Cuningham

CASE STUDY

Precision and Pace: Navigating Challenging Markets with Volumetric Modular

The Eddi Apartments at Pentagon Village

Edina, Minnesota

Point of View

Cuningham embraces off-site construction as a transformative opportunity for developers, owners, architects, designers, contractors, and builders. Off-site construction, including volumetric modular and building component prefabrication, offers substantial benefits related to efficiency, quality control, waste reduction, schedule management, and overall development project success.

Within the overburdened housing market specifically, modular construction has the potential to alleviate housing shortages by speeding up the building process and reducing construction timelines which ultimately reduces construction costs. Because modular construction can be scaled to meet increasing demand, Cuningham views the method as an efficient alternative building solution that maintains high construction quality standards.

Cuningham's commitment to continually improving our design process aligns our work with progressive, up-and-coming off-site construction methods. Through our dedicated Design Technology team, we embrace new tools and technologies to facilitate seamless collaboration from design through assembly. Enhanced transparency and collaboration with all project partners allows us to identify and address potential issues early, reducing costly on-site modifications. By integrating new technologies into our standard design processes, we help enhance the precision and control of the prefabricated elements, significantly reducing waste and improving overall project outcomes.

Ultimately, Cuningham views off-site construction as more than just an alternative delivery method; it is a cornerstone of our strategy to meet the evolving demands of the industry. As we continue to push the boundaries of design, construction, and fabrication, off-site construction enables us to deliver high-quality projects with agility, creativity, and sustainability.

The Eddi is one of the largest commercial volumetric wood-frame modular projects in the United States.

Project Overview

The Eddi Apartments, developed in collaboration with RISE Modular and Solomon Real Estate Group, is a 202-unit rental community, featuring both market-rate and affordable units, that sets a new standard for commercial modular projects in Minnesota. As the largest modular multi-family development in the state and one of the largest commercial volumetric wood-frame modular projects in the United States, The Eddi is comprised of 205 modules within a 244,000-square-foot, six-story building. The project is now the beating heart of the larger, master-planned Pentagon Village — a mixed-use redevelopment of an under-utilized office park.

Design Highlights

- Organized around an elevated public outdoor commons area featuring ample green space, residents have the ability to host events, concerts, and other social opportunities year-round.
- The community features a variety of high-end amenities, including co-working spaces, a clubroom, fitness center and yoga studio, outdoor pool deck, and a dog run.
- By integrating high-density residential spaces into the Pentagon Village community, Eddi Apartments transforms an under-utilized area of Edina into a vibrant, multifaceted neighborhood.

Pictured: Eddi’s shared lounge and co-working spaces.

100%

of **wood product recycled** for re-use

13

days on average to **create one module**

10-12

modules set **per day**

The Eddi is the beating heart of Pentagon Village, a mixed-use redevelopment transforming an under-utilized office park into a dynamic neighborhood.

Goals and Challenges

Broadly speaking, building methods have remained unchanged for generations. Volumetric modular construction, particularly in large-scale multifamily projects like The Eddi, represents a groundbreaking shift for the industry. With any new process or direction, challenges are inevitable and require time to navigate. With this in mind, **key challenges** encountered on The Eddi included:

- Dedicating increased amounts of time for upfront design coordination
- Navigating complex and shifting regulatory approvals
- Finding transportation routes and available timeslots for the mod deliveries
- Managing on-site assembly logistics

One of the project's biggest challenges not listed above was its visual appearance and functional flexibility. While modular construction has gained popularity with both owners and developers for its ability to save time and money in the face of rising construction costs and ongoing labor shortages, it comes with a perceived limitation around layout options and building façade variation. If the building design is not approached thoughtfully, the end product can become a boxy, mundane building with minimal visual interest. Additionally, lack of attention to detailing and exterior finish material attachments can create large, visible seams which are visually unappealing and cause maintenance problems.

Because of these potential trappings, some in the industry have developed a misguided perception that modularly-constructed buildings are of lower construction quality or craftsmanship than traditional on-site wood framed or metal framed construction methods which is simply inaccurate.

Thus, **Cuningham and RISE Modular's goal when designing The Eddi was to create a modular building that "nobody would know is modular."**

By understanding potential constraints at the outset of the project, Cuningham and RISE Modular successfully navigated through a thoughtful design process, utilizing Cuningham's extensive multifamily residential design experience to create an aesthetically pleasing building functionally indistinguishable from its traditionally-constructed counterparts. In fact, because construction workers created the modules inside a controlled, factory environment, The Eddi was built to much higher standards of efficiency, consistency, and quality.

Left: The building's 'C' shape layout enhances privacy for residents.

Right: A simple material palette and distinct corner articulations serve as visual focal points.

"The challenges became opportunities to problem solve and innovate. At Cuningham we hope to continue to apply the knowledge we have gained as we continue to evolve our design methods to complement and support the evolution of our partners' construction methods"

Ellen Rath | Cuningham Senior Associate

Design Approach

Effective implementation of modular construction hinges on three main factors:

- Alignment with project partners
- Agility
- Accelerated decision-making.

Alignment with Project Partners

For The Eddi, Cuningham's collaborative process began with a designer-led **Pull Planning Session** — a co-creative meeting to define the project's end goal and then map out the steps necessary to achieve it.

To facilitate the session, Cuningham's team created a project timeline template in Miro, a collaborative, online whiteboard. With all the project key stakeholders in the room (developer, owner, contractor, mod fabricator, architecture team, interior designer, and engineers) three questions were asked:

What do you need? From whom? By when?

The different answers from each stakeholder were then used to define the project critical path. Starting with this collaborative planning session led our project team to agree upon shared project goals which informed the design even before pencil met paper. This alignment ultimately led to a stronger design vision and therefore smoother owner approvals for the design components throughout the project.

> "Getting everyone on the same page early on was our key to success. By spending time at the factory and hashing out details up front, we made sure the construction process went smoothly, with no surprises along the way."

Ellen Rath | Cuningham Senior Associate

Cuningham's "inside-out" design process meant that the units' interiors were finalized much sooner than they would during the traditional design process.

Agility

With the collaborative foundation in place, The Eddi team met multiple times per week during the initial design phases, spending extensive time on-site at RISE Modular's factory to learn the modular construction process firsthand and use this knowledge to optimize the design approach. This increased upfront coordination was crucial for answering constructability questions such as:

- How will the modules attach?
- How will our wall assemblies differ from typical wood construction?
- How will the utilities need to be routed to accommodate the modular construction method?
- How will we meet acoustic performance ratings?
- How will we detail our fire rated assemblies?

Modular fabrication techniques can vary greatly from manufacturer to manufacturer. Therefore, understanding the unique construction methods and parameters from the outset of your project with a chosen modular fabricator is critical to ensuring a smooth design and delivery process.

Accelerated Decision Making

To accommodate the modular construction process, Cuningham adopted an "inside-out" design process for The Eddi, understanding that the units' interiors had to be finalized much sooner than they would during the traditional design process. Together in the pull planning session, the full project team identified a list of early procurement items for which design and selection had to be completely finalized prior to the end of the typical Design Development phase. Later in the project, this accelerated approach allowed RISE Modular to reduce the project's construction timeline by building the mods in the factory simultaneously with the on-site team's construction of the precast concrete podium.

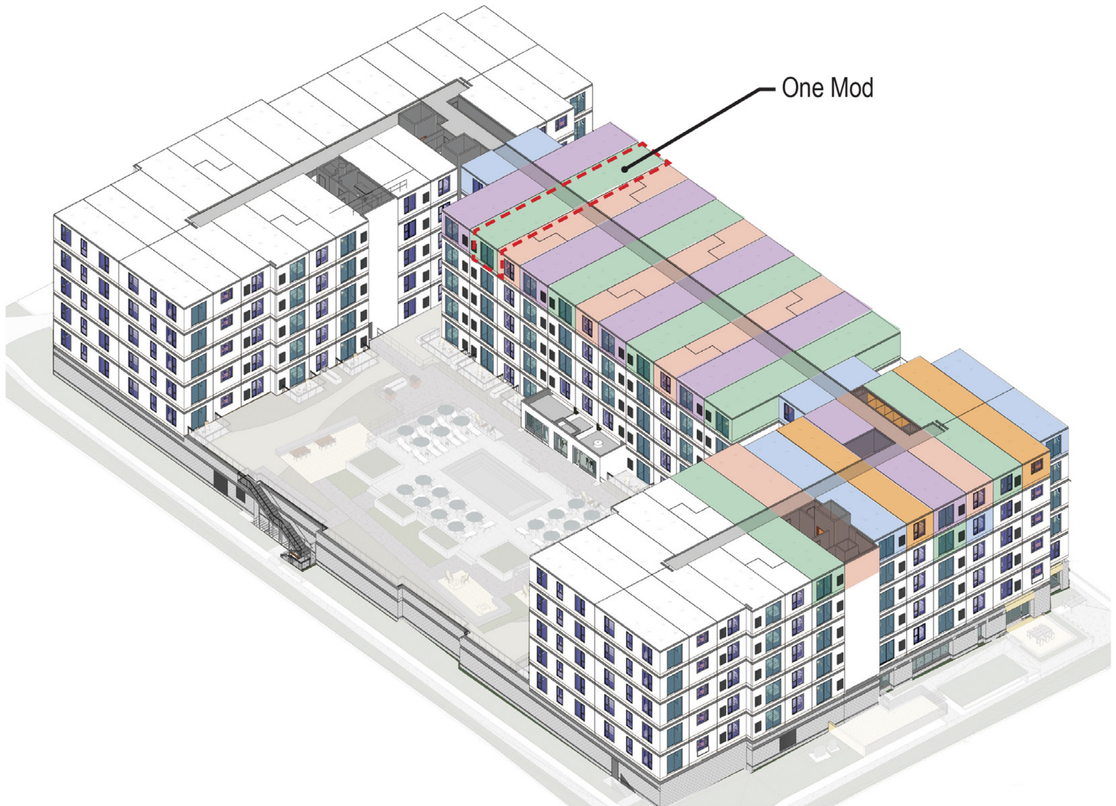
> "This is not just a construction type change, it is a complete shift in the entire process of how we design and construct our buildings."
>
> **Ellen Rath | Cuningham Senior Associate**

One of The Eddi's 205 mods being set by ProSet.

Specific Design Solutions

Contrary to common misconceptions, modular construction does not have to equate to repetitive stacks of uniform elements arranged in a perfect rectangle. Modular design is a tool, not an aesthetic, and Cuningham deliberately made sure there was enough articulation to differentiate The Eddi from other prototypical modular buildings.

Central to creating this visual differentiation was The Eddi's siting. During the initial planning process, the team considered the optimal building footprint for the site, and how the individual modules, or mods, could most efficiently be used to create this footprint. Ultimately, the team decided on a 'C' shape layout on top of a one-story amenity deck podium oriented away from the larger development to give residents a sense of privacy as well as access to an amenity deck.



Cuningham designers also avoided an overly symmetrical design, which would have more obviously emphasized the project's modular nature. Of the building's three wings, the central wing that connects the other two is recessed along the street edge, making for a more inviting pedestrian experience that flows naturally into Pentagon Village's other program areas.

Additional interest is achieved through strategically implemented accent colors and metal panel accent edge bands that span multiple mods, giving the building a more cohesive overall appearance.

Right: Thoughtful design details add visual dynamism and set The Eddi apart from other modular buildings.

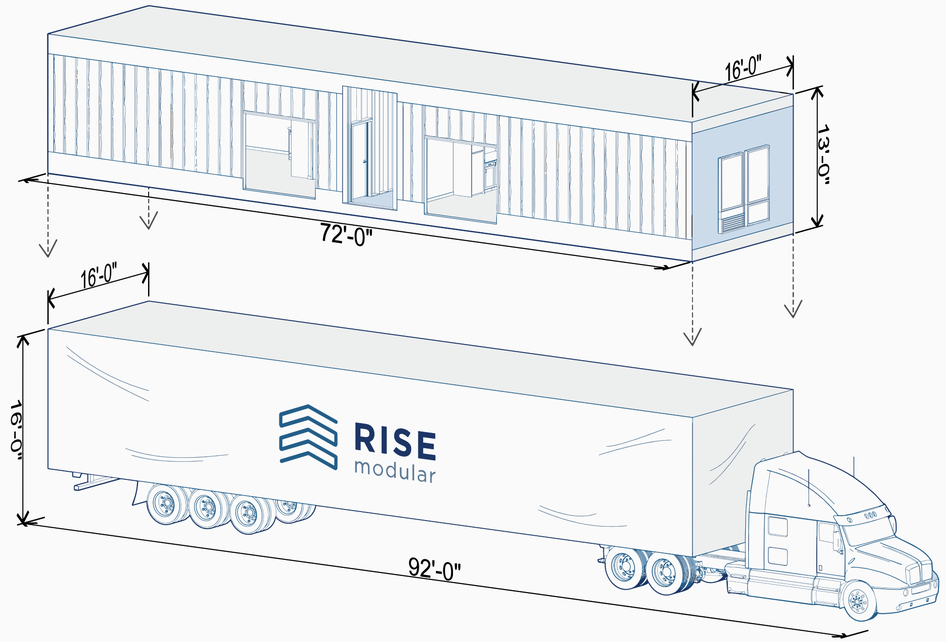
Left: Modules span from face to outside face to maximize efficiency.

Designing and Placing the Mods

In order to maximize efficiency, the project team took a twofold approach in their design: minimize the number of mods used and reduce variation in mod types. With this in mind, the mod dimensions were stretched to the longest transportable length, spanning from the building's outer face to the opposite outer face rather than just to the corridor wall. The mod width was then tailored to meet ideal sizes for the intended apartment elements, whether they housed living/dining/kitchen spaces or bedrooms/bathrooms/closets.

On The Eddi, individual units span between modules. While a hotel room or studio apartment can fit within a single mod, Eddi's larger one- and two-bedroom units span two or three modules. Module interior layouts can include areas like stairs, mechanical rooms, and elevator shafts.

The placement of the mods throughout the building footprint was strategically planned, factoring in the unit mix, unit layout, building support spaces (mechanical, electrical, etc.), and interaction with stairs and elevators. The design also incorporated resident storage units, all while maintaining consistency in mod placement and unit layout across each building level.



As the building developed, careful consideration was given to how much of the project could truly be fabricated with mods, versus what needed to be "stick-built" on-site. Invaluable to these considerations was the design team's Unit Type Matrix, which compiled the number of overall unit types through an automated schedule in Revit, Cuningham's BIM platform. This data was easily accessible for the entire project team and helped optimize the balance between off-site fabrication and on-site construction, enhancing efficiency and consistency.

For the building corners, Cuningham's designers aimed to maximize natural daylight for the desirable corner units while preserving as much building floor plate potential as possible. To achieve this balance, they designed the corner mod at the wing intersections to be shorter, allowing for more windows and daylight without major floor area loss. Additionally, the end mod was shortened, adding façade articulation, and creating space for a more private inset balcony, enhancing both visual appeal and functionality.

Right: Eddi's larger one- and two-bedroom units span two or three modules.

Left: Mod dimensions were stretched to the longest transportable length.

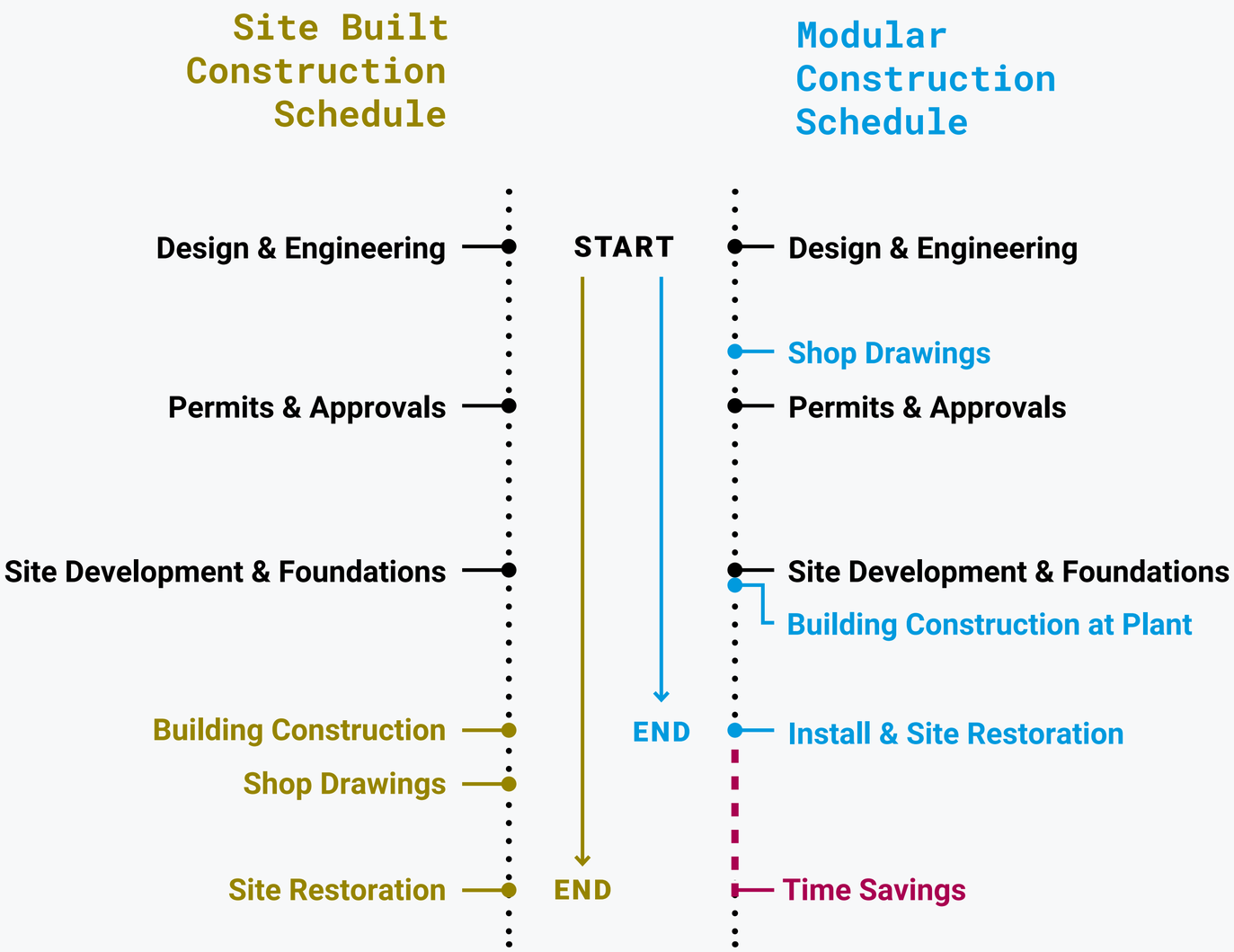
Results and Impact

Because of its modular approach, The Eddi Apartments' construction timeline was roughly one year shorter than that of comparable properties utilizing traditional methods — even though construction took place during Minnesota's harsh and unpredictable winter.

By delivering final design and building component selections for the defined early procurement items in alignment with the project's critical path, Cuningham's design team enabled RISE Modular's factory to start manufacturing the project's mods in their climate-controlled factory ahead of on-site construction work, such as foundation and underground utility installation. In this way, construction processes typically done sequentially were completed concurrently, saving months off of a traditional construction timeline. Further, the "just-in-time" transportation strategy associated with modular construction—where building mods are delivered to the construction site as needed—also meant that The Eddi avoided additional material storage costs and weather-related delays.

Right: Time can be saved with modular construction by beginning building off-site while site development and foudations are in progress.

Left: Indoor, climate controlled construction of the modules at the off-site plant prevented construction delays even during harsh winter weather.



Scan the QR code to see The Eddi’s “just-in-time” delivery strategy in action and watch RISE Modular and ProSet’s successful setting of the project’s 205 mods, despite blizzards, heavy snow, rain, sleet, and sub-zero temperatures.

The Eddi’s 205 mods being easily set during Minnesota’s harsh and unpredictable winter.

Make it Modular

Not only did the modular approach on The Eddi save money by reducing the overall construction timeline, but building inside a factory provided the benefits of improved construction quality, high acoustic performance, and reduced construction waste. With early alignment on project goals, schedule drivers, modular fabrication opportunities and constraints, as well as a shared design vision, this emerging construction method was a resounding success, for both owner and residents.

If you can relate to:

- Frustrating construction schedule extensions
- Seemingly excessive amounts of change orders
- Poor construction quality due to lack of available skilled labor
- Supply chain-related delays
- Weather delays from our increasing unpredictable climate

Then you should consider a form of off-site construction on your next project.
These pain points listed above impact not just designers and architects, but also owners, residents, contractors and anyone who works in or with the design and construction industry.

Undertaking this new construction approach on your next project will take some navigation through building official approvals, a commitment to making and sticking to design decisions early, and unique delivery logistics.

Let *Cuningham be your guide.*

We believe off-site construction is more than just an alternative delivery method; it is a cornerstone of our strategy to meet the evolving demands of the industry. As we continue to push the boundaries of design, construction, and fabrication, our experience and familiarity with off-site construction enables us to deliver a high-quality project with agility, creativity, and speed to market.

Metal panel edge bands that span multiple modules contribute to a cohesive and dynamic look.

Project Credits

Team

- Client: RISE Modular and Solomon Real Estate Group
- General Contractor: RISE Modular
- MEP Engineer: Emanuelson-Podas, Inc.
- Structural Engineer: BKBM Engineers
- Civil Engineer: Kimley-Horn and Associates, Inc.
- Mod Setter: Proset

Professional Photography

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A public outdoor amenity deck gives, residents the ability to host events, concerts, and other social engagements year-round.

How can off-site construction work for you?

Learn more about how prefabrication can reduce timelines and budgets on *your* upcoming project.

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