PRESENTATION ABSTRACTS
2018 Toronto Wood Solutions Fair

Thursday, November 22, 2018
The International Centre (Conference Centre) | 6900 Airport Rd, Mississauga, ON L4V 1E8

Planning With Wood
By: Douglas Cardinal, Architect, O.C., Ph.D. (h.c.), B.Arch, O.A.A., A.A.A., S.A.A., A.I.B.C., A.I.A., NCARB, R.C.A.A., F.R.A.I.C., F.R.I.A.S., F.R.S.C., Blackfoot, Algonquin, Anishnaabe

Douglas Cardinal will share the way that the Indigenous people would approach planning through working with nature, including wood. Many years ago, Mr. Cardinal was asked to work with Oujebougoumou and Ross River First Nations to bring proper housing and planning to the communities. Over the years his design-approach has evolved using the latest engineered timber products.

How Innovation in Timber Construction has Transformed Contemporary British Architecture
By: Harbinder Singh Birdi, BA hons, B Arch, RIBA, Senior Partner, Hawkins\Brown Architects LLP

Harbinder will present several of the practice's projects - ranging from the housing sector to education, sports and leisure - where innovative, modern methods of timber construction have been used and wood serves as the primary construction material for these RIBA award winning projects. Harbinder will describe in detail the benefits of using timber both in terms of construction and sustainability.

The Arbour - The Growth of Tall Wood in Toronto
By: Carol Phillips, B.E.S., B.Arch. (U of Waterloo), OAA (BCDS), AIBC, NSAA, SCUP, LEED AP, FRAIC, Partner, Moriyama & Teshima Architects; Luigi Ferrara OAA, MRAIC, Hon. ACID O, ICSID Senator, Dean, Centre for Arts, Design & Information Technology, George Brown College; Tammy Cooks, Director, Real Estate, George Brown College

The synergies between the burgeoning mass timber industry and commitment to low carbon, smart development, and attention to resilience and innovation on the Toronto Waterfront provide fertile ground for disruptive design solutions. This presentation will focus on two aspects of the Arbour for George Brown College. Firstly, from the Client perspective, an exploration of the process involved in deciding to host an international design competition to meet a highly aspirational vision for a new type of learning environment. Secondly, from the Architect, an exploration of the winning solution and where the team is currently in approvals and development in the challenging intersection of mass timber, passive systems, higher occupancy assembly buildings and great spaces for learning. Learning Outcomes:

1. Learn the logistics of hosting an international design competition and the challenges and benefits to a project.
2. Learn the virtues, challenges and possible applications of a CLT based superstructure.
3. Develop an understanding of the overall design considerations and construction differences between a steel/concrete building and mass timber.
4. Understand the needs of assembly post-secondary buildings and how these needs are met or challenged in a mass timber solution.

System Connectors for Point Supported Flat Slabs and Building Physics Decoupled Cantilever Elements - Spider and Bridge Connectors

By: Roland Maderebner, Dipl.-Ing. Dr. techn., University of Innsbruck, Austria

SPIDER CONNECTOR: To realize point supported flat-slabs with Cross-Laminated-Timber like in concrete constructions, two main challenges have to be resolved. First, the stress concentration at the supporting points and second, the requirements on the panel joints of the CLT elements. The compression strength of wood perpendicular to the grain and the rolling shear stress reduce the load carrying capacity of CLT-elements under concentrated loads. In addition, due to the dimensions of the CLT-panels, it is necessary to produce a bending- and shear resistant panel joint. Methods to reinforce the material with self-drilling screws, which increase the resistance of compression strength perpendicular to the grain and the rolling shear strength are already well-known. However, these improvements are important, but not sufficient for a breakthrough of flat slabs in timber construction. With a new construction method, the Timber-Engineering Unit of the University of Innsbruck develops a Connector system, which allows building point supported flat slabs with a column grid between 5 to 7m.

BRIDGE CONNECTOR: The Bridge Connector is a system that enable a building physics optimized, flexible rigid decoupling of cantilevered components made of timber, especially cross-laminated timber. Therefore, it is on the one hand possible to guarantee a continuous airtight and heat-insulating level, and on the other hand, enable a temporally independent installation due to the solvability of the system connector. It is also possible to disassemble and recover damaged cantilever timber elements. With a completely new design and a sophisticated load dissipation, the bridge connector allows a completely new construction method in timber constructions. Experimental tests at the University Innsbruck confirm the load carrying capacity of the system.

Unlimited Versatility of Wood Construction

By: Lubor Trubka, Architect AIBC, FRAIC, Principal in Charge / Lead Design Architect, Lubor Trubka Associates Architects (LTA)

This project aims to stimulate the desire to design and build with wood by illustrating its potential in a selection of construction examples. Canada is home to more than 22,000 individuals educated and engaged in architectural endeavours (IBIS World, 2017) and over 34,000 civil engineers working in architectural engineering and related services (Engineers Canada, 2015). There are significant opportunities for wood in construction – it is Canada's most natural, renewable and readily available resource and its inherent limitations are only perceived. This presentation will encourage design professionals to use wood to its full potential and further advance current wood construction technologies.

North American Wood Design Awards: a Showcase of Wood Design Award Winners from 2017-18

By: Marianne Berube, Executive Director, Ontario Wood *WORKS!* and Lynn Embury-Williams, Executive Director, Wood *WORKS!* BC

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, systems, and advancements in manufacturing continue to come on-line, the applications for wood products 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.

This presentation showcases award-winning projects of every type from the Wood Design Award programs held across Canada and in the US in the past year, shining a light on wood design excellence in both structural and architectural applications.

Heavy Timber Budgeting
By: Andre Lema, Business Development, Western Archrib

Understanding the cost drivers in a heavy timber framing system can be simple and complicated. Glulam can be made into many different shapes and sizes and the cost implications can be missed. It can be difficult to understand why one system costs more than another. How much impact do coatings have on the overall package cost? When should one system be chosen over another? Understand the design choice implications before a tender closes. Use glulam to gain maximum exposure without stepping outside your budget. We will investigate the different options for connecting timber, material choices, and tools to choose the best system for the application.

Acoustics of wood-frame buildings: all you need to know
By: Cristian Wallace, Business Development & Specifications, AcoustiTECH

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 woodframe buildings; Means of soundproofing wood-frame buildings; The do's and don'ts for acoustics in buildings (through case studies and examples).

Learning objectives:
1. Define general acoustics principles
2. Demystify sound propagation of noise in different materials
3. Demystify sound insulation of floor/ceiling assemblies
4. Recognize the proper acoustic solution
5. Understand the difference between different sound/acoustic ratings

It Takes A Forest - Working Together to Engage the Hearts and Minds of Ontario's Public
By: Rob Keen, R.P.F., CEO, Forests Ontario

Public awareness and support are critical to the advancement of wood construction in Ontario. An improved understanding of the potential applications of wood, the benefits of wood compared to alternate building materials, and the sustainable management of our forest resources (as a local source of wood), can influence consumer behaviour and increase the acceptance of, or demand for, new standards and practices (i.e. social licence). Join Rob Keen, CEO of Forests Ontario as he discusses lessons learned and the next steps in the It Takes A Forest campaign – a collaborative initiative of over 40 organizations designed to engage the hearts and minds of Ontario's public on key topics related to the province's forest management standards and the use of wood products.

Audience members will learn how to engage the public and key stakeholders in a meaningful manner, how to develop effective communication materials, and the role we can all play in ongoing awareness initiatives in the province. Participants will also obtain an understanding of Ontario's world leading

forest management standards – a key component in providing public assurance around the broader sustainability of building with wood.

Timber Office Buildings: Everything Old is New Again
By: Cory Zurell, PhD, P. Eng., Principal, Blackwell Structural Engineers

Century-old brick and beam industrial buildings are highly sought after as modern commercial office real estate, and in many markets they have largely all been converted. New versions of the old brick and beam vernacular are being pursued as an attractive and economical form of Class A office space and are highly desirable among progressive employers, especially in the technology start-up sector. Different framing options are available, from the way it used to be done 100 years ago, to new hybrid systems. Opportunities and constraints of timber framing systems for offices will be discussed, as will strategy to address issues presented by current building codes.

Fasteners for Mass Timber - Systems, Characteristics and Behaviour
By: Max Closen Dipl. Ing (FH), MASc, Technical Advisor, MyTiCon Timber Connectors Inc.

This presentation provides a technical review of fastening technology used in Mass Timber Construction. We will cover detailing options for self-tapping screws, beam hangers and material handling devices with the resulting performances and characteristics. Connection strength, stiffness, ductility and reinforcing effects will also be covered, as it relates to timber fasteners.

Bracing for Climate Change – Lessons Learned About Building for High Wind Resistance
By: Cory McCambridge, Engineered Wood Specialist, APA - The Engineered Wood Association

This session will discuss structural failures observed during storm damage assessments as well as cost-effective above-code recommendations that contribute to improved overall performance in the structural shell of a building. These recommendations focus on good connection details to tie together exterior walls, roofs, and floors and can help builders cost effectively build a safer structure. By understanding how wind affects a structure and how good design and construction practices can improve the storm resistance of a home's structural shell, home damage in future storms can be minimized.

Learning Objectives:
1. Recognize the fundamental behavior of wood structures especially as it pertains to lateral loads from high wind events.
2. Identify common failure modes using photographs from post-disaster evaluations.
3. Understand construction methods that can reduce damage during high wind events.
4. Understand the importance of a complete load path when designing and building for resiliency.

Effective R value calculator for walls: A free tool to demonstrate compliance with prescriptive wall provisions of OBC's SB-12
By: Robert Jonkman, P.Eng. Director Codes and Standards - Structural Engineering, CWC

Learning Objectives:

1. Canadian Wood Council's free web-based EffectiveR wall thermal calculator (www.effectiveR.ca) assists designers and builders in choosing code-compliant wall construction. You will learn about the over 2000 combinations of walls, how the calculator works, and how to use it to demonstrate code compliance.

2. 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 based on 5 cities in Canada, representing 5 climatic conditions.
3. You will learn about wall assemblies that comply with OBC SB12 compliance packages.
4. You will learn why it's important to use wood sheathing on your wall assembly

The Dunrobin Tornado: Lessons learned for wood frame construction
By: Ghasan Doudak, Ph.D., P.Eng., Associate Professor, Civil Engineering, University of Ottawa and Robert J. Jonkman, P.Eng. Director Codes and Standards - Structural Engineering, Canadian Wood Council

Can wood frame buildings be designed to withstand high wind loads such as those experienced during a tornado? This seminar presents the lessons learned after a site visit to the hardest hit EF3 tornado zone in Dunrobin, Ontario. Participants will learn:

- how a continuous load path from the roof to the foundation is essential in order for houses to withstand high winds;
- how typical construction methods can be tweaked, for a nominal cost, to improve the performance of wood frame construction under high wind loads; and
- key differences between designing for lateral wind loads and lateral seismic loads.

Encapsulated Mass Timber: a new construction type for the 2020 NBC
By: Marc Alam, B.Eng., E.I.T. – Technical Specialist – Fire, Canadian Wood Council

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.

Innovations in Residential Construction Using Advanced Gypsum Products
By: Bob Hartogsveld, Architectural Solutions Manager, CertainTeed

In this session, Bob Hartogsveld will present the different types of gypsum board and their various uses in residential construction. Fire resistance and acoustic performance will form the core of the session, including a review of the fire performance and sound testing results for several assemblies.

Philip J. Currie Dinosaur Museum: Pre-fabricated Construction and Mass Customization in Wood
By: Martin Baron, B.E.S., B. Arch., LEED AP, MRAIC, AIBC, OAA, Partner, Teeple Architect

Teeple Architects is exploring strategies of highly collaborative working methods and the innovative use of digital technology to bridge the gap that exists between design and construction. The Philip J. Currie Dinosaur Museum represents a major stepping stone for the firm in marrying manufacturing to construction through the use 3D technology and digital fabrication to achieve mass-customization and pre-fabrication. In this seminar, Teeple Architects will outline their workflow to produce a first-in-the-world digitally fabricated wood structural elements and demonstrate why wood construction is uniquely suited to digital fabrication and mass customization.