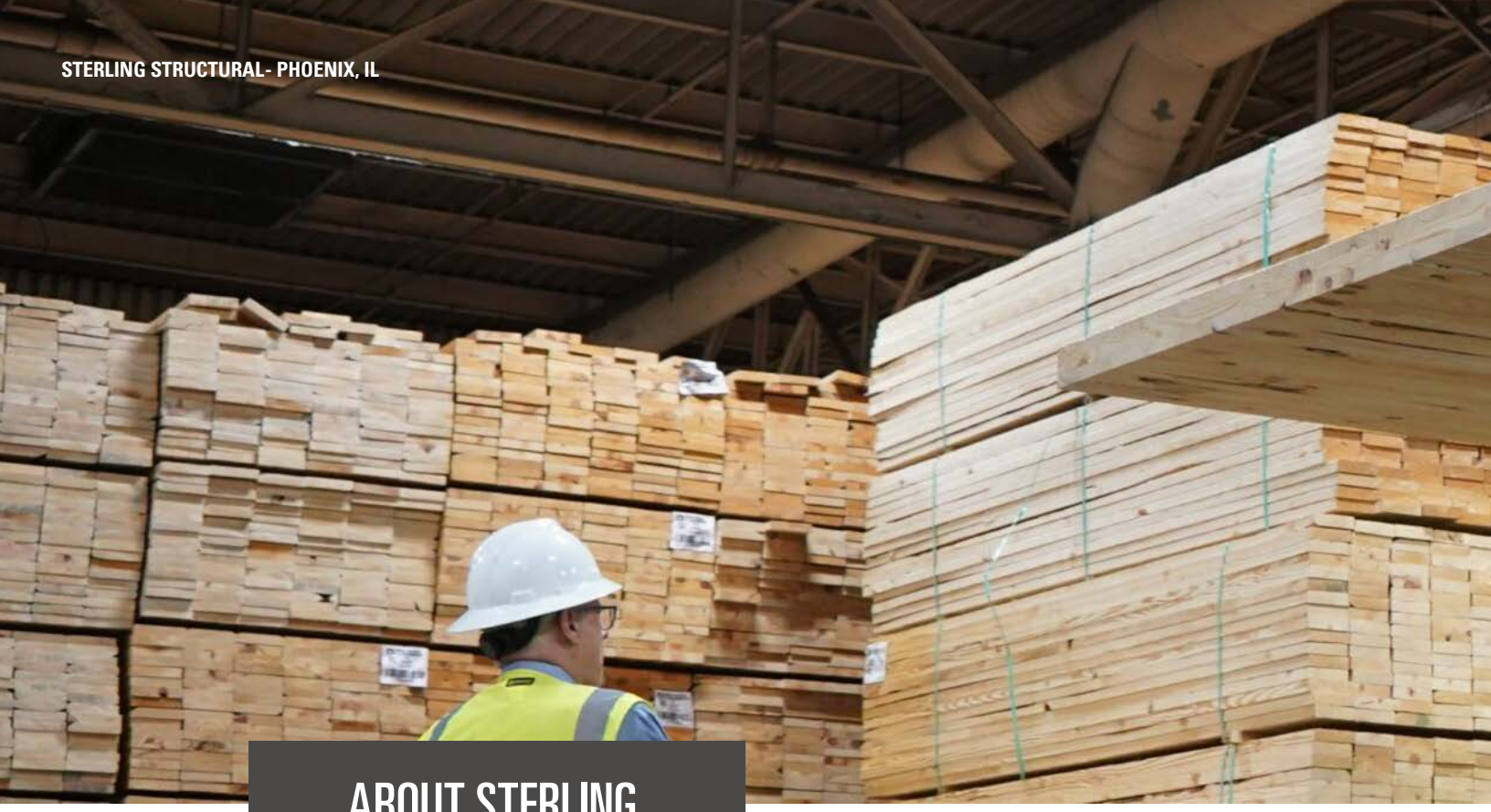
DESIGN MANUAL

MASS TIMBER FOR THE MASSES

TerraLam® CLT

Effective Solutions for Smart Designs

STERLING® Structural



ABOUT STERLING

MAKING MASS TIMBER ACCESSIBLE

Our company was founded in 1949 and continues to operate according to the Sterling family values to this day. Since we are always innovating and adapting to our customers' needs, we were one of the first companies to begin manufacturing CLT and offered its unique benefits to the site access and industrial matting market.

Today, Sterling is still America's largest CLT manufacturer with the capacity to produce 1,000 panels a day at our plants in Lufkin, Texas and Phoenix, Illinois. In 2022 we expanded to bring our exceptional operational capacity and wealth of experience to the building construction market, with PRG 320-certified structural CLT panels available at competitive price points and timelines.

This design guide was developed to give you, our community, a better understanding of our manufacturing capabilities and how the design process impacts manufacturing as part of our commitment to innovating with you. From optimal grids to spline details, we are sharing smart design solutions that will ensure we can collectively design more sustainably and bring mass timber to the masses.

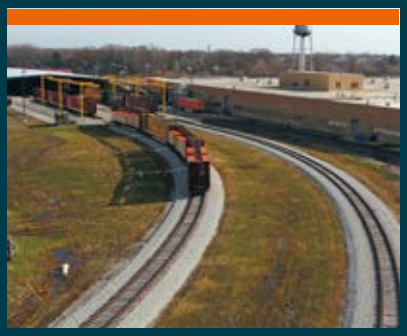
TABLE OF CONTENTS

WHAT WE DO

Think of Sterling as a resource for all things mass timber. We have developed collaborative working relationships with national glulam, connection hardware and complementary product manufactures to efficiently procure and coordinate top-quality building product packages tailored to your specific needs.

Design Assist and Coordination

Project Management and Logistics



Machining and Prefabrication

Transparent Pricing and Timelines

Value-Added Complementary Products

Sustainability Support

With our strong network, exceptional project management and industry expertise, we work together from design through sequence and installation to deliver your turn-key mass timber or hybrid package.

WHY CLT?

NOW IS THE TIME FOR TIMBER - WE CAN HELP

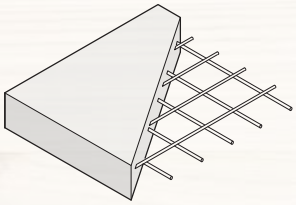
Timber buildings are healthier for the environment because wood materials store carbon throughout the life cycle of the building, instead of releasing it into the atmosphere to form carbon dioxide (CO_2). Additionally, building with forest products typically creates fewer emissions during the harvesting/extraction, manufacturing and transportation cycle than other materials used in construction.

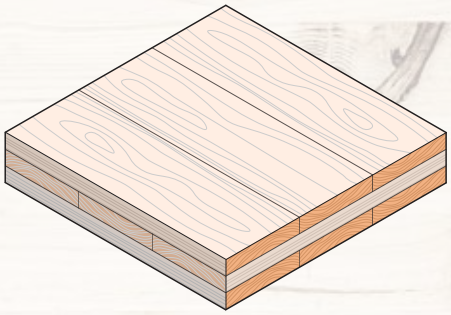
Many buildings have been completed using CLT for floors, roofs, and walls with a full mass timber system. However, it is common to use CLT floor and roof panels in combination with engineered wood framed post and beam systems or light-frame wood bearing walls as the vertical supporting structure.

Since roughly 75% of the carbon sequestered in a mass timber building is stored in its floor and roof slabs, increasing the adoption of CLT for horizontal plate applications can significantly reduce the construction industry's carbon footprint. Providing flexibility for the utilization of a wider range of vertical support materials while making substantial progress in sustainability.

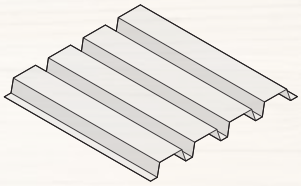
300 LBS CO_2E/M^3 SEQUESTERED

500 lbs CO_2E/m^3 emitted



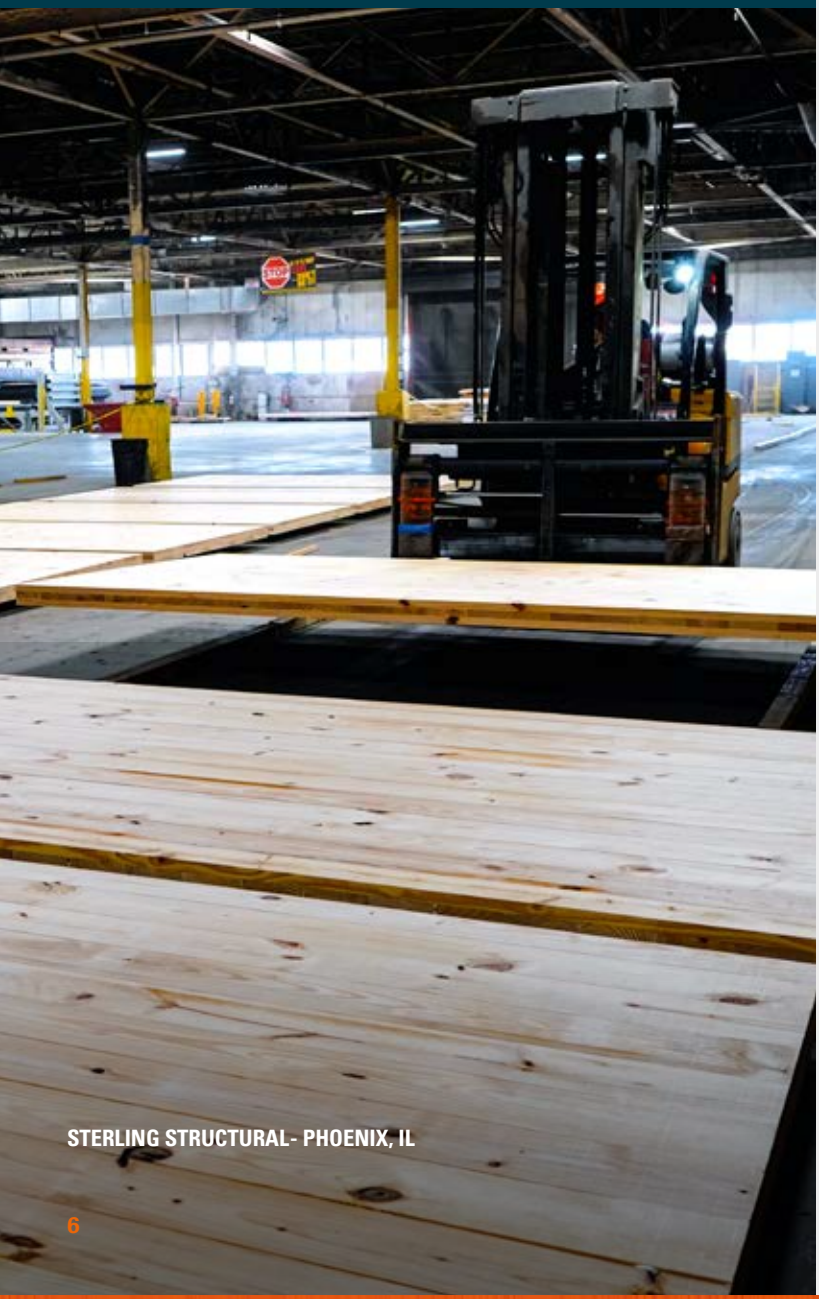


5100 lbs CO_2E/m^3 emitted



STANDARDIZATION

Developed in direct relation to the established lumber supply chain, the lumber for our CLT panels is transported to our facilities by rail, ensuring consistent delivery and scalable production. We offer CLT panels in three different lengths and ply configurations, with all USA sourced species options including Southern Pine, Spruce Pine Fir South, and Eastern Hemlock—all compliant with PRG-320 to meet a wide range of design needs.



STERLING STRUCTURAL- PHOENIX, IL

LAYUPS

CLT billets are made by stacking layers of kiln-dried lumber crosswise and bonding them together under pressure, forming a dimensionally stable, rectangular panel.

4.125”

3-PLY

Often used at roof and wall conditions.

6.875”

5-PLY

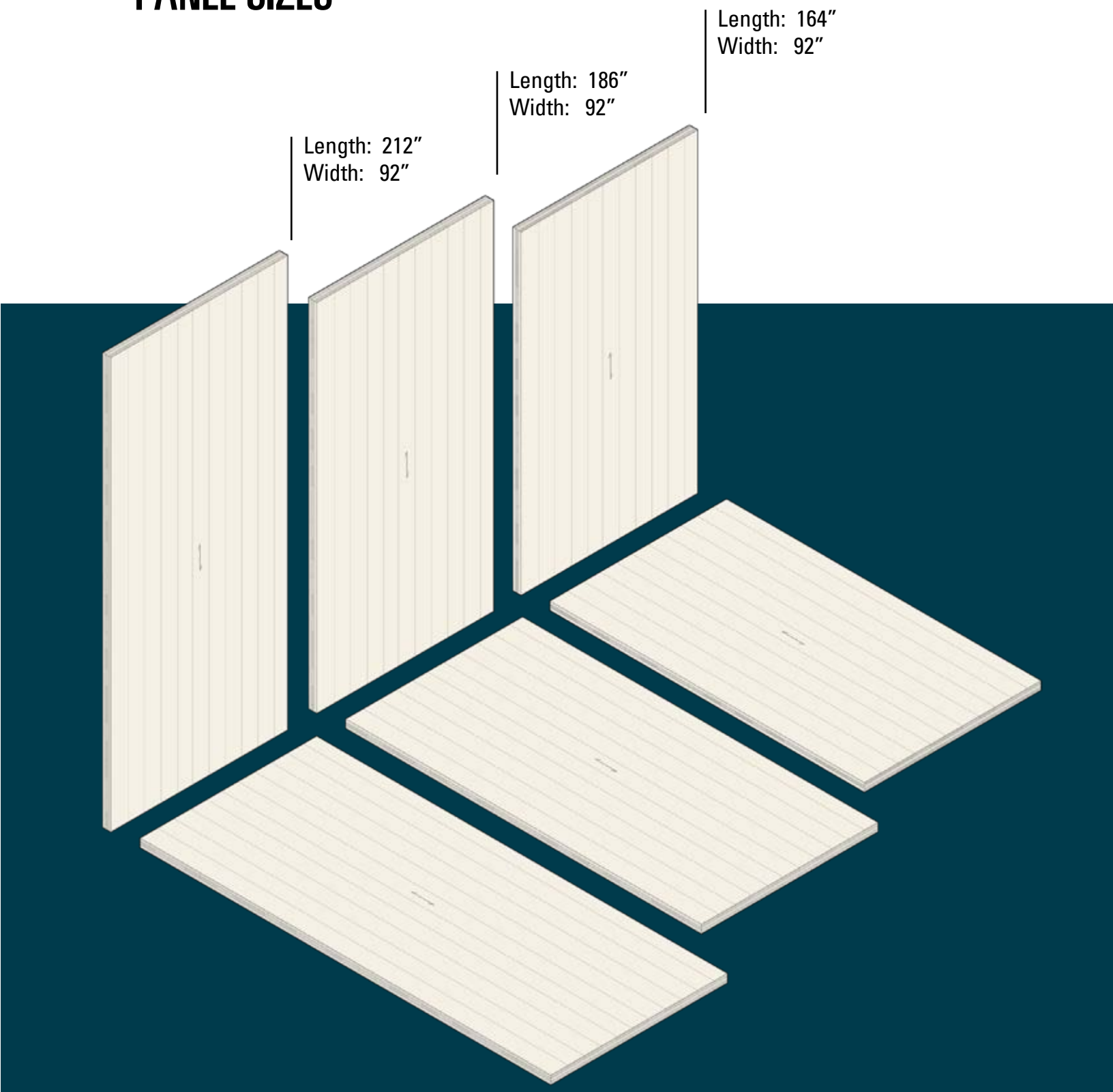
Often used at floor and shaft wall conditions.

9.625”

7-PLY

Used at high load floor conditions and when vibration control is needed for acoustics.

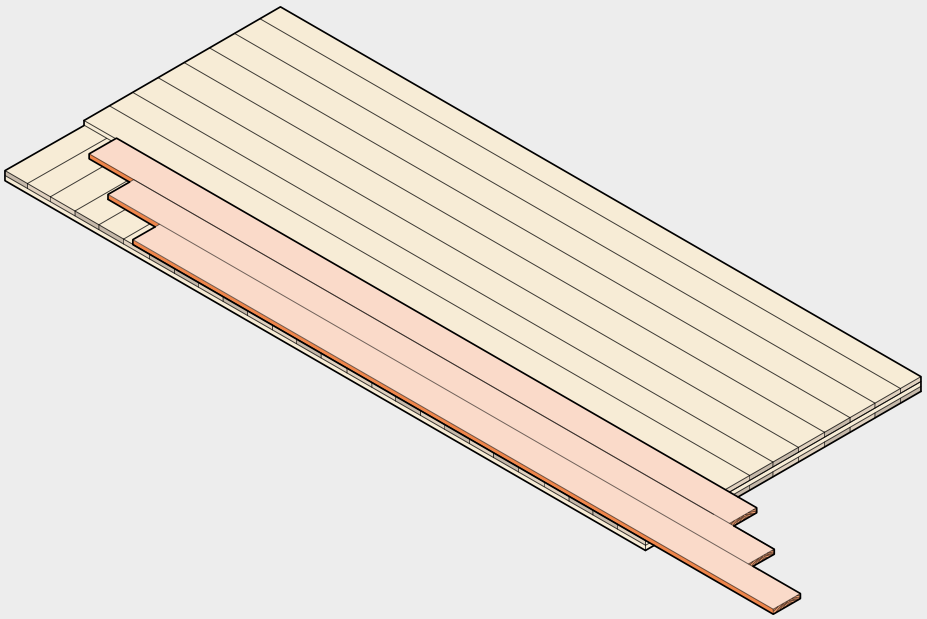
STERLING PANEL SIZES



WHY STANDARD DIMENSIONS?

Our panel dimensions are built off what is readily available and accessible in the existing lumber supply chain.

This standardized approach ensures consistent availability, faster timelines, lower costs and the most efficient and sustainable use of material.



PANEL DIMENSIONS

PRODUCT	LENGTH		WIDTH		THICKNESS
	ft	in	ft	in	in
TL300S14	13.67	164	7.67	92	4.125
TL300S16	15.50	186			
TL300S18 *	17.67	212			
TL500S14	13.67	164	7.67	92	6.875
TL500S16	15.50	186			
TL500S18 *	17.67	212			
TL700S14	13.67	164	7.67	92	9.625
TL700S16	15.50	186			
TL700S18 *	17.67	212			
Tolerance	+/- 1/4"		+/- 1/8"		+/- 1/16"

*ONLY AVAILABLE IN V3+ GRADE, SP SPECIES

SPAN TABLES

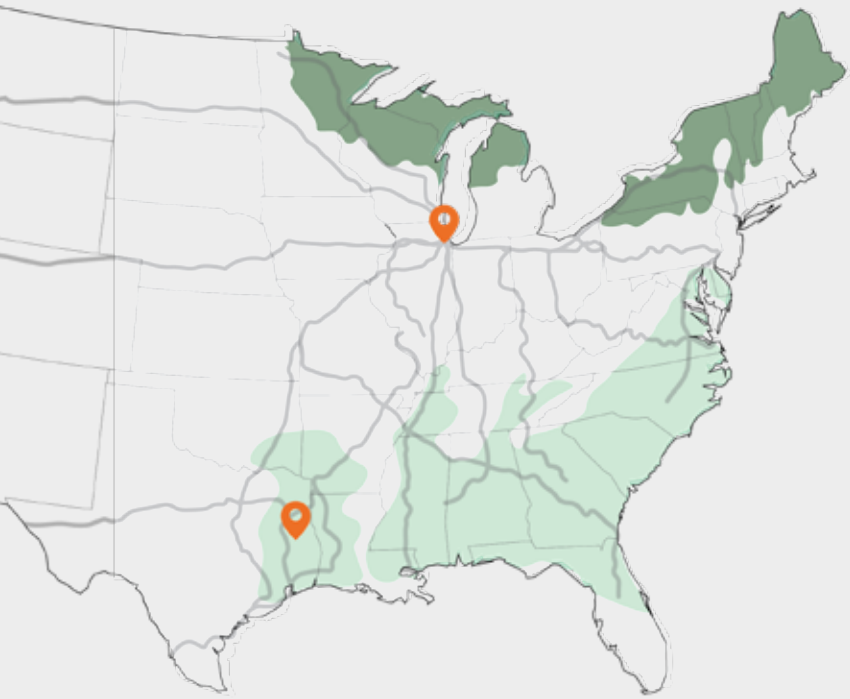
Our consideration of span specifically refers to the distance between supports rather than the entire panel length. We have also taken into account the weight of the panel itself, dead loads in the tables below are superimposed and do not need to include the panel weight.

REFER TO THE SPECIFICATION GUIDE AND SPECIES ADDENDUM FOR COMPLETE SPAN TABLES COVERING ALL LOADING REQUIREMENTS. OUR LIVE LOAD 60 PSF TABLE BELOW.

Dead Load	MAXIMUM SPAN DISTANCE																	
	8'			10'			12'			14'			16'			17' 8"		
Thickness (in)	3-ply 4.125	5-ply 6.875	7-ply 9.625	3-ply 4.125	5-ply 6.875	7-ply 9.625	3-ply 4.125	5-ply 6.875	7-ply 9.625	3-ply 4.125	5-ply 6.875	7-ply 9.625	3-ply 4.125	5-ply 6.875	7-ply 9.625	3-ply 4.125	5-ply 6.875	7-ply 9.625
20 PSF																		
30 PSF																		
40 PSF																		
50 PSF																		
60 PSF																		

VINEYARD VIEW APARTMENTS - SUTTONS BAY, MI

STERLING STRUCTURAL- PHOENIX, IL



Rail System

Sterling Locations

Southern Pine

EH + SPF-S

SOURCING

Sterling manufactures to a single appearance standard that can be used for both exposed and concealed applications. We utilize No. 2 lumber, sort for wane, and have rigorous panel handling requirements for our operations and logistics teams. By standardizing our appearance grade, we are able to use readily available lumber to get you your products faster and at a lower price point. Sterling uses high-grade planers to deliver a smooth final surface that honors the natural characteristics of each species with sanding and a Sansin KP-12 clearcoat offered as an additional option for the perfect finish.

The majority of our lumber arrives to our facility via rail, reducing the carbon footprint of our cradle-to-gate life cycle.

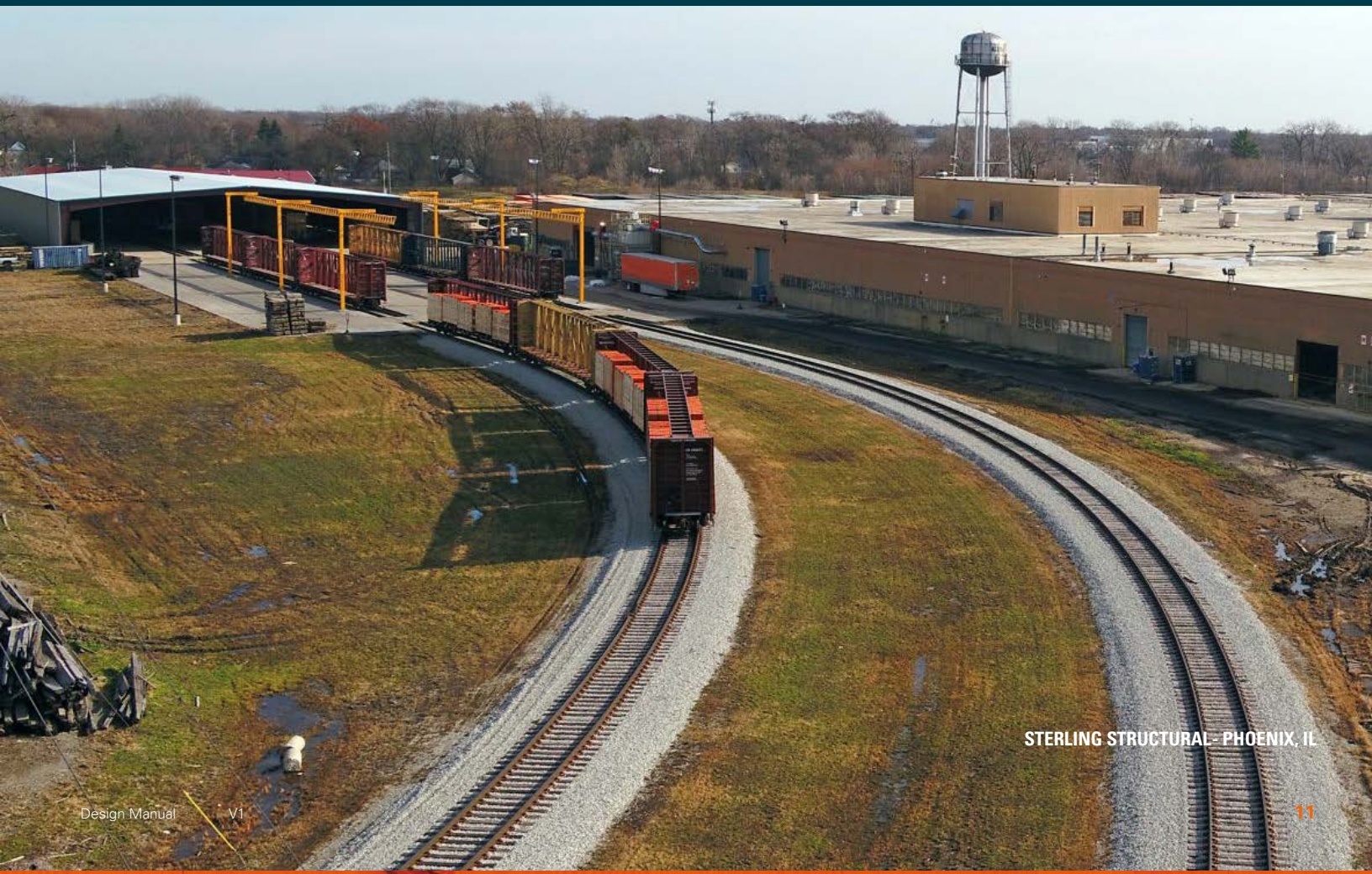
100% USA SOURCED WOOD OFFERINGS

All of the wood used in our CLT panels is grown, processed, and manufactured in the USA.

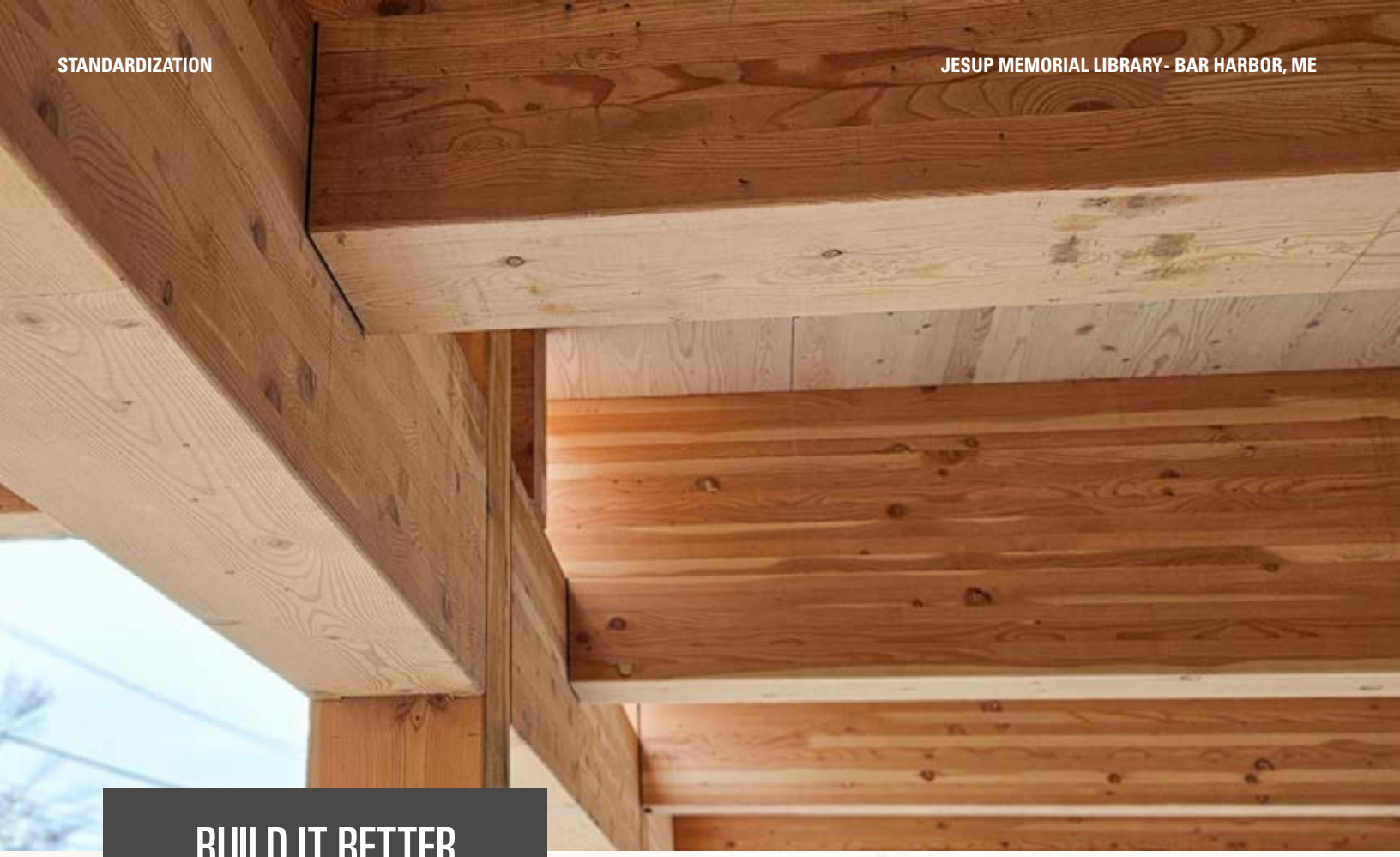
SOUTHERN PINE

PINE FIR SOUTH

EASTERN HEMLOCK



STERLING STRUCTURAL- PHOENIX, IL



BUILD IT BETTER

SPECIFICATIONS + CERTIFICATES

Looking for more detailed information about TERRALAM® Download the Specification Guide from our website containing product details, panel connections, span tables, and more.

SUSTAINABILITY CERTIFICATIONS

Declare.

Declare – Sterling TerraLam panels carry a DECLARE® material transparency label through the International Living Future Institute.

EPD®
THE INTERNATIONAL EPD® SYSTEM

Environmental Product Declaration – Our Environmental Product Declaration (EPD) is available for AEC teams to measure their sustainability through whole-building life cycle assessment (LCA). EPDs are third-party verified reports detailing the environmental impacts of products throughout their full life cycle. Life Cycle Assessment support is available upon request.

SUSTAINABLE FORESTRY INITIATIVE

Sustainable Forestry Initiative – Sterling supports regenerative forestry practices throughout its supply chain. We source 100% of our lumber from U.S. forests and are committed to traceability and accountability through the SFI Certified Source and Chain of Custody programs.

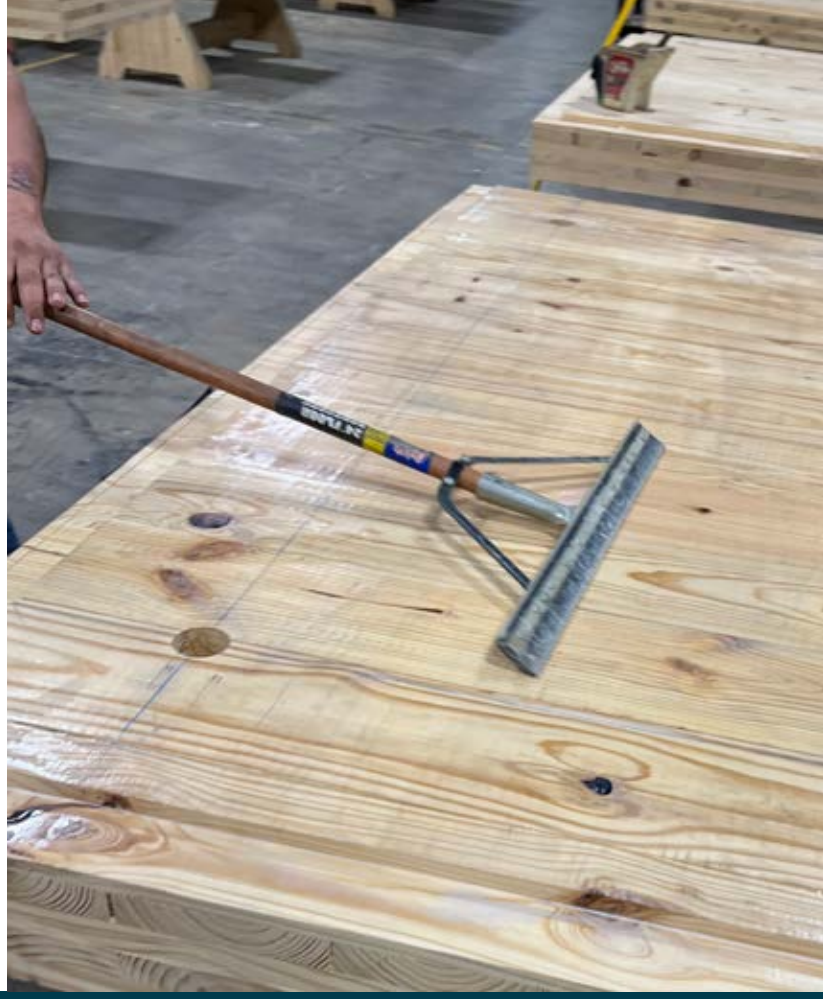
LEED LIVING BUILDING CHALLENGE

LEED/Living Building Challenge – TerraLam panels are eligible for credits in the Materials Petal of the Living Building Challenge, as well as sourcing and material health areas in LEED. Contact our team to learn how TerraLam can contribute to green building certification programs or otherwise support your sustainable design goals.

FINISHING

Partnerships with value-aligned manufacturers allow us to deliver panels with complementary products pre-applied in our facility under precise factory conditions. These surface treatments, such as self-adhered weather resistive barriers and protective coatings, are available upon request at an added cost and can be instrumental in saving on-site application time and labor.

KP-12 is a protective undercoat for timber protects wood from UV degradation and moisture absorption from transit through construction.



SOUTHERN PINE
UNFINISHED

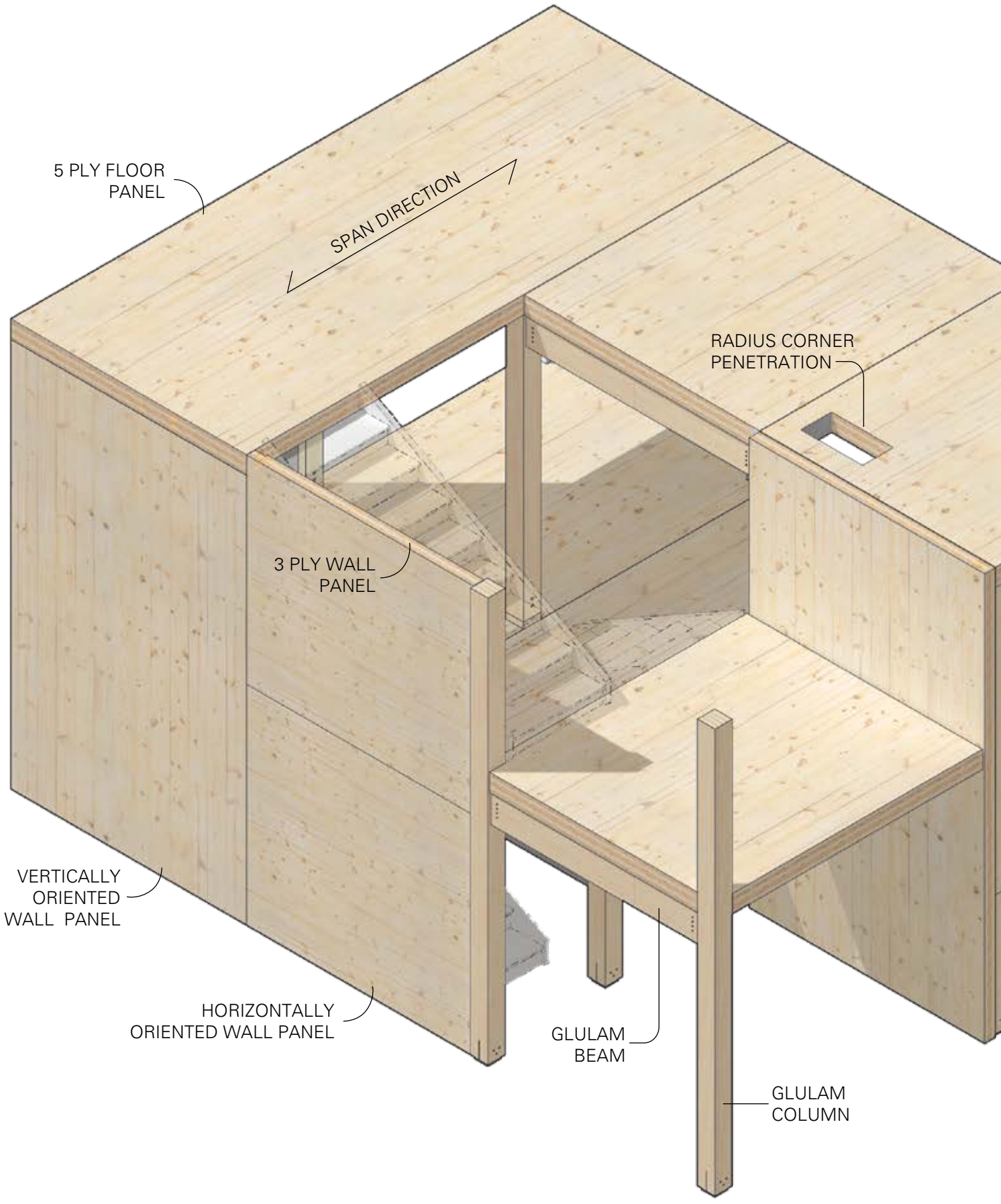
SOUTHERN PINE
SANSIN KP-12

BRITTON LUMBER - BATH, NH

DESIGNING WITH TERRALAM®

Timber is not the same as steel. With wood, volume is the driver and cost usually goes up with the span and customization. We understand there are many other factors that contribute to each unique project: parking layouts, mechanical systems, and acoustics to name a few.

We have compiled tried and tested example grids, tolerances, and common details we recommend that work with a variety of program types. Think of these as a starting point to reduce waste and optimize structure.

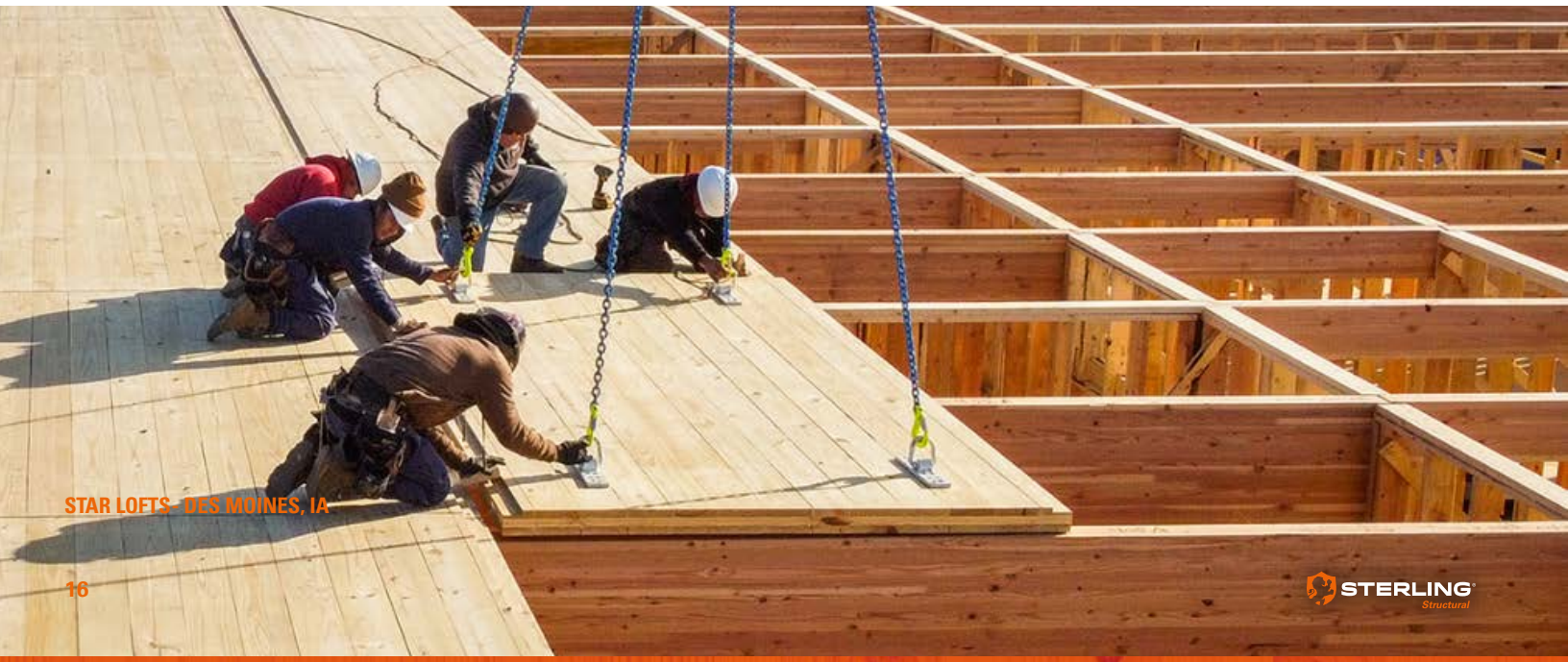

5 PLY FLOOR PANEL
SPAN DIRECTION
RADIUS CORNER PENETRATION
3 PLY WALL PANEL
VERTICALLY ORIENTED WALL PANEL
HORIZONTALLY ORIENTED WALL PANEL
GLULAM BEAM
GLULAM COLUMN

WASTE WITHIN GRIDS

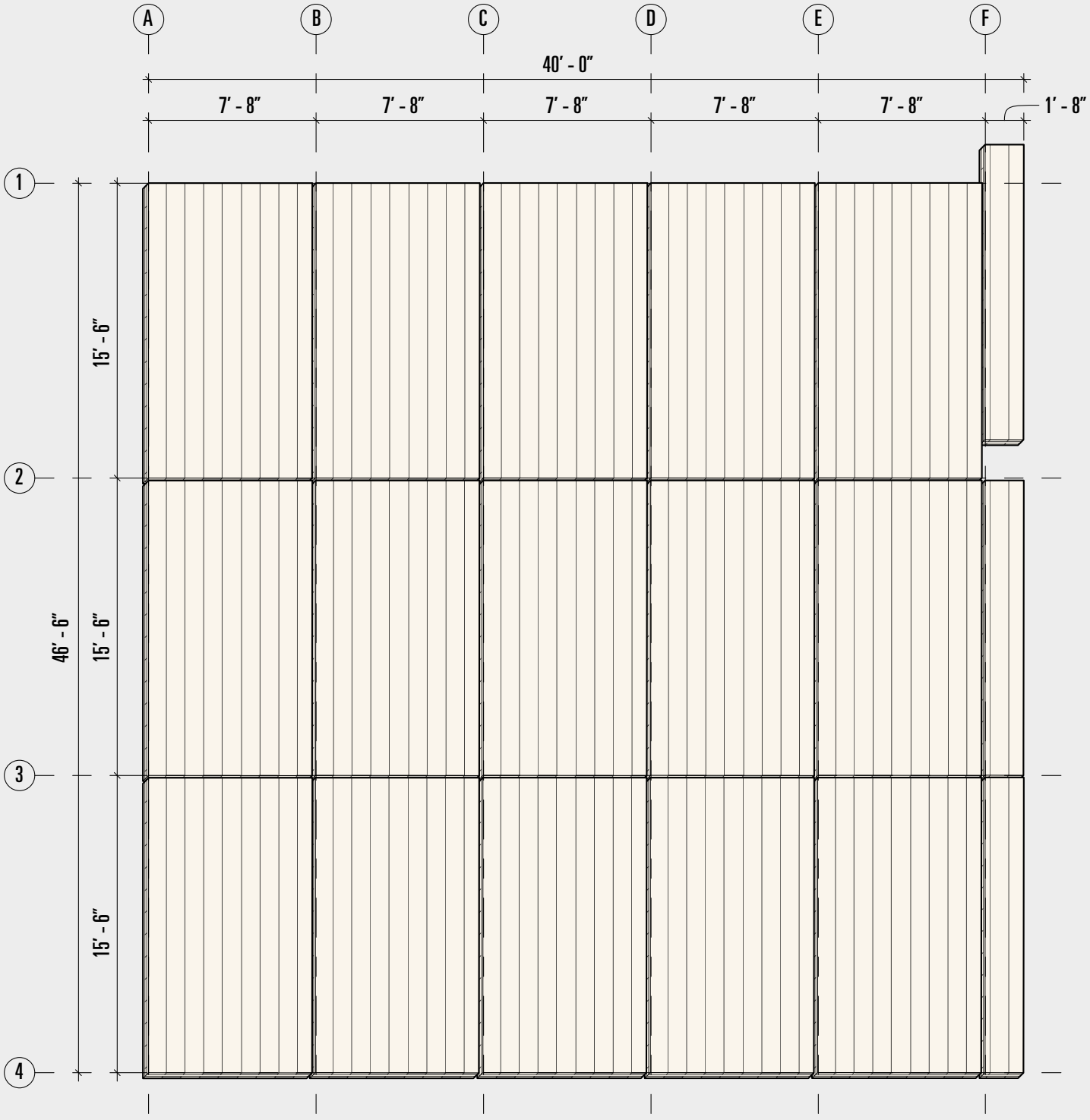
Material waste increases when buildings are designed without consideration for material manufacturing dimensions (see sizing on page 7). Designing to a grid based on manufactured panel sizes reduces fabrication, improves material efficiency, and supports more sustainable construction.

We're happy to assist from the very beginning — engaging Sterling early gives your team access to proven grid layout strategies from past projects that help reduce waste, increase efficiency and ensure a value-engineered structurepanel efficiency.

GRID SIZE	TOTAL AREA	CLT AREA	WASTE
23'-0" x 13'-8"	630.6 SF	105 SF x 6 = 630 SF	**0%**
23'-0" x 15'-6"	712.8 SF	118.8 SF x 6 = 712.8 SF	**0%**
20'-0" x 24'-0"	480 SF	105 SF x 6 = 630 SF	31.25%
20'-0" x 30'-0"	600 SF	118.8 SF x 6 = 712.8 SF	18.8%
22'-0" x 24'-0"	528 SF	105 SF x 6 = 630 SF	19.3%
22'-0" x 30'-0"	660 SF	118.8 SF x 6 = 712.8 SF	8.0%
30'-0" x 30'-0"	900 SF	118.8 SF x 8 = 952 SF	5.8%
30'-0" x 40'-0"	1,200 SF	105 SF x 12 = 1,200 SF	5.0%



STAR LOFTS - DES MOINES, IA

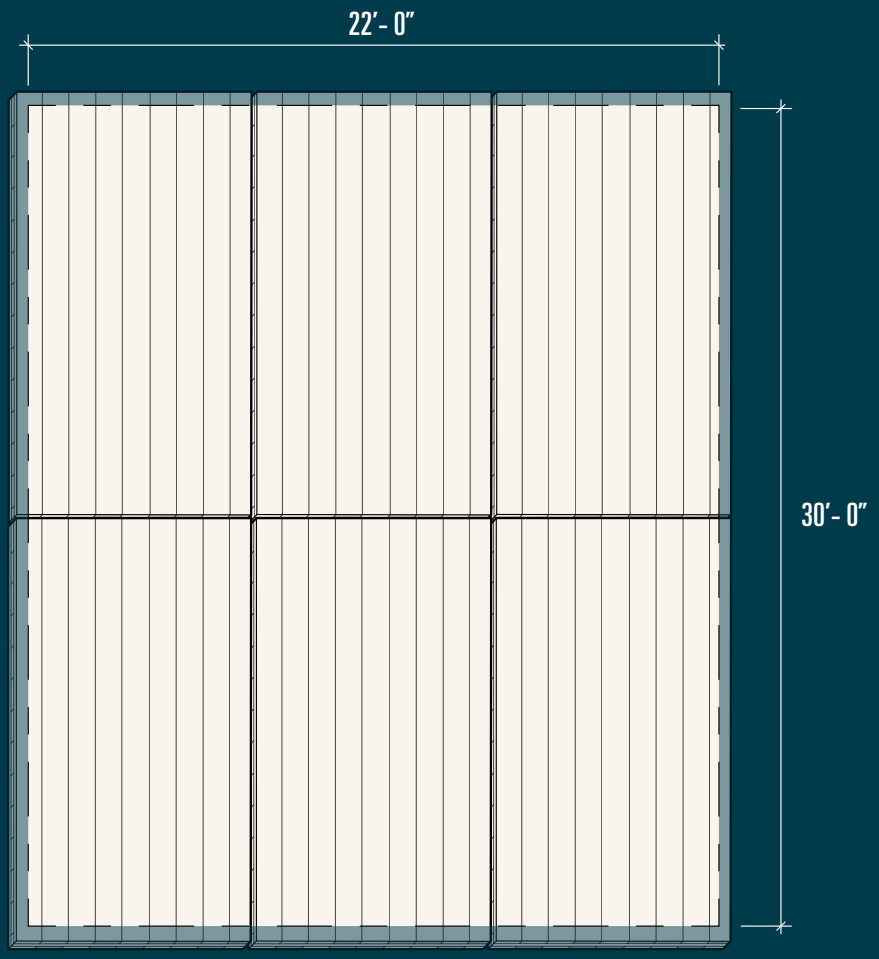


Total Area = 1,600 SF
CLT Area = 105 SF x 16 = 1,680 SF

WASTE = 5.0%

GRIDS BY PROGRAM TYPE

CLT is rapidly gaining traction across a variety of building types due to its strength, sustainability, and prefabrication efficiency. The most common spaces using CLT today typically fall into categories that benefit from modular construction, aesthetic wood finishes, domestically-sourced solutions, and/or sustainable credentials.



MULTI-FAMILY

Acoustic performance will be a key driver in the design - shorter spans, thicker panels, or additional mass (e.g., topping slabs) can help control vibration.

Optimal Grid Sizes: 23' x 13'-8"
23' x 17'
22' x 30'

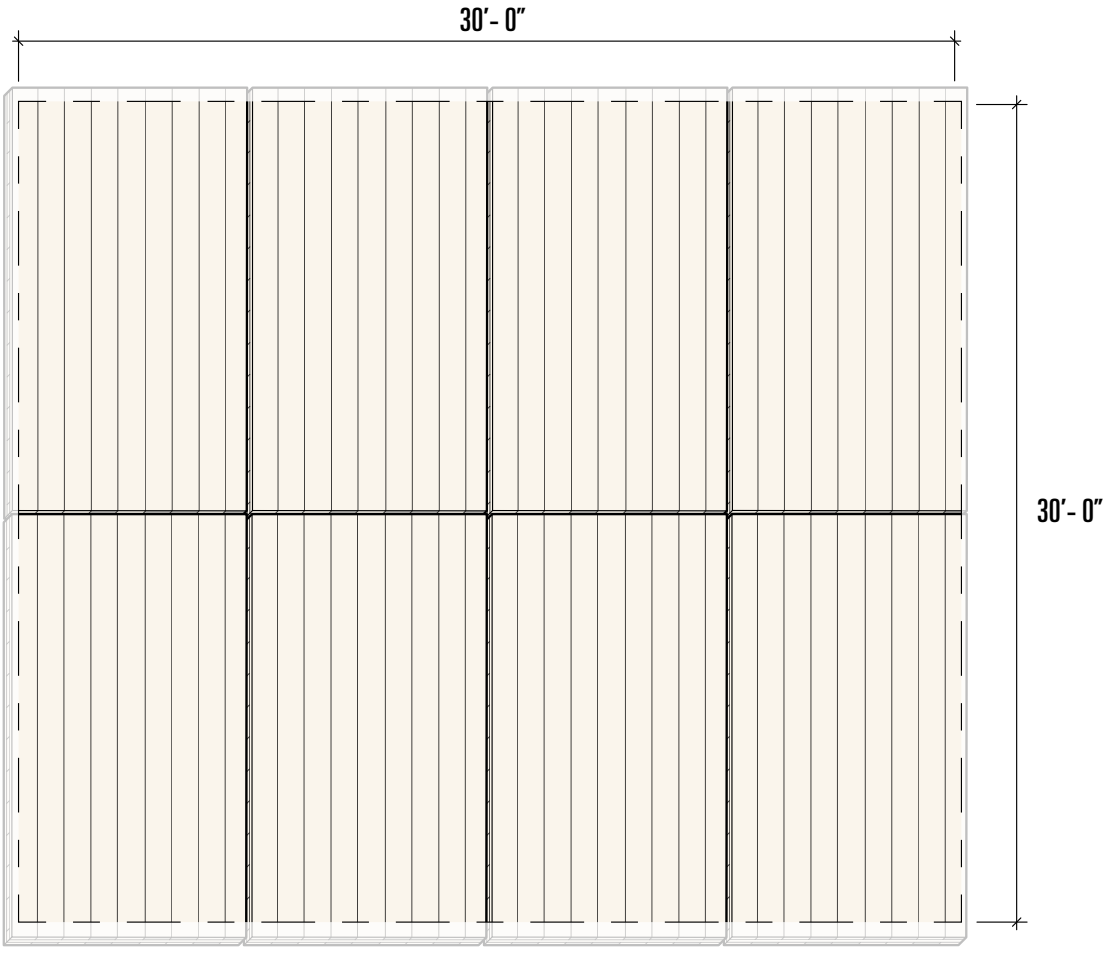
RETAIL / COMMERCIAL

Hybrid systems with glulam or steel beams can accommodate larger open spans maintaining flexibility for merchandising and customer flow.

Optimal Grid Sizes: 23' x 13'-8"
23' x 17'
22' x 30'

USE CASES FOR CLT

Repetitive layouts	Prefab + fast erection
Sustainable design	Low carbon + biophilic benefits
Tight sites	Less noise, minimal site disruption
Exposed structure	Aesthetic value + reduced finishes



EDUCATION

Typical classroom design requires spans from 26-30 feet. Grids from there can optimize the material. Mid-span support can be glulam or steel depending on goals of project.

Optimal Grid Sizes: 22' x 26'
30' x 30'

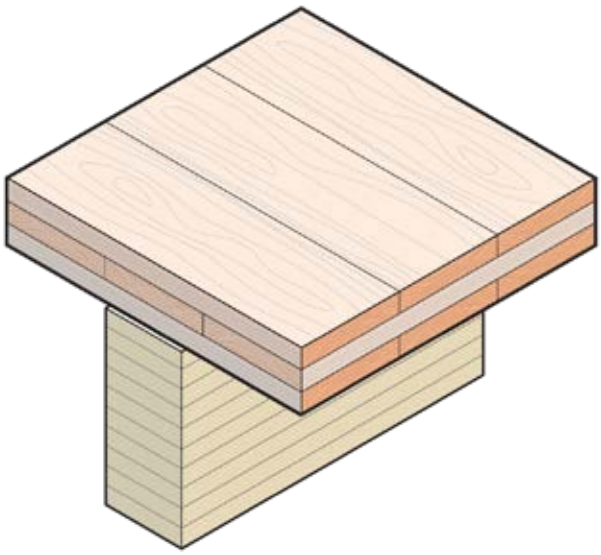
WAREHOUSE / BIG BOX

Grids must address large open spans, high load requirements, and limited partitions, while prioritizing cost-effectiveness.

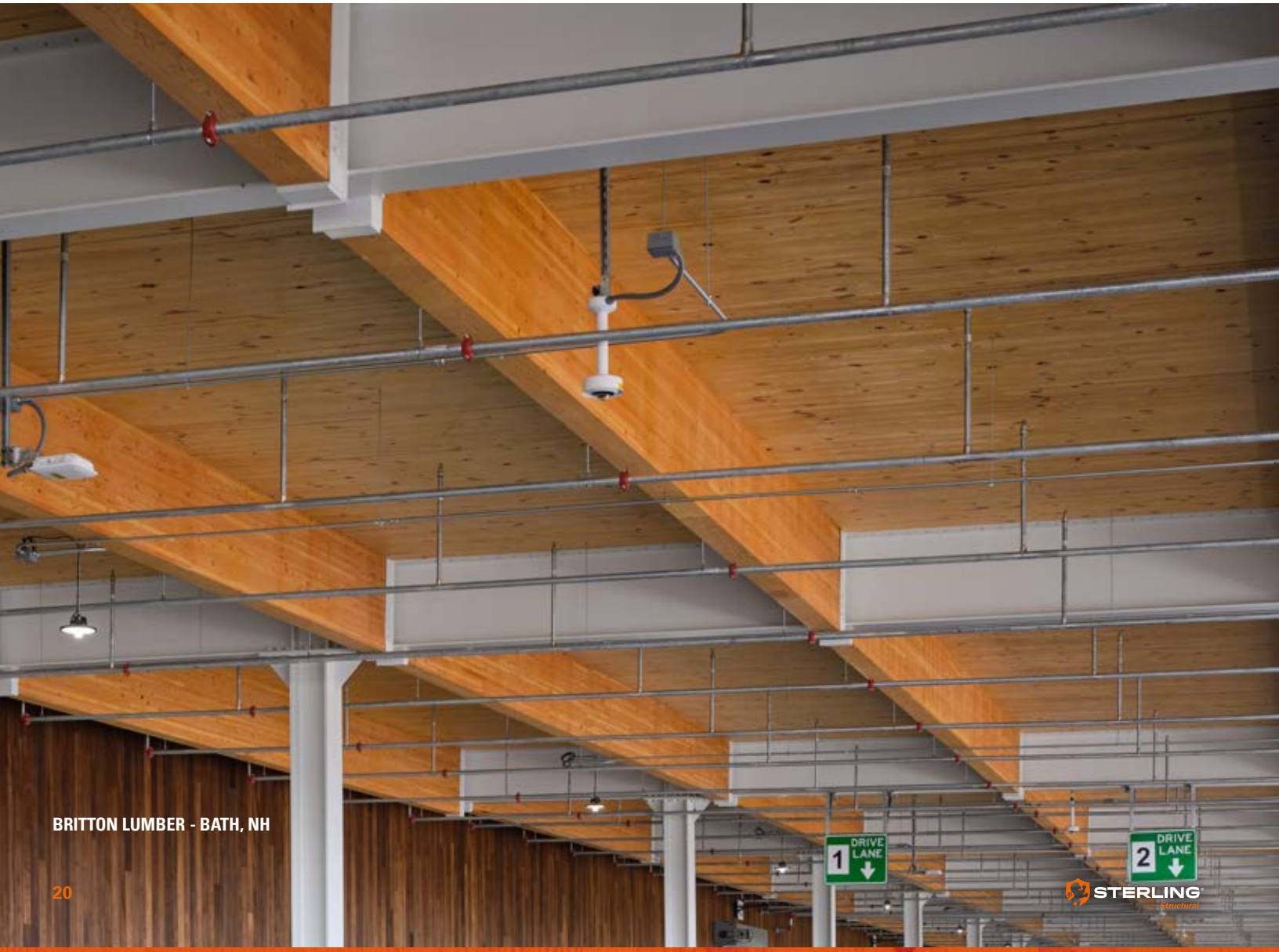
Optimal Grid Sizes: 30' x 30'
45' x 45'
52' x 52'

MASS TIMBER + GLULAM

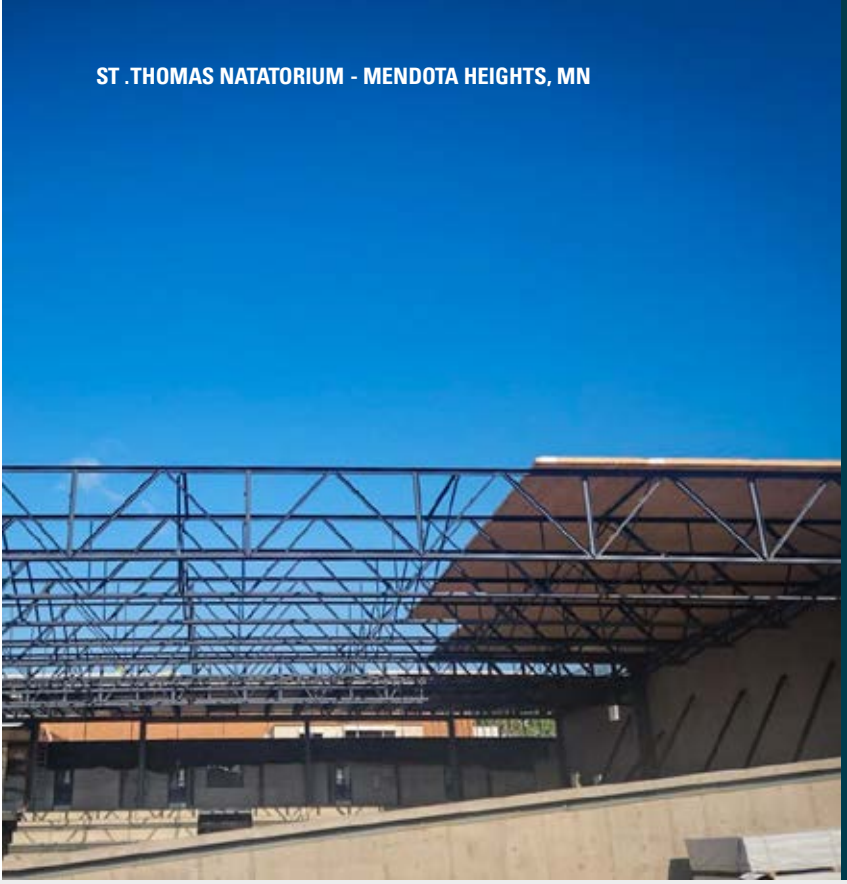
Glulam columns and beams are used with CLT slabs and walls to create strong, efficient hybrid timber structures. The glulam elements provide the main structural frame, supporting vertical and horizontal loads. CLT slabs span between glulam beams, while CLT walls can either sit on glulam beams or align with columns. This combination offers design flexibility, structural efficiency, and quick assembly on-site.



Sterling works directly with trusted US partners to design, procure, and deliver glulam.



BRITTON LUMBER - BATH, NH



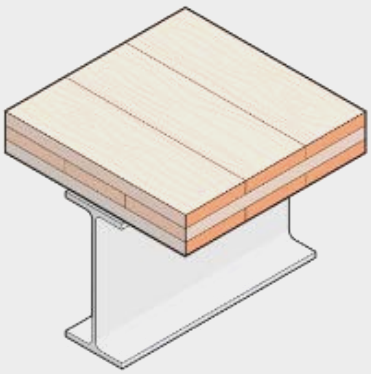
ST .THOMAS NATATORIUM - MENDOTA HEIGHTS, MN

HYBRID STRUCTURES

Some projects call for a unique approach blending different forms of construction. CLT can seamlessly integrate with traditional materials to create a modern, high-performance space. This approach not only delivers structural efficiency but also enhances the aesthetic appeal of the project.

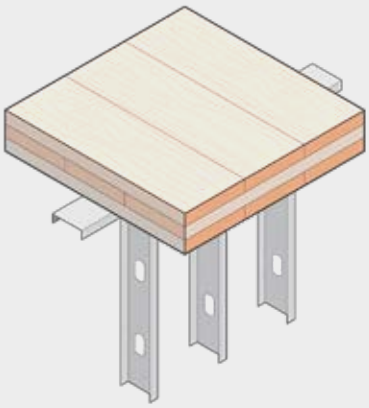
Hybrid structures with CLT panels often combine steel, stud framing, or concrete to enhance span capacity, structural performance, and address cost considerations, and design goals.

COMMON HYBRID SYSTEMS



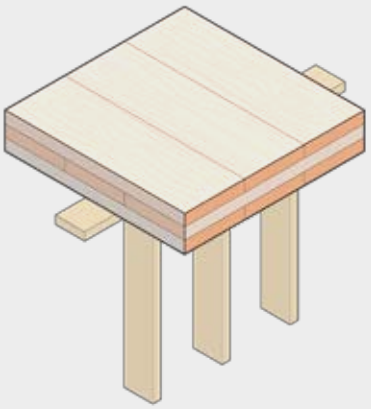
CLT + STEEL

For long spans, open floor plans, and reduced member sizes.



CLT + MTL STUD

For interior construction and low rise applications.

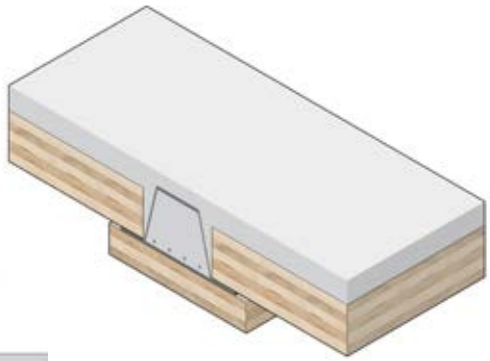


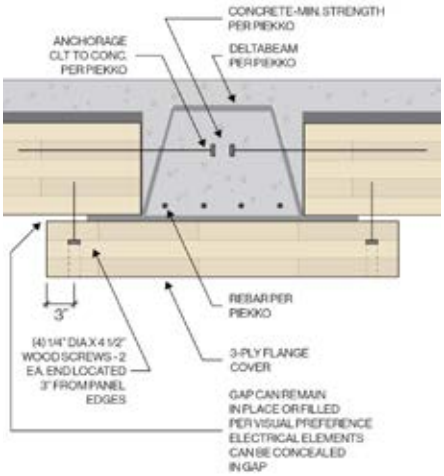
CLT + WOOD STUD

For interior construction and low rise applications.

DELTABEAMS

DELTABEAMS are a composite steel beam system often used in CLT applications to allow for longer spans, shallow floor depths, and integrated fire protection. CLT panels are mechanically connected to the beam using screws or shear connectors.



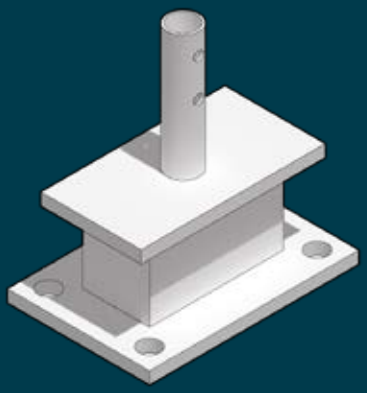


COMMON CONNECTORS

Metal connectors are essential in CLT construction to securely join panels, transfer loads between elements, and ensure structural stability under gravity, lateral, and seismic forces. Sterling has a library of details to pull from that can meet any project goals.

CONCEALED BEAM CONNECTOR

Concealed beam-to-column and beam-to-beam connections can be factory-installed for routed applications to meet fire requirements. These connections are preferred because they install quickly and have shorter lead times.

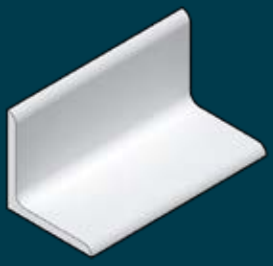


COLUMN STANDOFF

Column standoffs provide a clean, concealed connection between mass timber columns and concrete foundations—offering both architectural appeal and moisture protection.

HOLD DOWN STRAP

Straps can be used for either CLT panel-to-panel connection or CLT panel-to-steel connection and are required at wall applications.

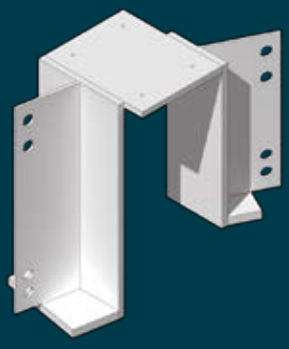


BASE ANGLE

Angle connections at the base of the wall help securely anchor the panel to the curb or foundation.

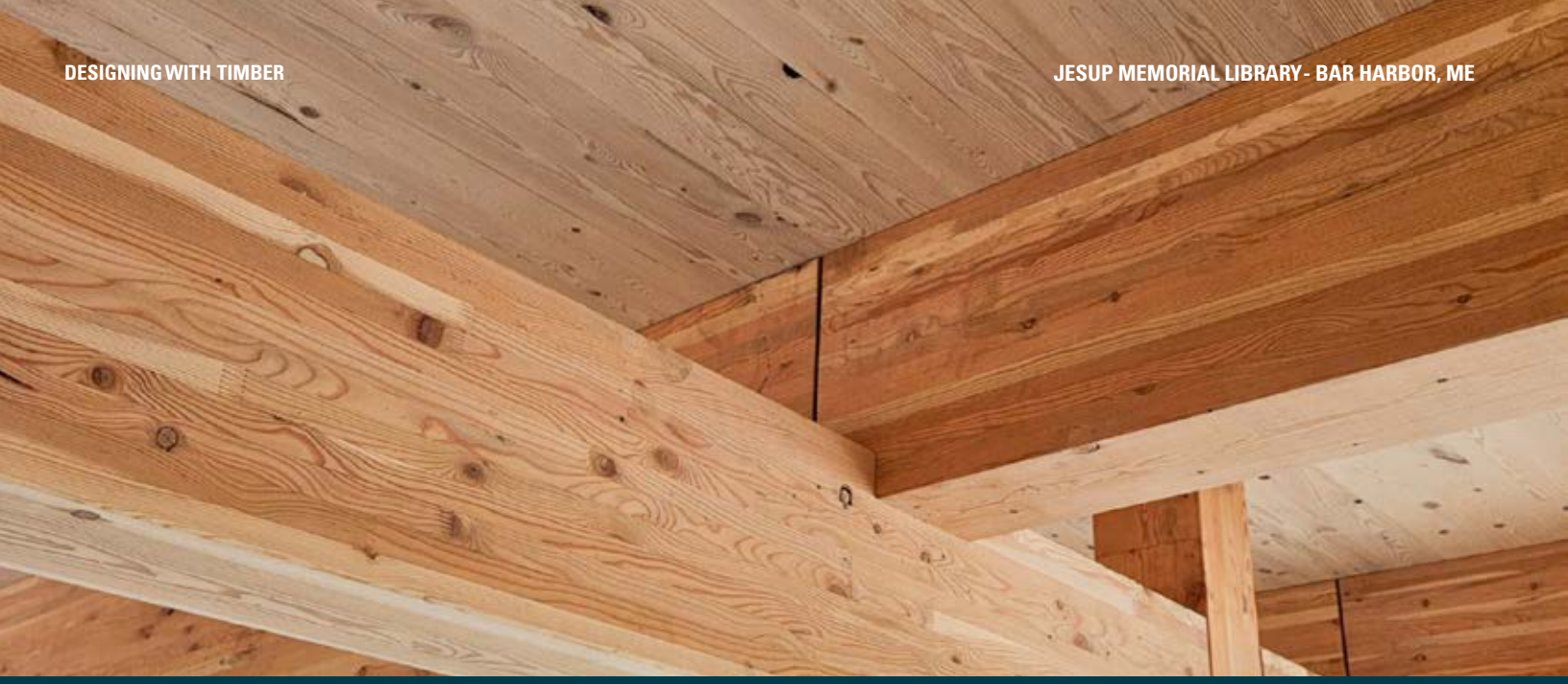
BEAM HANGER

When connections can be exposed, beam hangers provide design flexibility and an opportunity to express the structure. This design option can support up to high loads, offering a cost-effective connection solution



CUSTOM KNIFE PLATE

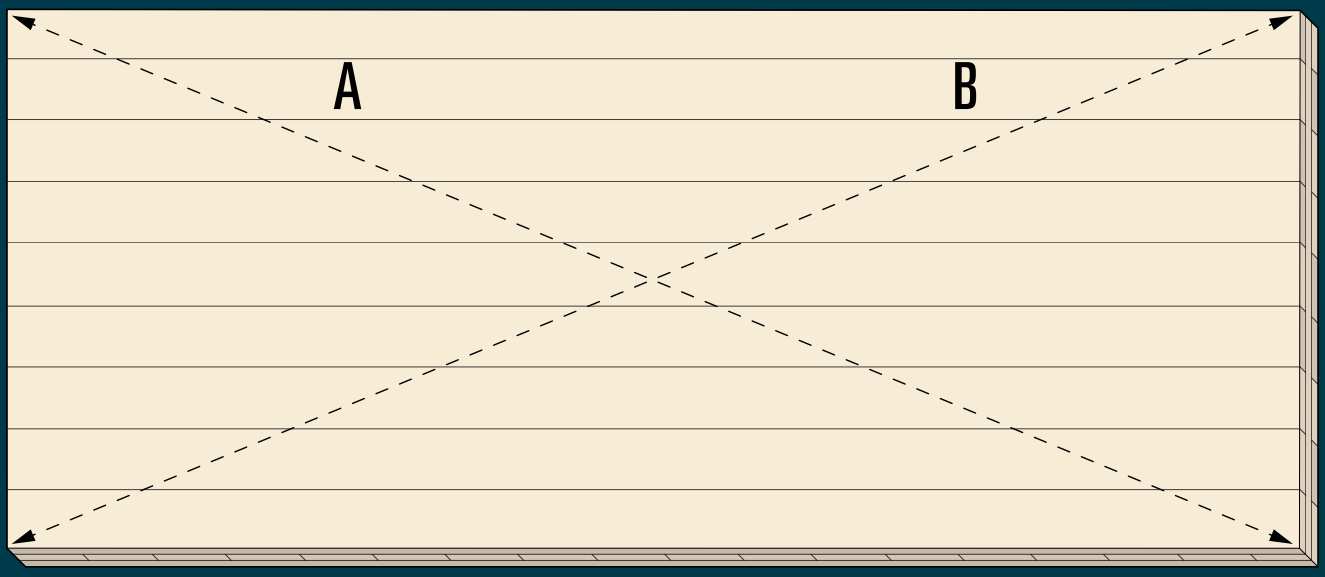
Custom connections are sometimes required—often at beam-to-column interfaces. The custom knife plate shown here, designed with project-specific angles, is one example. Custom doesn't always mean more expensive; with thoughtful detailing, these solutions can be just as efficient and cost-effective as standard options



TOLERANCE

We are all familiar with construction tolerance - but how do you actually design details so that they work in the field? PRG320 allows for 1/8" tolerance within the standard dimensions of a panel. To efficiently lay out our panels, we recommend including a 1/8" gap between panels to account for not only tolerance of the mass timber components, but other trades as well.

SQUARENESS: A-B < 1/8"



Steel requires different tolerances than concrete, and existing buildings are rarely perfectly square. Understanding how your systems integrate allows for more effective detailing. We work closely with design teams and our installation partners to deliver a successful project.

MACHINING

Each CLT panel is carefully designed and considered down to the last detail. Penetrations (ducts, conduits, plumbing) are pre-planned and precisely machined. Similar to prefabricated concrete panels or steel pre-planning is crucial to preserve CLT's structural and performance integrity.

Panel Orientation and Grain Direction

CLT panels are designed to span in their long direction. This is parallel to the face layer orientation.

Fastener Holding and Edge Distances

Over-machining or cutting too close to panel edges can compromise performance.

Routing for MEP

Prefabricated MEP penetrations eliminate the need for complex field cuts, saving time and reducing installation challenges.

Fire Performance

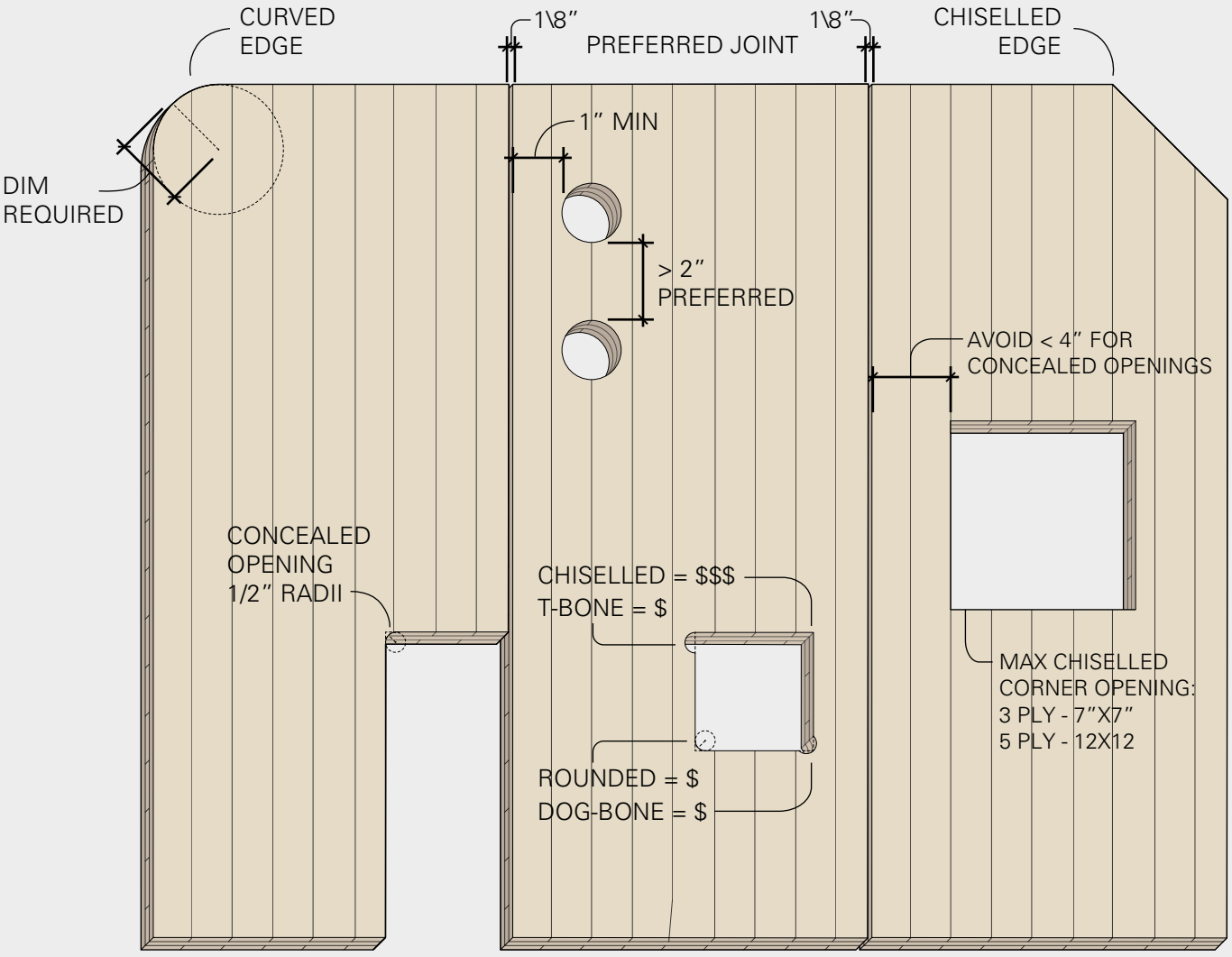
Machining can affect performance—oversized notches or routed areas can reduce fire rating.

Panel Tolerances and Assembly

Tolerance buildup across multiple panels can lead to misalignment during erection.

Panel Integrity

Avoid machining thin linear members that may break during transport or installation.



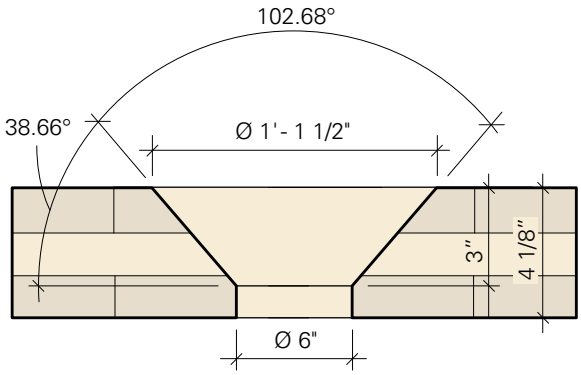
RECOMMENDATIONS

Fabrication elements are typically machined in the factory by a CNC to insure high precision, reducing on-site work and improving accurate assembly. Our 1" radii bit is the preferred workhorse when it comes to machining, we base first pass cuts off of its dimensions. Coordination for each penetration is reviewed and detailed during the shop drawing process.

ADDITIONAL DETAILS

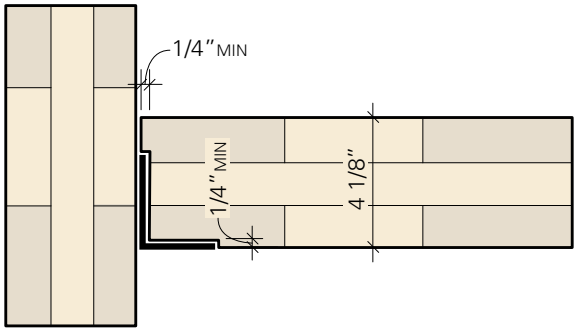
Penetrations through panels are inevitable - mechanical ducts, window openings, and roof drains - buildings are complex. How these custom cuts are made can make a significant impact on the fabrication schedule and installation.

ROOF DRAIN / BEVELS



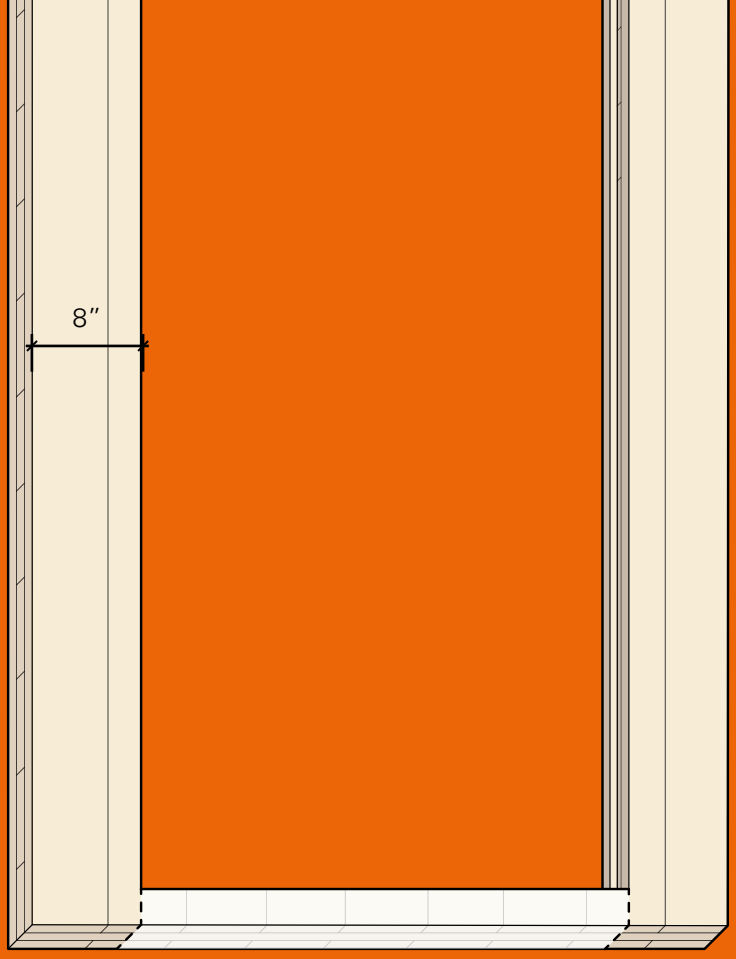
When creating bevel or sloped cuts, leave a minimum of 1/2" edge to prevent breaking.

LEDGE



Routed details can be integrated into panels to create a flush finish.

STAR LOFTS - DES MOINES, IA



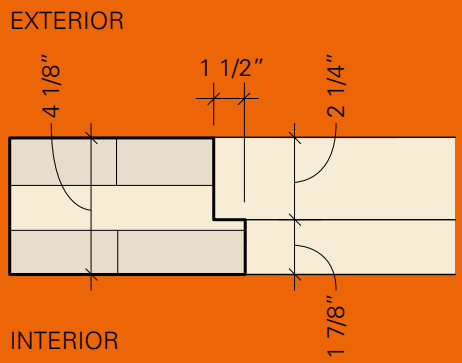
DOORS

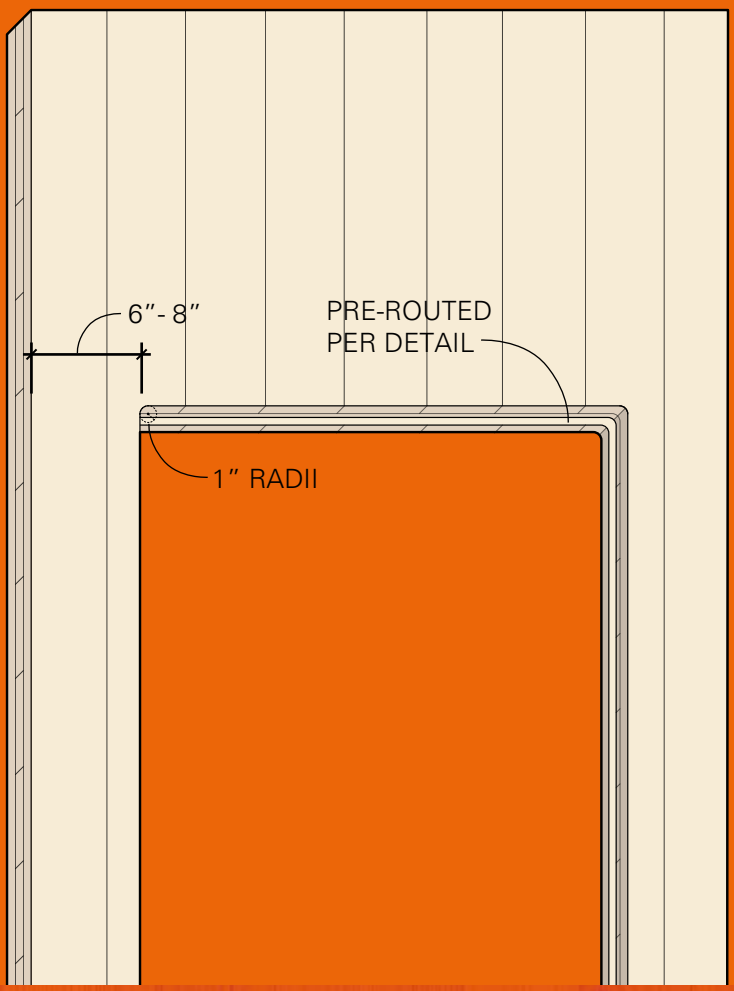
Door openings come with a 2 1/2″ base to ensure the panels are square upon arrival, The base is field cut prior to installation.

Door openings can be customized to meet design intent. Do the corners need to be chiselled? Will there be an inset frame? We can work through all the details.

WINDOWS

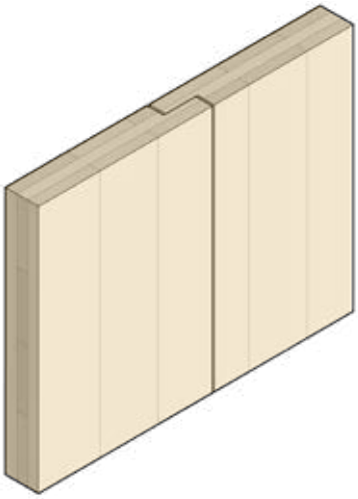
Window frames can be pre routed into CLT panel based on precise opening dimensions.

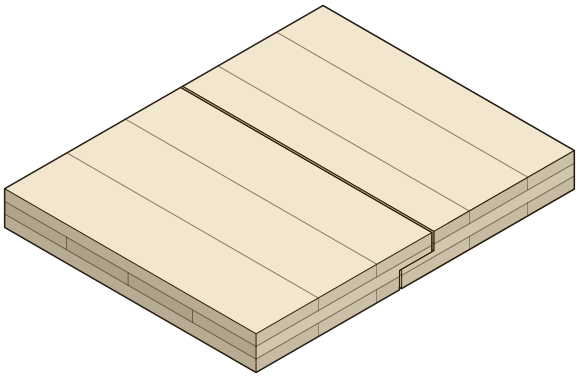


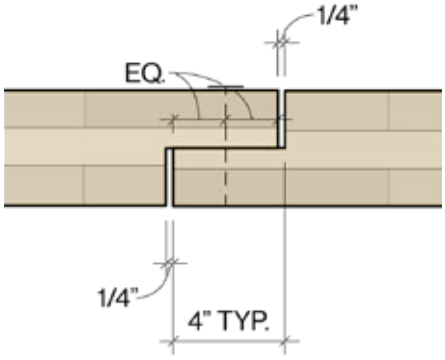


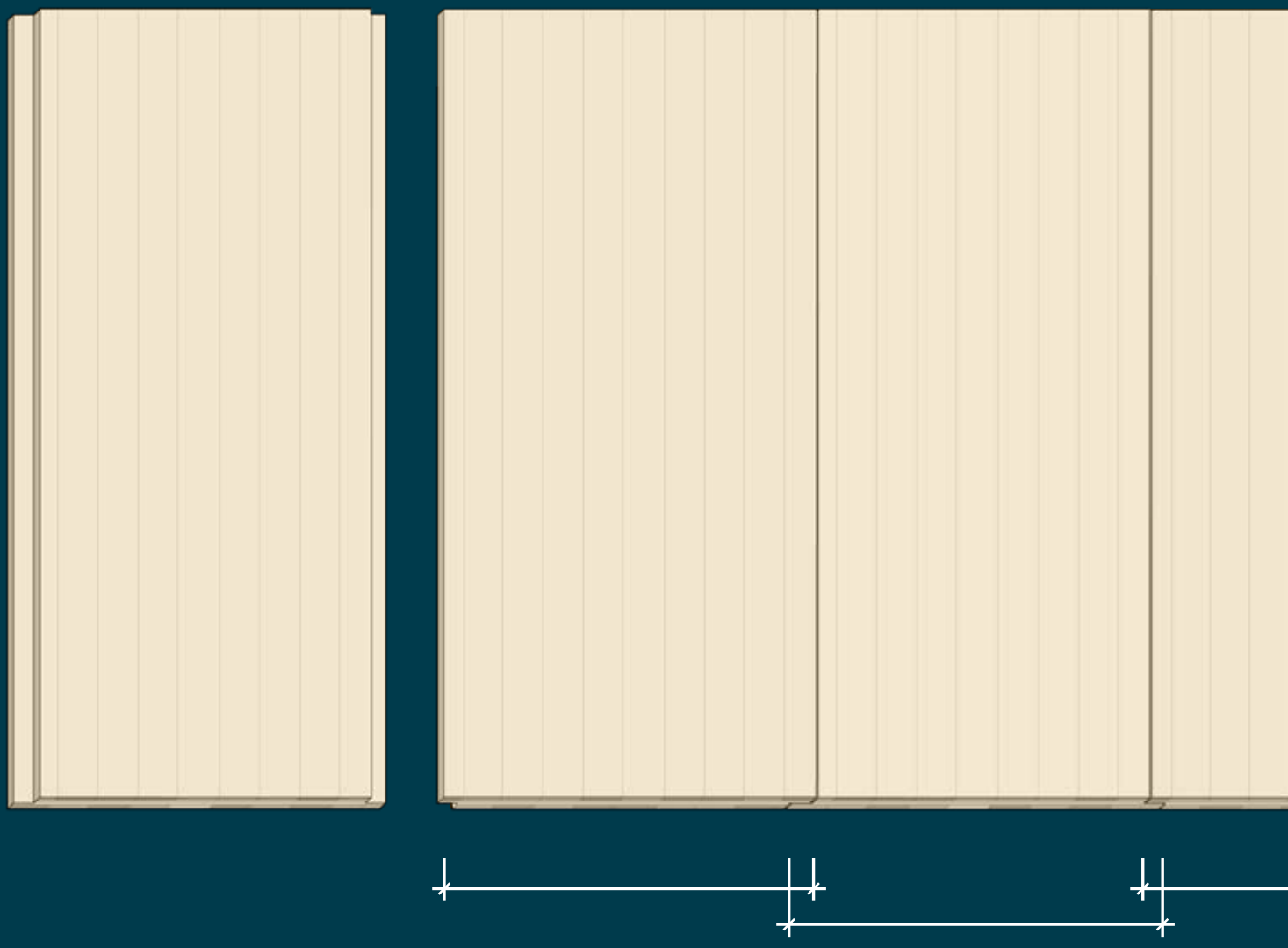
HALF LAP DETAILS

Half-lap connections tie panels together, without added material and both sides appear the same. This connection can be used for walls, roofs, and floors.







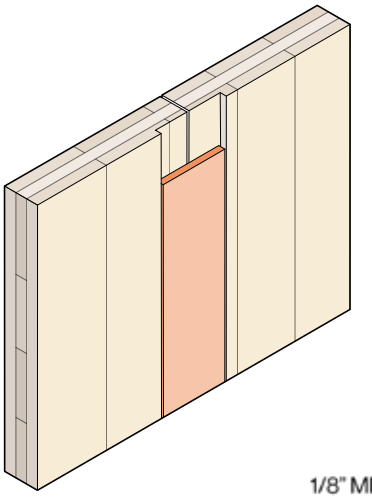


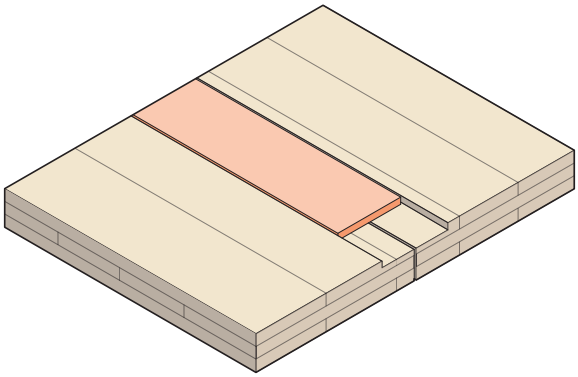
PANEL LAYOUT

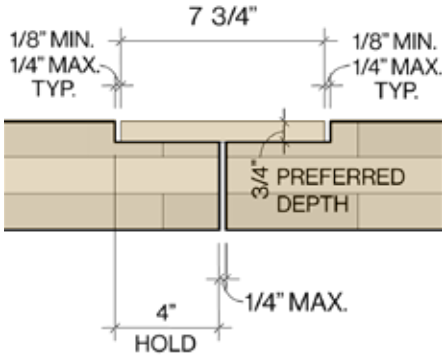
When lap joints are used to join panels, the width of the lap reduces the span.

SPLINE DETAILS

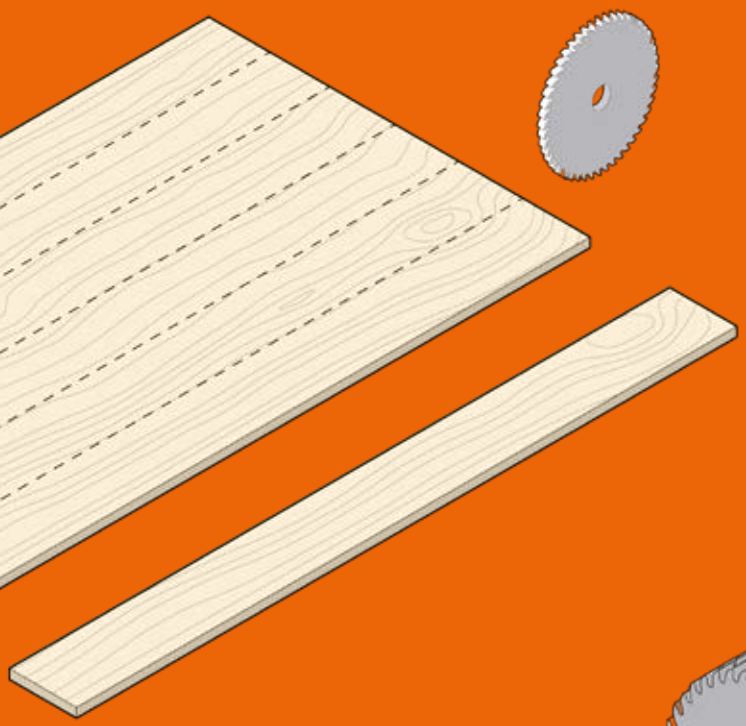
A recessed spline is used to structurally tie panels together. Most typically, we see this along the long edge of panels. This connection can be used for walls, roofs, and floors.



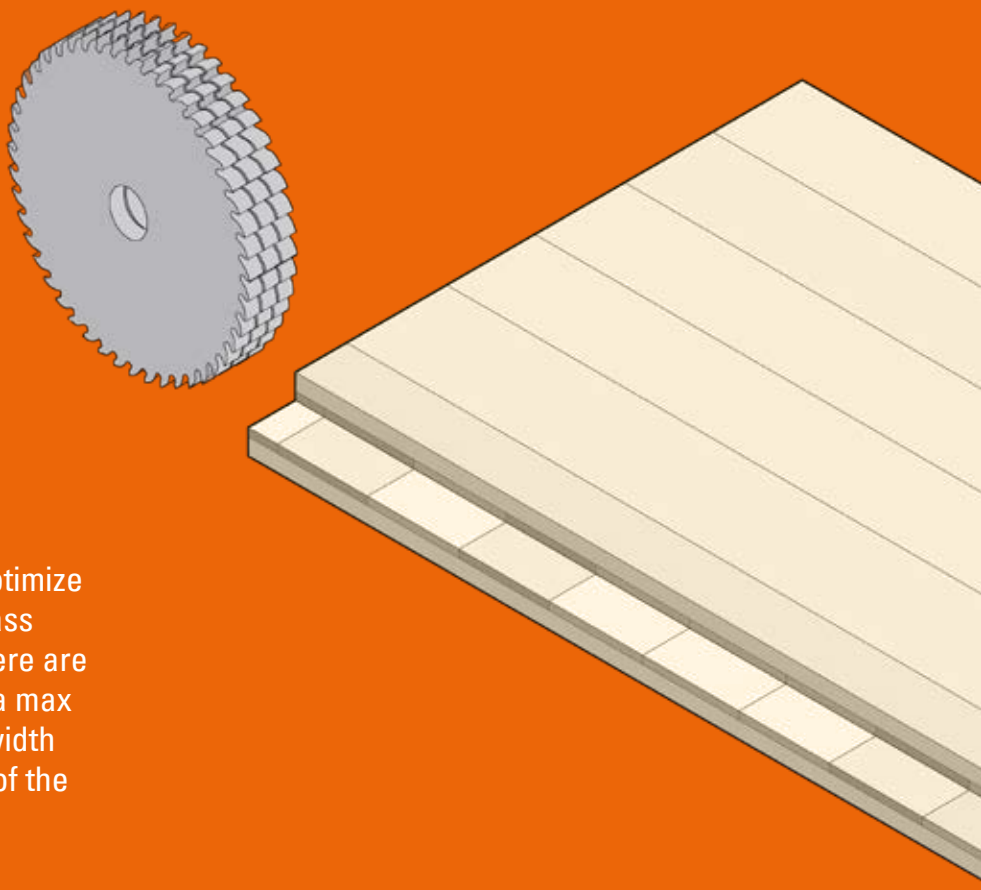




STAR LOFTS - DES MOINES, IA



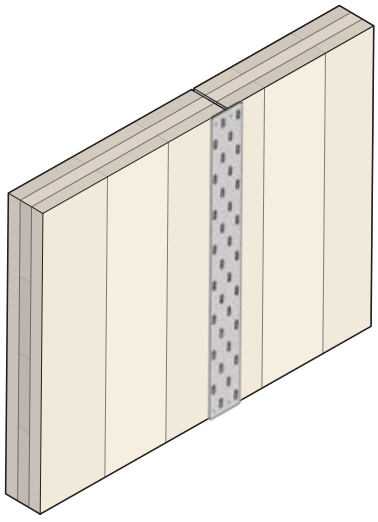
Efficiency of material translates all the way down to the design of our preferred spline. Accounting for the thickness of the blade, we sized the spline for zero waste using a standard 4x8 plywood sheet.

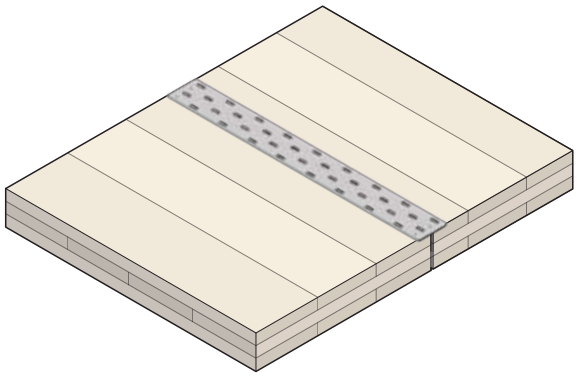


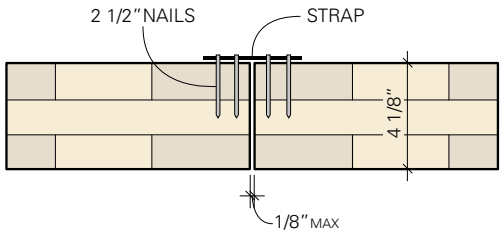
We developed custom tools to optimize common details we see in the mass timber world. As with all tools, there are limitations. Our custom saw has a max width of 4" and depth of x." This width directly relates to the efficiency of the lap joints. Pretty cool huh?

STRAP DETAILS

Straps are used to securely connect CLT panels, providing structural reinforcement and ensuring continuity between wall, floor, and roof elements. Pre-construction meetings are available with Vaproshield to coordinate which products work best for your project.

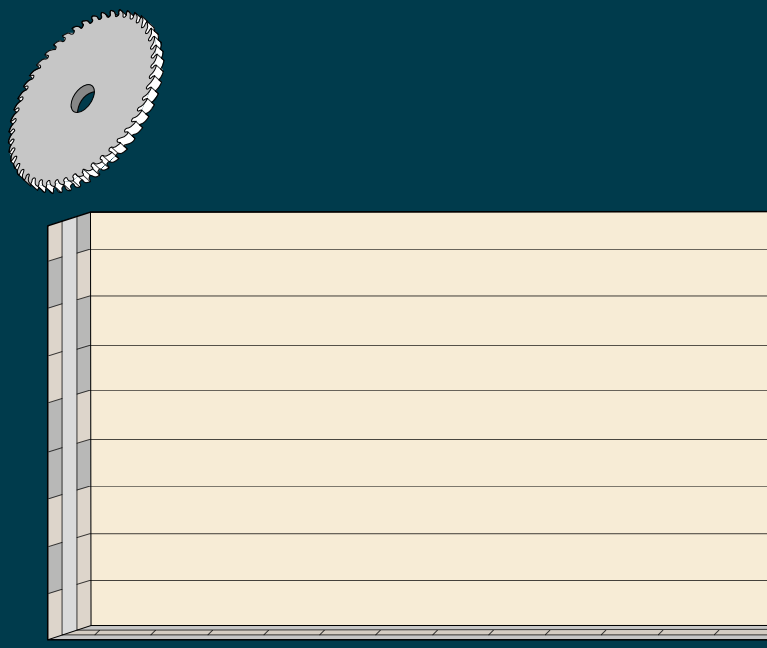


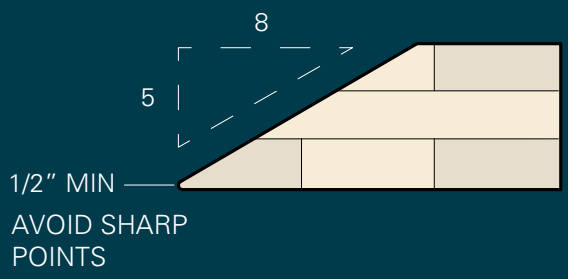


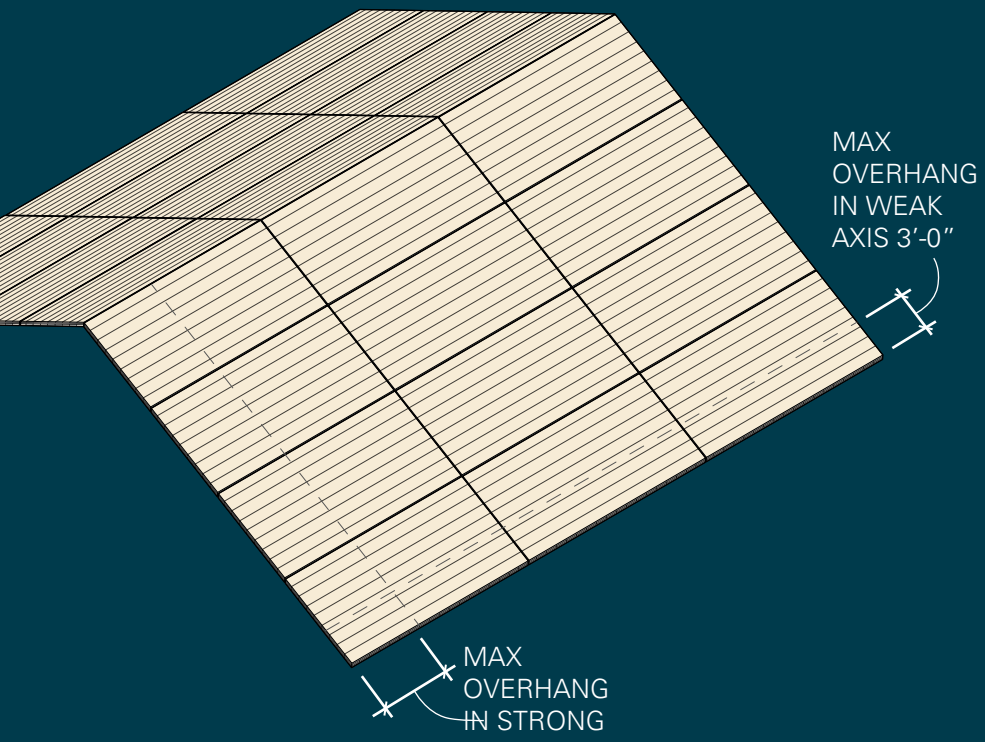


ROOF OVERHANGS + SLOPES

Mass timber roof panels often include overhangs, beveled edges for sloped conditions, and plumb cuts at the end of the eave. These features serve both aesthetic and functional purposes but must be detailed carefully to ensure durability and ease of fabrication. Beveled edges should avoid overly sharp angles that result in fragile knife-edges; instead, a minimum 1/2" chamfer is required to prevent damage during shipping and installation. Our saws can efficiently cut bevels up to 8" deep into a 5-ply panel—deeper details may require routing, which significantly increases fabrication time.

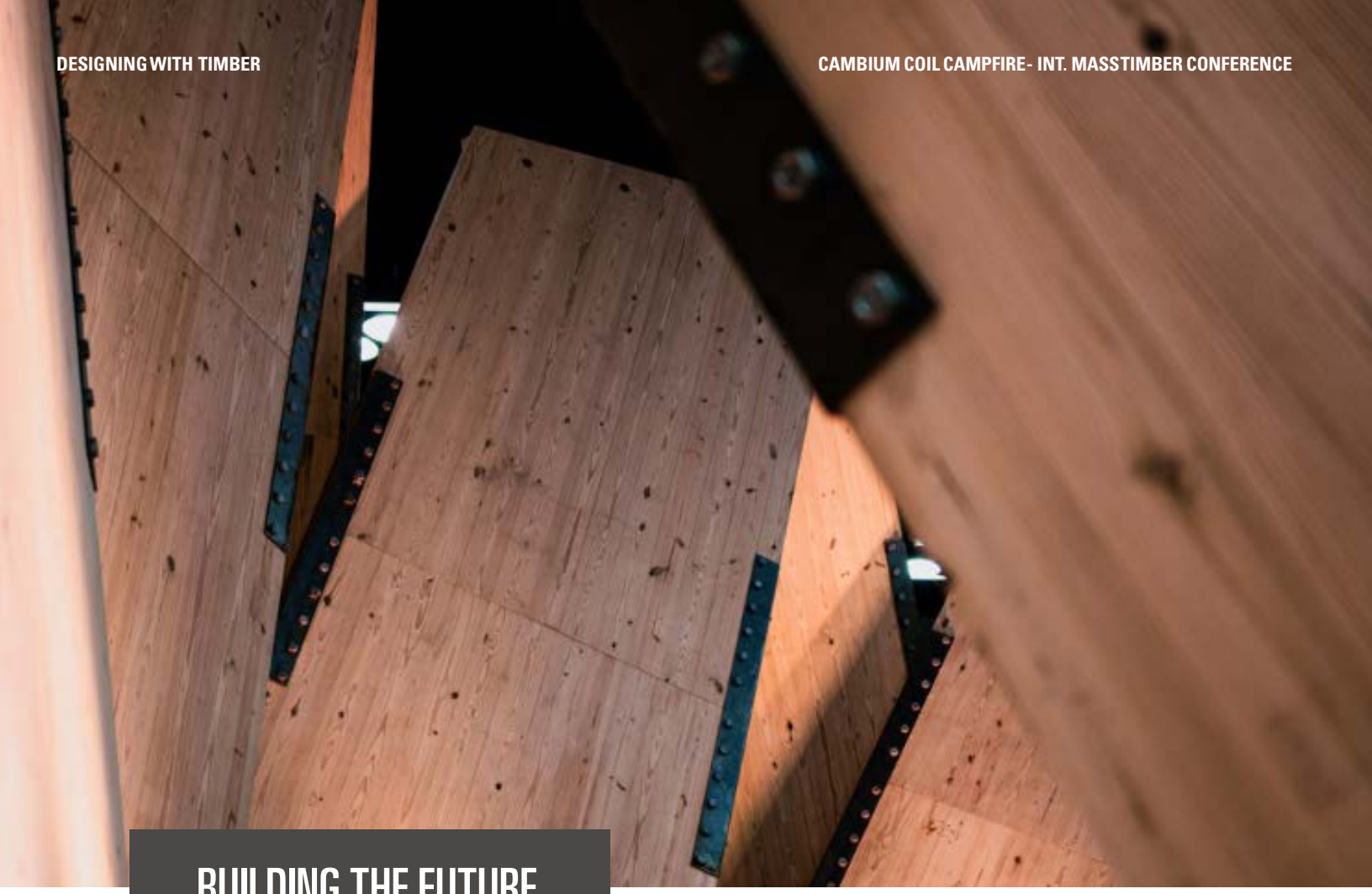






Overhangs should also be limited based on span direction—typically no more than ~3' in the weak axis and up to ~5' in the strong axis, depending on panel layup, project location, and the engineer of record. When detailing these features, designers should clearly communicate slope and overhang geometry in the model and coordinate early with the manufacturer on complex transitions.

**Confirm w/ EOR for loading and location*



BUILDING THE FUTURE

VERSATILE MASS TIMBER SOLUTIONS

Now that you've got the basics down, you're ready to start designing with mass timber. From understanding how the material works to figuring out grids, systems, and layout strategies, this guide gives you a solid starting point. Mass timber brings together strength, sustainability, and natural beauty—and opens the door to smart, creative design solutions.

As you move from concept to execution, keep in mind that every project is different. The best designs come from thoughtful collaboration, early coordination, and a willingness to explore what's possible. Don't be afraid to challenge conventions—mass timber can flex to meet your goals in unexpected ways.

But this is just the beginning. There are so many possibilities with mass timber, and we're here to help you explore them. Whether you're sketching your first concept or diving into detailed design, we want to be your go-to partner in making it real. Let's work together to bring your ideas to life and bring mass timber to the masses!

Our approach is simple, we leverage our deep experience in manufacturing and design, we cut through complexity to provide purposeful design recommendations that enhance efficiency.

OPTIMIZED CLT LAYOUTS

Reducing waste and maximizing repeatability for cost savings and fabrication efficiency

CONNECTION STRATEGIES

Evaluating a variety of connection options while considering construction type, installation efficiency, coordination of trades, and cost

CONSTRUCTIBILITY REVIEW

We provide recommendations to make construction cleaner, easier, and quicker

DESIGN ASSIST WITH STERLING STRUCTURAL

Is this your first mass timber project? Are you looking to maximize value while maintaining structural integrity? Our team can help. While the Engineer of Record (EOR) retains responsibility for final stamped drawings and calculations, we work alongside your team to provide the knowledge and support needed to make your project a success. If the EOR is not fully comfortable with mass timber, we can also provide Professional Engineering Delegated Design Services as an additional offering.

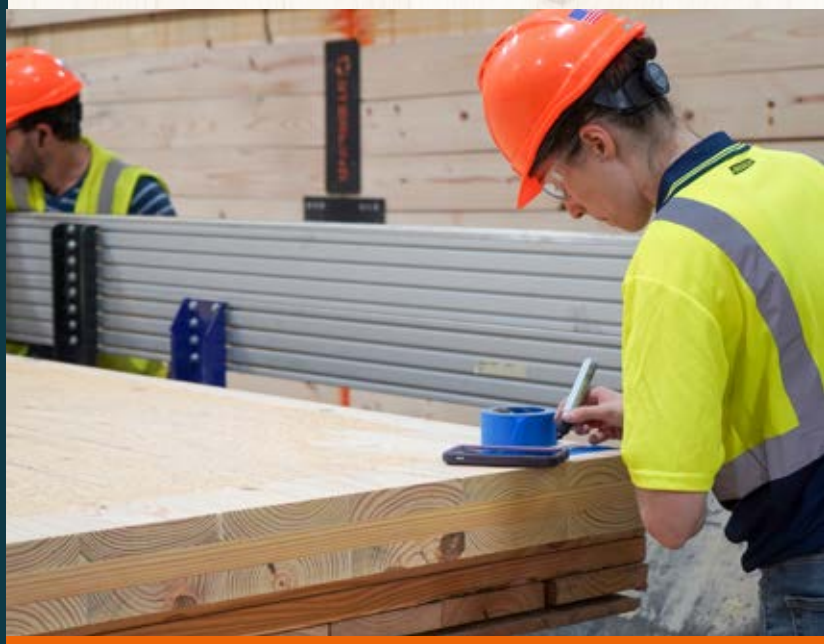
DELEGATED ENGINEERING

Not fully comfortable engineering mass timber yet? We partner with trusted engineers nationwide to design, detail, and engineer mass timber connections during the shop drawing phase to ensure every project meets structural requirements and maximizes construction efficiency.

STANDARD DESIGN SCOPE

As your manufacturing partner, our typical process includes a kick-off meeting with the design team, installer, and general contractor after we have reviewed the drawings and BIM model. We confirm construction tolerances, connection details, and any trade coordination items outside of the mass timber scope. These conversations improve the overall project success, and which we see as our success.

The primary team members assigned to the project for day-to-day work include licensed architects, engineers, and experienced manufacturing professionals to ensure the work meets the requirements to reach your goals.



info@sterlingstructural.com

CALL 708.940.4403

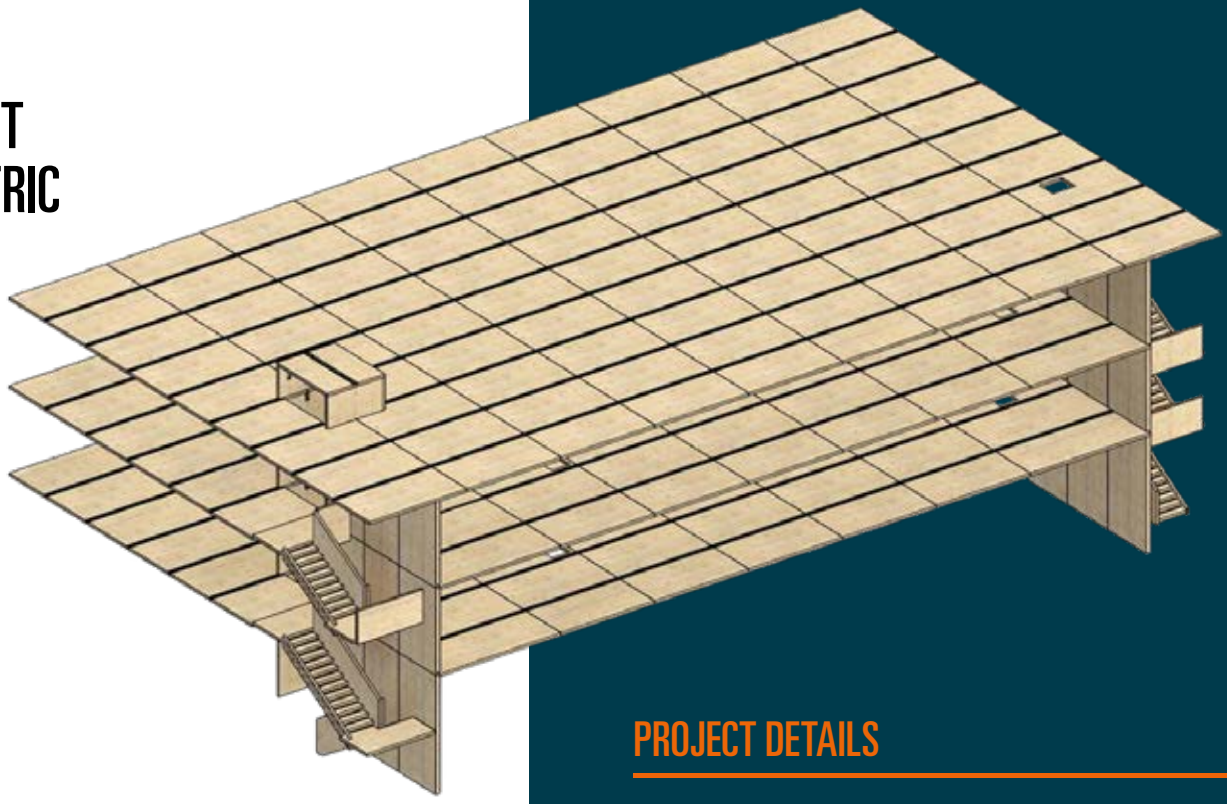
STAR LOFTS

Des Moines, IA

This multi-family housing project met both budget and sustainability goals by combining mass timber, including cross-laminated timber (CLT) decking and glue-laminated timber (glulam) columns and beams, with dimension lumber for a smart hybrid system. Sterling Structural also provided the prefabricated shaft walls for this project.

Mass timber brought efficiencies in terms of schedule and sequencing; it also helped the developer save money by avoiding the cost of interior drywall because the wood could be left exposed. The light-frame dimension lumber added value in other ways; it was simple for crews to frame and insulate, and the contractor was able to easily run mechanical, electrical, and plumbing (MEP) systems from floor to floor while also meeting fire resistance and acoustical design requirements. An innovative flooring assembly achieves a 55 STC/50 IIC rating while leaving the top layer as exposed concrete, providing a finished floor surface that helped the project stay on budget.

PROJECT ISOMETRIC



PROJECT DETAILS

YEAR BUILT: 2024

 # OF STORIES: 3

SQ FT: 22,770

BLDG SYSTEMS: V-B

BUILDING TYPE: Multi-Family (Apartments, Condos)

MATERIAL TYPES:
Mass Timber
Cross-Laminated Timber
Glue-Laminated Timber
Light-Frame
Lumber

PROJECT TEAM:
Owner/Dev. – Cutler Development
Cont./Installer – Capital Homes Iowa
Engineer – KPFF
Architect – ID8 Architects, PLC

The project achieved a 70% reduction in embodied carbon. Built on the site of a dilapidated gas station, Star Lofts is Iowa's first Zero Carbon-certified building accredited by the International Living Future Institute (ILFI).

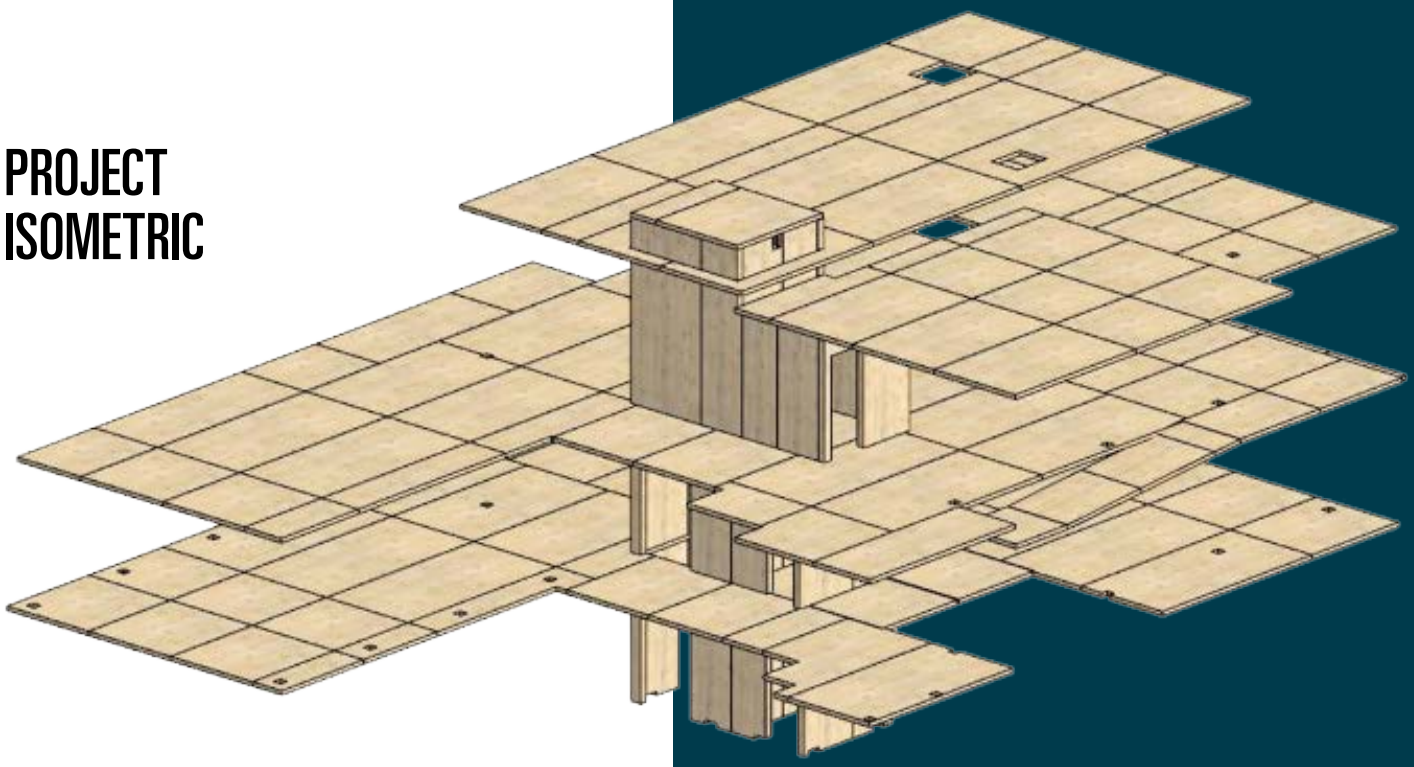
JESUP MEMORIAL LIBRARY

Bar Harbor, ME

This historic 12,800 SF library, listed on the National Register of Historic Places, is undergoing a renovation with a 9,600 SF modern addition. The project will provide much-needed program space while honoring the library's original design, including expanded areas for children's programming, adult reading, meeting rooms, community spaces, and archival storage.

This innovative project sets new standards in sustainability by utilizing Eastern Hemlock and SPF-S lumber for CLT floors, roofs, and shaft walls, all locally sourced from New England. This project is proudly supported by wood utilization work and expertise from University of New Hampshire Extension and Innovative Natural Resources Solutions. The glulam components, provided by our partners QB Corp out of Salmon, Idaho feature doug-fir glulam, showcasing the versatility and beauty of timber in modern construction.

PROJECT ISOMETRIC



PROJECT DETAILS

YEAR BUILT: 2024

 # OF STORIES: 3

SQ FT: 9,601

BLDG SYSTEMS: IV

BUILDING TYPE: Public Library

MATERIAL TYPES: Cross-Laminated Timber
Glue-Laminated Timber

PROJECT TEAM: Glulam Partner – QB CORP
Connection Hardware Partner – Simpson Strong-tie
Contractor – E.L. Shea
Engineer – Thornton Tomasetti
Architect – Simons Architects

By balancing preservation and innovation, this renovation will ensure the library continues to serve Bar Harbor and its surrounding communities for generations to come.

CAMBIUM COIL CAMPFIRE

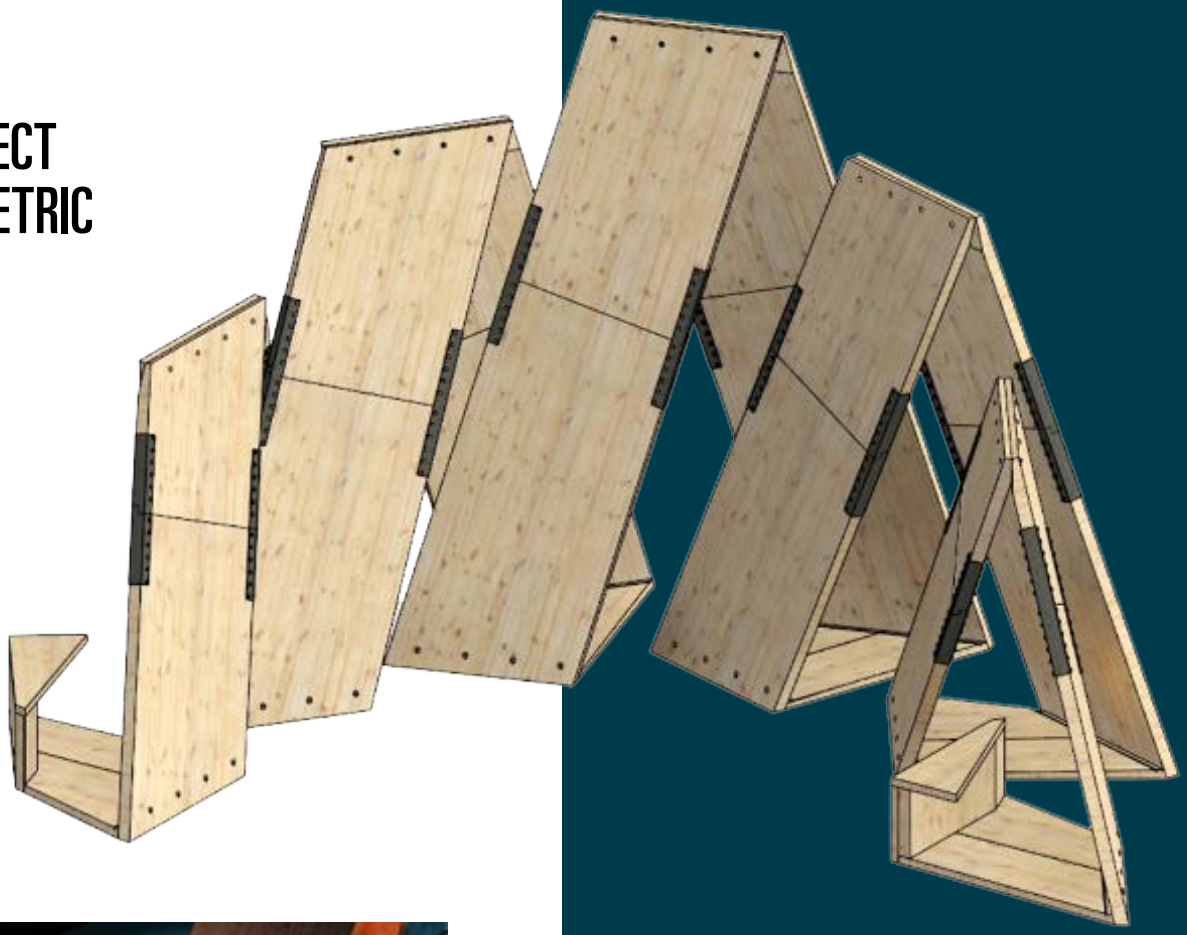
International MassTimber Conference

With the intention of bringing people together, RIOS designed this pavilion to evoke the experience of gathering around a campfire. Beginning with upcycled lumber sourced through Cambium, the mass timber panels radiate from a low table-like entrance to a soaring peak of nearly thirty feet. Sterling Structural, as the mass timber manufacturer, navigated the complexities of the pavilion's geometry, pushing fabrication capabilities while addressing the critical challenge of connection detailing. This ensured the structure could be assembled and disassembled for future use in multiple locations.

The design process was highly collaborative, with RIOS, Cambium, Sterling Structural, and Minimal Impact Engineering our installer working together to achieve both the architectural vision and the practical requirements of fabrication and installation.

Rendering by RIOS

PROJECT ISOMETRIC



PROJECT DETAILS

YEAR BUILT: 2024

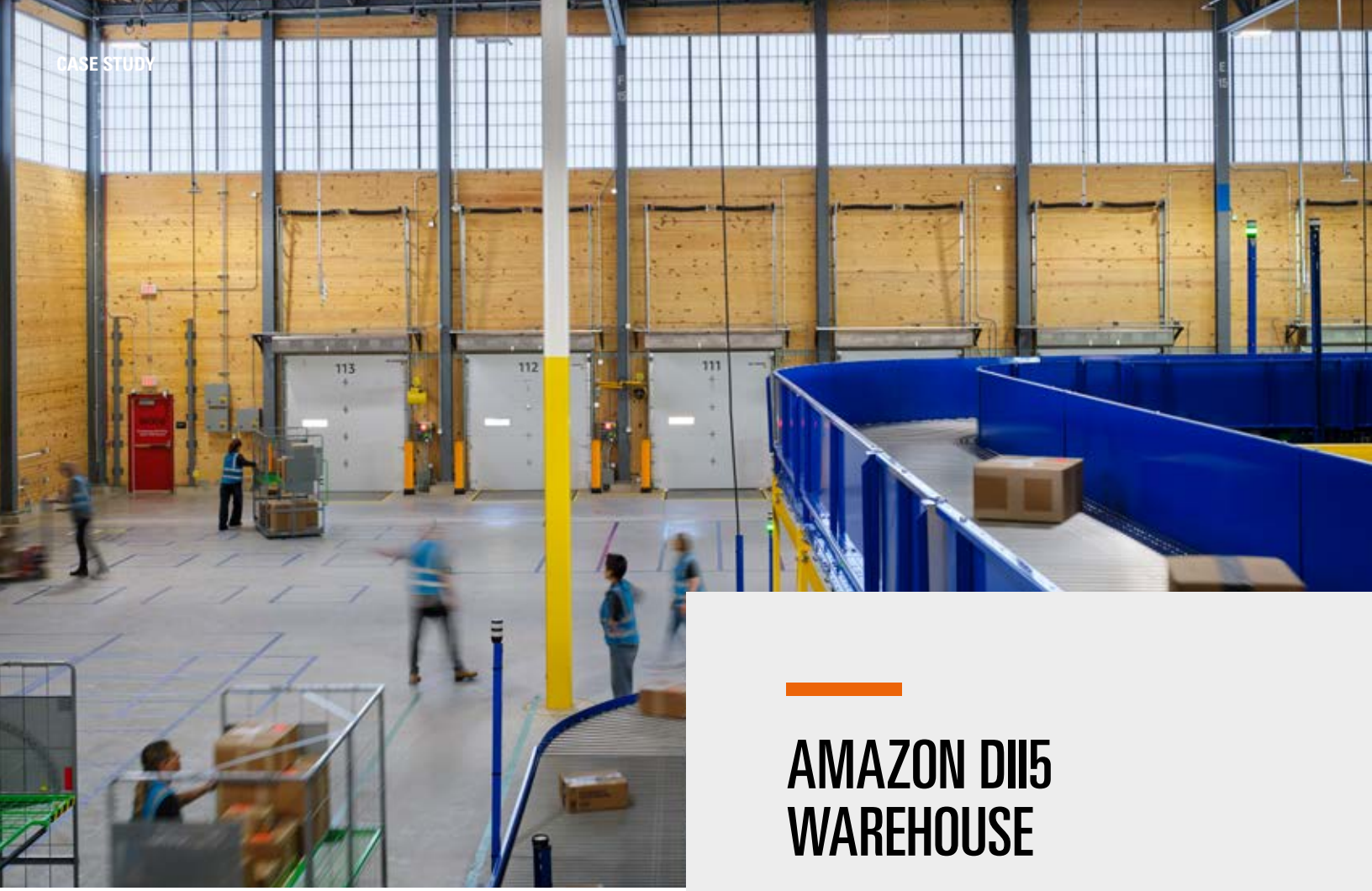
BLDG SYSTEMS: Mass Timber

BUILDING TYPE: Pavilion

MATERIAL TYPES: Mass Timber
Fasteners/Hardware

PROJECT TEAM: Connection Hardware – Rothoblaas
Owner/Dev. – Cambium Carbon
Installer – Minimal Impact Engineering
Architect – RIOS

Also acting as the structural engineer, Sterling played a key role in refining the connections to balance structural integrity with adaptability.

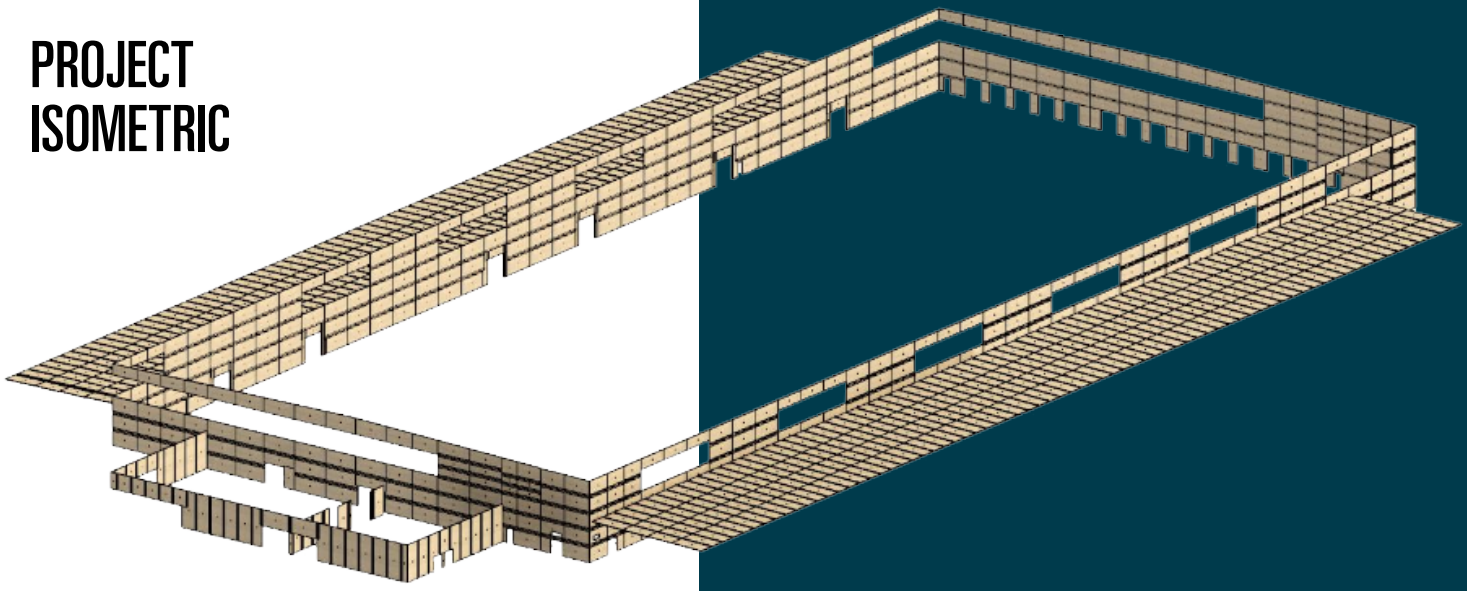


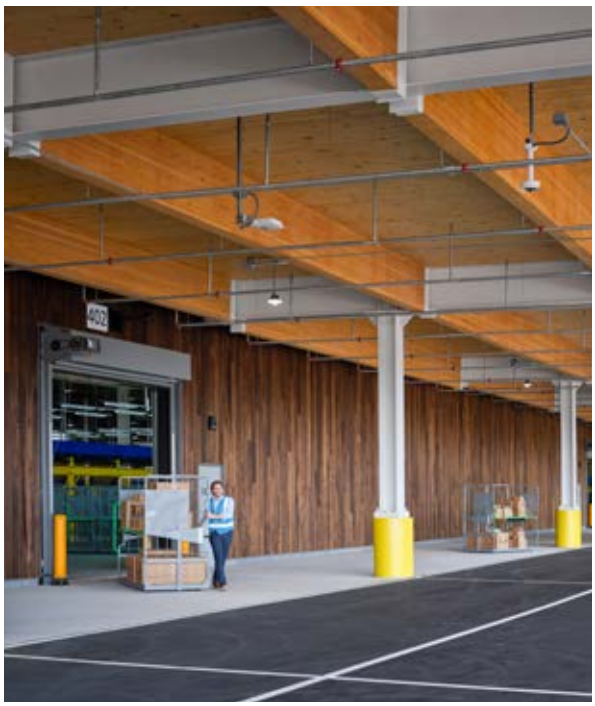
AMAZON DII5 WAREHOUSE

This new 159,600-square-foot facility sets a high standard for sustainable industrial development, balancing speed, efficiency, and a strong commitment to carbon reduction. Designed to support a two-shift operation, with a third shift added during peak seasons. Reducing the carbon footprint was a central driver for the project's design and procurement strategies, including sourcing USA Southern Pine for the CLT panels—manufactured at our Phoenix plant, less than 100 miles from the project site.

Sterling Structural supplied over 1,100 Cross-Laminated Timber (CLT) panels, forming the primary building enclosure for the main warehouse floor. Working closely with confidential structural engineer, the team developed an optimized structural grid to maximize material efficiency, particularly within the CLT wall layout. In the office bay, Sterling provided CLT panels for both the roof and walls, partnering with QB Corp for glulam components. Custom bucket connections, also supplied by Sterling, further streamlined the office bay's erection process.

PROJECT ISOMETRIC





PROJECT DETAILS

YEAR BUILT: 2025

 # OF STORIES: 1

SQ FT: 159,600

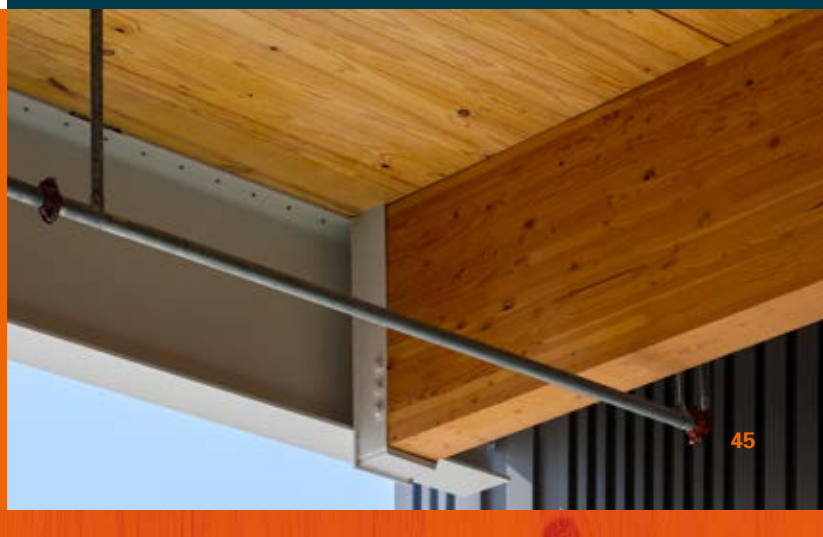
BLDG SYSTEMS: 5-B/V-B

BUILDING TYPE: Storage + Business (Office)

MATERIAL TYPES: Steel columns + joist
Cross-Laminated Timber walls + roof
Glulam columns and beams

PROJECT TEAM: Glulam Partner: QB Corp
Connection Part.: Simpson Strong-tie
Rigging Partner: Rothoblaas
Waterproofing Partner : Vaproshield

This project demonstrates the power of collaboration and innovation in sustainable industrial construction, setting a new benchmark for low-carbon logistics facilities.



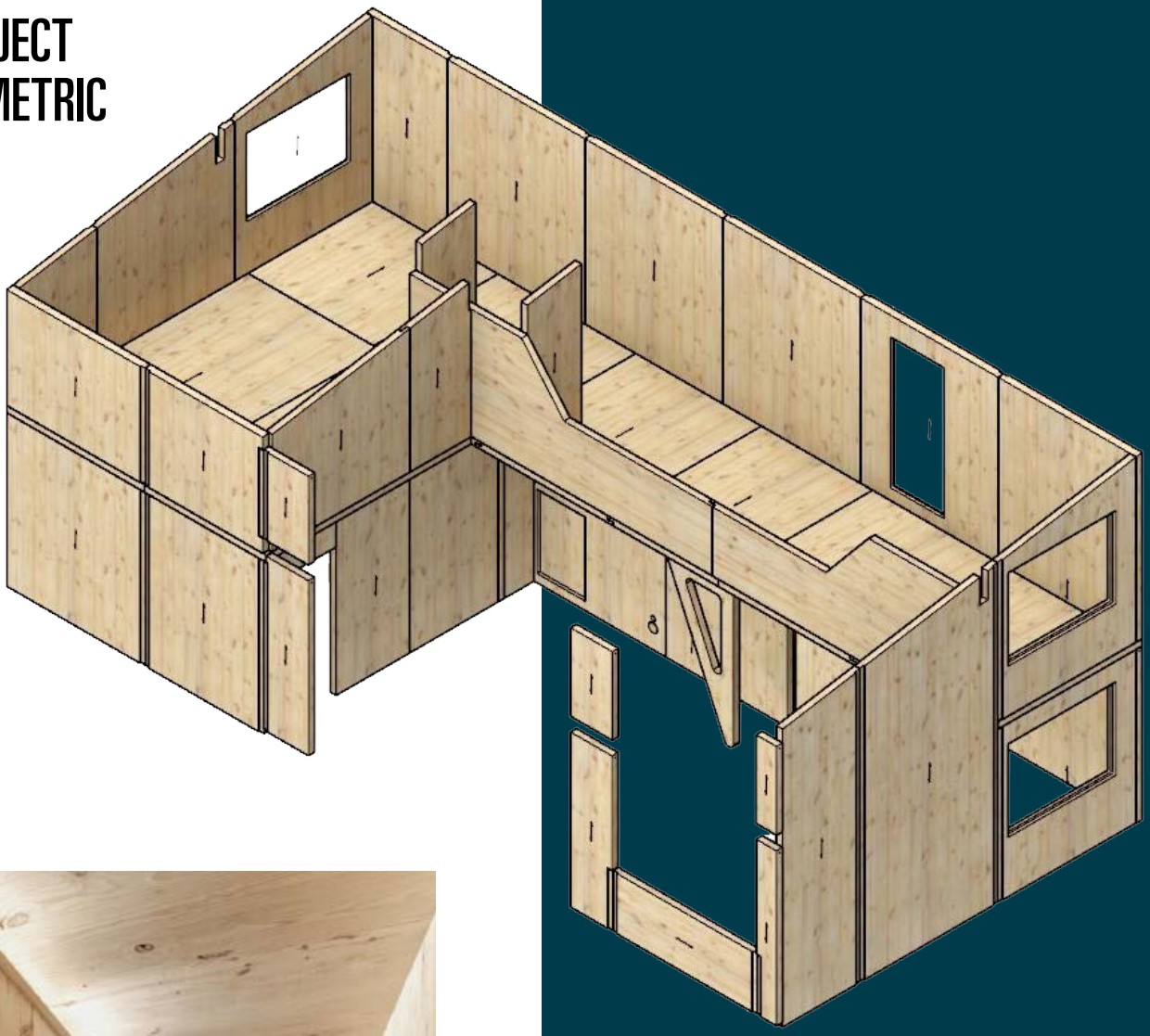
WATER'S EDGE

Nashville, TN

The innovative Aera team has designed an approximately 1500sf single family home using exposed CLT for both the interior and exterior wall assemblies along with exposing the CLT floor of the mezzanine level. Sterling worked directly with their team to optimize panels for fabrication of concealed receptacles, recesses at appliances. We design and manufacture building systems to rapidly deploy sustainable human habitats around the globe.

STERLING Structural

PROJECT ISOMETRIC



PROJECT DETAILS

YEAR BUILT: 2025

 # OF STORIES: 1 + Mezzanine

SQ FT: 1,500

BLDG SYSTEMS: V-B

BUILDING TYPE: Single Family Residential

MATERIAL TYPES: Cross-Laminated Timber Walls
Glulam

PROJECT TEAM: Owner/Developer: Aera Systems
Engineer: Aera Systems
Installer: MLP Solutions + Timber BLDR
Architect: Aera Systems

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