

Hybrid Timber Tower, Toronto: Achieving 105 Stories and Long Spans via Steel Cables and Cages

Craig Applegath
Founding Partner, DIALOG



**CTBUH 2022
Steel-Timber Conference**

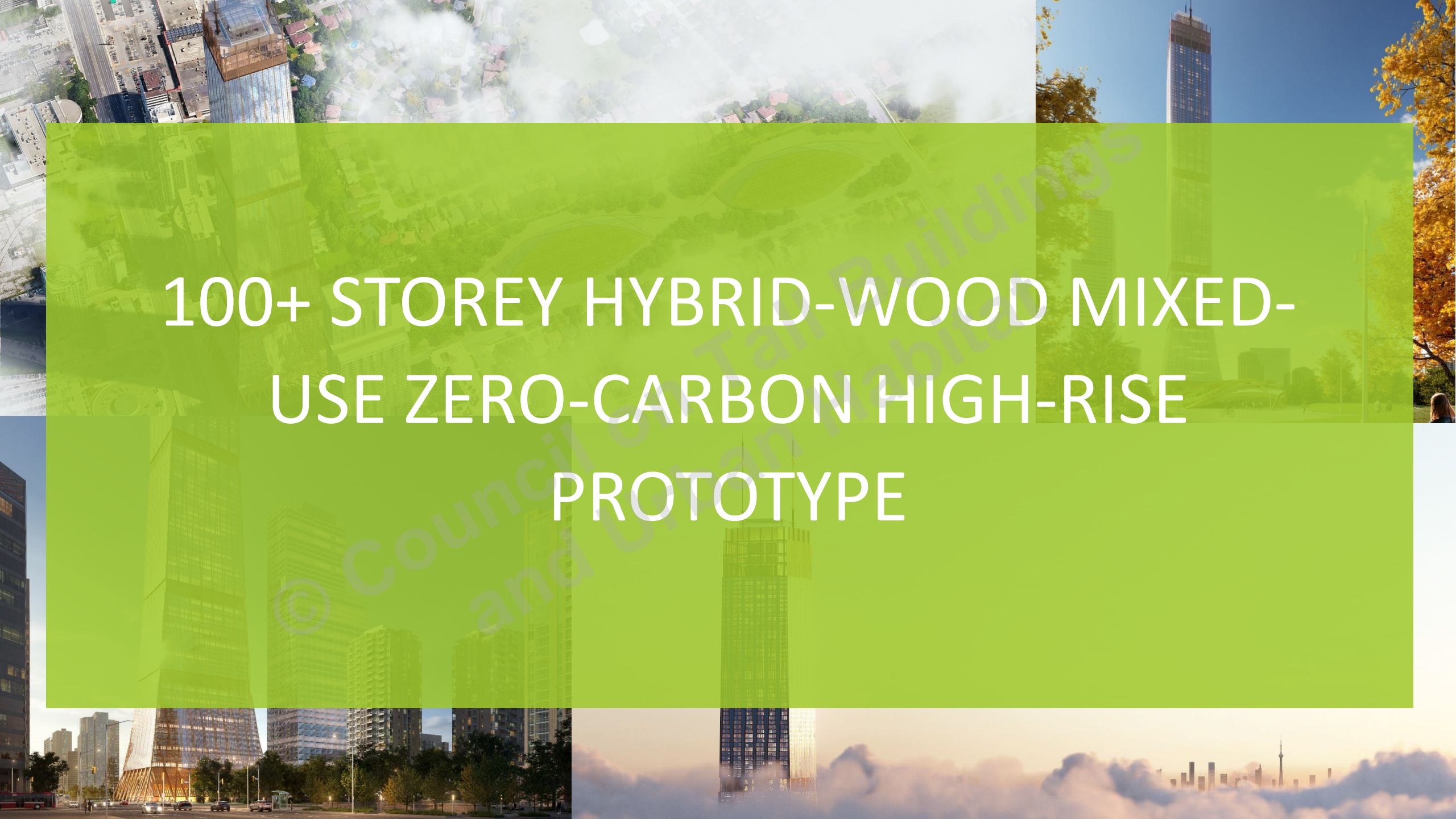


HYBRID TIMBER SUPERTALL: SCALING UP THE AMBITION OF MASS TIMBER

CTBUH HYBRID WORKSHOP CONFERENCE
MAY 24th, 2022

Presented by: Craig Applegath
Thomas Wu
Daria Khachi



The background of the slide is a collage of images related to urban development and sustainability. At the top left, there's an aerial view of a city street with buildings and trees. To the right, a tall skyscraper is visible against a blue sky. The bottom left shows a modern building with a distinctive wooden facade. The bottom right features a city skyline at sunset or sunrise, with clouds and a prominent tower. A large, semi-transparent green rectangle covers the center of the slide, containing the main text. A faint, diagonal watermark reading 'Council and Urban Buildings' is visible across the green area.

100+ STOREY HYBRID-WOOD MIXED- USE ZERO-CARBON HIGH-RISE PROTOTYPE

100+ STOREY **HYBRID-WOOD** MIXED-USE ZERO CARBON HIGH-RISE PROTOTYPE

*“How can we design a mixed-use high-rise building using wood, steel, concrete and other advanced materials **that maximizes the overall use of sustainably harvested wood by volume** in high-rise construction in the most cost efficient, energy efficient, low carbon, and elegant manner, that is also conducive to human wellbeing, and the wellbeing of the environment?”*

JANUARY 10, 2018

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The logo for RDH, featuring the letters 'R', 'D', and 'H' in a stylized font. The 'R' is blue, the 'D' is green, and the 'H' is orange, all set against a white background.





© Dialog on Tall Buildings
Urban Habitat



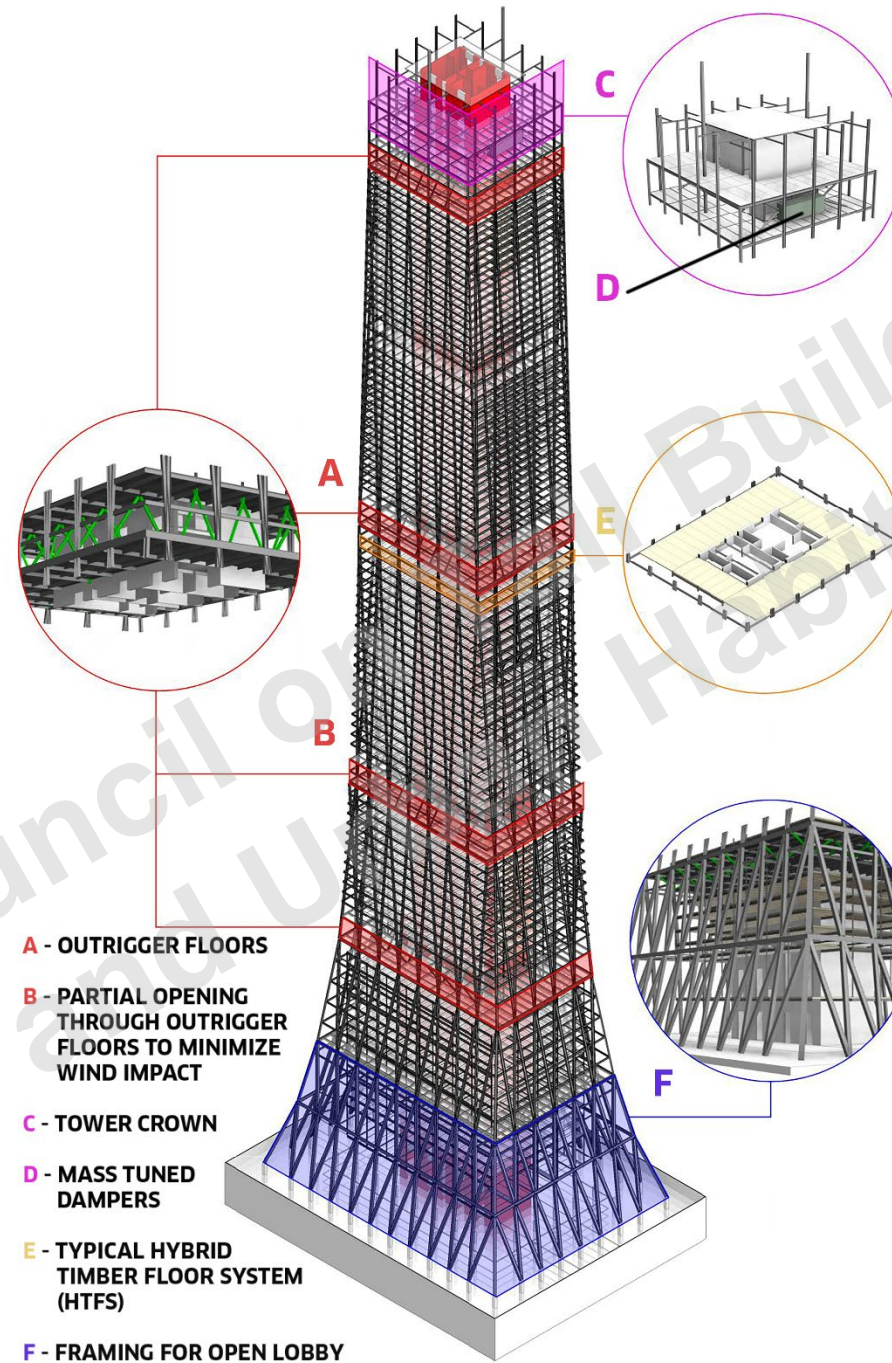


HYBRID STRUCTURAL DESIGN

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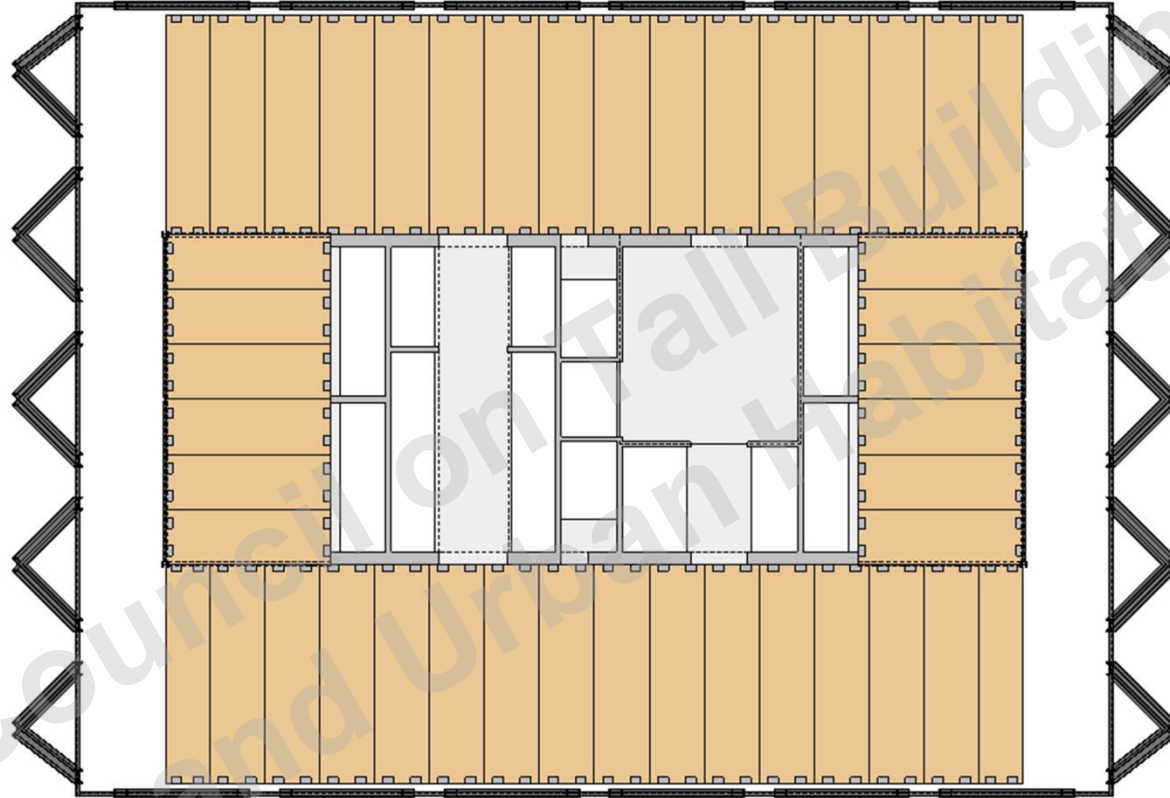
Structural Concept

Hybrid Timber Panel System



Structural Concept

Hybrid Timber Panel System



HTFS Panel Arrangement

Structural Concept

Hybrid Timber Panel System



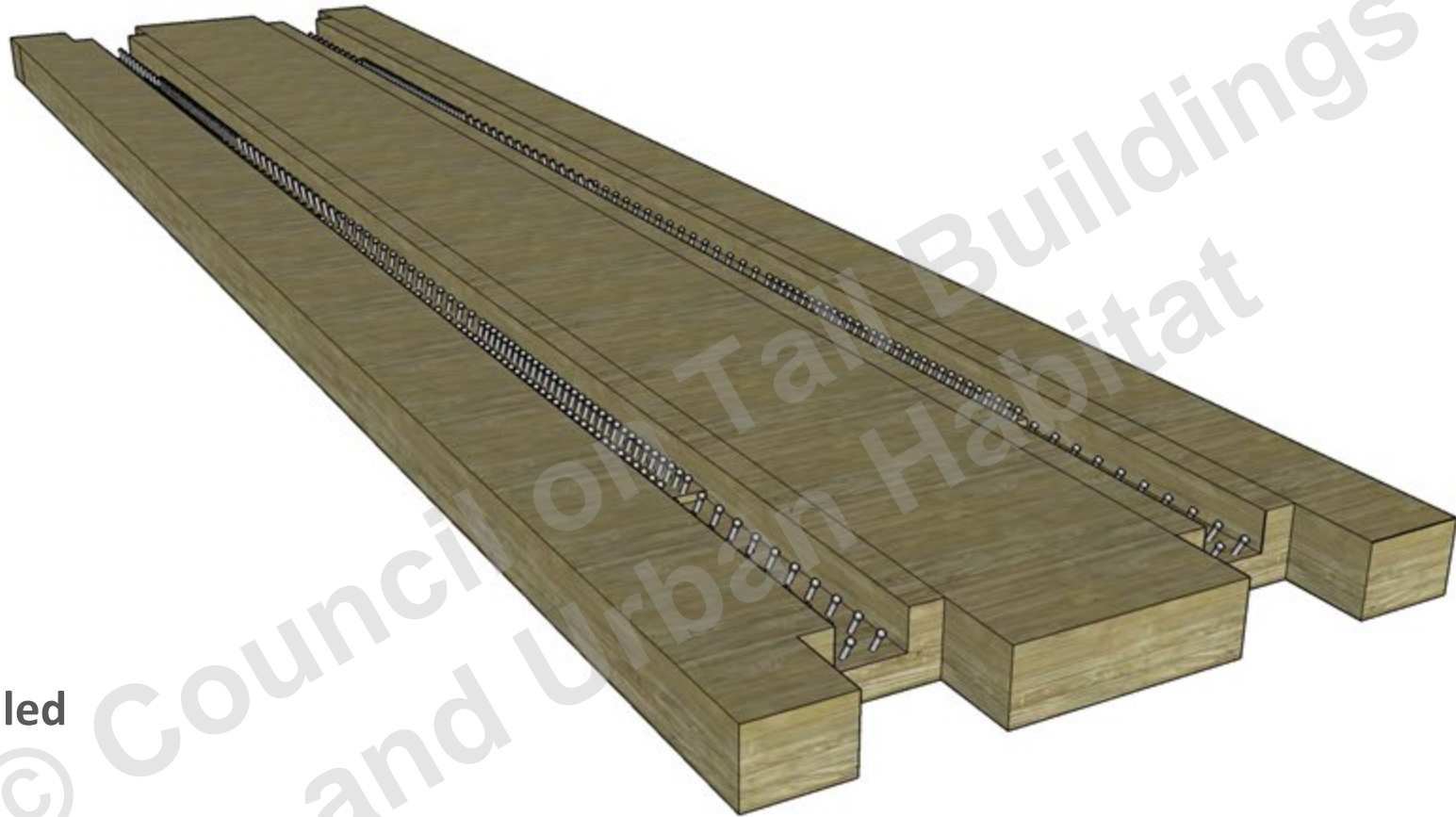
CLT arrive at plant

CNC'd in advance

Procured from domestic supplier

Structural Concept

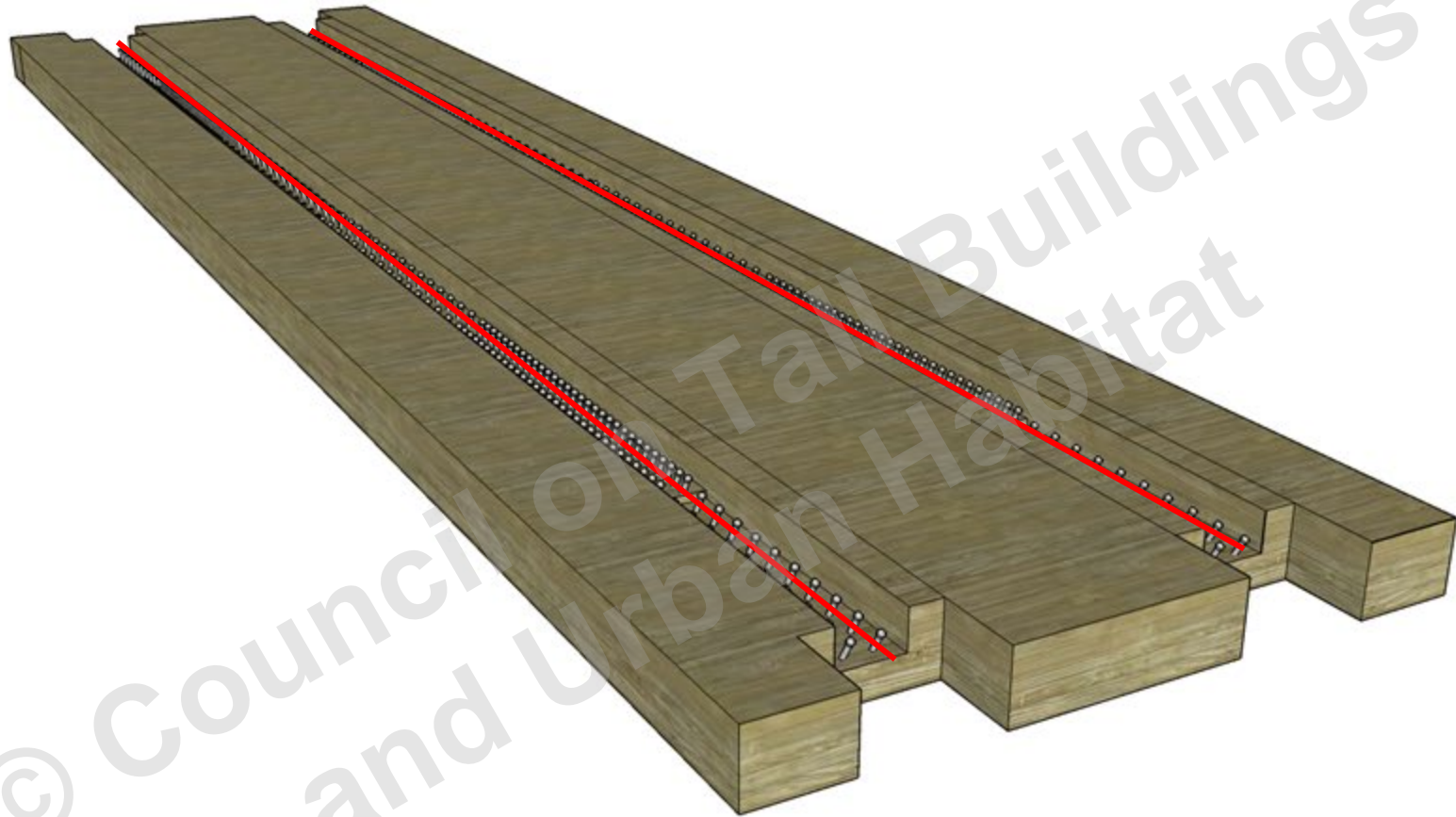
Hybrid Timber Panel System



Screws, cages installed

Structural Concept

Hybrid Timber Panel System



PT ducts installed

Structural Concept

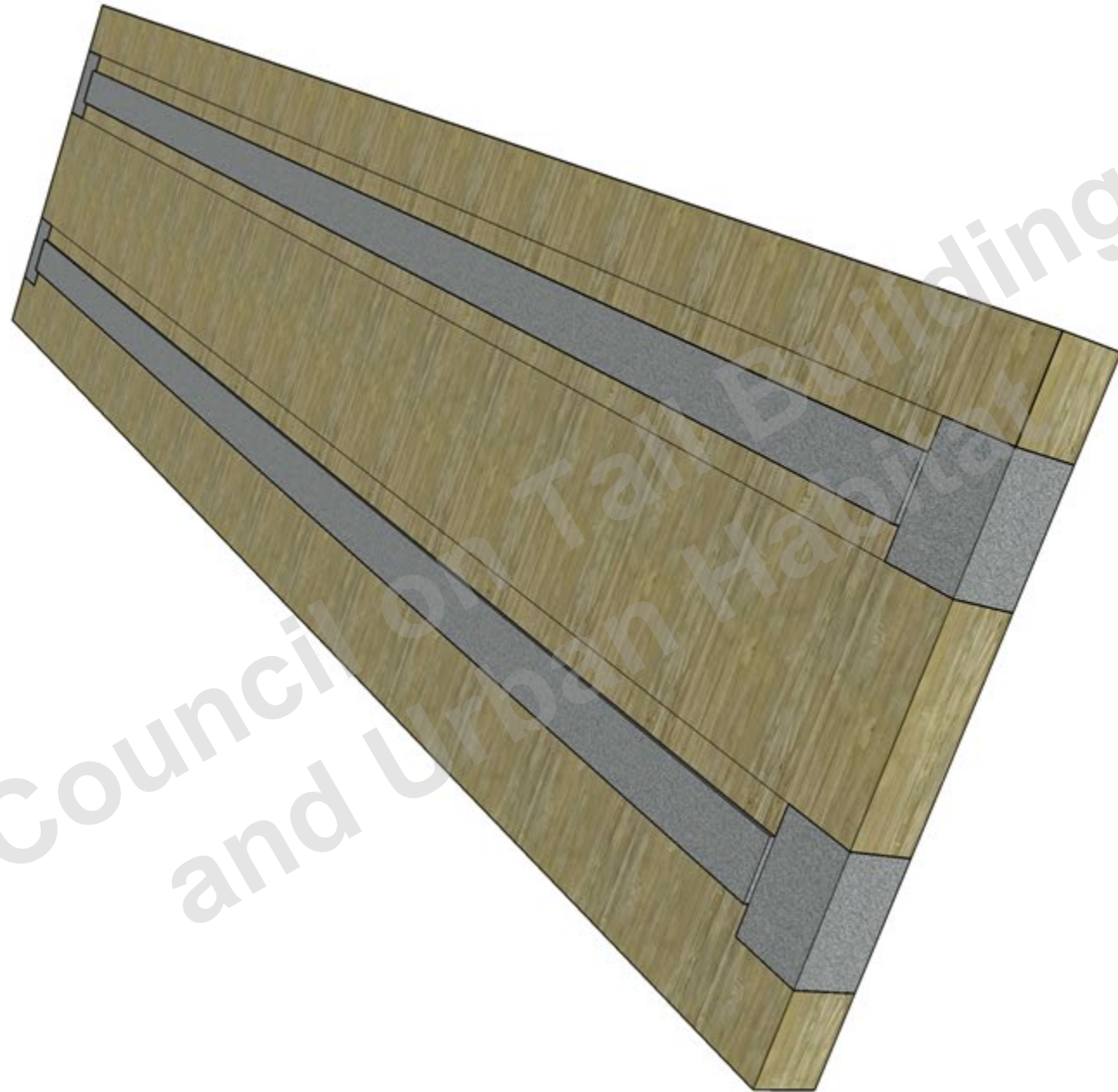
Hybrid Timber Panel System



Concrete cast in plant

Structural Concept

Hybrid Timber Panel System



Panels flipped

Structural Concept

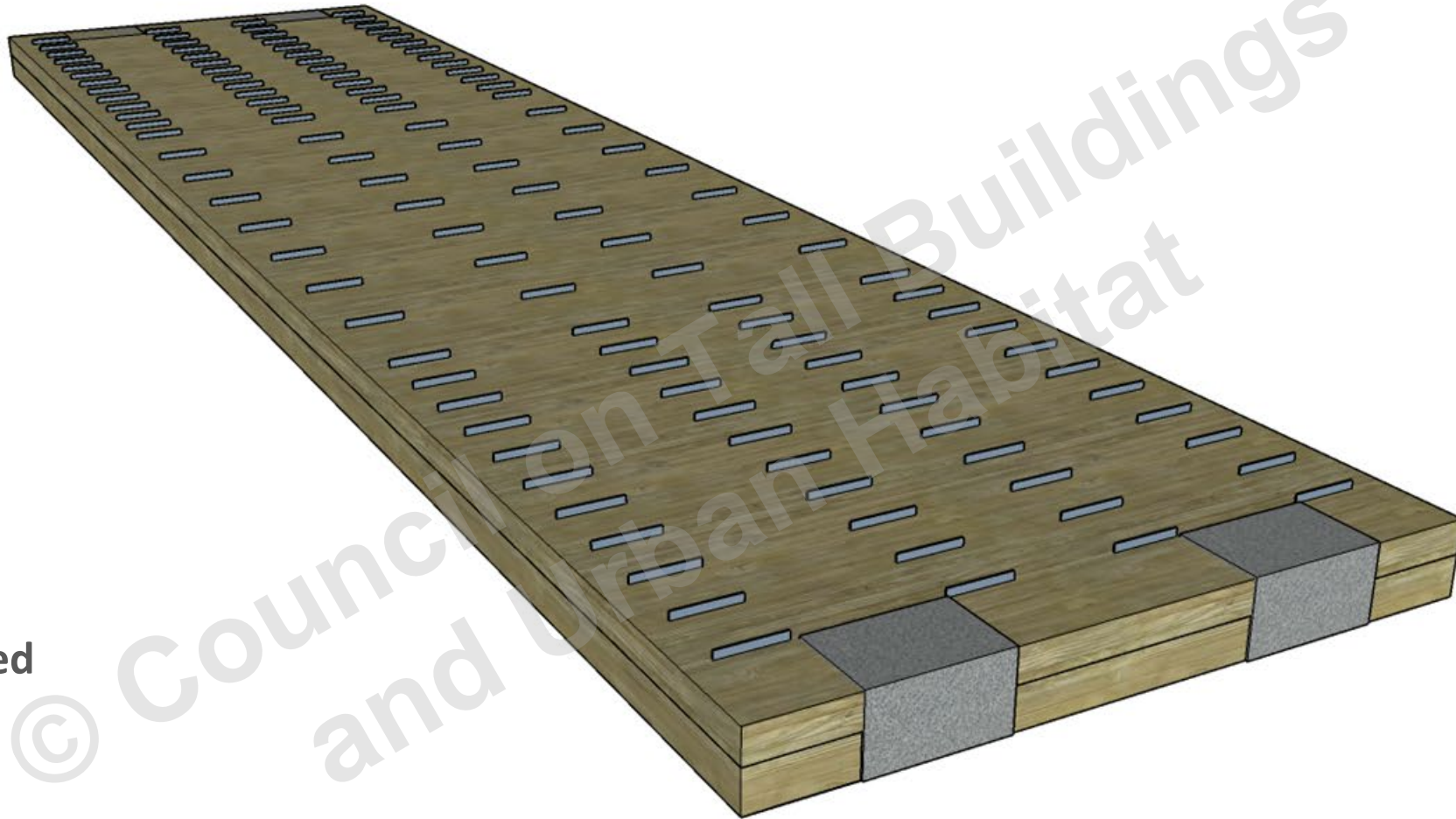
Hybrid Timber Panel System

Panels flipped



Structural Concept

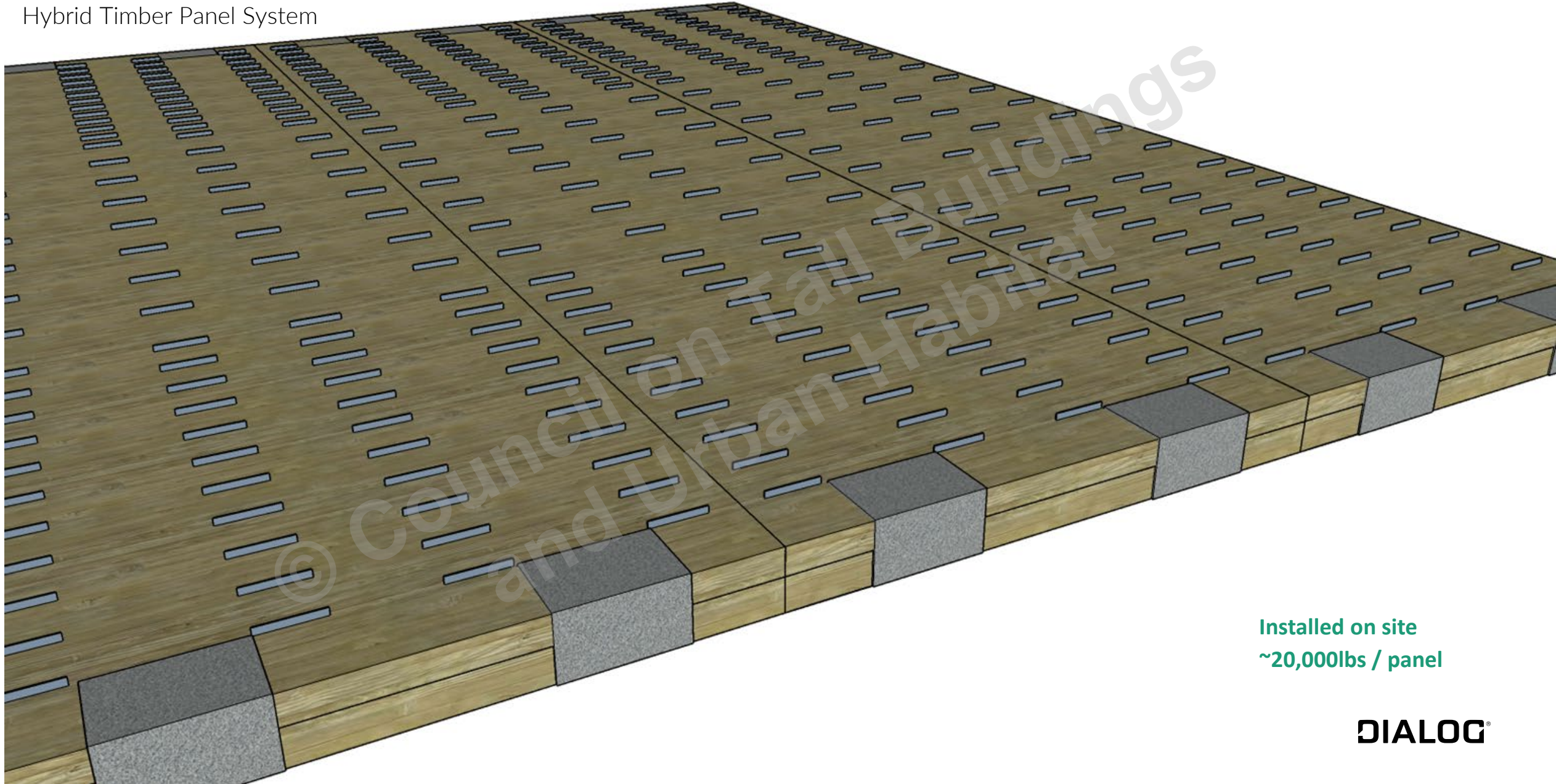
Hybrid Timber Panel System



Kerf Plates installed

Structural Concept

Hybrid Timber Panel System

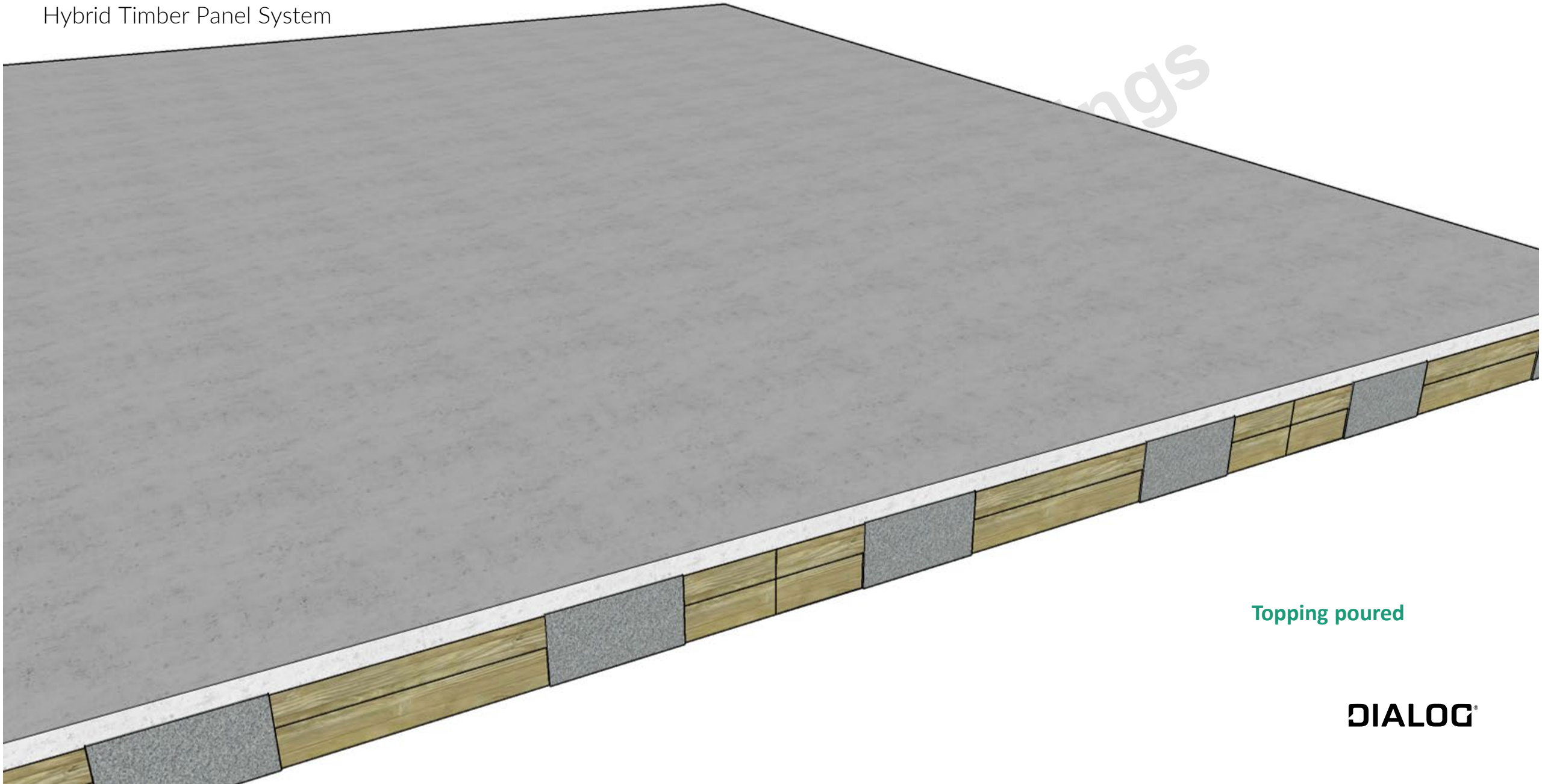


Installed on site
~20,000lbs / panel

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Structural Concept

Hybrid Timber Panel System



Topping poured

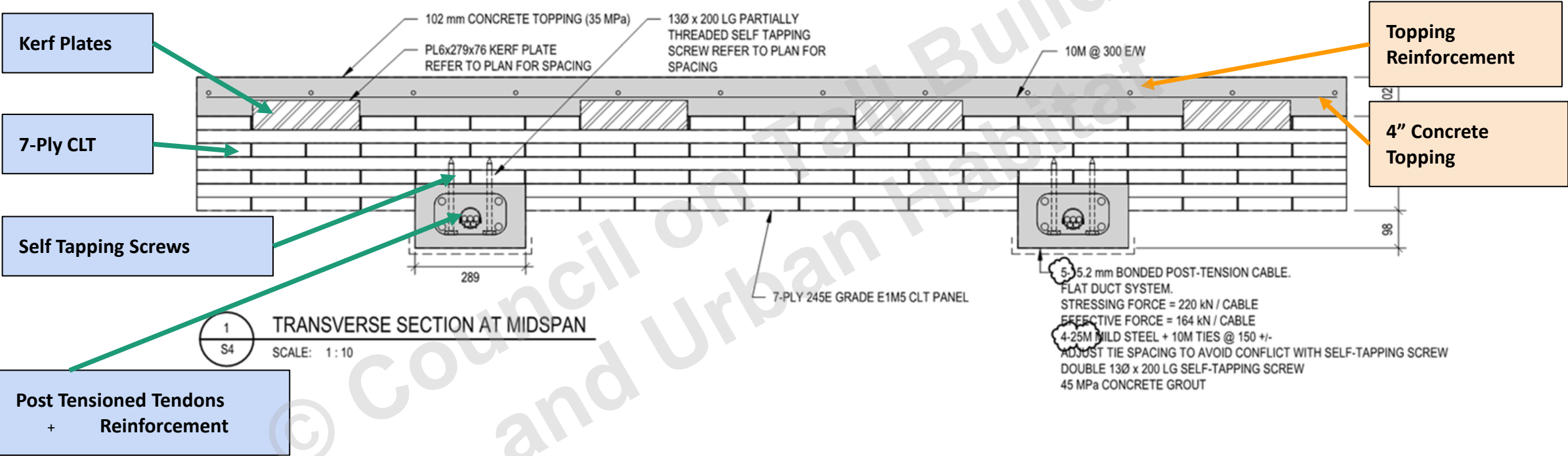
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Manufacturing Concept

Hybrid Timber Panel System

Plant Scope

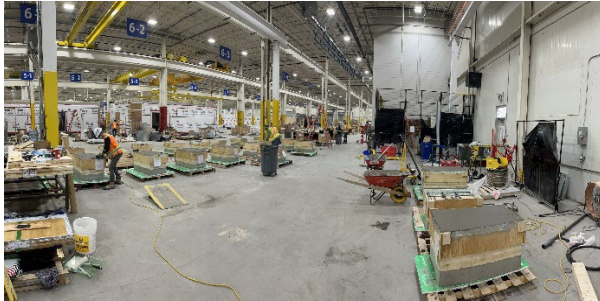
Field Scope



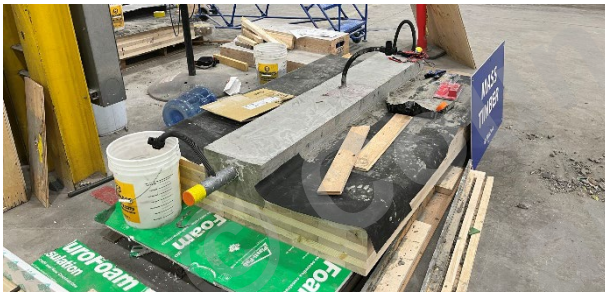


RESEARCH PROGRAM

1. Small-Scale Structural Testing



2. Small-Scale Fire Testing



3. Full-Scale Structural Testing

4. Standard Fire Testing

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THE FUTURE OF MASS TIMBER DESIGN AND CONSTRUCTION?

Patent Applications (November 2021)

Hybrid Timber Panel System



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SEVEN KEY TAKE-AWAYS

- 1. LONG SPAN = COMMERCIAL FLOOR PLATE SPAN (CLASS A)**
- 2. REDUCE STRUCTURAL DEPTH = ENVELOPE COST SAVINGS**
- 3. ADDRESSES FIRE SAFETY**
- 4. EXPOSED WOOD CEILING**
- 5. HIGH DEGREE OF PREFABRICATION = REDUCED ON SITE CONSTRUCTION TIME**
- 6. COST COMPETITIVE TO TRADITIONAL CONSTRUCTION**
- 7. IS A HIGHLY EFFECTIVE CARBON STRATEGY!**

The background is a collage of various photographs showing people in professional and community settings. A semi-transparent green rectangle is centered over the collage, containing the text. The photos include: people in meetings, a person on a staircase, a group of people smiling, a person on a bicycle, a large group of people sitting on steps, and a person in a wheelchair. A faint, diagonal watermark reading 'Council of Architecture' is visible across the collage.

THANKS!

dialogdesign.ca

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