Mass Timber Overview:
Systems, Products & Codes

Mass Timber Construction Management:
Design through Project Close Out
Learning Objectives

1. Understand the preconstruction manager’s role in material procurement and coordination of trades for code-compliant mass timber projects.

2. Highlight effective methods of early design-phase cost estimation and building official interaction on code compliance topics that keep mass timber options on the table.

3. Discuss potential construction schedule savings and construction fire safety practices realized through the use of prefabricated mass timber elements.

4. Explore best practices for interaction between manufacturer, design team and preconstruction manager that can lead to cost efficiency and safety on site.
Dowel-Laminated Timber (DLT)

Mass plywood panels (MPP)

Decking
STRUCTURAL SOLUTIONS | HYBRID CONCRETE + MASS TIMBER

Photo: Structurlam
Beam to Column

Photo: StructureCraft

Photo: Structurlam
Column to Foundation

Photo: Alex Schreyer
Panel to Panel & Supports

Photo: Charles Judd

Photo: Alex Schreyer
CURRENT STATE OF MASS TIMBER PROJECTS
As of July 2019, 599 multi-family, commercial, or institutional projects have been constructed out of mass timber across the U.S., or they’re currently in design.

PRECEDENT PROJECTS | 360 WYTHE BROOKLYN, NY
PRECEDENT PROJECTS | MJOSTARNET NORWAY

Photos: Bygg Mesteren | Voll Arkitekter
MASS TIMBER PRODUCTS
Glue Laminated Timber (GLT)

Photo: Alex Schreyer
Glue Laminated Timber (GLT)
Cross-Laminated Timber (CLT)
Cross-Laminated Timber (CLT)

- Major Axis
- Minor Axis

Dimensions:
- 4 1/8” to 19 1/2”
- 10’X40’
- 8’X64’
Nail-Laminated Timber (NLT)
Dowel-Laminated Timber (NLT)
Mass Plywood Panels (MPP)

Photos: Freres Lumber
Other Mass Timber Product Options

- Glue Laminated Timber (GLT)
- Laminated Veneer Lumber (LVL)
- Parallel Strand Lumber (PSL)
- Laminated Strand Lumber (LSL)
- Timber-Concrete Composite (TCC)
- Decking

Photos: StructureCraft
MASS TIMBER IN THE CODE
Mass Timber in Low- to Mid-Rise: 1-6 Stories in Construction Types III, IV or V
Tall Mass Timber: Up to 18 Stories in Construction Types IV-A, IV-B or IV-C

**Building Code Applications | Construction Type**

- **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'
  - Allowable Building Area: 648,000 SF
  - Average Area Per Story: 54,000 SF

- **Type IV-C**
  - 9 Stories
  - Building Height: 82'
  - Allowable Building Area: 420,000 SF
  - Average Area Per Story: 46,000 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.*

Credit: Susan Jones, atelierjones
Mass Timber’s Fire-Resistive Performance is Well-Tested, Documented and Recognized via Code Acceptance

<table>
<thead>
<tr>
<th>Required Fire Resistance (hr.)</th>
<th>Char Depth, a_{char} (in.)</th>
<th>Effective Char Depth, a_{eff} (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Hour</td>
<td>1.5</td>
<td>1.8</td>
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<tr>
<td>1½-Hour</td>
<td>2.1</td>
<td>2.5</td>
</tr>
<tr>
<td>2-Hour</td>
<td>2.6</td>
<td>3.2</td>
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</tbody>
</table>

Source: AWC’s NDS
Mass Timber Fire Design Resource

- Code compliance options for demonstrating FRR
- Updated as new tests are completed
- Free download at woodworks.org
Questions?

Speaker Name
Contact info
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