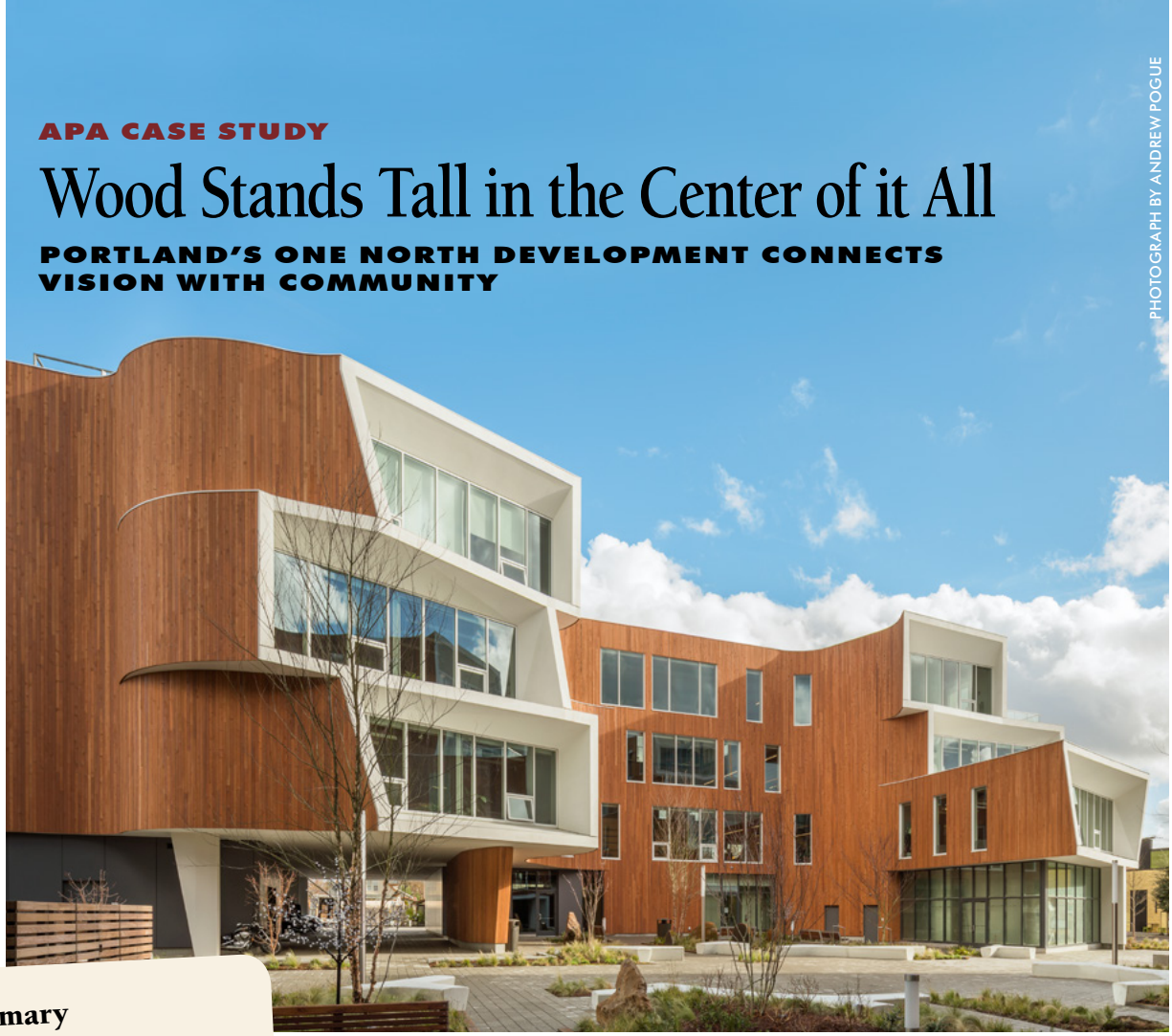
APA CASE STUDY

Wood Stands Tall in the Center of it All

PORTLAND'S ONE NORTH DEVELOPMENT CONNECTS VISION WITH COMMUNITY



PHOTOGRAPH BY ANDREW POGUE

Viewed from the interior courtyard, One North's intriguing façade incorporates exterior shading, an airtight, super-insulated building envelope, and sustainably harvested, locally sourced cedar siding.

Project Summary

PROJECT NAME:
One North

LOCATION:
Portland, Oregon

COMPLETED:
2014: The Radiator
2015: One North: East Building
2015: One North: West Building

TYPE:
Mixed Use / Office

PROJECT TEAM FOR THE RADIATOR:
Developer: Kaiser Group, Inc.
Architect: Path Architecture
Structural: Munzing Structural Engineering

PROJECT TEAM FOR ONE NORTH:
Developers: Karuna Properties II, LLC; Nels Gabbert, LLC; Owen Gabbert, LLC
Architecture: Holst Architecture
Structural: Froelich Engineers

Can you design a building to reflect community values? How do you translate a mission focused on energy efficiency and waste reduction into a physical structure? How can you connect building tenants with their neighbors?

One North, a three-building office development in Portland, Oregon, found answers to these three questions—with innovation, vision and ingenuity. And engineered wood stands tall in the center of it all.

One North is comprised of three multi-story timber-framed office buildings called The Radiator, One North: East Building and One North: West Building. The three structures surround a large 14,000-square-foot courtyard, open to the street for use by both tenants and neighbors.

One North differentiates itself in a number of ways, said Ben Kaiser, project architect and developer from the Kaiser Group. "We started with the goal to have three buildings that shared resources for the benefit of the block. The courtyard was designed to be a community space, given back to the neighborhood."

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Sustainable Focus

In addition, the developers wanted the buildings to have a strong sustainability focus. The team chose glulam to frame the structures to take advantage of the beams' carbon-sequestration capabilities. The glulam framing, which was left exposed to the interior, also met the aesthetic goals of the finished space.

Wood's natural insulating qualities help keep energy use extremely low—much lower than the standard for similar commercial buildings. The exteriors of the One North: East and One North: West Building structures were padded with three inches of insulation to optimize energy performance; The Radiator utilizes two layers of DensGlass® outside and batt insulation on the interior cavity. All three structures use solar panels and LED lighting throughout. Operable windows allow natural ventilation during warm months, and fins on the west face of one building even track with the sun during the day to provide shade. The development was designed to help attract environmentally-minded, creative firms who appreciate the open floor plans and high ceilings in each structure.


PHOTOGRAPH BY ANDREW POGUE

Glulam beams and columns and tongue-and-groove cedar decking were left exposed throughout the interior. Glulam beams range from stock sizes to large custom beams in depths up to 36 inches.

Radiator Building—Portland's first five-story wood office building in a century

The Radiator (named because the designer wanted the structure to radiate out into the community and invite people in) is a 36,000-square-foot, five-story timber-framed structure. The Radiator is touted as the first five-story office building in Portland to be framed with timber during the last 100 years. The L-shaped structure features exposed Douglas-fir glulam beams and columns, as well as T&G cedar decking.

"The Radiator kicked off a heavy timber building boom in the city, proving the financial viability of building larger buildings in wood, and reminding the design and build industries to recall this tried-and-true construction type," said Kaiser. "The main priorities of the project were the resuscitation of the Oregon timber industry, a critical part of the state's economy and heritage, as well as to illuminate the environmental benefit of the carbon sequestration that is inherent in timber construction. In direct contrast to steel and concrete, building with timber actually reduces the carbon footprint of a building's construction process."

The building team used an aggressive sprinkler system design for The Radiator, which uses Type III-A construction for the slab-on-grade structure. All exposed interior columns on the exterior walls have an individual sprinkler head, and the whole building is sprinklered. Plywood shear walls provided lateral stability throughout.

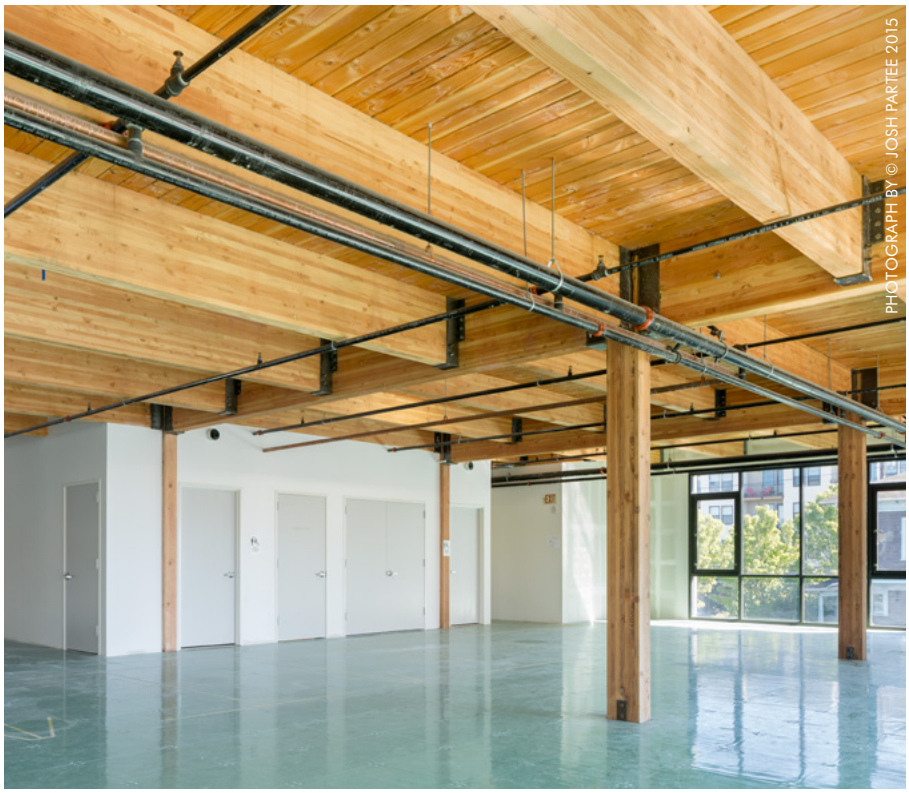
Contractors also installed a 4-inch raised panel floor as a data/electrical/phone plenum that eliminated the need to install surface-mounted conduit. This inventive approach gave the open wood ceiling above a much cleaner aesthetic; it also provided sound separation between floors.

WoodWorks provided technical support to the designers, and The Radiator recently won the organization's 2016 Multi-Story Wood Design award.

One North: East and One North: West Buildings—purpose-built for energy efficiency

The two adjacent structures, named One North: East Building and One North: West Building, were also designed to push the accepted standards for energy efficiency in commercial construction in Portland.

Cory Hawbecker from Holst Architecture said both buildings are modeled to perform 50 percent more efficiently than an average office building. "Our sustainability strategies included exterior shading, a super-insulated, airtight building envelope, use of wood for the structure and use of sustainably-harvested cedar wood siding, which was locally sourced."



All exposed interior columns on the exterior walls of the Radiator have an individual sprinkler head, and the entire building is sprinklered.

One North: East Building stands four floors tall with 43,418 square feet; they used three floors of Type V-B wood-frame construction over a Type I concrete podium. One North: West Building has five floors and 35,671 square feet of space; this building has four stories of Type III-B wood construction over a Type I concrete podium. Both feature retail space on the first floor, with offices and creative space above. One North: West even holds a community room for tenant and neighborhood use.

Pushing the Boundaries

Hawbecker said much of the vision for the One North: East and One North: West Buildings came from the developer, Eric Lemelson of Karuna Properties II, LLC. "Eric is interested in climate change and in helping people and society adapt. So, we wanted to create a model for an energy-efficient project that could also be built responsibly. Eric was particularly interested in the wood structure and the wood cladding; he didn't want to see us use steel or concrete because wood is a much better construction material from a sustainability standpoint. He also wanted this to serve as a replicable financing model." Wood's affordability advances that goal.

Kaiser (who developed The Radiator) lives not far from One North, and said that the community focus came from controversies surrounding rapid development in the area. "We wanted to find a way to support the local community by investing in Oregon and using local wood. One North is still a development, but it's a development that is designed to help the immediate neighborhood and the broader community around it."

Response has been positive—good enough, in fact, that Kaiser said they feel it is time to start pushing the boundaries again. "Building larger, taller structures using wood is moving the conversation of sustainability away from light bulbs and photovoltaic arrays and on to the harvesting and manufacturing of our natural resources into sustainable building materials. Using today's technologies in concert with centuries-old building methods will push us into the next era of sustainable building."

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Form No. S120A
Revised July 2016

APA