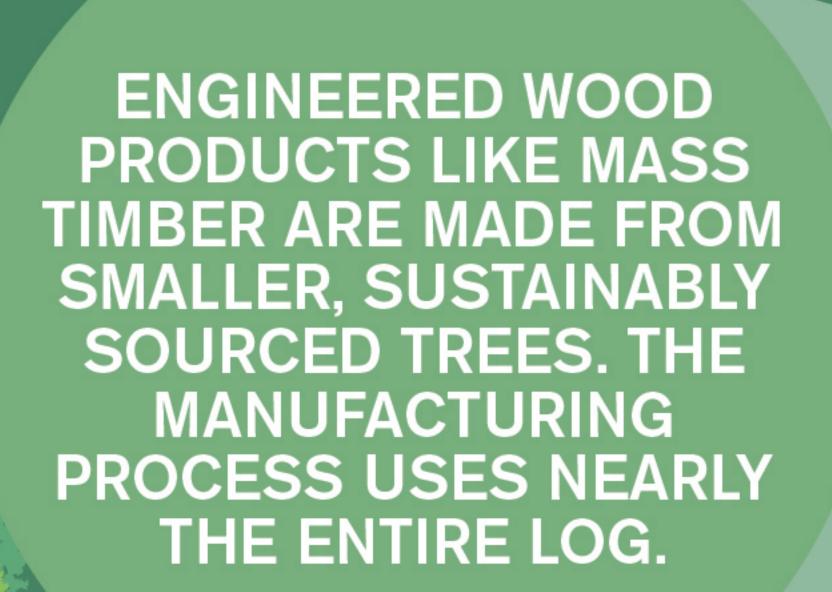
SOFTWOOD LUMBER A SUSTAINABLE BUILDING MATERIAL

Whibully Will MASS TIMBER?

WOOD MYTH: ISN'T IT DIFFICULT TO BUILD WITH MASS TIMBER?

MASS TIMBER PANELS CAN BE CUT AND JOINED WITH FAMILIAR TOOLS. PREFABRICATION REDUCES TIME, WASTE, AND ON-SITE LABOR.





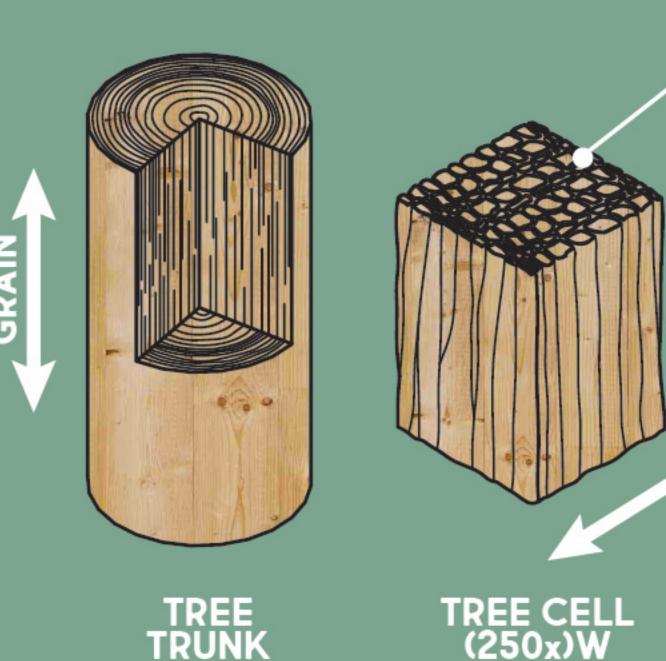
MASS TIMBER COLUMNS AND BEAMS AT ASCENT. New Land Enterprises



EXTERIOR VIEW OF ANDY QUATTLEBAUM OUTDOOR EDUCATION CENTER. Jonathan Hillyer

WOOD IS AN IDEAL BUILDING MATERIAL

WOOD STRUCTURE

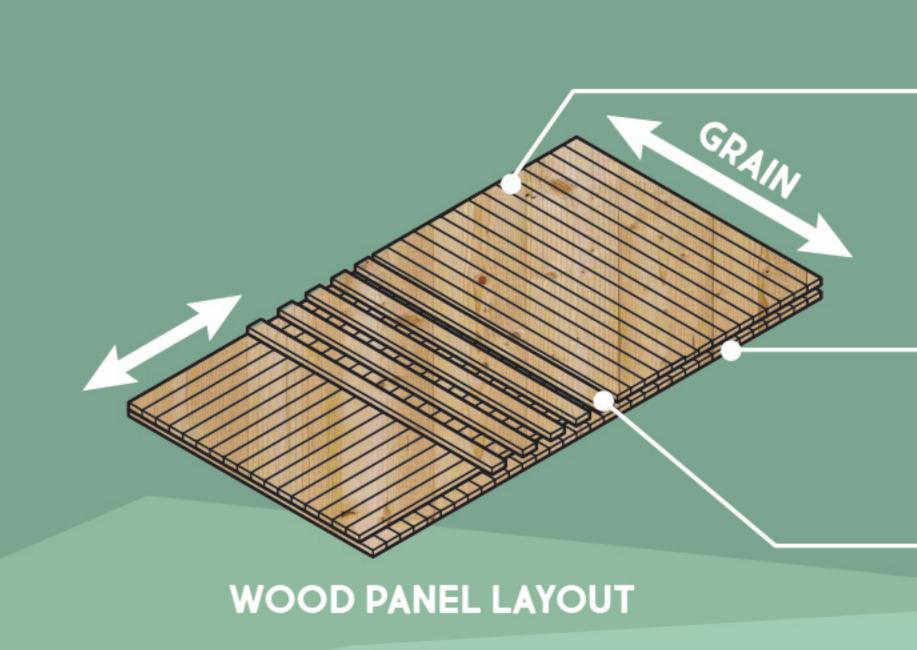


Wood is the strongest and most stable in the direction of the grain.

Wood is weaker and more prone to expansion and shrinkage across the grain.

The tree trunk's long tubular cells—similar to drinking straws—give wood its strength and stability.

MAKING CROSS-LAMINATED TIMBER (CLT) PANELS

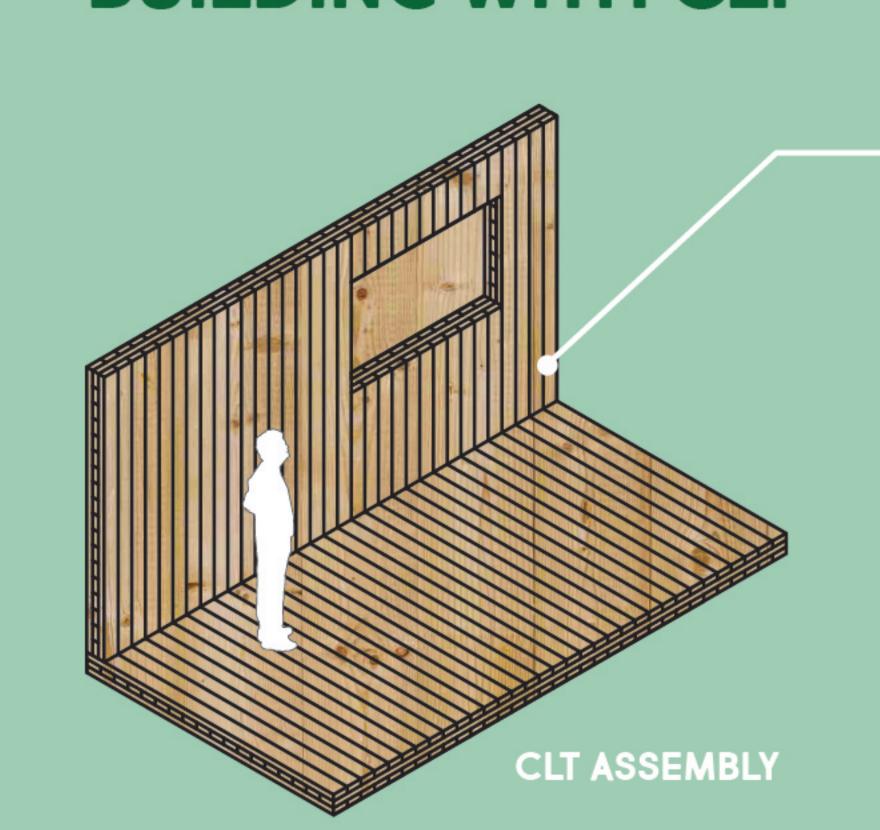


High-quality wood is used for the top and bottom layers of each panel, while the core layers are made of lower-quality wood.

 Manufacturers use small, low-quality logs that would otherwise go to waste.

Layers are glued together with each layer's grain laid perpendicular to the previous ones to provide maximum strength and stability.

BUILDING WITH CLT



Panels are prefabricated in a factory, minimizing waste and speeding up construction time.

Computer-controlled machinery in the factory trims the panels to exact dimensions and cuts openings for windows, doors, and other installations.

WHY LIVE IN MODERN WOOD BUILDINGS?

WOOD ENVIRONMENTS MAKE PEOPLE HAPPY

Some studies have shown that exposure to nature and natural materials can have positive effects on our sense of well-being. This has led to an increase in the use of natural materials like wood in biophilic design. In an age where the average American spends 90% of their life indoors, bringing natural materials into interior environments can benefit our lives.

WOOD'S CELLULAR STRUCTURE CONTAINS AIR POCKETS THAT LIMIT ITS ABILITY TO CONDUCT HEAT. THE PRECISE MANUFACTURING OF CLT AND OTHER ENGINEERED TIMBER LIMITS AIR LEAKAGE. THE RESULT: A COMFORTABLE INTERIOR THAT REQUIRES LESS ENERGY TO MAINTAIN.

WOOD'S NATURAL PROPERTIES CAN **ENHANCE A BUILDING'S** ACOUSTICS. IT'S A GOOD CHOICE FOR CONCERT AND PERFORMANCE HALLS, OFFICES AND MEETING SPACES, SCHOOLS, AND LECTURE THEATERS.

WHEN A BUILDING HAS REACHED THE END OF ITS USEFUL LIFE, WOOD CAN BE RECYCLED AND REUSED. **EVEN WHEN DISCARDED** WOOD IS BIODEGRADABLE, MINIMIZING ITS IMPACT ON THE ENVIRONMENT.

BUILT FROM LOCALLY SOURCED LUMBER, **WOOD BUILDINGS IN** THE U.S. USUALLY COSTS LESS TO **BUILD THAN STEEL** OR CONCRETE ONES.

ASCENT

Residential

MAGDALENA HOTEL

4 stories, 47,000 SF

Lake Flato, 2021

Hotel

WOOD IS AN IDEAL

STRUCTURAL

MATERIAL BECAUSE IT

IS LIGHTER BUT AS

STRONG AS

TRADITIONAL

MATERIALS.

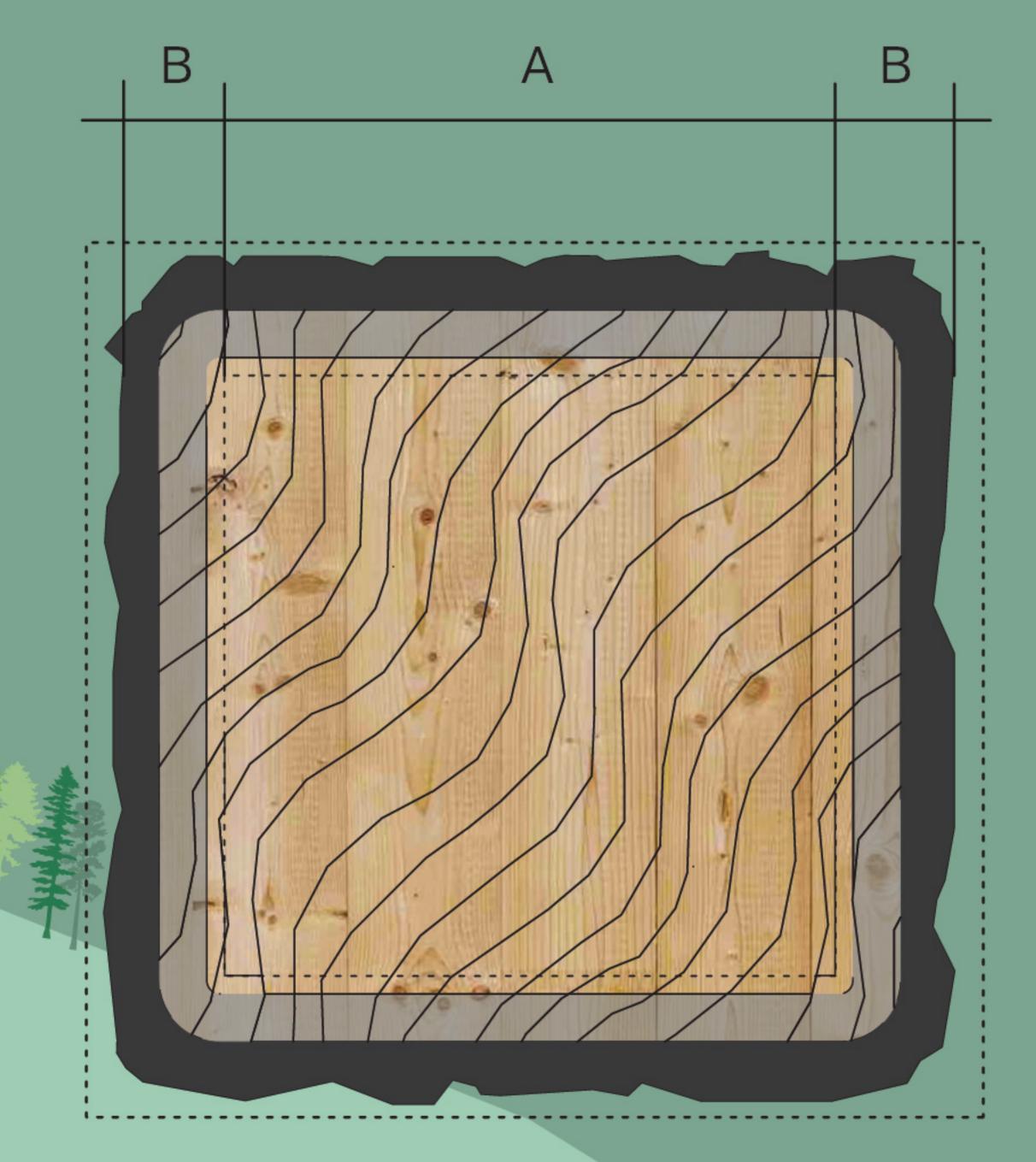
WOOD IS STRONG

FIRE RESISTANCE

Timber does not ignite until it reaches more than 390°F. When lit, timber develops a protective char layer. Large timber beams have high fire resistance because the interior of timber remains much cooler.

Heavy timber has a particular advantage in a fire because it chars on the outside while retaining strength. This charring effect offers increased safety and means mass timber is predictable when exposed to fire.

FIRE-RESISTANT TIMBER BEAM: CHARRING DIAGRAM



WOOD MYTH: WON'T WOOD BUILDINGS BURN DOWN?

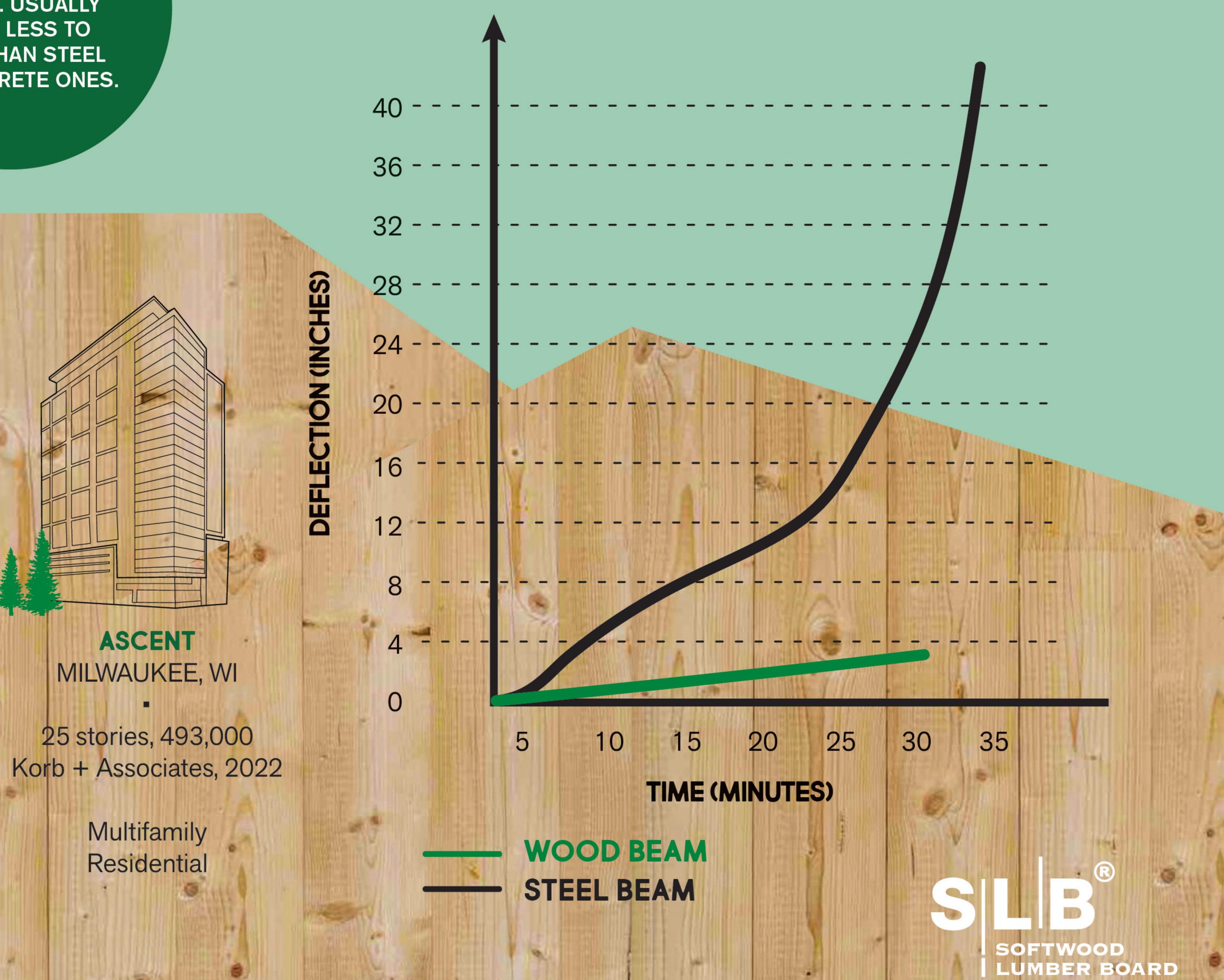
WOOD BUILDINGS ARE DESIGNED TO MEET THE SAME LEVEL OF FIRE PERFORMANCE AS BUILDINGS MADE FROM ALTERNATIVE MATERIALS.

- A Residual Section -Structural Capacity Retained
- B Sacrificial (Char) Layer -No Structural Capacity Retained

WOOD VS. STEEL: COMPARATIVE FIRE PERFORMANCE

Source: American Wood Council

A standard fire exposure test showed that a wood beam (7"x21") maintained its endurance throughout the 30-minute test while an exposed steel beam (16 WF 40) lost nearly all its strength and stiffness.



ASPEN ART MUSEUM T3 MINNEAPOLIS

ASPEN, CO

1 story, 33,000 SF Shigeru Ban, 2014

Civic (Recreational)

SEATTLE, WA

2 stories, 1,500 SF Atelierjones, 2015

> Single-Family Residential

MINNEAPOLIS, MN

7 stories, 220,000 SF Michael Green Architecture, 2016

Business (Office)

ALBINA YARD PORTLAND, OR

> 4 stories, 16,000 SF LEVER Architecture,

> > Business (Office)

5 stories, 117,000 SF 2016

320 WYTHE BROOKLYN, NY

Flank, 2018 Business (Office)

5 stories, 156,000 SF OX Architecture, 2019

Business (Office)

ANDY EDUCATION CENTER

SENECA, SC 2 stories, 16,500 SF

Cooper Carry Architects, 2020

Educational

SOFTWOOD LUMBER A SUSTAINABLE BUILDING MATERIAL

Naturally renewable, locally abundant, and easy to work with, wood once played a major role in the rapid growth of cities in the U.S. But after devastating fires in Chicago and Boston in the 1800s, new building codes limited timber construction, resulting in the concrete and steel cities we see today.

Innovations in wood products are changing the game. New mass timber structural panels are not only fire resistant but allow for buildings that are cost effective to erect and energy efficient to maintain. Mass timber buildings can be built with unprecedented height, span, and seismic stability. Building codes are finally changing to permit this extraordinary material.

WHY HARVEST WOOD?

WOOD PROVIDES BENEFITS THROUGHOUT ITS LIFE

Forests absorb CO₂ from the atmosphere through photosynthesis. Wood residue is a byproduct of milling and a smart way to

Wood products can be reused or recycled to create new products.

consume a local,

sustainable fuel.

Wood buildings are energy efficient.

Mass timber makes it possible to build taller and larger, durable buildings that

are constructed quickly and efficiently.

Trees are a

renewable resource

and store carbon.

Manufacturing

processes typically

use all parts of the

log, producing virtually

no waste.

EACH YEAR,

FORESTS IN NORTH

AMERICA GROW

SIGNIFICANTLY

MORE WOOD THAN

IS HARVESTED.

THIS GRAPHIC IS BASED ON AN EXHIBIT DESIGNED BY IKD FOR THE FAIRBANKS MUSEUM & PLANETARIUM WITH GENEROUS SUPPORT PROVIDED BY THE SOFTWOOD LUMBER BOARD; U.S. DEPARTMENT OF AGRICULTURE; AND THE VERMONT WOODLANDS ASSOCIATION.

DESIGN BY I-K-DESIGN.COM HOSTED BY FAIRBANKSMUSEUM.ORG

WOOD MYTH:

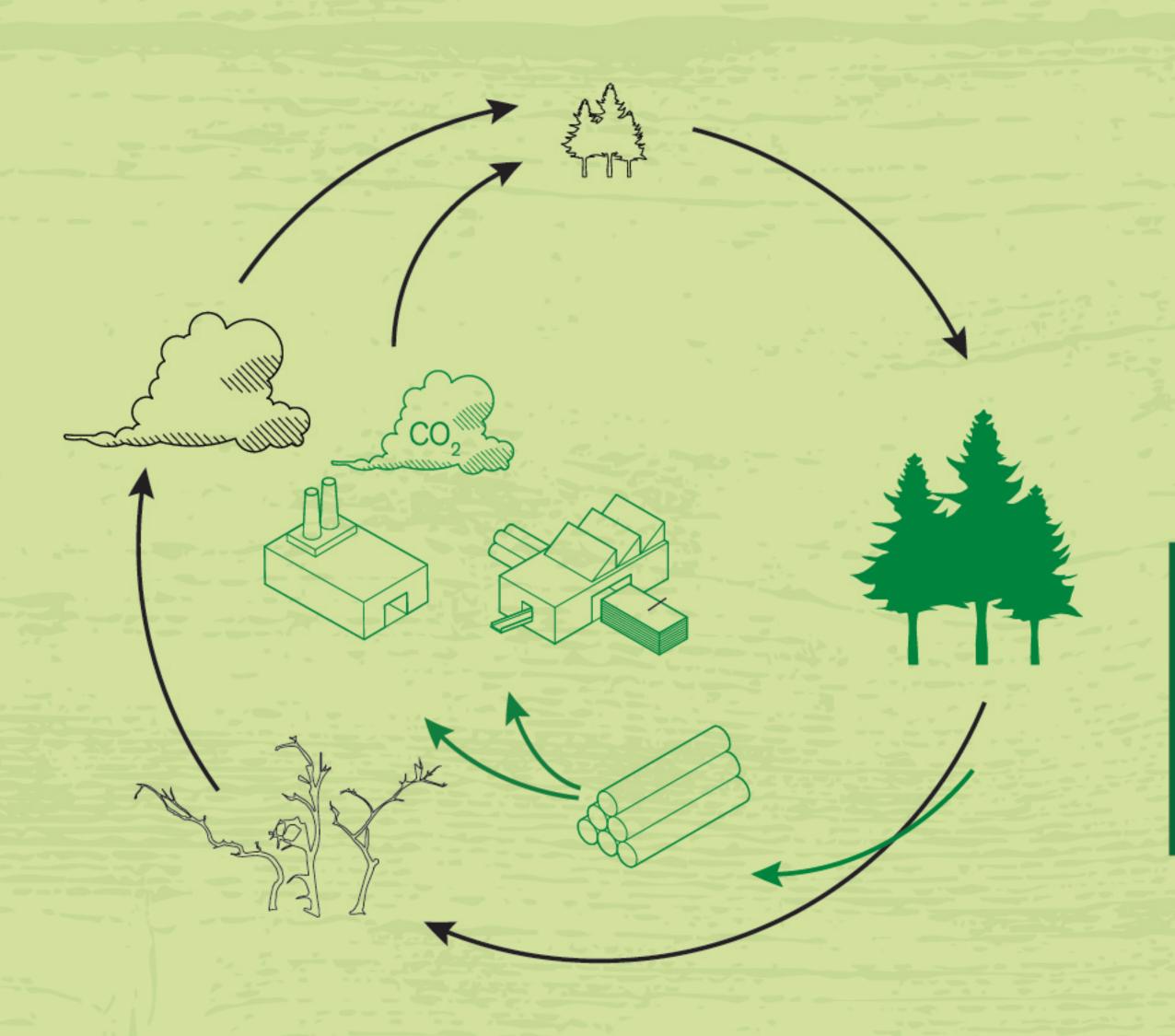
SHOULDN'T WE LEAVE THE FORESTS ALONE?

CAREFUL HARVESTING LEADS TO HEALTHIER FORESTS, FEWER FOREST FIRES, FEWER INVASIVE SPECIES, AND LESS CARBON DIOXIDE IN THE AIR.

WOOD STORES CARBON

Trees need CO2 to grow. They have the unique ability to absorb CO2 from the atmosphere and store it long-term in their fiber. To combat climate change effectively, trees should be harvested at maturity when carbon content is at its peak.

ON AVERAGE, NORTH AMERICAN WOOD PRODUCERS USE 98% OF EVERY TREE BROUGHT TO A MILL FOR PROCESSING.

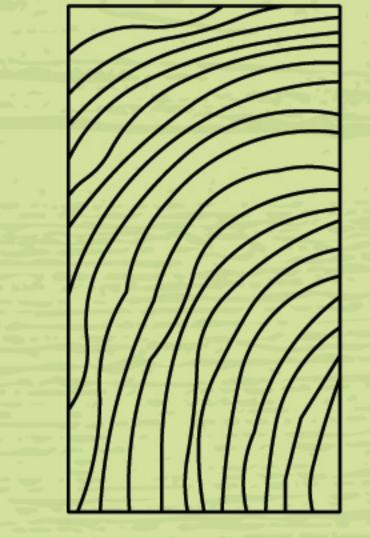


A BENEFICIAL CYCLE

- 1. Young trees absorb carbon rapidly
- 2. Mature trees absorb carbon slowly 3. Decaying trees and fires release carbon
- 4. Carbon is reabsorbed into new trees

HARVESTING TREES LOCKS CO2 INTO THE TIMBER

HARVESTING WOOD: LOWER IMPACT



TIMBER Raw Ingredients:



STEEL Raw Ingredients: Iron Ore Coal Carbon Manganese Chrome

Nickel

Tungsten

CONCRETE

Raw Ingredients: Sand Limestone Gypsum Silicon Phosphorus Sulphur

ENERGY INTENSITY

Wood buildings can dramatically reduce carbon emissions in the construction industry. Wood products require less total energy, and in particular less fossil energy to make, than other materials including metals, concrete, or bricks.

ENERGY USED TO PRODUCE 1 TON OF MATERIAL

TOTAL ENERGY USED (MJ/KG)

WOOD CONCRETE **6X MORE THAN WOOD** STEEL 5X MORE THAN WOOD

WOOD PRODUCTS MAKE UP 47% OF ALL INDUSTRIAL RAW MATERIALS MANUFACTURED IN THE U.S., YET ACCOUNTS FOR ONLY 4% OF THE SECTOR'S ENERGY USE.



SUBSTITUTING WOOD FOR STEEL OR CONCRETE COULD SAVE 14-31% OF GLOBAL CO₂ EMISSIONS AND 12-19% OF FOSSIL FUEL CONSUMPTION.

2021 PROGRAM IMPACT

ACCELERATING INVESTMENT AND GROWING DEMAND

Generated

Helped the softwood lumber industry to support over 775,000 LUMBER HARVESTING AND MANUFACTURING JOBS and 546 mills in 45 states.

WOODWORKS DIRECTLY CONVERTED

352 LIGHT-FRAME AND 96 MASS TIMBER BUILDINGS, and influenced a total of 1,700 PROJECTS to choose wood for their design, performance, and sustainability needs.



13 NEW JURISDICTIONS to advance their adoption the 2021 IBC allowing for taller mass timber buildings.

Through the American Wood Council, supported



VIRTUAL AND IN-PERSON HOURS OF EDUCATION

to architects, engineers, designers, developers, and code officials.

By facilitating wood use, helped to avoid

METRIC TONS

of carbon dioxide emissions, which amounts to taking 1,040,600 CARS OFF THE ROAD



Think Wood's lead nurturing program, generated

Through

NEW PROJECTS

totaling an estimated 2.8 million square feet of project space.

Via Think Wood, finished the year with

SALES QUALLFIED LEADS (SQLS)

that were sent to WoodWorks for project support or further nurturing.

2012-2021 SLB CUMULATIVE IMPACT

9.8+ BILLION BOARD T of new demand has resulted from SLB

investments since 2012.

Incremental 79 BOARD generated for SINCE 2012.

The SLB has generated \$4.9 BILLION of revenue since 2012.

Average return of invested since 2012.