

2013 Wood Design Awards - Project Fact Sheet

North Vancouver City Hall

Location: North Vancouver, BC

Height	Size		Completion	Construction Budget
2	38,000	3,530	2012-07	\$10,000,000
<i>Storeys</i>	<i>sq ft</i>	<i>sq M</i>	<i>Date</i>	<i>\$ Cdn</i>

Project Description:

INTRODUCTION: This project expanded the existing North Vancouver City Hall into a vacated library structure with a new bridging atrium. The innovative, mass timber atrium roof structure, is built of cross laminations of large format Laminated Strand Lumber (LSL) panels; a first of its kind solution spanning 32' and interlocking to make a 220' long atrium. Although typically relegated to small scale hidden conditions in light wood frame construction, LSL panels for City Hall were pre-fabricated, erected on site and left exposed as the main interior; a strong example of how mass timber structures can offer low energy, rapidly renewable and carbon sequestering structural solutions in an elegant honest design.

INNOVATION & ENHANCEMENT: Concrete represents 8% of global man made carbon dioxide emissions; steel represents over 4% of world energy use. Both materials represent a significant challenge to building sustainably given their high energy and greenhouse gas footprints, but few alternative materials have been available to architects over the last century for large buildings; until now. Our team have been champions for a movement in the architectural industry to seek large format mass timber construction alternatives that are competitive with steel and concrete structures.

The City Hall project was a stepping stone in our work which began with the introduction of The Case for Tall Wood Buildings; a project that has seen enormous global interest since its publication in early 2012. Wood's low energy footprint and its ability to sequester carbon make it the best sustainable structural choice for larger buildings available to architects today (as long as the wood is sourced from sustainable forest practice) and yet the options and innovations in wood remain incredibly limited. New engineered wood products have begun to bring new possibilities for mass timber construction and have opened the door to new structural and architectural innovations that are more sustainable and, we would argue, exceptionally beautiful.

The design for the North Vancouver City Hall is a very important introduction in the innovative use of mass timber panels. Cross Laminated Timber panels (CLT) were becoming increasingly available in central Europe and were just beginning to be available in Canada when the design team started the project. Other mass timber products (laminated strand lumber LSL and laminated veneer lumber LVL) were not generally being considered as competitive products to CLT and had seen little innovative use to date. We selected LSL for the project to demonstrate that many panel products are available to designers if we step outside the conventions of the industry. We also realized that to use these products meant working more closely with industry and product developers than might be typical for a project of this kind. Our goal was to create a beautiful practical space with a structure that The result of the design teams work and the success of the North Vancouver City Hall project was to reshape the manufacturers (Weyerhaeuser and Louisiana Pacific primarily) perception of their own products. Although they were hesitant to sell their projects in this large format at the outset, today they are more than happy to seek increasingly larger projects and build increasingly taller and longer span buildings that will capitalize on the City Hall ideas. Effectively, the project helped open a new market with these products and do so with a strong sustainable agenda.

In the end, the wood in the building sequesters roughly 230 metric tonnes of carbon dioxide instead of creating greenhouse gas emissions with a steel or concrete structure. Our choice to use LSL was one of creating a broader market for rapid growth engineered wood products. While CLT is made of 40 year old (or older) trees, LSL is made of aspen, maple or poplar and can use very young trees of 10-15 years old.

Although glue technologies need to continue evolving to improve sustainable characteristics of the product, the benefit of these fast growth products is clear. By exposing the LSL we wanted to showcase the beauty of a material usually relegated to be hidden behind drywall and highlight how "pioneer trees", those found under power lines or along the side of the road ready for clearing, have great potential to create beautiful sustainable architecture.

Ultimately the design shows how materials grown by the sun are still in the early adoption stages of a new era of architecture that considers climate change and embodied energy in the structures of large institutional and commercial buildings.

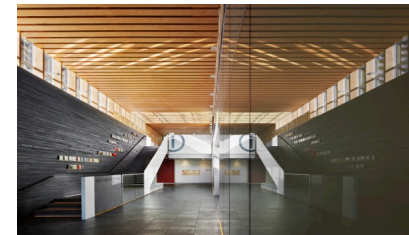
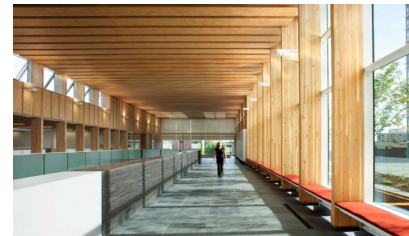
IMPLICATIONS & IMPACT

The architectural team introduced this innovative structural alternative and worked through the details with our engineers to find a solution that would ultimately be repeatable and fit within our ambition to build increasingly taller wood buildings. The team leveraged the knowledge we developed from the City Hall roof assembly to form the basis of what we believe will be a construction revolution in tall wood building technology. During the construction of City Hall we were able to concurrently

Where the Wood Was Used:

Primary Structural System	Columns, Beams & Braces	y
	Floor Structure	y
	Exterior Walls	y
	Foundation	
	Shear Walls	y
	Bearing Walls	y
	Fire Walls	y
	Roof Structure (inc. columns and braces)	y
Secondary Structure	Stairway & Elevator Shafts	
	Convenience Stairs	
	Entrances & Canopies	y
	Fire Separations	
	Enclosures for Mechanical Equipment	y

Project Images



Architectural	Partitions (interior)	y
	Exterior Curtain Walls	y
	Ceilings	y
	Exterior Cladding	y
	Parapets	
	Ceiling Bulkheads	y
	Flooring	
	Doors	y
	Windows	
	Skylights	
	Trim, Paneling & Features	y
	Millwork	y
	Wall and Corner Guards	
	Other Architectural Woodwork	y
	Hard Landscaping & Structures	y
Perimeter Fencing	y	

Building Project Team Members:

MGA	
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GHL Consultants	
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AME Group	

Recollective	
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