techniques; How to make use of the extreme layout flexibility of timber buildings to create custom made apartments.

Track/Seminar: LUNCHEON KEYNOTE **Theme:** Architectural/Design

Bio: Do Janne Vermeulen: Do Janne Vermeulen is architect-director and founding partner of Team V Architecture. She studied at the Bartlett School of Architecture (University College London). She finished her diploma in 2002 after internships at UN-studio and ANA-architecten and started work at Rick Mather Architects in London, where she worked on the design for the Virginia Museum of Fine Art in Richmond, USA. From 2005 until July 2013 she has been part of MVSA, as project architect and senior architect. Among other projects her main responsibilities have been the renovation of the Ministry of Finance, the new Kromhout Barracks in Utrecht and Haga Hospital in The Hague. As architect-director at Team V Do Janne carries the creative direction, which she shares with Jeroen van Schooten. She is responsible for the design of Congress Hotel and Residential Tower Overhoeks in Amsterdam, the renovation of the Main Building of TU Eindhoven and the timber residential tower Haut in Amsterdam. Besides her work as an architect, Do Janne taught at the Bartlett School of Architecture and joined the jury of several architecture awards, including the Dutch Concrete Prize, the BNA Next Step Program and the local jury of the RIBA International Prize.