CASE STUDY

Thomas Logan

Wood-frame urban podium project fills need for affordable downtown housing

Like other cities across America, Boise has struggled to meet the demand for affordable housing, especially in its downtown core. To help address the issue, Boise-based developer deChase Miksis used Low-Income Housing Tax Credits and cost-effective wood framing to build a 5-over-2 mixed-use podium structure in the heart of downtown, creating homes for 60 families. But instead of settling for a basic form and an unremarkable exterior, they created the Thomas Logan—an attractive, brick-clad building that fits seamlessly within the neighborhood. Balancing location and cost with quality and aesthetics, this urban infill development meets the city's desire to add affordable downtown housing with a project that looks and feels like a market rate development.

When deChase Miksis and fellow developer Old Boise decided to build Thomas Logan, they had two key requirements for the seven-story mixed-use affordable housing project in the downtown core of their hometown. "First was the same requirement we have for all our projects, which is to use high quality materials," said Dean Papé, a partner with deChase Miksis. "This project is near Boise's historic district, and we wanted an attractive building that would fit within the context of the neighborhood."

Papé said their second requirement was budget. "It would not have been financially feasible to build this project using a structural building product other than wood. Cost of materials, speed of construction, local availability; these all drove the decision to use wood as our primary structural material."

Podium Construction for Urban Housing

The Thomas Logan project, named after Boise's first postmaster, who arrived in Idaho Territory with his family in 1864, includes a two-story podium with ground floor retail and second-level office space topped by five stories of wood-frame residential units. The apartments include a mix of studio, one- and two-bedroom units, 45 of which are designated for people making between 30 and 60 percent of the county's median income.

As in the rest of the country, podium construction has become increasingly common in Boise, particularly over the last six years. But Thomas Logan stands out.

"Many affordable housing projects don't have what I call 'an appreciation for design,' but this ownership group was passionate about building a good looking project," said Matt Blandford, Idaho Operations Manager for Andersen Construction. "The developer has a long-standing relationship with the City of Boise. Building architecturally pleasing projects is a big part of what they do here."

Building type was another differentiator. The City of Boise's Special Design Standards for Type V Construction Ordinance (Boise City Code 9-3) are specifically designed to support residential construction in the downtown core. In contrast with the International Building Code (IBC), which allows four stories with Type V-A construction, the City of Boise standards allow up to five stories of multi-family housing using Type V-A wood-frame construction on top of a noncombustible podium. This meant Thomas Logan was not required to use fire retardant-treated lumber for exterior walls of the wood-framed portion, which added to its affordability.

Constructability was key to success. Thomas Logan was constructed in tandem with The Lucy, a six-story market rate project next door. Creating two projects side-by-side during the same timeframe resulted in efficiencies and shared savings. The same tower crane serviced both sites, and the contractor was able to coordinate tradespeople and building material deliveries between the two jobs.

Affordable, Quality Framing

Thomas Logan is a good example of how conventional framing with engineered wood products can be used to build high quality, affordable multi-family housing.

Pivot North Architects specified 11-7/8-inch-deep wood I-joists with 3/4-inch oriented strand board (OSB) subfloor and a 1-inch lightweight concrete topping slab. The floor-ceiling assembly below the I-joists includes resilient channels with two layers of gypsum wallboard for acoustic separation between floors. The roof was also built using wood I-joists topped with wood structural sheathing and tapered insulation for drainage.

PROJECT DETAILS

Thomas Logan

LOCATION:	Boise, Idaho
STORIES:	Five stories of wood over a two-level concrete podium
SIZE:	65,625 square feet
CONSTRUCTION TYPE:	Type V-A over Type I-A podium
COMPLETED:	2022

PROJECT TEAM

CLIENT/OWNER:	deChase Miksis and Old Boise
ARCHITECT:	Pivot North Architects
STRUCTURAL ENGINEER:	Axiom, PLLC
CONTRACTOR:	Andersen Construction
ENGINEERED WOOD SUPPLIER:	Boise Cascade

Curtis Eck, Senior EWP Area Sales Manager for Boise Cascade, said, “I-joists provide flexible, economical ways to frame commercial and residential structures. While we can produce and ship up to 60-foot I-joists, which can be cut to length at a jobsite, Thomas Logan was an urban infill project without much space for material storage, so we shipped the I-joists cut to the nearest foot. Once delivered on site, they were trimmed and dropped into place.”

Glue-laminated timber (glulam) was used to frame shaft openings in each floor, and in stairs to support the landings. “Glulam allowed us to take advantage of wood’s char rating for fire protection,” said Chad Gierhart, Project Manager with Pivot North Architects. “We also used laminated veneer lumber (LVL) for the window headers and rim board because the product is stable and readily available; it’s also easy for framers.”

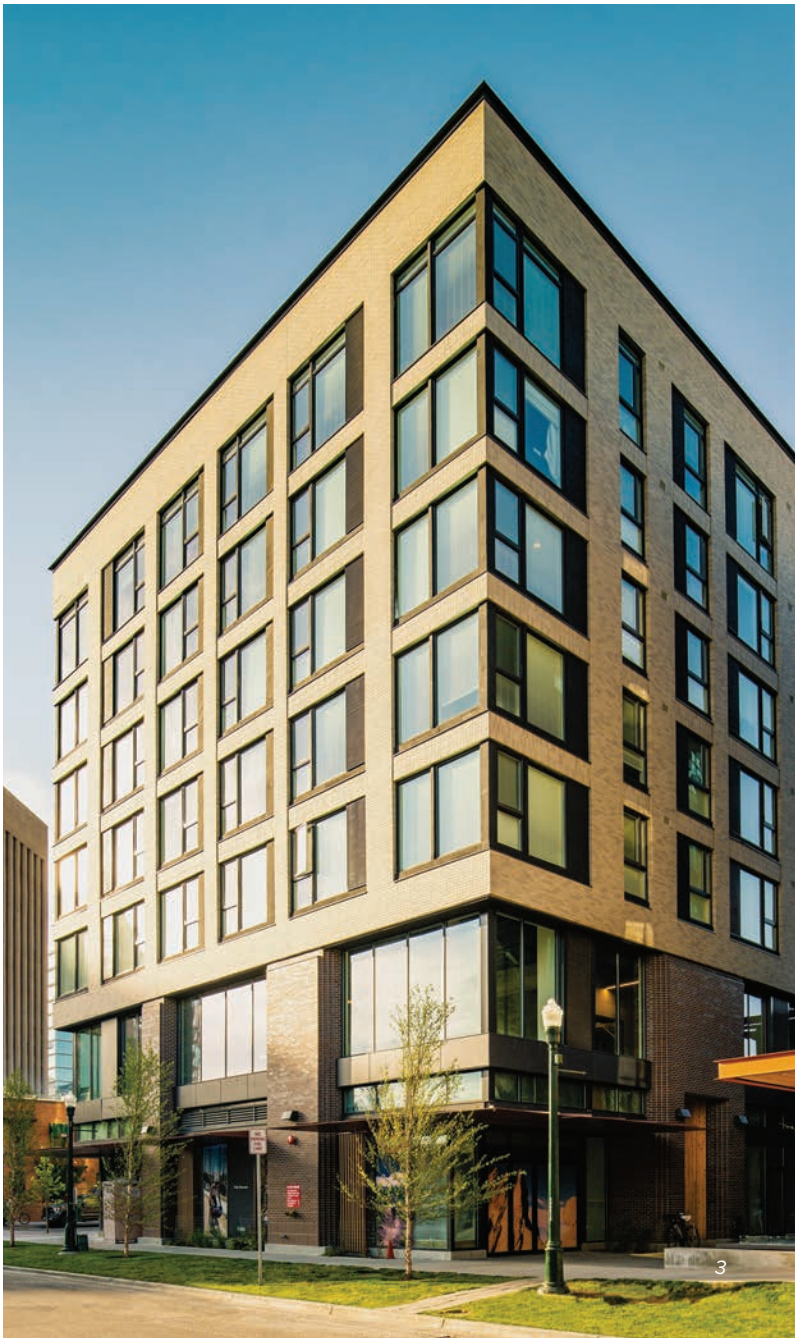
More than 90 percent of the wall panels were prefabricated by Andersen’s wood framing trade partner, Leighton Enterprises, using 2x6 dimension lumber for exterior and corridor walls. Unit demising walls, pre-framed using 2x4s, were doubled with a one-inch air gap between. “That was condo quality in terms of sound transmission,” said Gierhart. “The developer wanted to build a quality project.”

Off-site prefabrication of the wood-frame walls and stairs led to faster, more efficient construction. “We worked closely with all the trades during pre-construction to identify ways to save time and reduce material waste,” said Blandford. “COVID complicated things for this job in terms of staffing and procurement so we had to be flexible, but we still found ways to save.”

Urban infill projects with tight jobsites can complicate material delivery and staging, but wood building material suppliers understand the challenge. “We work closely with customers to deliver product where and when it’s needed, even precisely pre-cut in markets that have automated processing equipment,” Eck said. “Our world has recently been challenged with supply chain issues, but many engineered wood suppliers, including Boise Cascade, have an established national distribution network. Just as close communication among the design and construction team is important to a project’s success, so is close communication among the contractor and building material suppliers.”

Typical Podium Design

Thomas Logan’s structural design was typical for podium construction. “We used a two-stage analysis for shear, which is common for podiums,” said structural engineer Ashley Thompson, Senior Project Manager at Axiom. “The five floors of wood-frame construction were pretty standard. When we got to the concrete level, we switched from wood shear walls to concrete shear walls, utilizing the stairs and elevators for shear.”



Thomas Logan

Volume of wood products used:
45,469 cubic feet

U.S. and Canadian forests grow this much wood in:
4 minutes

Carbon stored in the wood:
1,058 metric tons of CO_2

Avoided greenhouse gas emissions:
2,250 metric tons of CO_2

TOTAL POTENTIAL CARBON BENEFIT:
3,308 metric tons of CO_2

EQUIVALENT TO:

699 cars off the road for a year

Energy to operate 349 homes for a year

Source: US EPA

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.
Note: CO_2 on this chart refers to CO_2 equivalent.

Reducing Carbon Footprint

The use of wood lowers a building's carbon footprint in two ways. Wood continues to sequester carbon absorbed by the trees while they were growing, keeping it out of the atmosphere for the lifetime of the building—longer if the wood is reclaimed at the end of the building's service life and re-used. Meanwhile, the regenerating forest continues the cycle of carbon absorption. Wood products also require less energy to produce than other building materials, and most of that comes from renewable biomass (e.g., bark and sawdust) instead of fossil fuels. Substituting wood for fossil fuel-intensive materials is a way to avoid greenhouse gas emissions and reduce embodied carbon.

Thompson added, "What was unique for Thomas Logan was that the windows in the five residential floors were quite big, almost floor to ceiling in some places. This makes the units feel more spacious, but it meant we had to push the headers into the rim board space and couldn't put shear walls on the exterior. Instead, we placed shear walls throughout the interior, pulling those forces back to the corridor."

She added that they worked to coordinate early with the contractor and framer, taking measures that resulted in a better-quality building at minimal additional cost. "For example, hold-down straps may be a bit cheaper, but they often lead to cracked finishes, so we prefer anchor systems," Thompson said. "We also recommend air gaps over staggered stud walls because they get better sound ratings for minimal cost differences. It's also important to stack walls. Thomas Logan had no transfer beams, which saved money."

Controlling Costs, Ensuring Quality

Attractive, quality buildings benefit not only the people who live and work within, but the community overall.

"During design, we knew there would be an affordable housing component to the project, but we honestly didn't take that into consideration," said Gierhart. "The developer just wanted a quality building that would add to Boise's growing skyline. In fact, we liked the final design so much that Pivot North Architects has decided to make the second-floor offices our new home."

For building material suppliers, quality is independent of cost. "Even though this is a low-income housing project, we believe that people still want and deserve high quality construction," said Boise Cascade's Eck. "Engineered wood has uniform strength and dimensional stability, which leads to a high-quality living experience."

"As a developer, we make a lot of decisions in terms of how we use materials and structural systems for success—and in our business, the word 'success' is closely associated with cost," said deChase Miksis' Papé. "Wood played a key role in how Thomas Logan was put together successfully."

Collaboration—between developer, architect, engineer, contractor and building material supplier—has never been more important, he added. "Thomas Logan was a public-private partnership, which demonstrates that we can develop attractive, quality, affordable housing, even in a downtown location."

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Images: Chad Case (finished photos) / Andersen Construction (construction photos)
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