TALLWOOD

DESIGN INSTITUTE

Oregon State University

UNIVERSITY OF OREGON

Growing Oregon's Wood Product Sector

Three Thoughts for Today:

1. **Western Oregon is The Best Place in the World to Grow High Value Trees**
    - *Only plantation area with native species*
    - *Our conservation values are not practiced elsewhere*
    - *Stable climate predicted for growing trees*
2. **How Much We Harvest Is Not As Important As How Many Jobs Are Created By What We Harvest**
    - *Jobs per board foot harvested is THE economic driver relevant to our rural economies.*
    - *We must focus on creating secondary manufacturing jobs that produce engineered wood products.*
3. **Oregon is Positioned to Compete in Global Markets for "Green Buildings" made of Engineered Wood Products**
    - *Architects are embracing wood as a sustainable material for tall wood buildings,*
    - *Doug Fir is the best species in the world for these products*
    - *Whole new markets are opening for high-value products manufactured here if we seize the opportunity to act strategically and collaborate*

TallWood Design Institute

An industry-driven partnership between:

College of Forestry, Oregon State University

College of Design, University of Oregon

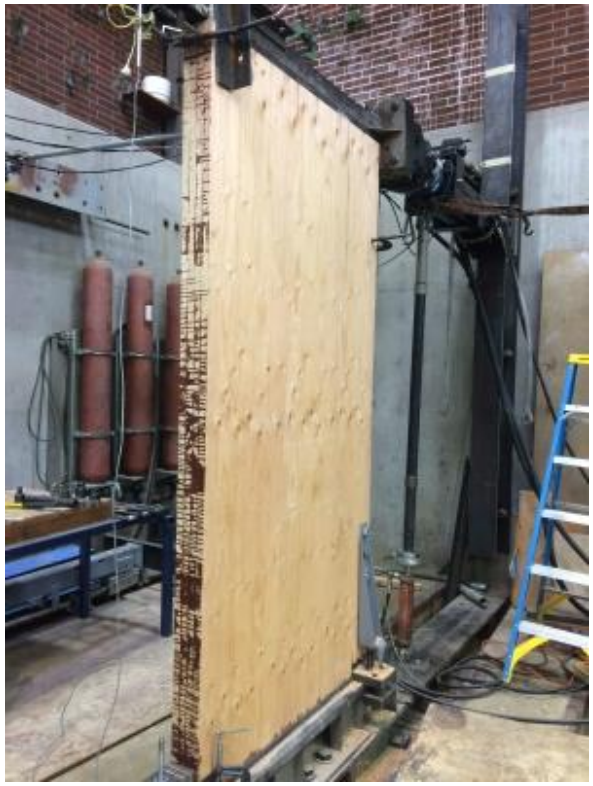
College of Engineering, Oregon State University

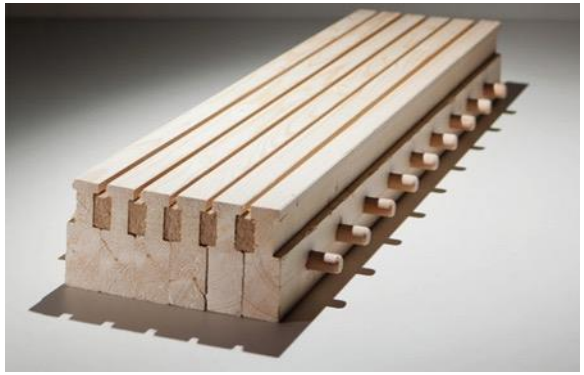
Mission:
To promote the manufacture and application of wood products in Oregon through research, testing, outreach and education

Why Mass Timber?

- Oregon's legacy in forestry and wood products
- New markets for Oregon fiber
- New employment opportunities
- Address climate change
- Performance and cost advantages
- Improved building quality

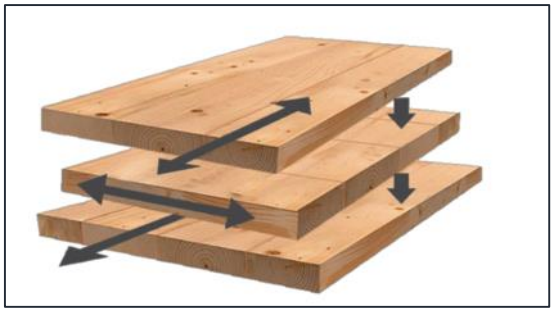
Mass Timber Is Not Just CLT





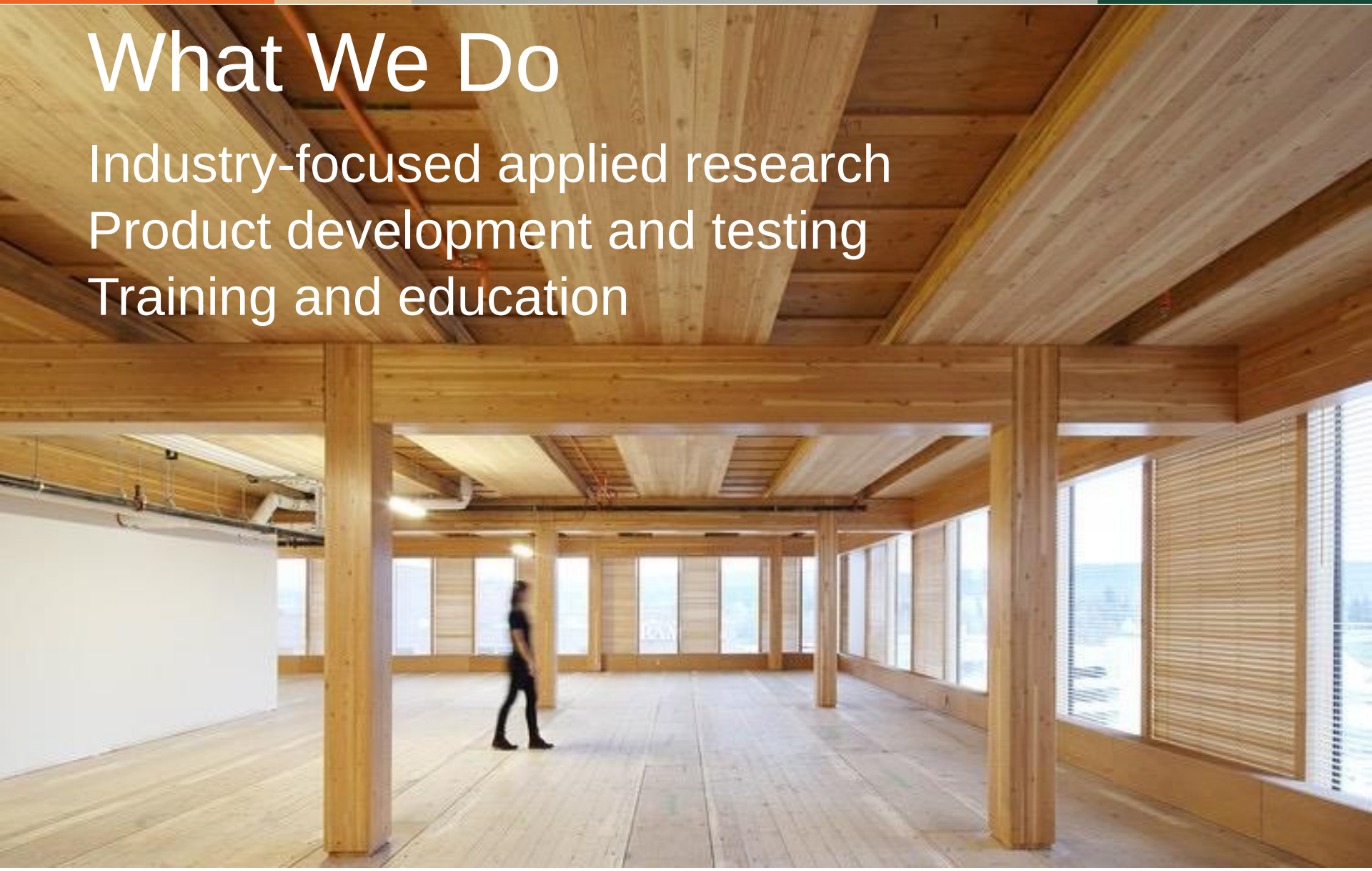
Barriers and Challenges

- Cost uncertainties and market uncertainties
- Lack of familiarity among building professionals: contractors, architects, engineers
- Perceived design challenges: seismic, fire, durability (moisture), standardized connector systems
- Manufacturing: need for computer aided skills



What We Do

Industry-focused applied research
Product development and testing
Training and education



Applied Research

$*1.9 M in Projects Underway in 2015/2017 Budget Biennium*

- Fire Performance of CLT Wall and Floor Assemblies Made in Oregon
- Behavior of CLT Connections with Self-tapping Screws
- CLT Fastener Solutions for Tall Wood Buildings
- Composite Concrete/CLT Floor Systems for Tall Buildings
- Seismic Performance of Cross-Laminated Timber and Cross-Laminated Timber-Concrete Composite Floor Diaphragms
- Design of the Timber Pile Ground Improvement for Liquefaction Mitigation
- Post-Occupancy Performance Monitoring of Mass Timber Buildings
- Peavy Hall as a Living Lab
- Net-Zero Tall Wood Buildings
- Life Cycle Analysis of Mass Timber Buildings
- Tall Wood Buildings and Indoor Air Quality
- Launching an Annual Survey -- Taking the Pulse of the Global CLT Industry

Product Development & Testing

Nearly $1 M available for testing of building components and code development

- **Partnering with manufacturers to prototype, test and refine new mass timber products**
  - DR Johnson CLT Panels
  - Freres Lumber MPP Panels
- **Providing peer review and testing services for new mass timber projects**
  - Framework Project
  - Glenwood Project
  - City of Eugene Planning Division

Education & Training

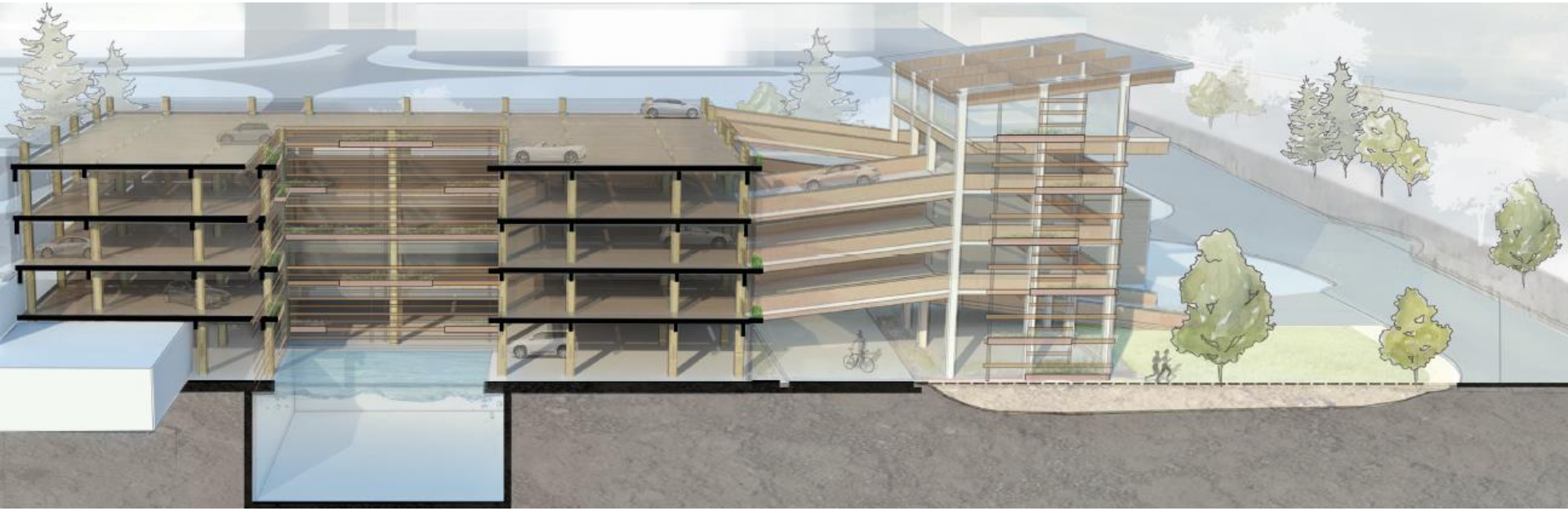
Programs that cross disciplines and prepare today and tomorrow's workforce

- 3D computer-aided design
- Training for code officials, designers, and contractors
- Computer-controlled fabrication (CNC Technology)
- Certificate program in mass timber manufacturing and construction
- Integrating information across the supply chain ("Building Integration Modeling")

SPRINGFIELD MASS TIMBER PARKING GARAGE
A PUBLIC PARTNERSHIP

Judith Sheine, Mark Donofrio Department of Architecture
College of Design
University of Oregon

Christine Lundberg
Mayor
City of Springfield, Oregon



MOMENTUM

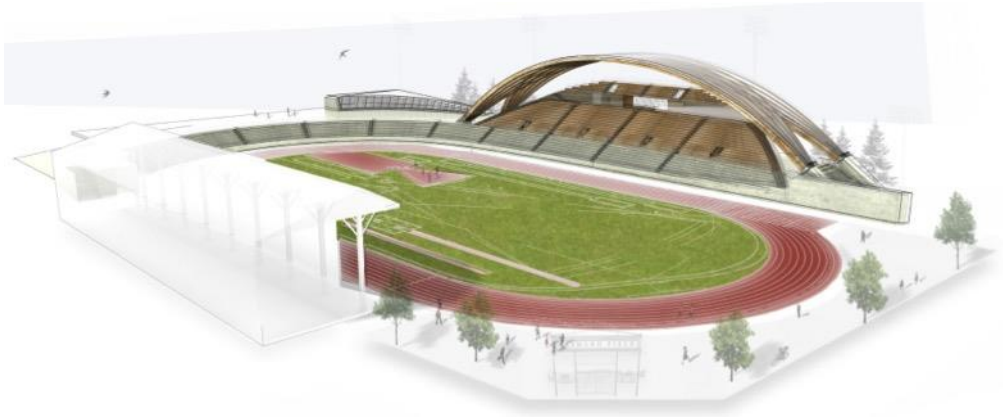
Danae Burck | Kelly Elmore | Cara Mitchell | Stefanie Wibiasa
Judith Sheine, Mark Donofrio, Faculty Advisors

THE LOOM

Wesley Miller | Garrett Mitchell | Jeffrey Toreson
Judith Sheine, Mark Donofrio, Faculty Advisors

Glenwood Parking Garage, Springfield, OR SRG Partnership, 2018-19

HISTORIC HAYWARD FIELD
MASS TIMBER WEST GRANDSTANDS



Judith Sheine
Department of Architecture
University of Oregon

Mikhail Gershfeld
Department of Civil Engineering
California State Polytechnic University, Pomona

Hayward Field
FOLDED PLATE

Addison Estrada| Abe Kelso
Judith Sheine, Mikhail Gershfeld, Faculty Advisors

Hayward Field
WAVY CANTILEVER

David Moreno| Russell Regulinski| Tim Sieroslawski
Judith Sheine, Mikhail Gershfeld, Faculty Advisors

Oregon State University

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UNIVERSITY OF OREGON

Hayward Field
SHELL

Jenny Lam| Alexandra Lau | Joshua Tully
Judith Sheine, Mikhail Gershfeld, Faculty Advisors

Oregon State University

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UNIVERSITY OF OREGON

Hayward Field
ARCH

Nicole Giustino | August Lehnert | Max Moore
Judith Sheine, Mikhail Gershfeld, Faculty Advisors

TALLWOOD

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Oregon State University

UNIVERSITY OF OREGON

MASS TIMBER PARKING STRUCTURE

SPRINGFIELD OREGON

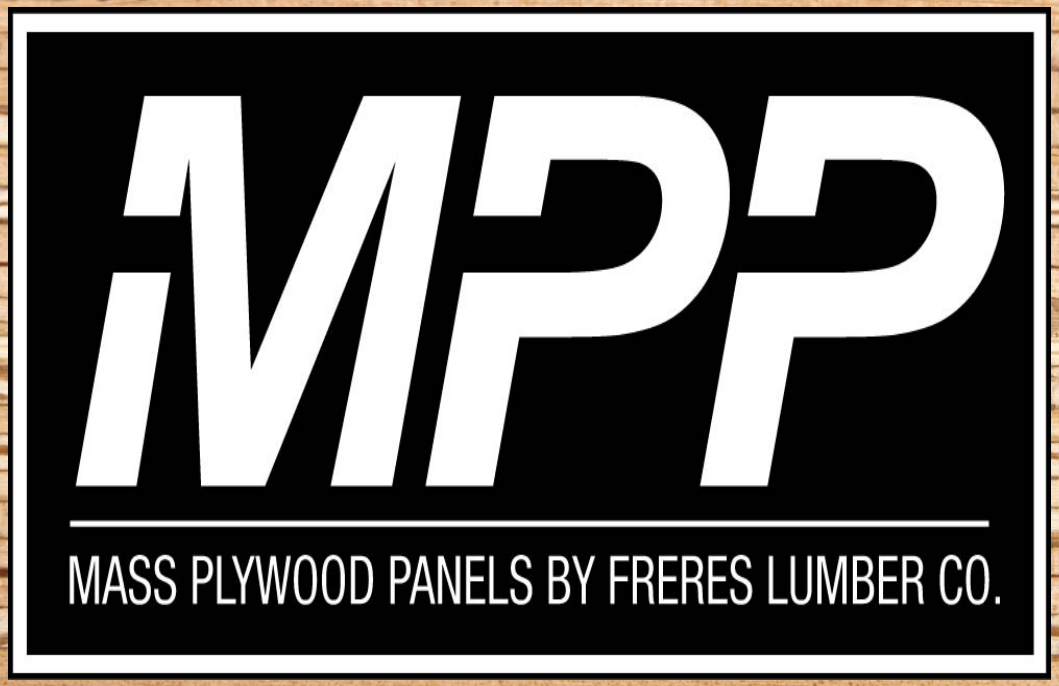
SPRINGFIELD OREGON

Springfield Public Schools

HAMLIN MIDDLE SCHOOL
SPRINGFIELD, OR

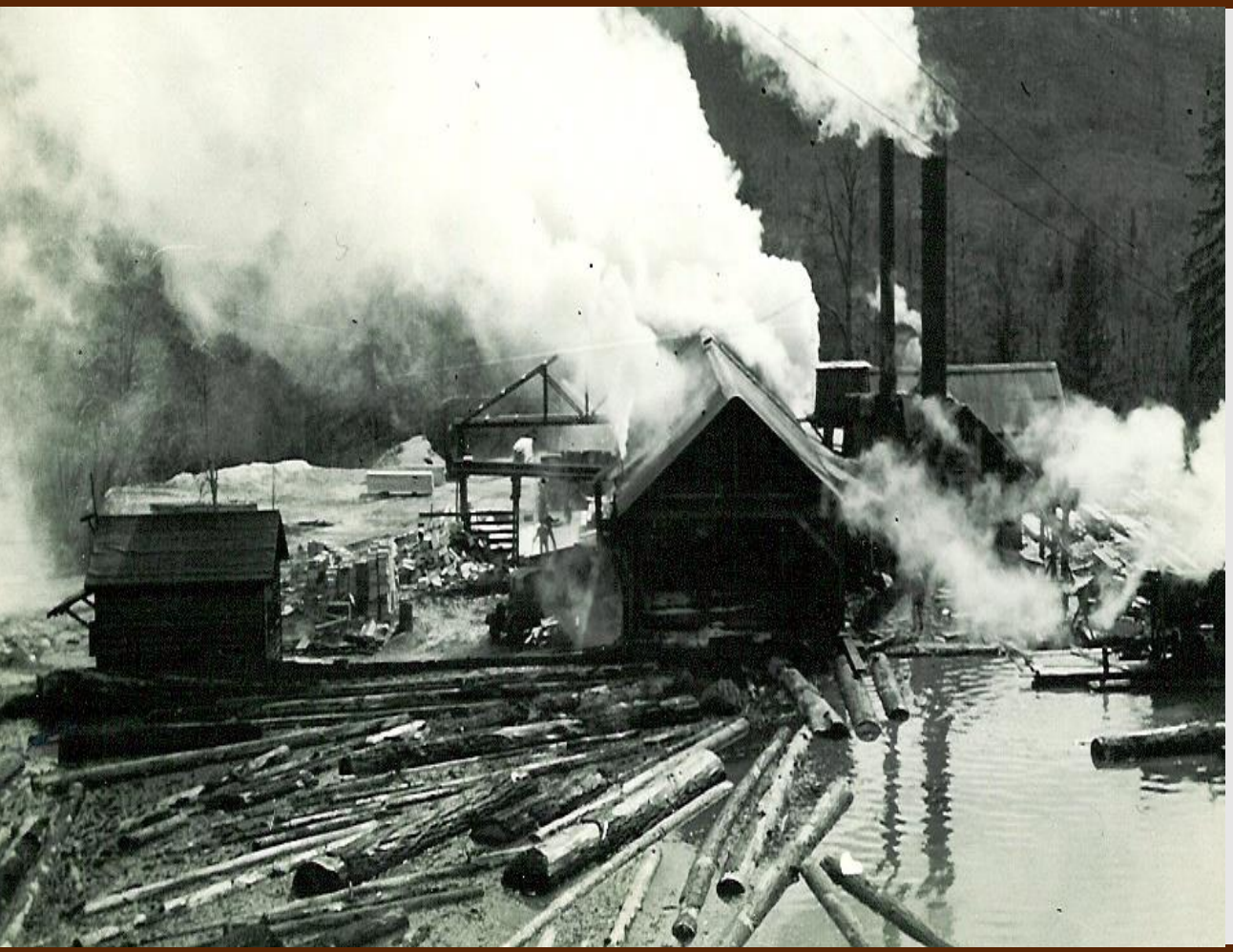
Freres

LUMBER CO., INC.



Freres

LUMBER CO., INC.



From Then…

Founded in 1922 by TG Freres

Sawmill on the North Fork of the Santiam River

Moved to current location in 1950's

Converted to veneer manufacturing in the late 1950's.

Freres LUMBER CO., INC.

… To Now

FLC Operates

Two Veneer plants

Veneer Drying Facility

Plywood Plant

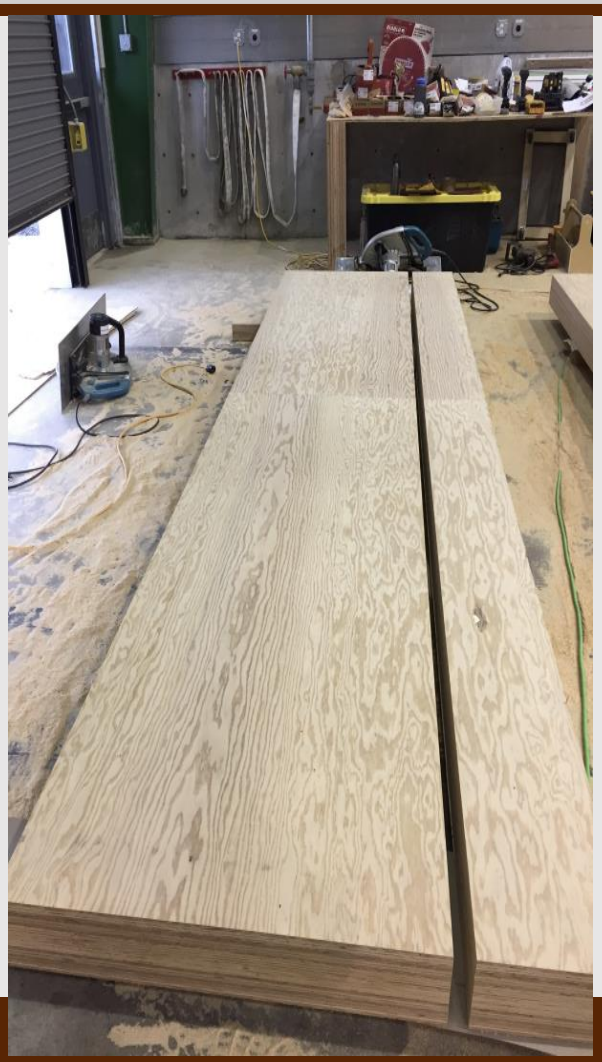
Cogeneration Facility

Stud mill

Fleet of Log and Highway Trucks

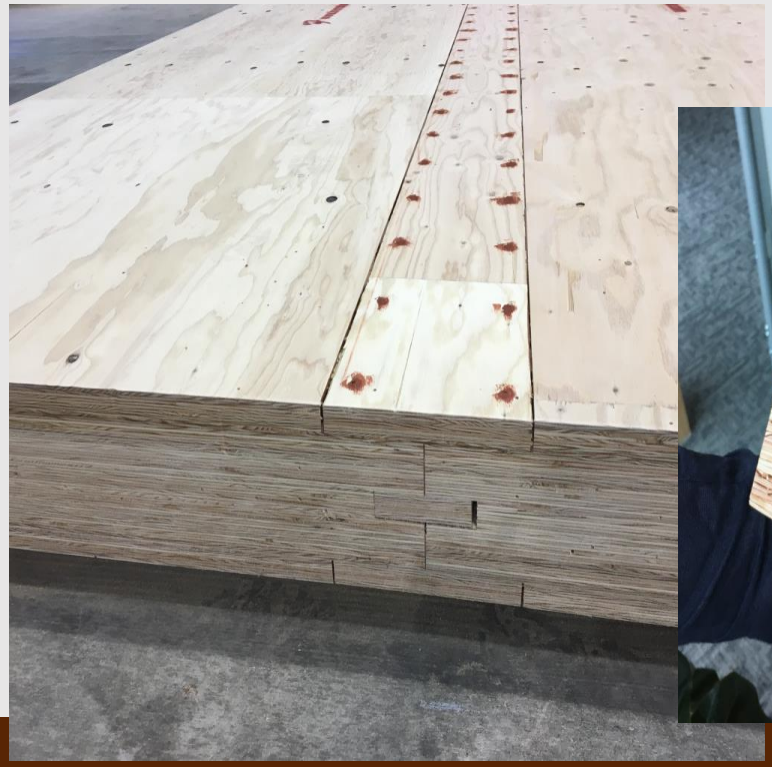
MPP Facility

Mass Plywood Panel



Dimensions

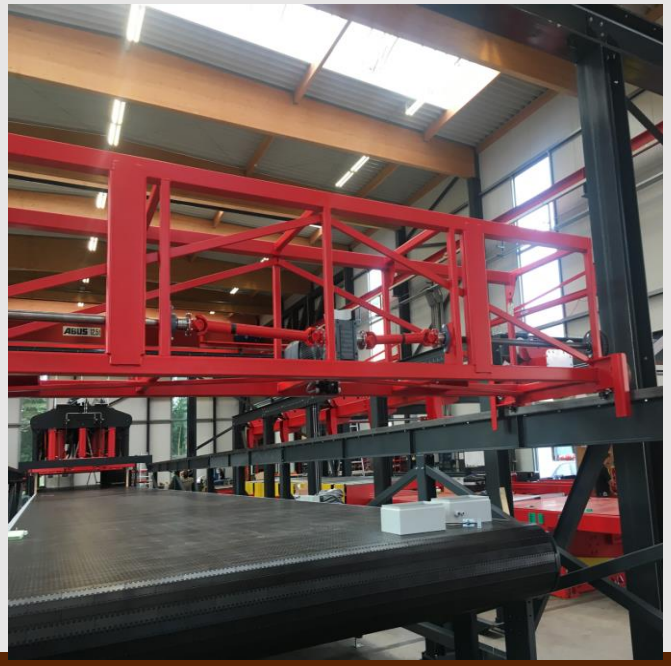
Up to 12’ wide by 48.5’ long by 24” Thick

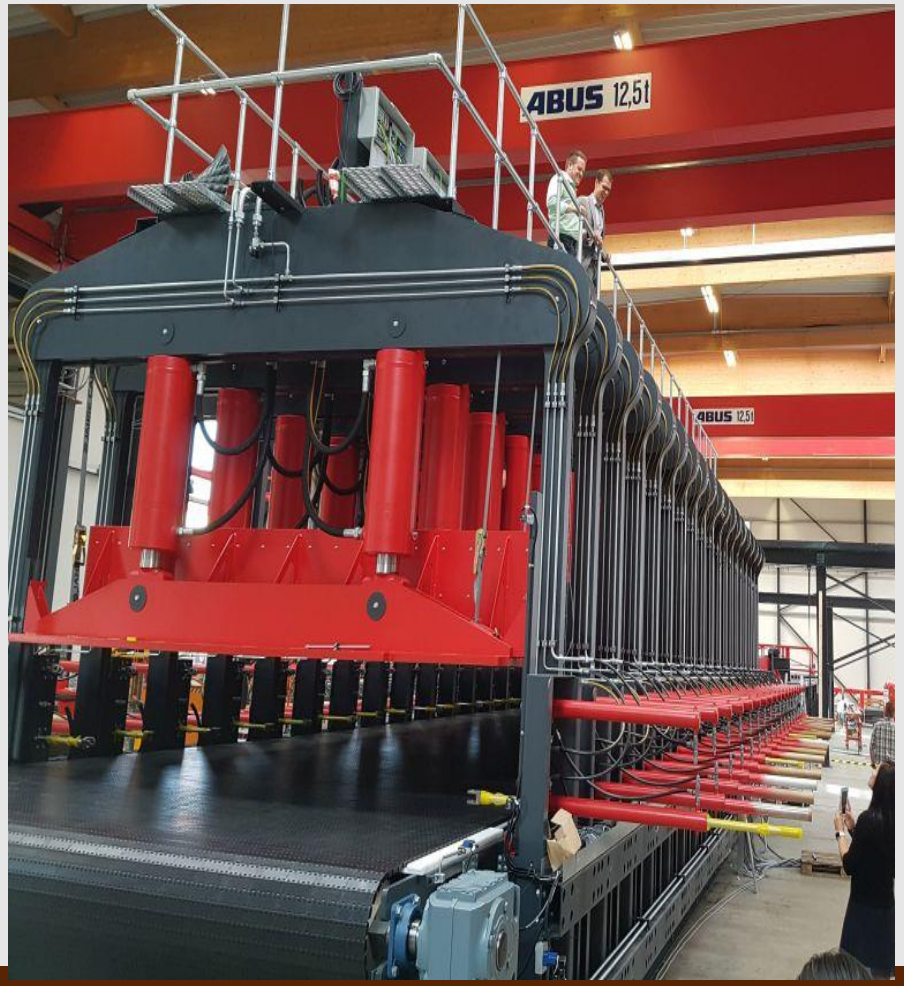


Freres

LUMBER CO., INC.

Facility Operational Christmas 2017




ABUS 12,5t
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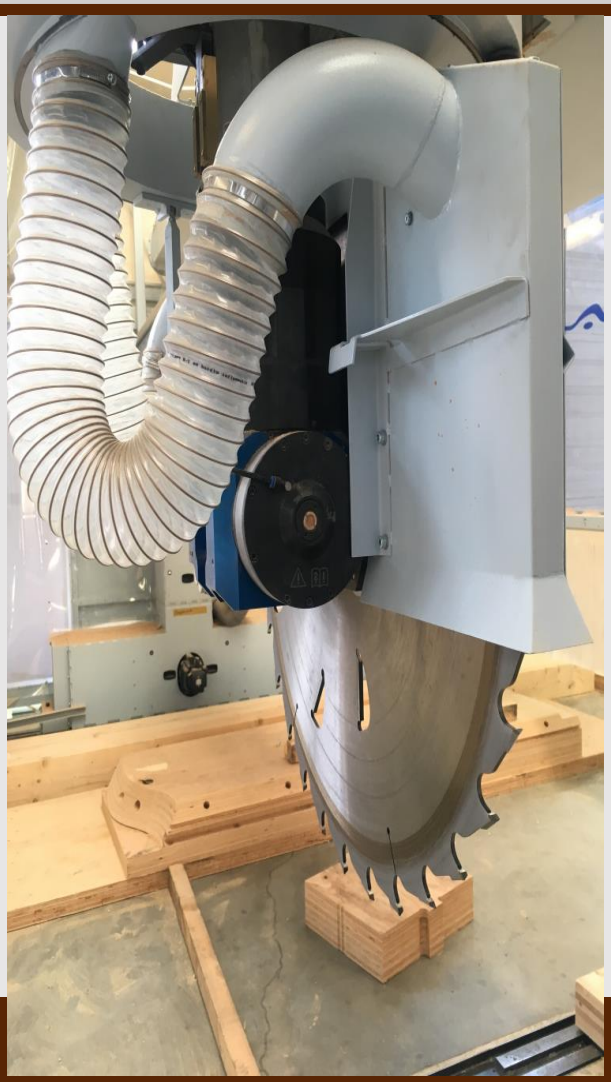

Freres

LUMBER CO., INC.