CASE STUDY

Northlake Commons

Seattle developer leads the way with mass timber lab-ready office

Laboratory-ready office buildings are a unique building type not often associated with the use of structural wood, but that didn't stop Seattle developer Hess Callahan Grey Group from choosing mass timber for Northlake Commons. The unique project, located on the shores of Lake Union overlooking Seattle's skyline, provides a home for companies involved with everything from artificial intelligence to life science research and more, with an innovative structure designed to elevate the human workplace experience.

Northlake Commons' dramatic architecture prioritizes natural elements, leveraging biophilic design principles and using wood to inspire innovation and promote well-being. The building blends function with flexibility, creating a warm and natural space that supports the inventive work within. Located along a popular Seattle bike trail, the five-story structure was also configured to align with the neighborhood, with more than 60,000 square feet of outdoor terrace and deck area, including an open ground-floor plaza that invites tenants and others to enjoy the view.

Interestingly, the site's history was already rooted in timber. Seattle's Dunn family founded Dunn Lumber in 1907 and operated a lumber distribution yard there for decades. In 2019, they hired Hess Callahan Grey Group to develop the property while still maintaining space for their warehouse.

The developer collaborated with architects at Weber Thompson and engineers at DCI to design the project in mass timber. The team chose a wood solution, turning

PROJECT DETAILS

Northlake Commons

LOCATION:	Seattle, WA
STORIES:	Five
SIZE:	275,000 square feet *(four levels of mass timber over a one-level concrete podium plus two levels below)*
CONSTRUCTION TYPE:	III-A
COMPLETED:	2024

PROJECT TEAM

OWNER/DEVELOPER:	Hess Callahan Grey Group, Spear Street Capital, Dunn Family
ARCHITECT:	Weber Thompson
STRUCTURAL ENGINEER:	DCI Engineers
GENERAL CONTRACTOR:	Swinerton
MASS TIMBER SUPPLIER:	Kalesnikoff Mass Timber
MASS TIMBER FABRICATION AND INSTALLATION:	Timberlab

Connect with the Northlake Commons project team at *www.woodworksinnovationnetwork.org/projects/northlake-commons*

WOODWORKS INNOVATION NETWORK.ORG

a full city block from a lumber yard into a beautiful mass timber development built on spec.

The Hess Callahan Grey Group, known in the Seattle community for their high quality approach to project development, wanted Northlake Commons to "elevate the human experience in the workplace." Their goal was to "create a project that spoke to the site's timber legacy while using design and innovation to meet the needs of the post-Covid workplace." The resulting mass timber structure was configured specifically to recognize the human desire for a connection with nature. Amenities include storage for bicycles, paddleboards, and kayaks, to support tenants who want to walk, bike, or even paddle to work.

"We consider ourselves a big picture developer," said Jo Callahan, Principal. "We work to create projects that are unique and special, differentiated in some way—projects that are resilient in bad markets, and attractive in good ones. Everything came together with Northlake Commons. We're seeing more companies who want to demonstrate that they care about both sustainability, and the health and wellness of their employees. When you walk into Northlake Commons, you feel that commitment. It's a building that is not only beautiful and functional, but one that speaks to a company's values."

Wood-Inspired Design

Weber Thompson's design was inspired by the site's history with wood. A birds-eye view of Northlake Commons shows two forms reflective of a mortise and tenon woodworking joint. From ground level, the building's visible structure represents layers of a forest. Exposed glue-laminated timber (glulam) columns rise tree-like from a courtyard, topped with glulam beams and cross-laminated timber (CLT) panels that represent the canopy above.

"The building has a strong narrative that the public gets to experience," said Cody Lodi, Design Principal at Weber Thompson. "Anyone can walk up and touch the wood columns, giving them a personal understanding of why mass timber is so impactful. The benefits are not just for tenants; it was important for this building to be approachable, to integrate into the neighborhood and give people a place to meet."

Meeting Lab-Ready Space Requirements

Scientific research facilities have special requirements in terms of column spacing, clear heights, vibration control, and more, so the project team started by hiring consultants knowledgeable about the industry. Once the specific needs were identified, they did studies to make sure the structural design would accommodate those needs.

However, since Northlake Commons was a speculative development, and since it was impossible to predict the requirements of every future tenant, the project team relied heavily on the adaptability of a mass timber structure. They focused on making the shell and core flexible and created a set of lab plans that can be adapted to meet the needs of most life science tenants.

Parking and the Dunn family's lumber distribution operations are located at the below-grade levels. Levels one and two are lab ready, with spacious 14-foot interior clear heights to accommodate special equipment and ventilation hoods. The top two levels are designed for office space.

Module size: Structural bays of a lab-ready building are usually designed to accommodate two to three lab modules within the grid. So, Weber Thompson architects used lab modules (a space planning unit in lab design, roughly 11x21 to 11x32 feet) along with the structural span of timber, to inform the grid size.

"We decided to be strategic and not try to meet the needs of every single laboratory user in the market," said Brittany Porter, Weber Thompson's Senior Project Architect. "Through our research, we also discovered that most spaces are never 100 percent lab—they're often 40 percent lab and 60 percent office. So, we looked at how an office grid could also be configured for lab readiness."

Weber Thompson spent time test fitting and evaluating different grid sizes with various programmatic requirements. It was a move that paid off, said Sam Dicke, Manager of Client Development for Timberlab. "That's one of the benefits of having a team on board early, since we could evaluate wood utilization and optimization as well as pricing."

The team landed on a 17x24-foot grid. "The 17-foot width worked well with the floor plates," Porter added. "We chose the 24-foot dimension to keep beams under 25 inches deep, giving us the interior clear heights needed to meet market expectations for Class A office and lab space. We also added some shorter bays, which resulted in even shallower beams, to accommodate mechanical runs. We were able to run ductwork tighter to the ceiling in those areas while still maintaining clear heights."

Vibration control: Vibration control was also an important criteria. Sensitive lab instruments like mass spectrometers and electron microscopes typically sit on base isolators—even in concrete and steel buildings—which provide the ultra-high level of vibration protection needed. But tenants still have high expectations. The unique vibrations stemming from the lumber distribution operations in the building's lower level also had to be considered.

Solutions included an 18-inch concrete transfer slab on level one, directly above the lumber distribution warehouse, designed to isolate vibration and noise. The developer also invested in a robust floor system throughout the building, assuming extra costs to provide better vibration control and more flexibility for future tenants, with a 3-inch concrete topping slab on top of the CLT panels for extra mass. They also included an option in the design to add extra purlins if needed to accommodate heavy laboratory equipment.

"That's one of the benefits of mass timber—flexibility," Lodi said. "It's easy to add elements to provide extra stiffness, and we have a set of design tools that a tenant can use when needed."

Building codes and fire design: Exposed mass timber is permitted in Type III construction and is typically required to achieve a 1-hour fire-resistance rating (FRR). However, life science spaces are required to meet a 2-hour FRR because of the potential for increased risk. The floor of level one, an 18-inch concrete transfer slab, already met the FRR requirements for lab use. Weber Thompson used 7-ply CLT floor panels on level two and upsized the mass timber columns on levels one and two to achieve the higher rating. Five-ply CLT was used for the floor structures of levels three and four, designed as office space, as well as the roof.

"It was a straightforward thing to do, strategically adding more fiber where needed to hit that 2-hour requirement," Porter said. "We could have made the fire rating work with the 5-ply CLT, but the 7-ply also gave us additional loading capacity and better vibration control."

Mechanical, electrical, and plumbing (MEP): Laboratory space often requires robust and complex MEP systems, ranging from straightforward eyewash stations to complicated chemical exhaust systems. To accommodate future mechanical needs, the team added three large vertical shafts, each 20x30 feet. "The building has a dedicated outdoor air system (DOAS) that's ready to receive branching once tenant build-outs are tailored," said Porter. "We also worked to maximize head heights and reduce beam depths, mixing low and high bays that provide logical places to run future services."

Unique Design Elements

In addition to meeting technical requirements, the design features several nuances that improve sustainability, add visual value, and optimize fiber utilization.

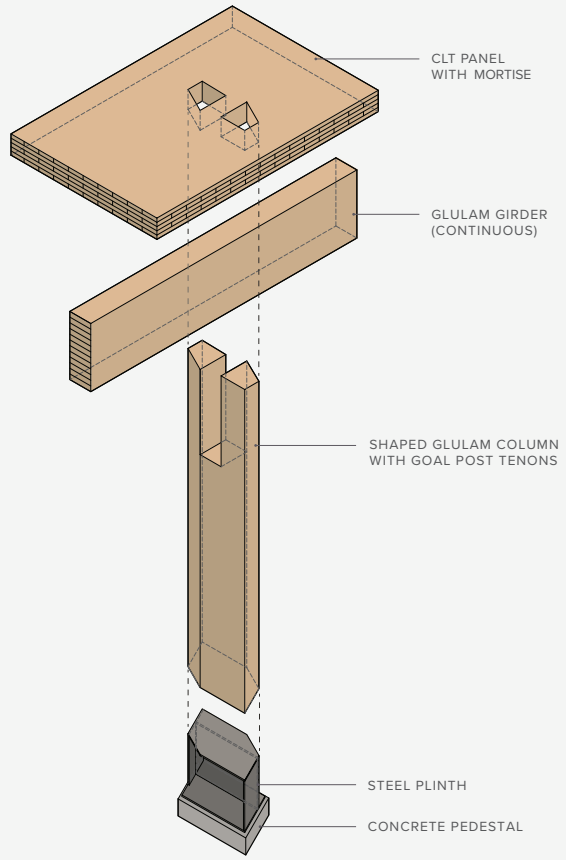
Tapered column detail: Glulam columns were designed to match loading requirements, with smaller sizes in the upper levels. In the ground-level plaza, they're also shaped to improve sight lines onto the Seattle skyline.

"We gave columns in the plaza a unique profile that references some of the geometry in the overall building form," said Lodi. "The shaped columns create interesting shadows, which also makes them appear thinner. We wanted something that people will discover once they walk through. The special shapes did have some added fabrication costs, but these columns are public-facing elements that help us tell the story of the project."

Goal post column connections: The design team wanted to utilize wood-to-wood bearing where possible, leading to the development of what they call a goal post column connection. "About 75 percent of the beam connections are wood-to-wood, which was a deliberate strategy," said Taylor Cabot, Preconstruction Manager for Timberlab.

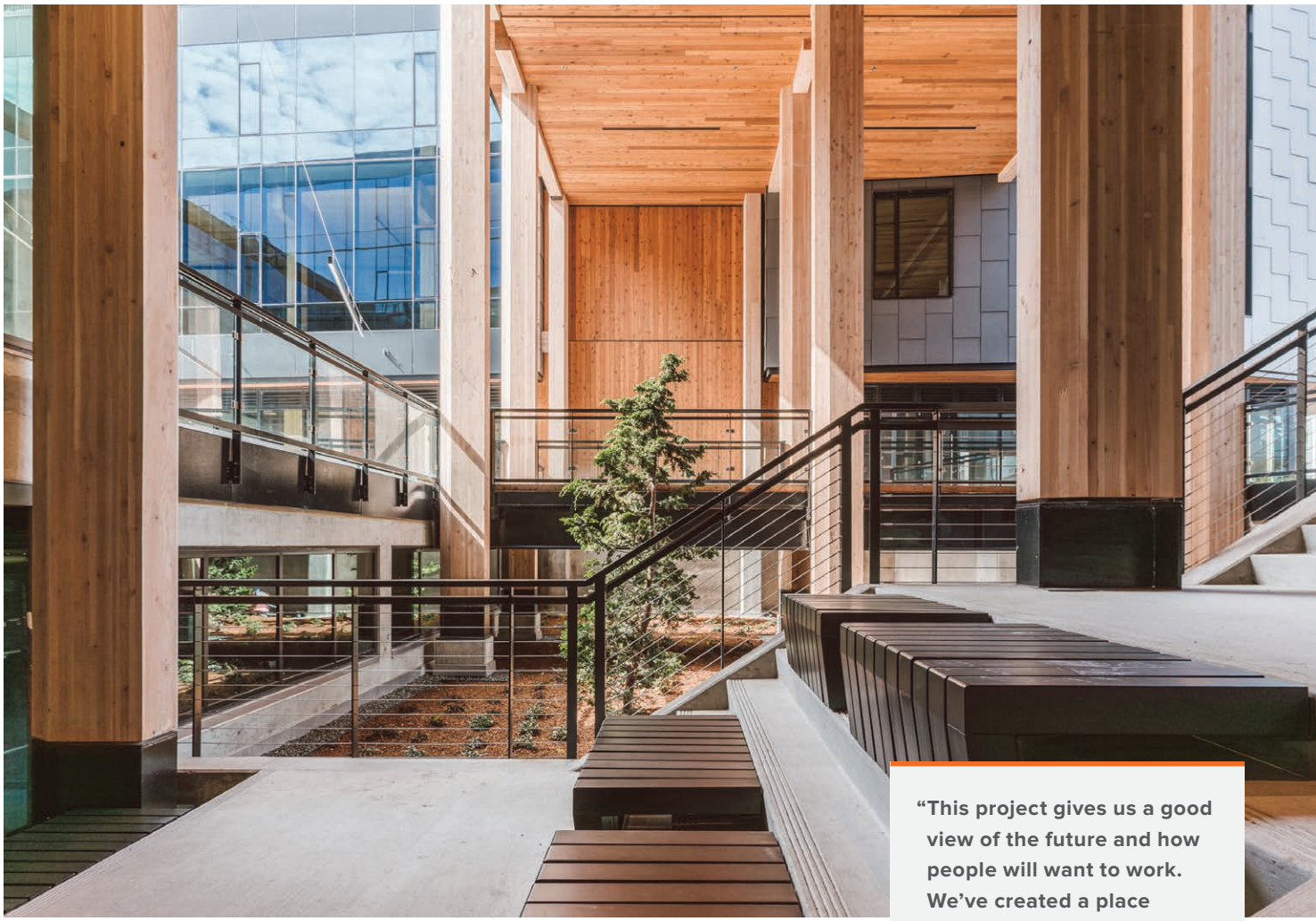
"Removing steel helps us tell a better carbon story; it's also more efficient since we have fewer suppliers. Plus, we have in-house CNC capabilities and felt confident in our ability to execute the required cuts at a high level of precision."

Timberlab cut a slot through the columns to seat the beams; some beams run continuous while others are abutted within the slot. The detail also allowed them to pull columns away from the façade, contributing to clear views.



Lateral system: Steel brace frames are strategically positioned throughout the structure for lateral force resistance. “We chose brace frames to help us navigate the lateral needs of the office and lab above and the high-bay warehouse and parking garage below,” explained Lodi. “The brace frames gave us some flexibility to move the lateral elements around.”

Color and moisture management: Because the beams and columns were left exposed, Timberlab had them coated—once for moisture protection and a second time to provide UV protection and bring the appearance of the Douglas fir glulam closer in color to the spruce-pine-fir (SPF) CLT panels. Glulam columns used in exterior applications were recoated again after installation for additional protection. Timberlab also developed a maintenance plan, giving the developer clear guidance for continued protection of the exposed wood.



Being a Better Neighbor

Sustainability weighed heavily in the decision to use mass timber for Northlake Commons.

"We want to be a good neighbor with our buildings, and part of that is maintaining a focus on sustainability," Callahan said. "Our goal is to have our developments make a place better."

The project achieved LEED C&S 4.0 Platinum certification and, according to the design team, a life cycle assessment (LCA) concluded that the mass timber structure had 23% less embodied carbon compared with a concrete structure baseline. The project team also worked to achieve efficiency in terms of wood volumes and regional sourcing. All the mass timber was manufactured within 500 miles of the project site.

Sustainability extended outside the building as well. Northlake Commons is located next to Lake Union, and the developer took steps to protect the watershed with an onsite bioswale that filters neighborhood stormwater before it flows into the lake. The bioswale will clean 2.6 million gallons of stormwater each year, protecting salmon habitat.

Biophilic Design and the Human Experience

Health and wellness were clear design priorities. In addition to leaving the mass timber exposed, the project emphasizes spacious views, natural light, and fresh air. It features more than 60,000 square feet of outdoor space, including private decks and outdoor plazas for collaboration and relaxation.

"Our industry has gained more understanding of the research behind tenant behavior, health, and wellness, and we know that mass timber plays a big role in that," Lodi says. "Human beings have an innate connection with nature. We've given a lot of building tours, and it's amazing to see peoples' reaction when it's their first experience in a mass timber building. One interesting thing we encourage visitors to notice is the building's smell—it's completely different from a concrete or steel building. That's hard to appreciate when you're looking at renderings or photos."

> **"This project gives us a good view of the future and how people will want to work. We've created a place where people can discover, connect, and socialize, a healthy place that benefits the people who work here as well as the public. Mass timber ties all that together."**
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> – *Cody Lodi, Design Principal*
> Weber Thompson

Capabilities, Possibilities, Opportunities

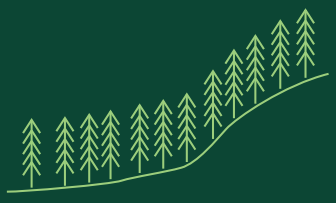
Combining lab-ready areas with office space, Northlake Commons is not a typical building typology. “It’s unusual to see mass timber in a spec project like this,” said Cabot. “It was a real leap of faith, and the project’s success is a testament to the fact that the owner and developers are committed to the Seattle community and were willing to do something different.”

Lodi agreed, adding that success also rested on their ability to link the structural capabilities of mass timber with its experiential possibilities. “This project gives us a good view of the future and how people will want to work,” he added. “We’ve created a place where people can discover, connect, and socialize, a healthy place that benefits the people who work here as well as the public. Mass timber ties all that together.”

Callahan added that those connections become even more apparent when people enter the building. “As soon as they walk in, they seem to have an ‘aha’ moment on why the wood is special,” she said. “That goes with our goal of building a high quality project, and mass timber is a key part of that story. We’ve created something here that will last, that will truly be resilient in the good times and bad. And frankly, that is our ethos.”

Supporting Sustainable Forests

Northlake Commons includes 128,604 cubic feet of wood products. It takes North American forests 10 minutes to grow this volume of wood.



Estimated by the Wood Carbon Calculator for Buildings, based on research by Sarthre, R. and J. O’Connor, 2010, A Synthesis of Research on Wood Products and Greenhouse Gas Impacts, FPInnovations.

Funding provided in part by the Softwood Lumber Board
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