Mass Timber
Through the Lens of Higher Education Projects

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What is **Mass Timber**?

- A material that can **substantially reduce** greenhouse gas (GHG) emissions
- **Slash** the waste, pollution, and costs associated with construction, and
- Create a more physically, psychologically, and aesthetically **healthy built environment**.

Why use Mass Timber?

- Performs well in a fire
- It reduces carbon emissions
- Buildings constructed faster
- Performs great in earthquakes
- Can help pay for good forest management
- Create jobs in struggling rural area
- No other choice

Sustainably harvested wood sequesters 1/3 more carbon than unsustainably sourced wood.
Sustainable forestry includes soil management and optimizing growth cycles. These are essential to seeing the overall carbon reduction benefits of mass timber.
Wood

Steel

ArcelorMittal launches XCarb™, signalling its commitment to producing carbon neutral steel

Concrete

New approaches could reduce the carbon-intensity of cement production and lessen concrete’s broader environmental impact.

INGRID LOBET | JANUARY 05, 2021

Global cement production is responsible for about 8 percent of the world’s carbon emissions.
Light Wood-frame Construction
Heavy Timber Construction
Mass Timber Products

- Glue Laminated Timber (GLT)
- Laminated Veneer Lumber (LVL)
- Parallel Strand Lumber (PSL)
- Laminated Strand Lumber (LSL)
- Mass Plywood Panel (MPP)
- Cross Laminated Timber (CLT)
- Nail Laminated Timber (NLT)
- Timber Concrete Composite (TCC)
- Dowel Laminated Timber (DLT)
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Current Projects

San Jacinto College Classroom Building
- Structure: Walter P Moore, Fast + Epps
- Code: Arup
- Nordic Structures

Rice University Hanszen College Addition
- Structure: Ensight/Haynes Whaley, Knippers Helbig
- Code: Arup
- Structurlam

SFASU New Residence Hall
- Structure: Ensight/Haynes Whaley
- Code: Arup
- Texas Timberframes
Why MT at San Jac?
Quieter Construction Environment
Reduced Construction Time
Benefits

Reduced Foundation
Aesthetics
Benefits

Stability in Pricing?

Los Angeles Times

Trump’s steel tariffs were supposed to save the industry. They made things worse.

Industry News > Markets

Lumber prices moderate as 2019 summer begins in North America

By Madison's Lumber Reporter

JoeScan

MADE FOR SAWMILLS

CFI

FOREST INDUSTRIES

Editors' Picks

Maximizing potential: industry veteran leads the charge to upgrade Ontario mill

The courage to change: Women in Forestry Virtual Summit calls for culture shift

The CFI Podcast: Carol Walker on fostering diversity & inclusion in forestry
Worth Mentioning
David Logan, senior economist at the National Association of Home Builders (NAHB), explained that this historic price volatility had a serious impact on home-building earlier this year. He attributed the soaring prices to the COVID-19 lockdown – supply was restricted as mills were force to shut down operations and demand skyrocketed as employed people working from home decided to start doing DIY work en masse and housing demand bounced back with fervor.
Worth Mentioning

Team Selection & Engagement

- Pre-solicitation conference for GC’s
- Mass timber supplier interviews
- Project meetings with full team
Mass Timber Design Assist

• Constructability issues discussed
• Cost evaluation and reasoning
• Detail knowledge from the manufacturer
Worth Mentioning

Holistic Cost Pricing

• **Cannot** evaluate comparative bids based structural frame cost alone

**General Conditions**
**Foundation**
**Finishes**
**Labor**
Worth Mentioning

Holistic Cost Pricing

• Cannot evaluate comparative bids based structural frame cost alone

General Conditions
Foundation
Finishes
Labor
Working with Mass Timber

• Requires pre-planning to understand manufacturing differences

• Easy to understand but takes time to execute the BIM model

• Educate your team so they know why a mass timber solution will work
Girder/Beam/Column Location

- Optimize grid spacing
- Keep repetitive
- Work with a manufacturer

14’ – 6” Bay Spacing Option

29’ – 0” Bay Spacing Option

Typical 850-sf Classroom Module
Worth Mentioning

Hybrid System

- Larger spans with few columns
- Construction time savings may be lost
- Fire proofing steel may be required
- Can utilize a podium with wood on top
Project Goals

SJCC Classroom Building

★ Replace Existing Buildings
★ Connect to Davison
★ Become a Focal Point for the East side
★ Consider Mass Timber as a tool to protect against price fluctuations
Program divides mass  
Bars slide to create entry  
Wing bends to create student courtyard
Project Features

- Erection crew 3x smaller than steel crew
- 66 days to erect structure
- Noticeably quieter on site
- 990 solar panels
- 3.9 kilowatt capacity
- Graywater system
- 6,000-sf Electro-chromatic glass
- Educational branding throughout

SJCC Classroom Building

122,242-square feet
57 classrooms
Lobby Design Study

SJCC Classroom Building
Thank You