Ontario’s Mass Timber Buildings Program

April 12, 2018
Background

• Ontario is positioning itself as a lead jurisdiction in climate change mitigation.

• The Climate Change Mitigation and Low-carbon Economy Act passed in May 2016, followed by the Climate Change Action Plan (CCAP).

• Approximately 22% of all GHG emissions came from the province’s building sector in 2014.

• MNRF, MMA, and MRIS collaborated and received TB approval for a Mass Timber Buildings Research and Demonstration Program.
What is Mass Timber?

Glue laminated timber (glulam)

Cross laminated timber
CLT

Brock Commons at UBC

Nail laminated timber
NLT
New Wood Buildings

10 Storey Forté in Melbourne

7 Storey T3 in Minneapolis
Benefits

Mass Timber Buildings:

- Fire performance comparable to concrete & steel
- Carbon storage
- Cheaper, quicker, and quieter to construct
- Urban densification and affordable housing
- Clean-tech building innovation
- Light weight, strong, natural beauty
- Job and industry opportunities
- Supports the forestry sector
Timeline

Pre 1941 - Tall Wood Buildings

1941 National Building Code

2009 BC Wood First/Mid-Rise

2013 Federal Tall Wood Demo

2015 Ontario Building Code Mid-Rise

2016 Climate Change Action Plan - Mass Timber Buildings program

2016/17 - Tall Wood Building Reference

2020 NBCC tall wood buildings 12 storeys
The Three Pillars

- The Mass Timber program is a four-year program and includes three key objectives:
  1. Encouraging design and construction of tall wood buildings in Ontario.
  2. Providing specialized training on mass timber construction.
  3. Supporting research and development of the next generation of mass timber building systems.

1. Tall Wood Demonstration Projects

- Funding is available for incremental costs associated with the additional design, approval and construction required to construct tall wood buildings over traditional methods.

- MNRF collaborated with NRCan and its Green Construction through Wood Program (GCWood) to allow for a common application process. The expression of interest for tall wood demonstrations closed December 6, 2017 and Ontario received five projects.

- These projects underwent an evaluation process with a panel of industry experts and all were approved to receive funding, however, one project has changed its design and no longer qualifies for funding.

- The approved demonstration projects include: two academic training buildings in Toronto, an office space building in Toronto, and a residential condominium building in North Bay, Ontario.
2. Skills Development & Training

MNRF has partnered with:

• The College of Carpenters and Allied Trades and the Carpenters Union to develop and deliver a training module to tradespeople in innovative mass timber building systems and connection systems.

• Design Build Research in Vancouver to deliver Timber Online Education (TOE), a virtual platform to support a global community of experts to promote continuing education for the various aspects of timber construction.

• University of Toronto and George Brown College to establish a Mass Timber Institute (MTI) for training and research in Ontario. MTI is a collaborative venture between various partners including Lakehead University, Laurentian University, University of Ottawa and FPInnovations.

• The Canadian Wood Council to help support training for existing professionals and others in the construction industry and regulators on the best uses of mass timber building systems
3. Mass Timber Research & Innovation

- Encouraging development and production of next generation mass timber building systems and support research that helps enable the adoption of mass timber building systems in the 2020 and 2025 National and Ontario Building Codes (OBC).

- Supporting extensive research in Ontario will leverage results of full scale fire, seismic, durability, acoustic and vibration tests conducted internationally by researchers and engineers.

MNRF Partnerships include:
- Centre for Research and Innovation in the Bio-economy (CRIBE) to encourage innovative and commercially available building solutions.
- National Research Council to develop a technical testing guide for CLT connectors and fasteners, and to test the climate change resilience of mass timber building systems.
- FPInnovations to work with industry in applying Ontario’s Tall Wood Building Reference for the design and construction of mass timber buildings and to research several mass timber building products.
Ontario’s Tall Wood Building Reference

• Ontario’s Building Code does not currently contain standards for wood buildings over six stories.
  – Wood buildings over six stories can be constructed using an alternative solution, which means it achieves the same level of performance required under 1.2.1.1 Division A in the Building Code.

• The development of the Reference is in MNRF’s 2016 mandate letter.

• MNRF recognizes benefits of tall wood construction & seeks to provide information to construction stakeholders.

• Worked with numerous stakeholders including architects, designers, fire officials, government, researchers, etc.

• Download a copy of the Reference at: www.ontario.ca/page/building-with-wood
Key Elements of the Tall Wood Building Reference

• The Reference consists of two main sections: fire safety and structural design.

• It provides detail on aspects of compliance, methods of analysis, methods of design and the expected performances for a number of areas including, but not limited to:
  – max building area (area per floor)
  – sprinklers
  – floor assembly
  – stairwell construction
  – elevator shaft construction

• It also provides a clear narrative to explain the Alternative solutions process in OBC.

• The Tall Wood Building Reference builds on MMA’s guideline on Fire Safety During Construction of Five and Six Storey Wood Building in Ontario.
Other Planned Tools in our Toolkit

• The demonstration program will facilitate the key objectives of the program by providing a ‘building tool kit’ that will include:
  – The Ontario Wood Bridge Reference Guide
  – Lifecycle Carbon Calculator
  – Ontario Wood Charter
  – Additional research (i.e. technical guides)
Thank you!

Please visit our website at:

www.ontario.ca/page/building-with-wood

Questions?