AVISON YOUNG

IMAGE SOURCE: HINES

FACT SHEET

Mass Timber Construction in the Greater Toronto Area

The Greater Toronto Area (GTA) – particularly the City of Toronto – has recorded an uptick in the number of proposals for commercial buildings to be built using mass timber construction, spurred by advancements in wood product technology and construction systems. The advantages offered by this type of construction, together with evolving legislation and government incentive programs, are giving a boost to the popularity of mass timber construction in Toronto and across Canada.

Mass timber products are made using adhesives or fasteners to assemble dimensional lumber, wood veneers, strands or fibres into larger elements such as columns, beams, and floor or wall panels. These products include cross-laminated timber (CLT), nailed-laminated timber (NLT), glued-laminated timber (GLT), laminated strand lumber (LSL), laminated veneer lumber (LVL) and structural composite lumber (SCL).

NOTABLE PROJECTS PROPOSED OR UNDER CONSTRUCTION

6

TOTAL SQUARE FOOTAGE

4 million sf

STOREYS PERMITTED

4 ➡ 6 ⇨ 14

PRODUCT TYPES

CLT, NLT, GLT, LSL, LVL, SCL

CARBON SEQUESTRATION

220 kg/m^3

FIRE SAFETY

>= Concrete & Steel Buildings

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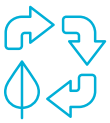
Advantages of Mass Timber Construction

Mass timber construction can offer advantages for developers and tenants, as well as benefiting the environment.

Pre-fabrication of structural components off-site in a factory results in **more efficient assembly at the construction site** – saving time and money and reducing waste. The process also mitigates construction noise and mess affecting nearby residents and businesses. In addition, labour costs can be lower as workers do not require the same specialized training needed for steel buildings.

For building occupants, there may be **psychological benefits** to being surrounded by wood in the workplace – the warmth and texture of wood appeal to humans on a deep level.



Mass timber offers **environmental benefits**. Wood is a renewable resource and a carbon sink, capturing carbon dioxide from the atmosphere as it grows and trapping it (every cubic metre sequesters 220 kg of carbon). Wood also offers much better insulation performance than concrete or steel, meaning less energy is required for heating and cooling.

Greater efficiency and reduced waste result in a **smaller carbon footprint** during the construction process. For example, a nine-storey apartment building constructed in London stores an estimated 186 tons of carbon while the steel and concrete for a similar, conventionally built tower would have generated 125 tons of carbon dioxide during production – a net difference of 311 tons.

Why Mass Timber is Trending in the GTA

Wood is enjoying a revival around the world as a structural material for taller buildings. "Wood is the new concrete," says Alex de Rijke, a partner in London-based architecture firm dRMM with extensive experience in mass-timber design. "Concrete is a 20th-century material. Steel is a 19th-century material. Wood is a 21st-century material."

In Toronto, the increase in development proposals involving mass timber buildings is being driven by several factors, including tenant demand for scarce brick-and-beam spaces, economic and environmental considerations on the part of developers, and changes to government legislation and incentives that are intended to encourage the construction of taller buildings using wood and other innovations that will benefit Canada's forestry sector.

The Province of Ontario amended its building code regulations in 2015 to raise the maximum height of wood-frame buildings from four storeys to six. This limit is expected to rise further as legislation has been proposed which would revise the Ontario Building Code to allow timber buildings up to 14 storeys without the additional approvals process currently in place for buildings above six storeys. In July 2019, the provincial government announced it will invest nearly $5 million in a new CLT plant to be constructed by mass-timber design-build firm Element5 in St. Thomas, ON. The $32-million, fully automated facility – set to open in August 2020 and create 60 new jobs – will be one of the first of its kind in North America and will produce CLT for use in projects throughout Canada and the U.S.

The Federal government, meanwhile, launched the Green Construction Through Wood (GCWood) program in 2017 to "support projects and activities that increase the use of wood as a green building material". The program covers infrastructure projects, low-rise non-residential buildings and tall buildings – and also aims to facilitate proposed revisions to Canada's national building code to permit taller wood buildings across the country. The program's purpose is to give developers an incentive to be one of the first to build with mass timber, and to provide support in the form of knowledge and tools for future development.

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Notable Projects in the GTA

T3 BAYSIDE

Phase I - 220,000 sf office building (10 storeys) - preleasing - Hines

80 ATLANTIC AVE.

80,000 sf office building (5 storeys) - under construction for Q3 2019 delivery - Hullmark

77 WADE AVE.

127,000 sf office building (7 storeys) - preleasing - Fiera Properties

SIDEWALK LABS

CREDIT: PICTURE PLANE FOR HEATHERWICK STUDIO

3,300,000 sf of Mixed-use (12 acres) - proposal - Sidewalk Labs (Alphabet Inc.) & Waterfront Toronto

U OF T ACADEMIC WOOD TOWER

128,790 sf institutional building (14 storeys) - proposal - University of Toronto

TRCA HEADQUARTERS - 5 SHOREHAM DR.

87,187 sf institutional office building (4 storeys) - pre-construction - Toronto Region Conservation Authority

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What about fires?

Naturally, fire is an important concern with wood buildings. However, large structural components made of mass timber can actually outperform steel in the event of a fire. The thick wood chars on the outside, sealing the inside from the flames. By comparison, steel beams can soften, bend or even melt in a fire. In terms of safety for occupants, the foundations, fire exit stairwells and elevator shafts of mass timber buildings are made of concrete, as in other tall buildings.

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