2 Billion Tons CO2 Absorbed

2 Billion Tons CO2 Released

MATERIAL

PRODUCTION

TRANSPORT

4 Billion Tons Timber

CARBON NEUTRAL
TMBR | CLT PANEL

Source: WoodWorks
TMBR | CLT STRUCTURAL – LIGHT FRAME + STEEL

Source: WoodWorks
TMBR | CLT COMPOSITE SECTION

- Concrete topping slab
- Topping slab reinforcement
- CLT floor plank
- CLT composite beam
- Composite shear connector
- Column beyond

Details:
- 3/8" Diam., x 1 1/8" long Nelson shear connector welded to 1/4" steel plate fastened to CLT w/ 5K screws at 3" x 3"
- #3 Rebar at 6" on center in direction of span, 12" on center perpendicular to the span direction

Measurements:
- 2.1" x 6.34" Topping
- 8" x 10'-0"
MASS TIMBER | PROJECTS

TIFFIN HOUSE

HYDE BLACK

TERRACE HOUSE

JACK LONDON SQUARE PERDE P2

LIGHTHOUSE JORDAN

TOWER CRESCENT

T2 WEST MEDWAY

PHILIPPORT 15

CARBON 13

VINEY CONDOS

RIVIA 16

T3

T3 DRUMMOND TALLWOOD HOUSE

KLESK EICHELBERGER HOUSE

CIVILISATION

TENAL

GUARDS GATE PLACE

CURLIM PLACE

PLUWERSDORF

CUBE

WOOD INNOVATION & DESIGN CENTRE

What’s next for Taller Wood? To find out, visit: ThinkWood.com/TallerWood
1. STRUCTURE CRAFT, ABBOTSFORD, BC (nlt, dlt)
2. STRUCTURELAM, BC, CANADA
3. KATERRA, SPOKANE, WA
4. FRERES LUMBER CO, LYONS, OR
5. WESTERN STRUCTURES, VENETA, OR (glulam)
6. DR JOHNSON WOOD, RIDDLE, OR
7. TERRALAM CLT, LUFKIN, TX
8. NORDIC, MONTREAL, CANADA
9. Vaagan timbers, colville, wa
10. Smartlam, Galloway, b.c. | Columbia falls, mo | Dothan, al
T-3 | CONSTRUCTION TYPE

324,000 SF
ALLOWABLE BUILDING AREA

54,000 SF
AVERAGE AREA PER STORY

6 STORIES MAXIMUM
85'-0" MAXIMUM BUILDING HEIGHT
324,00 SF MAXIMUM AREA

TYPE IV- HT

IBC 2015
T-3 | MANUFACTURE+TRANSPORT+CONSTRUCTION
MASS TIMBER | PORTLAND PROJECTS
MASS TIMBER | ICC TYPE iv CLASSIFICATIONS 2021

**Type IV-A**
- 18 stories
- Building height: 270'
- Allowable building area: 972,000 SF
- Average area per story: 54,000 SF

**Type IV-B**
- 12 stories
- Building height: 180 ft
- Allowable building area: 648,000 SF
- Average area per story: 54,000 SF

**Type IV-C**
- 9 stories
- Building height: 85'
- Allowable building area: 405,000 SF
- Average area per story: 45,000 SF

**Type IV-HT**
- 6 stories maximum
- Maximum building height: 85'-0" (26 m)
- Maximum allowable building area: 324,000 SF
- Maximum allowable area per story: 54,000 SF

---

**BUSINESS OCCUPANCY [GROUP B]**

*Building floor-to-floor heights are shown at 12'-0" for all examples for clarity in comparison between 2015 to 2021 IBC codes.*
Noise as measured in a lab: Transmission through Framing, Concrete and CLT plates.
## CLT Acoustic Properties

<table>
<thead>
<tr>
<th>CLT Panel</th>
<th>Concrete/Gypsum Topping</th>
<th>Acoustical Mat Product Between CLT and Topping</th>
<th>Finish Floor</th>
<th>STC³</th>
<th>IIC³</th>
<th>Source</th>
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<tbody>
<tr>
<td>CLT 3-ply (3.5&quot;)</td>
<td>3&quot; concrete</td>
<td>Maxxon Acousti-Mat® 3/4</td>
<td>None</td>
<td>53² ASTC</td>
<td>45² IIC</td>
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<td>1-1/2&quot; Gyp-Crete®</td>
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<td>LVT</td>
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<td>Carpet + Pad</td>
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<td>LVT on Acousti-Top®</td>
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<td>Eng Wood on Acousti-Top®</td>
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<td>Maxxon Acousti-Mat® ¾ Premium</td>
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<td></td>
<td>LVT</td>
<td>47² AIC</td>
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<td>LVT on Acousti-Top®</td>
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<td>LVT Plus</td>
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<td>LVT Plus</td>
<td>48²</td>
<td>49²</td>
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</tbody>
</table>

Source: WoodWorks
### Composite Slab Acoustic Properties

**BASE ASSEMBLY**
1.60" 5-PLY CLT
2.25" NORMAL WEIGHT CONCRETE W/ 5/8" DIA. COMPOSITE SCREW CONNECTOR (7'-6" SPACING)

|-----------------|--------------------------|-----------------------------------------------|--------------|--------|--------|--------|

Source: WoodWorks

[^3]: Specific acoustic properties and classifications refer to standards or calculations relevant to the construction materials and assembly.
TEST H: SLEEPER SHALLOW SAND ASSEMBLY

1. 6.60" 5-PLY CLT
2. 2.25" NORMAL WEIGHT CONCRETE W/ \( \frac{3}{8} \)" DIA. COMPOSITE SCREW CONNECTOR (2'-6" SPACING)
3. 17mm PLITEQ GENIEMAT FF17
4. WOOD 2X2 WOOD SLEEPERS W/ SAND (1.5")
5. \( \frac{3}{8} \)" OSB SHEATHING
6. \( \frac{3}{8} \)" QTSCU 4005 SOUND INSULATION MAT
7. \( \frac{3}{8} \)" ENGINEERED WOOD FLOOR
TMBR | ALTERNATE CODE – 20% VS 40%

RCP: SECOND FLOOR DESIRED

RCP: SECOND FLOOR REQUIRED (20% EXPOSED)
Rationale for Increased Exposed Mass
Timber Surfaces
Enhanced Fire Protection Features

Exposed CLT Deck
- Encapsulation: None
- Tested Rating: 3hrs
- Calculated Rating: 8 to 3.5hrs

Encapsulated Areas / Corridors
- Encapsulation: 80 mins
- Tested Rating: 2hrs
- Calculated Rating: 3 to 3.5hrs

Concrete Terrace Deck
- Non-Combustible
- Tested Rating: 3.0hrs

Glulam Framing
- Encapsulation: None / 80 mins
- Tested Rating: 2hrs
- Calculated Rating: 2.5 to 3.5hrs

Notes:
1. All steel connectors are concealed
2. Concrete topping creates continuous non-combustible barrier between levels
3. Fire-stopping at concrete slabs

2021 IBC Req'd Rating: 2hr
Rationale for Increased Exposed Mass Timber Surfaces

**Enhanced Fire Protection Features**

- Exit Stair Systems:
  - Non-combustible materials or encapsulated shaft surfaces
  - Non-combustible attachments

- Exterior Wall System:
  - Non-combustible materials
  - Support and attachments of system are non-combustible

- Elevator Shafts:
  - Non-combustible materials or encapsulated shaft surfaces
  - Non-combustible attachments

Notes:
1. Concrete topping slabs are extended to support exterior wall and create non-combustible barrier between levels.
Design & Tools

This section highlights building code and structural system opportunities related to the design of non-residential and multi-family wood buildings, and provides links to additional resources. For assistance with a project, email help@woodworks.org or contact the Regional Director nearest you.

BUILDING TYPES
- Multi-Family/Mixed-Use
- Educational
- Office
- Commercial Low-Rise
- Industrial
- Civic/Recreational
- Institutional/Healthcare

BUILDING SYSTEMS
- Wood-Frame
- Mass Timber/Composite Systems
- Panelized Roofs
- Timber-Frame

DESIGN TOPICS
- Structural Design
- Fire and Life Safety

DESIGN TOOLS
- Design Guides & Standards
- Design Software
- CAD & REVIT Details
- Online Calculators
- Span Tables
- Inventory of Fire Resistance-Tested Mass Timber Assemblies
- Inventory of Mass Timber Acoustic Assemblies

TMBR | INSURANCE COMPARISON TO ELEVEN
CARBON SEQUESTRATION | CYCLE

CARBON12'S PIONEERING MASS TIMBER CONSTRUCTION, THE TALLEST IN THE UNITED STATES AT 85 FEET, WILL BE A PRECEDENT, INSPIRATION, AND CATALYST FOR BUILDERS AND ARCHITECTS IN THE UNITED STATES.

THE INCREASED DEMAND FOR THESE WOOD PRODUCTS WILL IN TURN LEAD TO A RESURGENCE OF THE SUSTAINABLE TIMBER INDUSTRY IN THE US, MEANING MORE TREES PLANTED, MORE JOBS CREATED, AND MORE ATMOSPHERIC CO2 SEQUESTERED IN OUR LIVING CITIES.

ENGINEERED WOOD PRODUCTS, SUCH AS GLT STRUCTURAL PANELS ARE THE NEXT BIG REVOLUTION IN CONSTRUCTION. STRONG AS STEEL, LIGHTER THAN CONCRETE, WITH ASSEMBLY TIMES A BARE FRACTION OF OTHER CONSTRUCTION METHODS, AND INCREDIBLY RESILIENT TO SEISMIC FORCES. MODERN MASS TIMBER WILL FOREVER CHANGE THE WAY WE BUILD.

TREES NATURALLY SEQUESTRATE ATMOSPHERIC CO2 AS THEY GROW. WHEN THEY DECOMPOSE OR BURN, THAT CARBON IS RELEASED BACK INTO THE ATMOSPHERE. WHEN HARVESTED FOR TIMBER, THE CARBON IS FOREVER LOCKED AWAY INTO THE WOOD.