



Mass Timber Schools

Case Studies

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.

Mass Timber Schools Accelerator Committee

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Cascadia Tech Academy 100 Building

Evergreen Public Schools
SCHOOL DISTRICT

Vancouver, WA

LOCATION

New Construction

TYPE OF UPGRADE

In Design

YEAR BUILT

Cascadia Tech's 100 Building is a career and technical education building that houses programs for construction technology, diesel technology, automotive technology, and criminal justice. The building is organized around four main shop spaces that are aligned to a central spine that connects circulation through building. Each shop space is tailored to the tools, workflow, and identity of each discipline.

The building massing reinforces the importance of each shop space and program identity. High-bay program spaces are expressed as individual volumes, each topped with clerestories that bring in abundant natural daylight, enhancing visibility, reducing energy consumption, and creating uplifting environments for hands-on learning. Between these taller volumes, flat-roofed support spaces house classrooms, offices, and shared resources, optimizing mechanical distribution and structural simplicity.

Durability, sustainability, and cost-efficiency are central to material strategy. The building employs a mass plywood panel (MPP) structural system, selected for its strength, practicality, aesthetic value, and environmental performance. MPP offers warmth and character while supporting a fast construction duration and long-term resilience, an ideal match for Cascadia Tech's occupied campus educational mission, as well as Evergreen Public Schools investment in lasting infrastructure.



PROJECT TEAM

LSW Architects

ARCHITECT

Kramer Gehlen & Associates, Inc.

STRUCTURAL ENGINEER

BUILDING STATISTICS

Building Area:
65,000 SF

Areas featuring Mass Timber:

- All floor and roof structures use mass plywood panels (MPP)
- All beams and columns use glue-laminated timber (GLT) pieces



Photo © LSW Architects

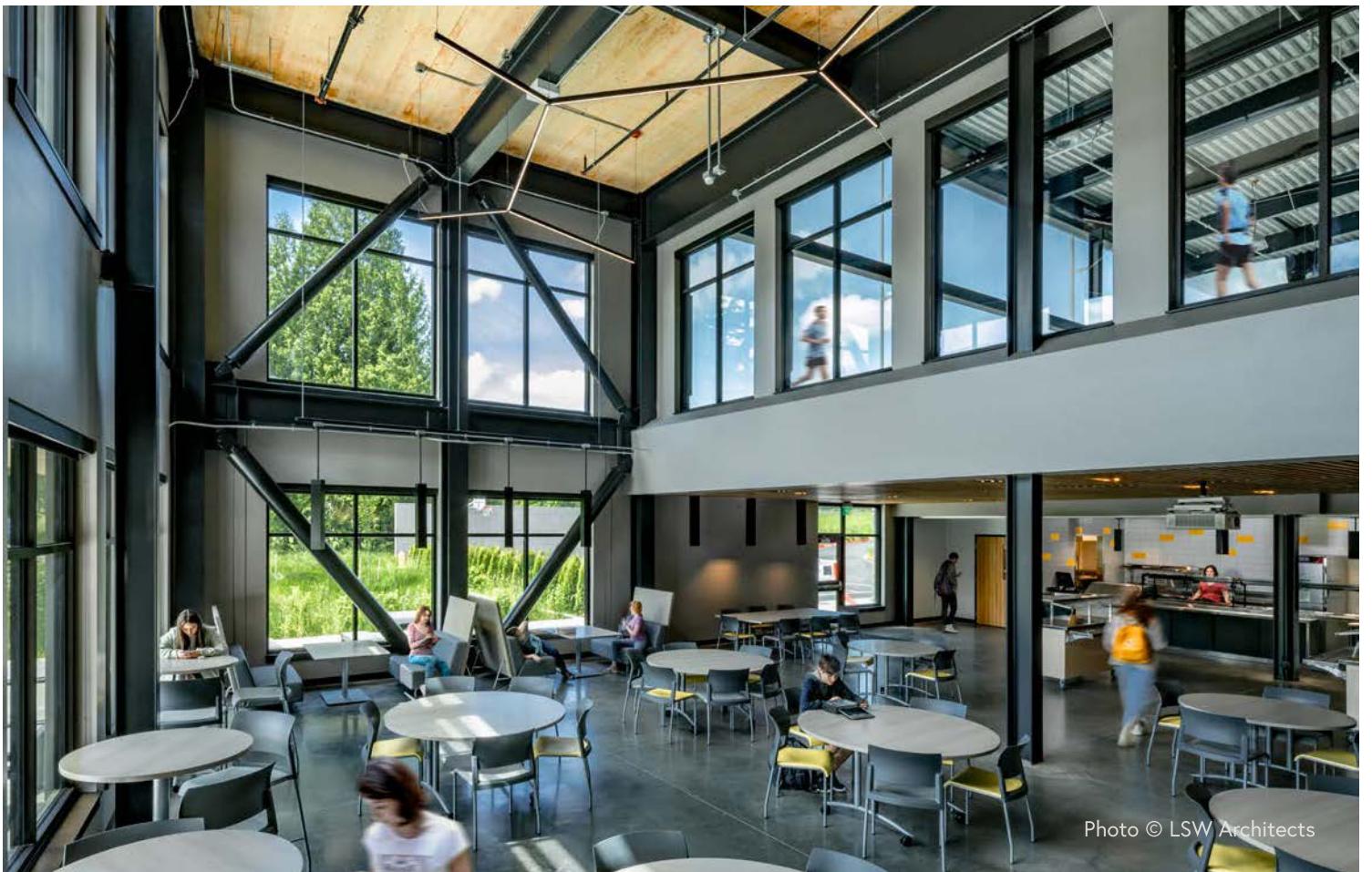


Photo © LSW Architects

Vancouver iTech Preparatory

Steel Building with Mass Timber Elements

Vancouver Public Schools
SCHOOL DISTRICT

Vancouver, WA
LOCATION

Replacement Building
TYPE OF UPGRADE

2019
YEAR BUILT

iTech Preparatory is a STEM-focused "School of Choice" serving grades 6 through 12 within Vancouver Public Schools. The building's design supports a project-based, collaborative learning model, with integrated spaces such as fabrication workshops, science and robotics labs, art and media studios, and a central commons. The campus incorporates a range of strategies to reduce environmental impact and enhance user experience, including the preservation and integration of the site's natural wetland. This natural drainage feature not only manages runoff but also serves as a focal point at the building's entry, reinforcing the school's connection to its landscape.

The building's compact three-story form minimizes its footprint, while strategic daylighting, shading, and the use of natural materials, including cross-laminated timber (CLT) in key visible areas, support energy efficiency and biophilic design principles. Exposed wood elements throughout the building create a warm, calming atmosphere that enhances student well-being and reinforces the school's connection to nature. These biophilic qualities are further emphasized through views of surrounding treelines, preserved mature trees, and outdoor learning environments. iTech stands as a model for future-ready educational design, where sustainability, wellness, and innovation converge to support the development of tomorrow's problem-solvers.

PROJECT TEAM

LSW Architects
ARCHITECT

Kramer Gehlen & Associates, Inc.
STRUCTURAL ENGINEER

Robinson Construction Co.
GENERAL CONTRACTOR

Carpentry Plus, Inc.
TIMBER INSTALLER

Structurlam
TIMBER MANUFACTURER

BUILDING STATISTICS

Building Area:
77,600 SF

Areas featuring Mass Timber:
Floor framing at Levels 2 and 3 (approximately 9,000 SF of CLT) in common areas, including cafeteria and collaboration spaces



Photo © LSW Architects



Photo © LSW Architects

Marshall Elementary School & McLoughlin Middle School

Primarily Mass Timber

Vancouver Public Schools
SCHOOL DISTRICT

Vancouver, WA
LOCATION

Replacement Building
TYPE OF UPGRADE

Phase 1 - 2020, Phase 2 - 2021
YEAR BUILT

At Marshall Elementary and McLoughlin Middle Schools, cross-laminated timber (CLT) is the defining material and design driver, shaping both the architectural character and the educational experience. As one of the largest CLT school projects in Southwest Washington at the time of its construction—the campus was designed to serve over 1,300 students across two buildings. These schools are physically linked by a central spine that houses shared resources like a media center and kitchen, maximizing operational efficiency. The extensive use of CLT and laminated veneer lumber (LVLs) not only reduced the carbon footprint but also created a warm, biophilic environment that mirrors the surrounding natural landscape. This material strategy supports a calming, multi-sensory experience that nurtures curiosity, imagination, and a deeper connection to nature.

The design team prioritized sustainability and wellness from the outset, setting an ambitious energy use intensity (EUI) target of 45 kBtu/sf/year. To meet these goals, the project leveraged the thermal performance and carbon-sequestering benefits of CLT, using it extensively across the second floor and roof area. A rigorous value analysis process optimized deck spans and minimized structural depth, ensuring cost-effectiveness without compromising performance. The schools' interiors are organized into learning community clusters, each with collaboration zones, maker spaces, and fabrication labs that support hands-on, interdisciplinary learning. The integration of CLT and other natural materials not only aligns with the district's sustainability goals but also elevates the educational environment, making it a place where students feel inspired, supported, and connected to the world around them.

PROJECT TEAM

LSW Architects
ARCHITECT

Kramer Gehlen & Associates, Inc.
STRUCTURAL ENGINEER

Skanska
GENERAL CONTRACTOR

Western Wood Structures
TIMBER INSTALLER

Structurlam
TIMBER MANUFACTURER

BUILDING STATISTICS

Building Area:
200,000 SF

Areas featuring Mass Timber:
Nearly the entire second floor and roof of both schools were constructed using cross-laminated timber (CLT)



Photo © Arthur Ross

Kopachuck Middle School

Steel Building with
Mass Timber Elements

Peninsula School District
SCHOOL DISTRICT

Gig Harbor, WA
LOCATION

Expansion and Modernization
TYPE OF UPGRADE

2021
YEAR BUILT

A 66,000 SF expansion and modernization at Kopachuck Middle School created new space for classrooms and administration offices. A new Cross Laminated Timber (CLT) roof was installed at the administrative wing, creating warmth and identity at the entrance of the building. The modernization also included structural upgrades and improvements to kitchen, science, and CTE space as well as daylighting and exiting enhancements.

BUILDING STATISTICS

Building Area:
66,000 SF

Areas featuring Mass Timber:
Cross Laminated Panels were used as the roof over the administration offices and main entry.

PROJECT TEAM

TCF Architecture
ARCHITECT

PCS Structural Solutions
STRUCTURAL ENGINEER

Schwiesow Construction
GENERAL CONTRACTOR

DR Johnson
TIMBER MANUFACTURER

PROJECT HIGHLIGHTS

CLT roof creates warmth and identity at the entrance of the building

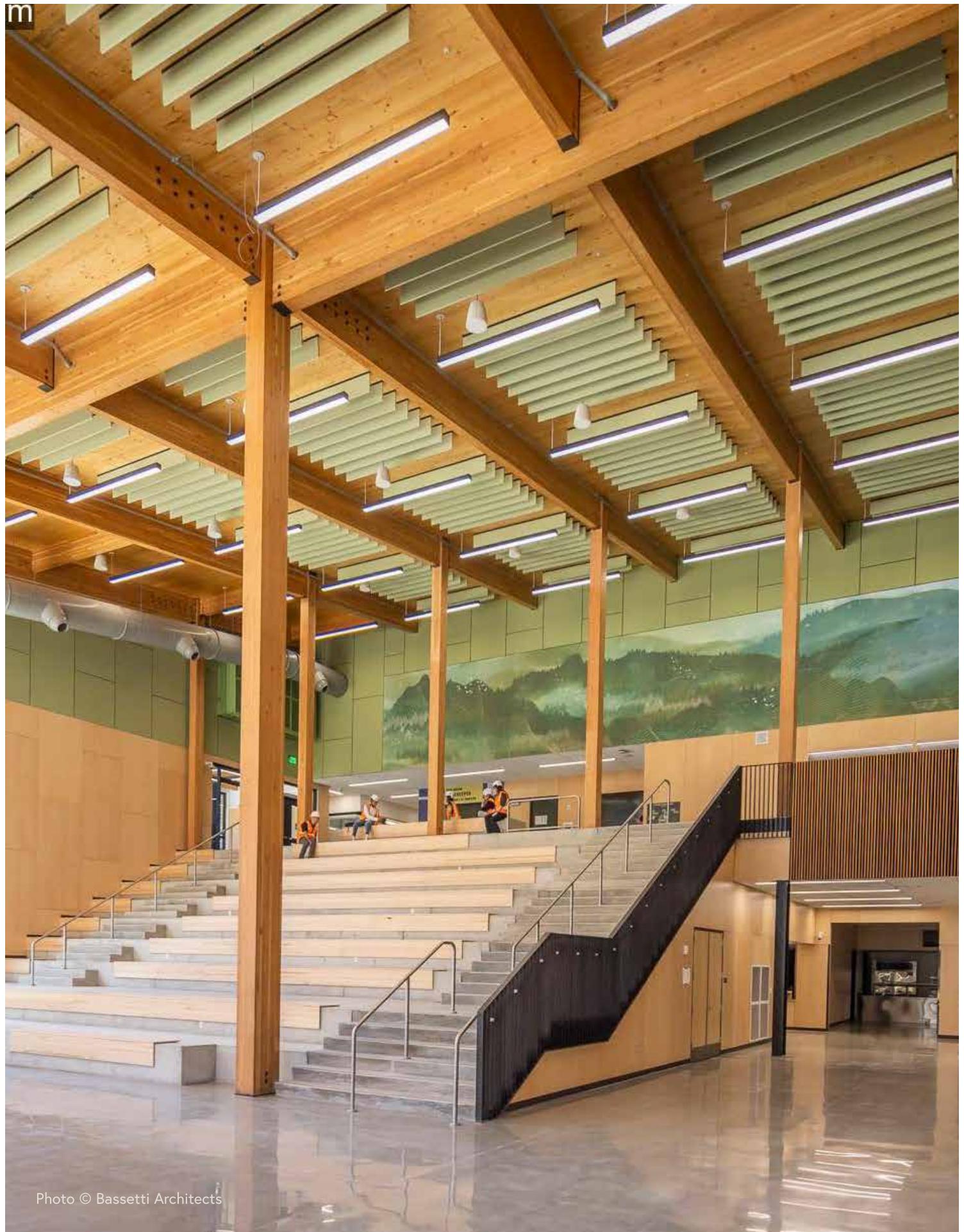


Photo © Bassetti Architects

Evergreen High School

- Primarily Mass Timber (Academic Building)
- Steel Building with Mass Timber Elements (Activity Building)

Highline Public Schools
SCHOOL DISTRICT

Seattle, WA
LOCATION

New Construction
TYPE OF UPGRADE

2025
YEAR BUILT

The 214,000 SF replacement of Evergreen High School includes a three-story academic building and two-story activity building. The story of Evergreen High School's redevelopment is interwoven between people and place. The place is a bucolic landscape that has been sculpted over time by glaciers, erosion, and human development. The site is characterized by a relatively natural yet urban setting that includes undulating landscape surfaces, mature trees, structured playfields, and Lakewood County Park.

The design seeks to develop a safe place nestled into the elegant site; welcoming entries that provide shelter and support security for all; engaging public spaces that encourage community gathering; differentiated spaces that support diverse social and academic activities and interactions; quiet spaces that enhance collaboration and individual focus; learning neighborhoods that support rigorous learning and personalized connections between students and adults; flexible layouts that support evolving pedagogies; and visible learning that inspires exploration and critical thinking.

PROJECT TEAM

Bassetti Architects / A Design Studio of HMC Architects
ARCHITECT
PCS Structural Solutions
STRUCTURAL ENGINEER
Cornerstone General Contractors
GENERAL CONTRACTOR
Carpentry Plus
TIMBER INSTALLER
SmartLam
TIMBER MANUFACTURER

BUILDING STATISTICS

Building Area:
214,000 SF

Areas featuring Mass Timber:
Academic Building

- The entire floor and roof structure used CLT panels
- All beams and columns used glued laminated timber

Activity Building

- Commons and hallways built with Glulam beams and columns, and CLT roof panels

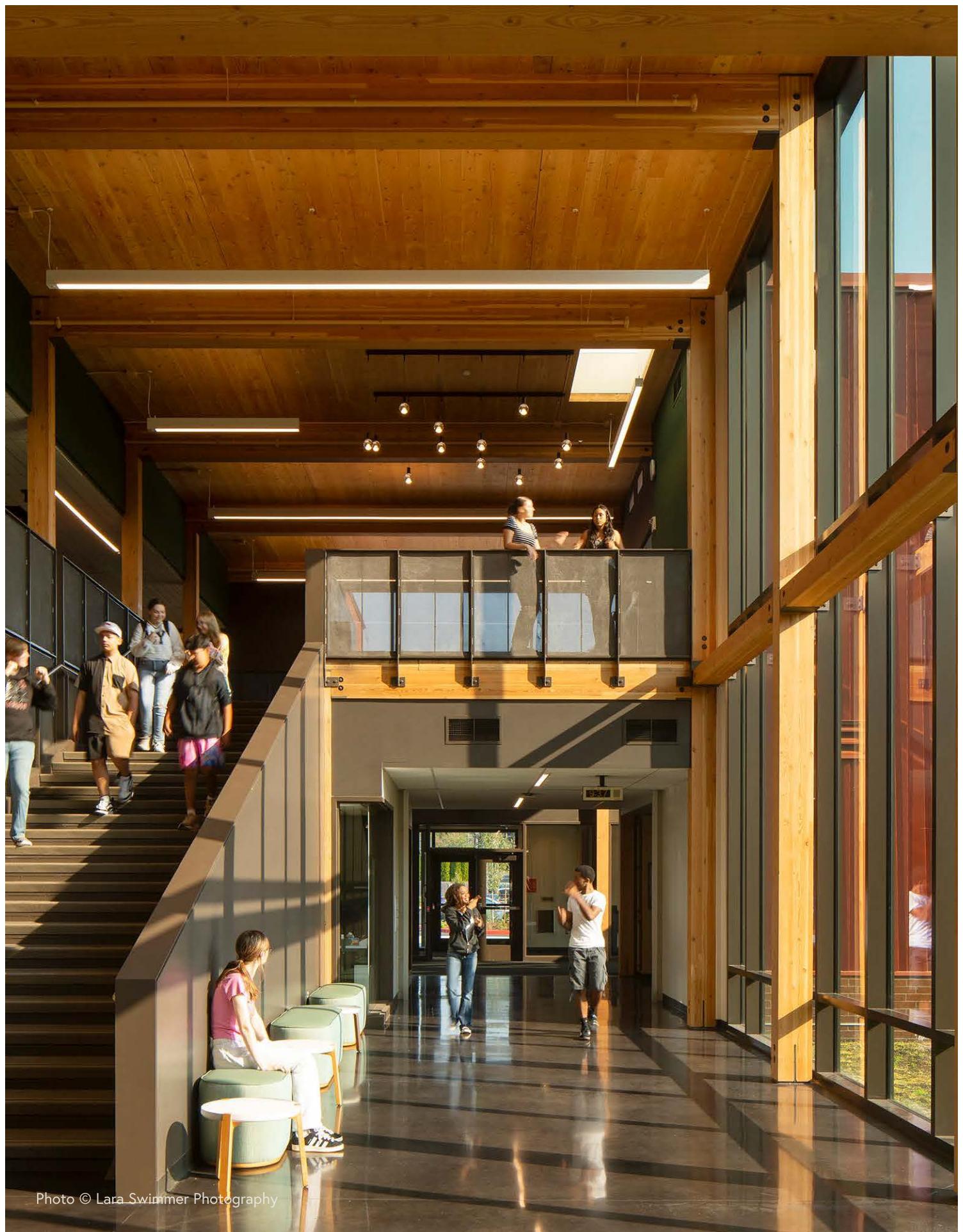


Photo © Lara Swimmer Photography

Washington School for the Deaf

Primarily Mass Timber

Washington Center for Deaf
and Hard of Hearing Youth
SCHOOL DISTRICT

Vancouver, WA
LOCATION

Campus Expansion
New Academic Building and
Gymnasium

TYPE OF UPGRADE

2024

YEAR BUILT

The Washington School for the Deaf project focuses on creating an inclusive, state-of-the-art campus tailored to the needs of deaf and hard-of-hearing students. The program includes the Divine Academic Building and Hunter Gymnasium, designed to foster visual communication, accessibility, and community engagement. Guided by DeafSpace principles, the project emphasizes open sightlines, natural light, and vibration-sensitive flooring to enhance learning and social interaction. The campus supports athletics and extracurricular activities, promoting holistic development. Sustainability was a priority, integrating energy-efficient systems and LEED Gold standards. This expansion ensures a modern, safe, and inspiring environment for future generations of learners.

The project employs mass timber as the primary structural solution, reflecting a commitment to sustainability and biophilic design. Cross-laminated timber (CLT) panels and glulam beams form the building's framework, reducing embodied carbon compared to conventional steel or concrete systems. Mass timber offers strength, durability, and seismic resilience while creating warm, tactile interiors that support visual communication. Prefabrication accelerated construction and minimized waste, aligning with the design-build delivery approach. The material's renewable nature and low environmental impact complement the project's LEED Gold certification goals. This structural choice demonstrates innovation, combining performance, aesthetics, and ecological responsibility for a progressive educational facility.

BUILDING STATISTICS

Building Area:
50,500 SF

Areas featuring Mass Timber:

- Classroom Wing
- Classrooms
- Common Areas

PROJECT HIGHLIGHTS

- Exposed timber interiors create warm, tactile environment that supports DeafSpace principles
- Prefab timber accelerated construction timelines and minimized on-site waste
- LEED Gold certification through renewable material sourcing

PROJECT TEAM

Mithun
ARCHITECT

PCS Structural Solutions
STRUCTURAL ENGINEER

Skanska
GENERAL CONTRACTOR

Skanska
TIMBER INSTALLER

Kalesnikoff
TIMBER MANUFACTURER

Bush Upper School

Primarily Mass Timber



Photo © Lara Swimmer Photography

Private
SCHOOL DISTRICT
Seattle, WA
LOCATION
New Construction
TYPE OF UPGRADE
2022
YEAR BUILT

The new upper school is a deep green classroom and commons building for an independent K-12 school slated to become the first Passive House school on the West Coast and the largest west of the Mississippi River. The program includes ten classrooms, casual break-out areas, 400-seat multipurpose room student lounge, student/faculty collaboration center, administrative offices and faculty work room. The program includes ten classrooms, casual break-out areas, 400-seat multipurpose room student lounge, administrative offices and work room.

This intimate classroom building demonstrates the school's commitment to sustainability. The use of mass plywood (MPP) construction reduced construction time and embodied carbon, and contributes to the overall Passive House performance of the building. Large format two-inch-thick panels comprise the majority of the structure, and are also deployed in work tables, bench furnishings, door panels and other interior elements to tell the story of material innovation on the project. The nesting of the multipurpose level into the hillside tempers the building thermal loads while creating a fully accessible entrance to the upper campus.



Photo © Lara Swimmer Photography

PROJECT TEAM

Mithun, Inc.
ARCHITECT
DCI Engineers
STRUCTURAL ENGINEER
Exxel Pacific
GENERAL CONTRACTOR
Cascade Joinery
TIMBER INSTALLER
Freres Engineered Wood
TIMBER MANUFACTURER

BUILDING STATISTICS

Building Area:
20,500 SF

Areas featuring Mass Timber:
• Common areas
• Multipurpose Room
• Classrooms

PROJECT HIGHLIGHTS

- Glulam post-and-beam structure with mass plywood floors
- Passive House Design



Renderings © Mahlum



Photo © Mahlum

Alki Elementary School

Primarily Mass Timber

Seattle Public Schools
SCHOOL DISTRICT

Seattle, WA
LOCATION

Replacement Building
TYPE OF UPGRADE

2026
YEAR BUILT

The 79,000 SF new construction at Alki Elementary School is designed to create an environment that communicates care, support, and belonging in ways students can easily recognize – beginning with the design of a three-story classroom building that prioritizes connection to an existing and reimagined Parkway Boulevard, an existing Community Center and the surrounding neighborhood.

The decision to use mass timber at Alki Elementary is a purposeful strategy to build social, educational, and environmental equity. Mass timber also creates a strong connection to place while reducing greenhouse gas emissions, promoting biophilia and a sense of welcoming, and offering many constructibility advantages.

Learning communities are clustered together into neighborhoods and distributed throughout the three floors of the building. The design prioritizes classroom location to orient towards the north and south for daylight and leverages views to the park to the north. Learning communities provide access to small group rooms and open learning commons' to invite collaboration and intervention work. These shared spaces become an important integral part of the framework to support diverse ways of learning.

BUILDING STATISTICS

Building Area:
79,000 SF

Areas featuring Mass Timber:

- Common areas
- Atrium
- Classrooms
- Library

PROJECT HIGHLIGHTS

- 3-story atrium lets in natural light and provides natural ventilation.
- The entire timber structure was erected in 5 weeks

PROJECT TEAM

Mahlum Architects
ARCHITECT

PCS Structural Solutions
STRUCTURAL ENGINEER

Cornerstone
GENERAL CONTRACTOR

Evergreen Erectors
TIMBER INSTALLER

Kalesnikoff
TIMBER MANUFACTURER



Photo © Benjamin Benschneider

Kellogg Middle School

Shoreline School District
SCHOOL DISTRICT

Shoreline, WA
LOCATION

Replacement Building
TYPE OF UPGRADE

2020
YEAR BUILT

Kellogg Middle School is a new 152,000 SF facility and the first acoustic dowel-laminated timber (ADLT) system installation in the U.S., where the wood panels are utilized for a combination of structure, finish, and acoustical control. Acoustic DLT is unique in that sound-absorbing fiber insulation is added to the panels. This is accomplished in the factory, by using CNC tools to rout out thin channels between the laminations, and inserting acoustic insulation in the cavities. This unique process can be used to achieve a noise reduction coefficient as high as 0.7. At Kellogg, the acoustic profile was utilized to showcase the wood structure without the need for an additional acoustic ceiling. The largest DLT panels in this project are nearly forty feet long by six and a half feet wide. The panels were prefabricated and efficiently flat-packed to the construction site, where they were erected in just two weeks.

The school is designed to address the specific academic, social, and emotional needs of the teenage learner. Internal and external transparency throughout the school creates an open, welcoming, and safe learning environment that inspires curiosity. Internal and external transparency throughout Kellogg Middle School creates an open, welcoming, and safe learning environment. Conceptually, the site is divided into a secure middle school "backyard" to the north and a public, open "front yard" to the south. A central, secure learning courtyard provides ample opportunities for students to take short cuts to their next class and connect with nature.



Photo © Mahlum

PROJECT TEAM

Mahlum Architects
ARCHITECT

Coughlin Porter Lundeen
STRUCTURAL ENGINEER

Hoffman
GENERAL CONTRACTOR

Hoffman
TIMBER INSTALLER

StructureCraft
TIMBER MANUFACTURER

BUILDING STATISTICS

Building Area:
152,000 SF

Areas featuring Mass Timber:

- Common areas
- Library
- Entry Hall

PROJECT HIGHLIGHTS

- First use of acoustic dowel-laminated timber (ADLT) in the U.S.
- Through detailed cost analysis, ADLT was less expensive than steel option with acoustic ceiling finishes



Photo © Arthur Ross



Photo © Arthur Ross

Lakeridge Middle School

Lake Oswego School District
SCHOOL DISTRICT

Lake Oswego, OR
LOCATION

Replacement Building
TYPE OF UPGRADE

2021
YEAR BUILT

Warm and welcoming, Lakeridge Middle School uses an exposed wood structural system designed to connect students with nature. Whole-tree columns, fabricated from hardwood trees harvested from the building site, support the structure inside and out. The other wood elements, which include glue-laminated timber (glulam) beams, acoustic dowel-laminated timber (ADLT) panels, laminated veneer lumber (LVL), and other engineered wood products, were also left visible to help reduce student stress and increase well-being. These elements evoke feelings of being in nature to reduce stress, anxiety, and aggressive behavior. Locally sourced acoustic ADLT ceiling panels also provide acoustic absorption and leave a finish that ties into the District's biophilic and low-carbon goals. Mahlum also used the warmth of the wood in the library to achieve the District's goal of creating "a more intimate space to celebrate reading the printed word."

Wood's efficient thermal conductivity also helped create a high-performance envelope, saving the District about \$400,000 each year in energy costs. Lakeridge Middle School is registered with the Energy Trust of Oregon's Path to Net Zero program; it also meets Architecture 2030 energy targets. The completed project met the sustainability, safety, accessibility, operational, and student wellness goals of the District.

Light Wood Frame with Mass Timber

PROJECT TEAM

Mahlum Architects
ARCHITECT

KPFF
STRUCTURAL ENGINEER

Skanska
GENERAL CONTRACTOR

DSL Builders
TIMBER INSTALLER

StructureCraft
TIMBER MANUFACTURER

RedBuilt
TIMBER MANUFACTURER

BUILDING STATISTICS

Building Area:
141,000 SF

Areas featuring Mass Timber:

- Dining common
- Library
- Entry Hall
- Exterior canopies

PROJECT HIGHLIGHTS

- Trees harvested on site were used as structural load bearing columns.
- In addition to mass timber elements, the project also uses LVL framing and wood trusses to reduce embodied carbon impacts.



Rendering © LEVER Architecture



Rendering © LEVER Architecture

PSU Schnitzer School of Art + Art History + Design

Primarily Mass Timber

Portland State University
SCHOOL DISTRICT

Portland, OR
LOCATION

New Construction
TYPE OF UPGRADE

2026
YEAR BUILT

Portland State University's Schnitzer School of Art, Art History and Design is a four-story, 100,000 square foot mass timber building. The project brings together Art, Art History, and Graphic Design programs in one building for the first time in decades. The school's design includes purpose-built classrooms, studios, and maker spaces designed with input from students and faculty. The student commons area sits at the core of the building and opens directly to a landscaped courtyard. Adjacent to this commons area is the main lecture hall, which doubles as an event space and provides direct access to the courtyard. The building was organized around a series of flexible commons areas, which act as informal gathering, exhibit, and learning spaces.

The building is PSU's first mass timber project with a structure comprised entirely of regional Douglas Fir. The timber is harvested from Oregon and Washington forests, with over 50% of the glulam material from tribal enterprises, including Yakama and Umpqua owned or managed forests. The mass timber structure is prefabricated to a remarkable 1/8th inch tolerance, which allows for an impressive speed of installation and high degree of precision during construction. It took less than three weeks to install the columns, beams, and floor structure for a single level. This pre-fabrication included roughly 1,000 penetrations that were digitally coordinated with BIM to organize the building's various mechanical, electrical, and plumbing systems around the structure. These building system components are also largely prefabricated for faster construction and efficiency.

PROJECT TEAM

LEVER Architecture
ARCHITECT

KPFF
STRUCTURAL ENGINEER

Swinerton
GENERAL CONTRACTOR

Timberlab
TIMBER INSTALLER

Timberlab
GLULAM MANUFACTURER

Kalesnikoff
CLT MANUFACTURER

BUILDING STATISTICS

Building Area:
100,000 SF

Areas featuring Mass Timber:

- CLT floor and roof structure bears on Glulam columns and beams throughout the entire building
- Non-Mass Timber System: Buckling Restrained Braced Frames for seismic are WF steel with round HSS diagonals