

# Custom detached homes

MASS TIMBER HOUSING OPPORTUNITIES –  
UTILIZING LOCAL RESOURCES TO DELIVER HOUSING AT ALL SCALES

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This book series reflects the deep commitment and innovation of organizations dedicated to developing projects with mass timber across different typologies. We would like to thank the MASSTAC Housing Committee members and individuals for their participation and support.

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The Washington Mass Timber Accelerator would like to express its gratitude for the generous funding provided by the Washington State Department of Commerce, which has enabled Washington's design, construction, and manufacturing industries to show the nation how we might sustainably address our housing crisis, at all scales, and across rural and urban landscapes.



# About the Washington Mass Timber Accelerator

The Washington Mass Timber Accelerator (MASSTAC) is a non-profit organization working to advance high quality, low-carbon construction through increased utilization of locally manufactured mass timber. With representation from Indigenous communities, government agencies, private industry, labor organizations, and forestry, we are the central hub of mass timber activity in the State of Washington.

## Our Mission

To sustainably and equitably accelerate the adoption of mass timber in construction, in Washington and nationally.

## Our Vision

Locally manufactured mass timber is driving cleaner, faster, safer construction and healthier, more beautiful buildings in Washington and beyond.

We envision a future where mass timber is not only a standard in construction but also a catalyst for economic growth, community development, and environmental stewardship. Where sustainable mass timber buildings provide healthy and inspired environments for living, working, learning, playing, and healing. Where reciprocal relationships between cities and forests, urban and rural communities, support social, environmental, and economic well-being for our region.

## Our Funders

Seed funding for MASSTAC was provided by the City of Seattle Office of Economic Development, and the Washington State Department of Commerce.

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# Foreword

Rico Quirindongo

DIRECTOR, OFFICE OF PLANNING  
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From Vancouver, British Columbia to Portland, Oregon, Seattle, Washington and the Olympic Peninsula, the Pacific Northwest has deep roots in the timber industry. Timber production in the state of Washington has not only shaped our cities but has also been pivotal in defining the region's economic trajectory. The state's forests, particularly in the Olympic Peninsula and the Cascade Range, have long been a rich source of timber, which fueled the state's development into one of the nation's most prosperous regions.

And so, the timber industry in Washington was not just about extracting resources, it was about transformation. The rise of the timber industry put Washington on the map and contributed significantly to the establishment of the Pacific Northwest as an industrial hub during the early 20th century. Cities like Seattle grew rapidly due to the vast timber resources of the region. The iconic sawmills and logging camps that dotted the Puget Sound provided raw materials for much of the nation's infrastructure and built the foundation of the Pacific Northwest economy. Washington's timber industry, along with its proximity to the Pacific Ocean, also played a key role in the development of ports and transportation networks, which allowed timber products to be exported globally. The growth of the railroads, shipyards, and other transportation networks followed in the wake of intensive timber harvesting, creating a powerful industrial economy. As Seattle and the surrounding areas became the epicenter of timber production, the state's economy flourished. For decades, timber was the cornerstone of the region's prosperity.

However, as the world has grown more environmentally conscious in the last several decades, the traditional timber industry has faced many challenges. Unsustainable logging practices and deforestation concerns prompted a call for a different approach to the work. Today, the demand for timber remains

strong, and we are moving into a more sustainable relationship with the forests. Simultaneously, we are recognizing the power of wood to be used as a substitute for energy intensive and carbon-emitting structural materials.

This is where the new frontier of mass timber comes into play. Today, we find ourselves at a crossroads where the timber industry, once defined by traditional methods, is evolving into something even more revolutionary with the development of cross-laminated timber (CLT). Utilizing products such as CLT, mass timber construction is not just reshaping construction, but paving the way for a more sustainable, carbon-neutral future while creating jobs, spurring economic growth, and supporting the state's industrial and architectural innovations.

CLT is an engineered wood product that has been hailed as a breakthrough in sustainable building, offering a new way to utilize the region's rich forest resources while dramatically reducing carbon emissions from traditional construction. A shift to mass timber is critical for Washington's ambitious goals of achieving carbon neutrality in the coming decades.

Mass timber is not just a material; it represents a new vision for the state's future, combining the historical legacy of timber production with cutting-edge innovations in architecture and construction. As a renewable resource, mass timber is part of the solution to reducing the carbon footprint of our built environment. When sourced and produced sustainably, mass timber buildings can sequester carbon, locking away greenhouse gases that would otherwise contribute to climate change.

The Canyons, LSW Architects  
Photo: © Marcus Kaufmann Photography

“ Utilizing products such as CLT, mass timber construction is not just reshaping construction, but paving the way for a more sustainable, carbon-neutral future while creating jobs, spurring economic growth, and supporting the state's industrial and architectural innovations. ”



The production of mass timber also uses far less energy than traditional construction materials like concrete and steel, making it a key component in Washington's transition to a carbon-neutral economy.

Beyond its environmental benefits, mass timber has the potential to invigorate the state's economy and provide a pathway to future job growth. From blue-collar construction industry jobs in the assembly and erection of mass timber buildings to white-collar jobs in architectural design and engineering of carbon-neutral buildings, the industry holds tremendous promise for diverse job creation. The growth of mass timber manufacturing could revitalize rural communities in the state's timber-producing regions, such as the Olympic Peninsula, creating opportunities for local manufacturing across the region. Investment in the development of mass timber production facilities and the necessary infrastructure to support the industry is critical to the state's economic future.

This investment will also help foster innovation in construction techniques. The ability to build mass timber skyscrapers, residential buildings, and even single-family homes represents a new era for the construction industry. For Seattle and its neighboring cities, mass timber offers a more efficient, sustainable way to build for the growing population. It opens new possibilities for housing production, from small accessory dwelling units (ADUs) to large-scale transit-oriented development (TOD) projects. Mass timber allows for faster construction timelines, which is essential in addressing the housing crisis that many cities across the U.S. are currently facing. Whether for mid-rise apartment buildings in Seattle or sustainable affordable housing projects in rural communities, mass timber provides a scalable solution that can meet the housing demands for urban and rural communities across the region.

What's more, the integration of mass timber into the design and construction of tall buildings, including mass timber towers, is breaking new ground in architectural design. Washington, a region known for its innovative architectural firms and design-driven approach to construction, is poised to lead this charge.

Mass timber provides a unique material aesthetic, warmth, and versatility that cannot be replicated with traditional construction materials. As architects and builders increasingly turn to mass timber, Washington could position itself at the forefront of a global movement toward sustainable building practices.

Investing in mass timber represents a chance to honor the region's timber roots while propelling the state toward a more sustainable, carbon-neutral future. Washington's timber industry has always been a powerful economic engine, and the mass timber sector offers the potential to continue that legacy while aligning with a green energy and materials strategy and a carbon neutral future. Supporting the emerging mass timber industry will strengthen our economy, reduce global carbon emissions, create green jobs, and improve the quality of life for residents in both urban and rural communities. Mass timber is part of the sustainable future that I want to see for myself, my family, and the diverse communities of which we are all a part.

This book outlines a vision for how we can invest in and see a sustainable vision forward, one that leans into our housing needs for the state and the region.

I am grateful to the leadership and investments of Washington Governor Bob Ferguson, Policy Director Sahar Fathi, Housing Senior Policy Advisor Nicholas Carr, City of Seattle Mayor Bruce Harrell, Office of Economic Development Director Markham McIntyre, Manufacturing and Maritime Strategic Advisor John Persak, and Washington Mass Timber Accelerator Executive Director Erica Spiritos. Their vision, their efforts, and their commitment in partnership with state, city, and industry leadership makes me hopeful for our collective future.



The Canyons, LSW Architects  
Photo: © Jeremy Bitterman Photography

# Introduction

## Stronger, Faster, Greener: Mass Timber Housing in Action

The mass timber industry is evolving rapidly, reshaping the way we think about building design and construction. Once a niche material, mass timber has rapidly gained acceptance across the architectural and construction industries, thanks to its remarkable versatility, sustainability, and economic advantages. With advancements in technology and updates to the International Building Code (IBC), including allowances for taller structures currently up to 18 stories, mass timber is poised to transform skylines and communities alike.

Mass timber offers a compelling suite of benefits that make it a smart choice for developers, institutions, and private clients alike:

- **Revenue Generation:** Mass timber buildings offer opportunities for increased density, faster speed to market, and enhanced leasing velocity due to the beauty of exposed wood.
- **Streamlined Construction:** Harnessing the potential of prefabrication to reduce construction timelines, mass timber buildings are erected quickly, quietly, and with minimal waste generated on-site.
- **Carbon Reduction:** A renewable material sourced from sustainably managed forests, mass timber reduces reliance on high-carbon materials and stores carbon throughout its lifecycle.
- **Building Performance:** Mass timber buildings offer durability, thermal comfort with energy efficiency, fire-resistance, and higher indoor air quality due to a reduced reliance on finish materials.

- **Health and Wellness:** Mass timber buildings enhance occupant well-being by fostering connections to natural materials. Research links such environments to improved cognitive function, reduced stress levels, and overall psychological benefits.

The state of Washington has emerged as a leader in this movement, with forward-thinking policies that enable mass timber's use in taller buildings. However, broader adoption will require continued collaboration among architects, developers, policymakers, and builders as we co-create a better way to build.

This Mass Timber Housing look book celebrates the vast potential of mass timber in housing projects throughout the Pacific Northwest, showcasing examples across categories such as modular and custom single-family homes, accessory dwelling units (ADUs), cluster housing, townhome, low-rise and mid-rise developments, tall timber housing, and skyscrapers. These projects — both built and unbuilt — demonstrate the material's adaptability and its ability to meet diverse housing needs. While the focus is on Washington State, the lessons and inspiration drawn from these projects resonate across North America and beyond. The projects in this look book demonstrate what is possible.

**The next step is yours.**



CLT Townhome Building Kit, Green Canopy Node  
Photo: © Inside Spokane Photography

# Meet Washington's Mass Timber Manufacturers

## Cascade Joinery • Bellingham, WA

FABRICATOR



For 33 years, Cascade Joinery has been crafting timberwork for high-end, commercial, residential, and municipal buildings, in a vast range of architectural styles. Today, we're one of the Northwest's leading producers of structural and decorative crafted timberwork, providing creative solutions to complex structural challenges. We believe in Mass Timber, and we're devoted to, and passionate about, delivering on it. From design-phase consultation to fabrication and on-site installation, we're by your side to manifest the most ambitious Mass Timber projects.

**For more information, contact:** Allen Stoltzfus, Sales Engineer  
allen@cascadejoinery.com • [cascadejoinery.com](https://www.cascadejoinery.com)

## Composite Recycling Technology Center (CRTC)

MASS TIMBER PANELS (CLT)



The CRTC Building Innovation Center was established to provide mass timber-based housing solutions to rapidly deployable military housing, emphasizing durability and protection. With access to vast stands of rapidly growing coastal western hemlock on the Olympic Peninsula, CRTC-BIC is the first entity worldwide to utilize thermal modification to stabilize and enable this underutilized species in CLT. ACLT - Advanced Cross Laminated Timber, is a CLT product that uses thermal modification (TM) of the lamstock in place of kiln-dried lumber. The TM process imparts improved dimensional stability as well as increased resistance to mold and mildew attack. Sourcing our primary lumber supply from the Makah Tribe, we have expanded to provide tribal and other affordable single-family modular detached homes.

**For more information, contact:** Glenn Ellis Jr, Housing Business Manager  
(505) 274-9198 • gellis@crtc-wa.org • [compositerecycling.org](https://www.compositerecycling.org)

## Green Canopy Node • Seattle, WA

PREFABRICATED MASS TIMBER HOUSING



Green Canopy NODE builds sustainable housing using offsite and traditional methods. We service developers in Washington and Oregon to acquire, plan, and construct their low rise multifamily and multi-unit projects. We innovate construction methods and components to increase cost control, reduce timelines, and improve sustainability. Green Canopy NODE offers a catalog of mass timber modular houses, townhomes, and apartments that are pre-designed and customizable to deliver carbon negative housing for developers and neighborhoods.

**For more information, visit:** [greencanopynode.com](https://www.greencanopynode.com)



## Mercer Mass Timber • Spokane Valley, WA

COMPLETE MASS TIMBER STRUCTURES

As a global mass timber manufacturer with operations in Washington, we provide high-performance prefabricated solutions for residential construction at all scales. Our vertically integrated approach—combining digital design, off-site manufacturing, and construction services—reduces project risk, accelerates schedules, minimizes site disruption, and enhances energy performance. From modular homes to mid- and high-rise developments, we enable sustainable, innovative, and resilient housing solutions.

**For more information, contact:** clt@mercerint.com • [mercermasstimber.com](https://www.mercermasstimber.com)

## Tieton Cabin Co. • Tieton, WA

PREFABRICATED MASS TIMBER HOUSING



Tieton Cabin Company, located in Tieton, WA, builds ready-made, thoughtfully designed one and two bedroom small homes optimized for versatile functionality as guest accommodations, income properties, or personal retreats. Robustly built with Cross Laminated Timber, Rockwool installation, steel frames and premium fixtures for energy efficiency, durability and performance, their elegant simplicity offers modern, timeless warmth with essential features. IBC compliant and WA State L&I certified, these homes arrive complete and install in one day with minimal disruption, ready for immediate use.

**For more information, contact:** Alex Mondau, Director of Strategy • 509-673-1030  
alex@tietoncabinco.com • [tietoncabinco.com](https://www.tietoncabinco.com)

## Vaagen Timbers • Colville, WA

COMPLETE MASS TIMBER STRUCTURES



Vaagen Timbers is a leader in sustainable mass timber manufacturing, transforming small-diameter logs from forest restoration into premium glulam and cross-laminated timber (CLT) products. By sourcing wood from within 100 miles of their Colville, WA (USA) facility, they reduce emissions and support local economies. Their precision-engineered glulam beams offer exceptional strength and beauty, meeting stringent ANSI/APA standards. Choosing Vaagen Timbers means investing in resilient, low-carbon buildings while actively contributing to healthier forests and wildfire prevention. From Forest to Frame — with purpose.

**For more information, contact:** Joel D. Rohrs, Executive Vice President  
(206) 708-3260 • [vaagentimbers.com](https://www.vaagentimbers.com)

# Mass Timber in Washington

## Manufacturers Map

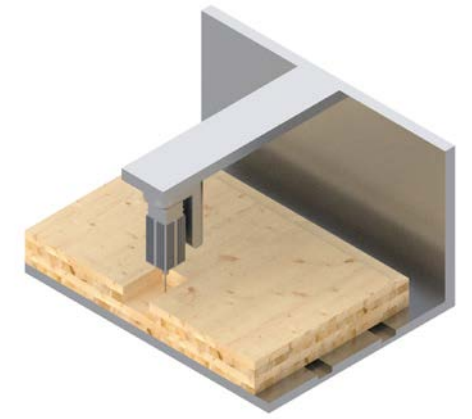


## Mass Timber Products

||| Glue Laminated Timber (Glulam)



+ Fabrication



≡ Mass Timber Panels (CLT, DLT, MPP)



▤ Prefab Mass Timber Housing



○ Connectors and Hardware



▣ Complete Mass Timber Structures



# Typology 2

## Custom Detached Homes

### What is custom detached home?

A stand-alone home that is uniquely designed and built to meet the specific preferences, needs, and specifications of an individual homeowner—where the owner collaborates closely with architects and builders to create a uniquely tailored floor plan, material palette, and finishes.

Mass Timber is treated much the same as lightwood frame by residential code with the exception of lateral design of a structural system utilizing CLT shear walls in a seismic zone. The most recent version of the referenced standard within the International Residential Code, Special Design Provisions for Wind and Seismic (SDPWS) uses more conservative design values than equivalent plywood shear walls. Architects and designers should be aware of the impact of shear wall aspect ratios and how it affects the placement of openings.

Photo: CLTHouse, atelierjones  
© Lara Swimmer Photography

### Why mass timber for this typology?

Appealing to the conscientious homeowner, mass timber offers a quality and simplicity of material unlike conventional construction. The opportunity for fully exposed timber on all surfaces with a greatly reduced material palette gives homeowners peace of mind about the materials they are bringing into their homes. Wood-filled biophilic spaces have widely published positive mental and physical health impacts on human inhabitants. Meanwhile the carbon sequestering, renewable materials supports the environmental health of the region and the world beyond.

Mass timber can create a warm, durable, and truly lasting multi-generational legacy home that stands the test of time. These solid timber homes are both nostalgic and forward thinking, conveying permanence while being uniquely compatible with passive design to provide high performance, optimal thermal comfort, and high energy efficiency.

The large panels and precise digital prefabrication allow for innovative and highly crafted and customizable spaces that still evoke the unique qualities and materials of the Pacific Northwest.

### What are the opportunities to scale?

The immersive and enticing biophilic appeal of mass timber will continue to grow in the custom housing market as mass timber becomes established in the United States as it has in Europe over the past few decades. Nimble flat-pack prefabrication is ideal for tight urban, remote rural, or climate-constrained sites presented by the custom home market. The natural warmth and tactility of mass timber is right at home in a remote ski chalet perched on a mountain side or a cozy and calming urban refuge.

Mass timber construction is a natural fit for passive design strategies to create uniquely sustainable and high performing homes. These same material characteristics and design principles are applied to create resilient fire-hardened homes in the Wildland Urban Interface, from materials that support the sustainable maintenance of the very forests that threaten these vulnerable areas.



## CLTHouse

Seattle, WA

CLTHouse represents atelierjones' first foray into mass timber construction, and became one of the first completed CLT projects in the United States. Situated in Seattle's Madison Park neighborhood, this unique residence was designed to accommodate a family of four on a small, irregularly shaped lot. The site's triangular shape inspired both the plan and section of the house, with pyramidal vaults reaching upward to bring natural light into the upper levels. The precise geometric design of the house was made possible through mass timber's digitally enabled pre-fabrication process. The compact, 1,500 SF design is conceived as a nesting series of volumes that spiral from entry to roof garden. Every square foot of the house was carefully considered, with spaces often serving multiple functions. A central core efficiently consolidates vertical services.

Completed in 2015 • Website: [CLTHouse](http://CLTHouse.com)

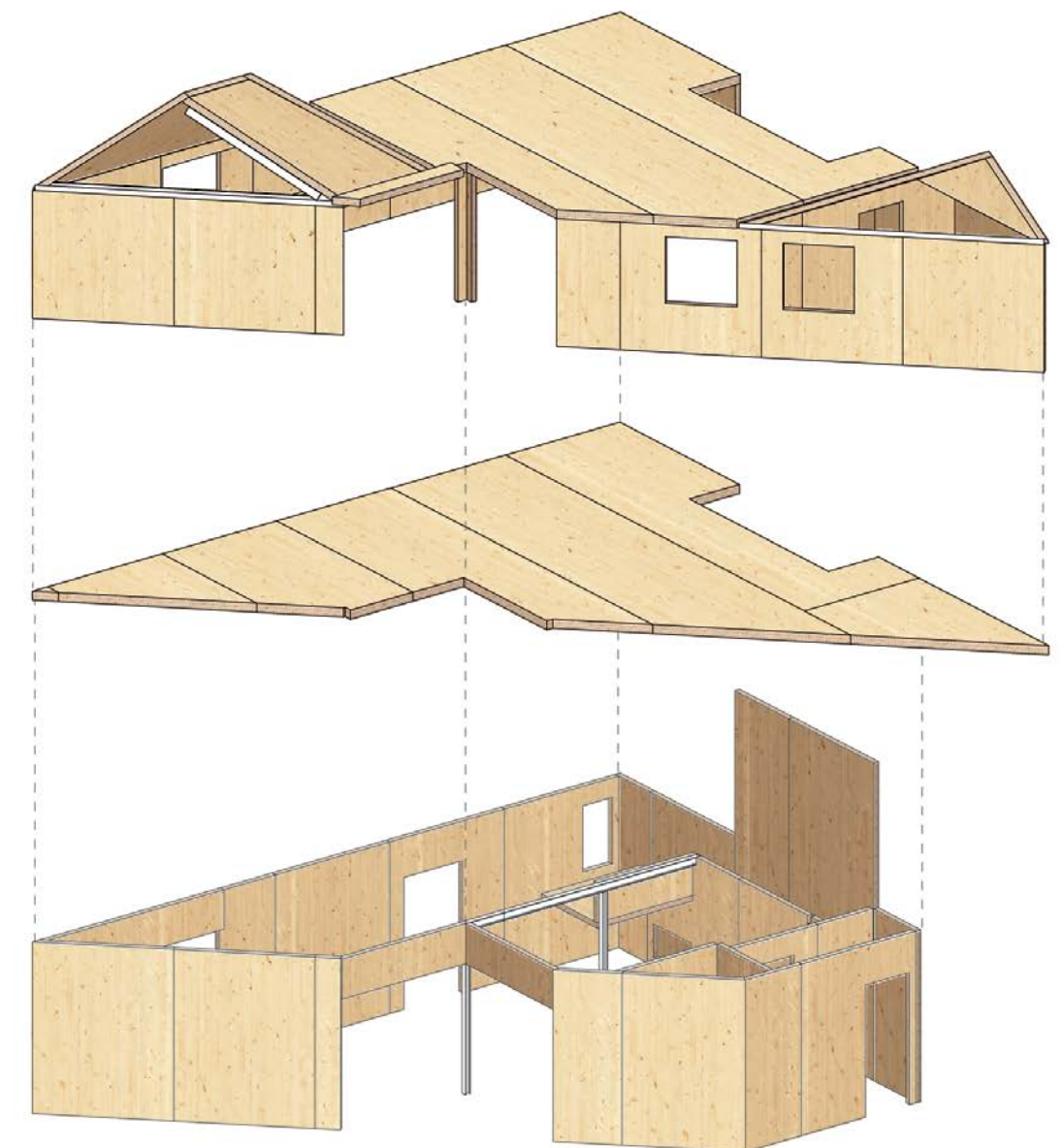
Photo: © Lara Swimmer Photography  
Diagrams courtesy of atelierjones



second level  
panels

floor panels

ground level  
panels



### PROJECT TEAM

atelierjones  
ARCHITECT

Cascade Built  
CONTRACTOR

Harriott Valentine Engineers  
STRUCTURAL

Pan Geo  
GEOTECHNICAL ENGINEER

Structurlam  
CLT

The CLTHouse panelized system includes 67 CLT panels for a total of 47,796 board feet of lumber used. This translates to approximately 184 mature softwood trees or less than an acre of forest.



## Kenmore House

Kenmore, WA

Kenmore house expands on atelierjones' work in single family mass timber construction, which started with the 2015 CLT house. This home for a multi-generational family outside of Seattle is arranged around a south-facing courtyard, with ample natural light to illuminate its warm Cross Laminated Timber interior.

*To be completed in 2025 • Website: [Kenmore House](#)*

Renderings and construction photo courtesy of atelierjones



### PROJECT TEAM

atelierjones  
ARCHITECT

gProjects  
CONTRACTOR

Harriott Valentine Engineers  
STRUCTURAL

LPD Engineering  
CIVIL ENGINEER

Sugarpine Engineering  
MEP ENGINEER

Mercer Mass Timber  
CLT



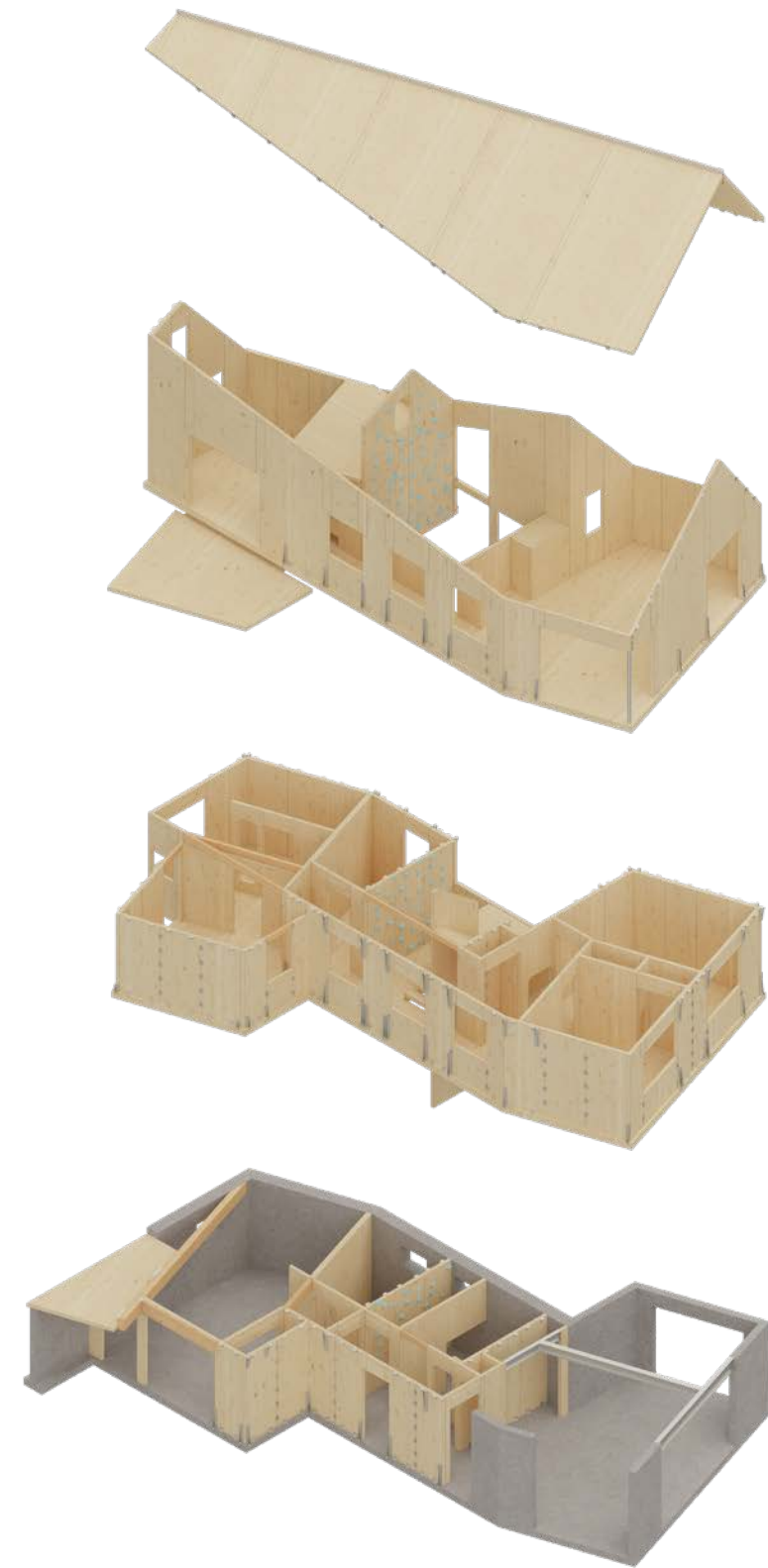
## Shoreline House

Shoreline, WA

Nestled amongst Douglas Firs on a site north of Seattle, this house will provide a healthy, sustainable, and resilient home for a family of four. Despite a compact footprint, the house will boast beautiful natural light and generous vertical connections, including a climbing wall that traverses the upper levels.

Construction to begin in 2025 • Website: [Shoreline House](#)

Renderings and diagram courtesy of atelierjones



### PROJECT TEAM

atelierjones  
ARCHITECT

gProjects  
CONTRACTOR

Harriott Valentine Engineers  
STRUCTURAL

Sugarpine Engineering  
MEP ENGINEER

Kalesnikoff  
GLULAM & CLT

Mass timber panel system with location of panel fasteners



# MASSTAC

Washington Mass Timber Accelerator

visit us at [wamassttimber.org](http://wamassttimber.org) 