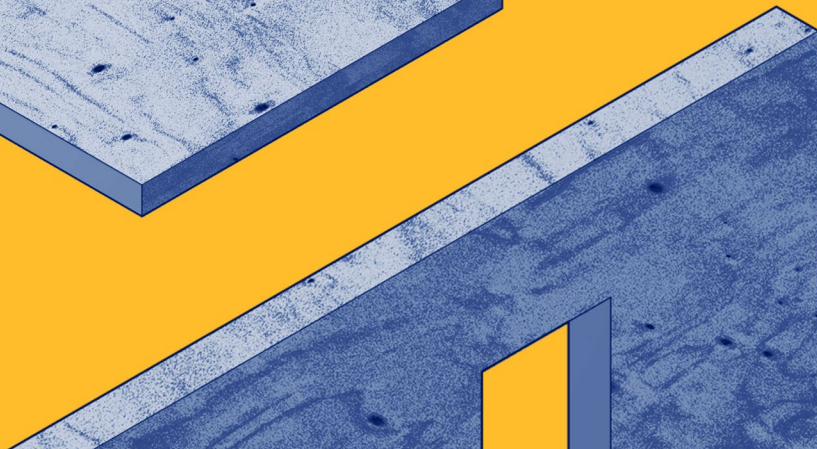
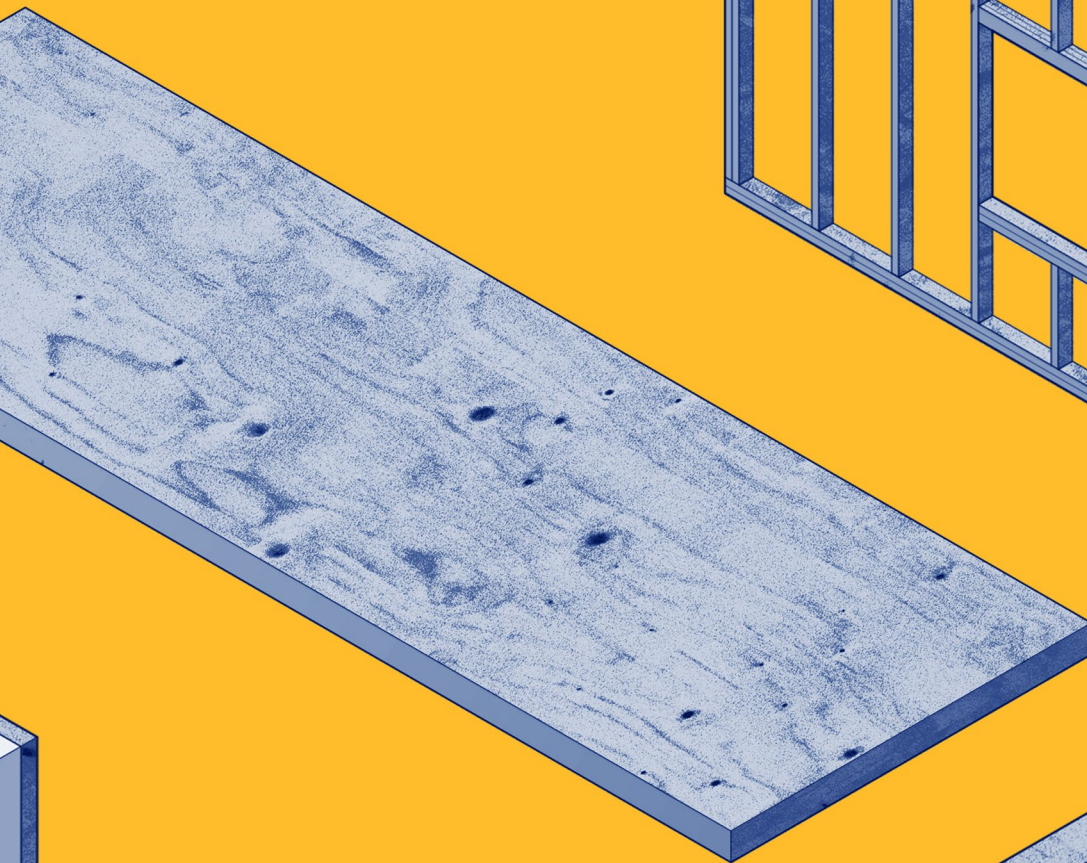
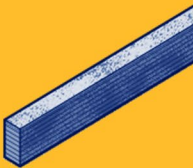
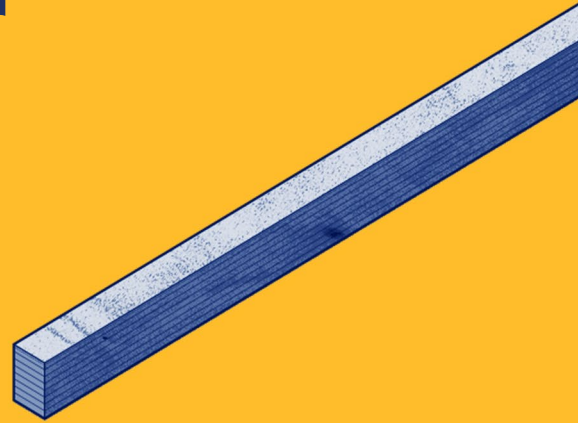


Modular Manual

A primer on prefabricated construction
for co-op housing in Canada



Publication Date: March 2026
Prepared for the Co-operative Housing
Federation of Canada



Authored by:



ReHousing is a non-profit focused on supporting housing creation through applied research, consultation and education.

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**Thanks to industry experts
who shared their knowledge
about prefabricated
systems.**

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Using the modular manual for co-op housing

This manual is a high-level guide designed to help people without design or construction experience understand the prefabrication industry in Canada. The manual explains, in simple terms, how different prefab systems work, outlines the main opportunities and challenges of each approach, and highlights where these systems currently have a strong presence across the country. This guide is meant to be a primer, not a comprehensive technical resource. Several detailed or specialized topics have been left out to keep the information clear and easy to follow.

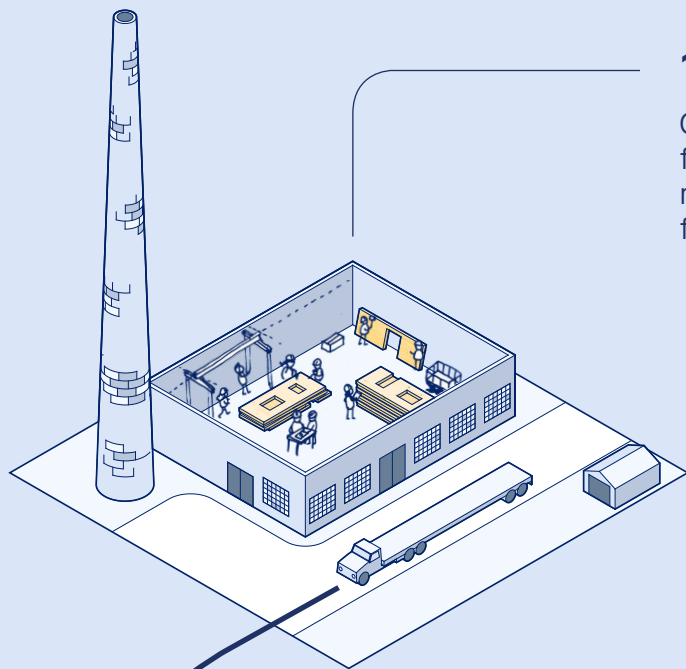
This document was developed using a range of research methods. We reviewed industry reports and academic literature, organized case studies, and compiled information on manufacturers using different prefabricated systems. We also interviewed experts from the design, manufacturing, and construction industries, and compared these insights with published research to ensure accuracy and consistency. Additional interviews from more regions and sectors would offer an even broader picture.

The manual starts with a brief overview of prefabricated construction systems. Next, it outlines the three most common prefabrication systems in Canada: volumetric modular, panelized, and mass timber. This selection aligns with a widely cited industry report and reflects our conversations with professionals in the field. For each system, the manual explains how it works, summarizes challenges and opportunities, and presents a case study. The final section compares the three systems, maps locations of manufacturers across Canada and reviews several key considerations when selecting a prefabrication approach.



So, what is modular construction?

Modular, or prefab, construction is an industrialized approach to building in which a significant portion of construction occurs off-site in a manufacturing facility. Components, or portions of a building, are constructed indoors, then shipped and assembled on-site.

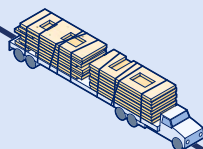


1 Fabrication off-Site

Components such as walls, floors, or 3D modules are manufactured off-site in a factory.

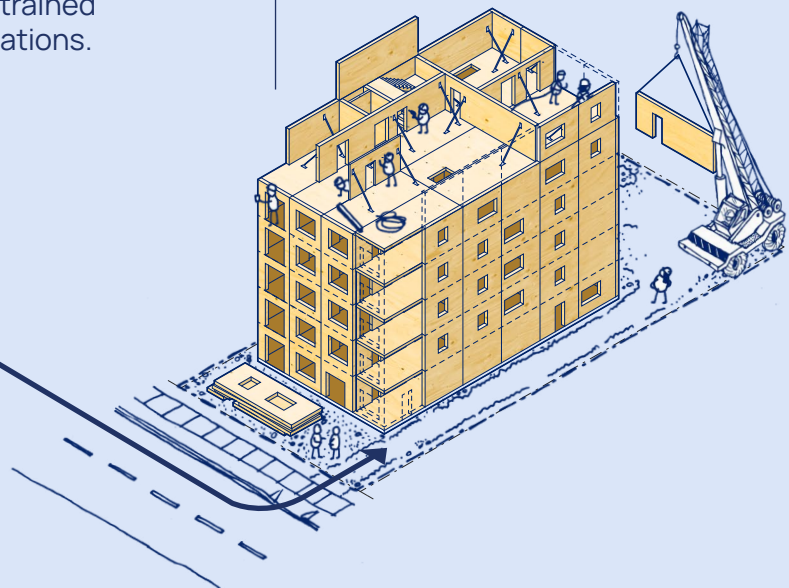
2 Shipped to Site

Components are shipped to the site, usually by truck. Size is constrained by transport regulations.



3 Assembled on-Site

A crane lifts and places components on site. Workers connect and assemble them into the building.



... and how does it impact how you build?



Feasibility Study

Using prefabricated systems affects the earliest stages of a project. It is important to work with manufacturers, contractors, and architects who understand how these systems operate so they can help ensure the right one is selected.



Design and Approvals

Designers should work closely with manufacturers before starting the design to understand how the chosen system will be used throughout the project. It is also important to contact regulatory authorities early, such as city planning, to identify potential challenges in reviewing this kind of project.

Construction

The construction process for prefabricated buildings differs from that of site-built projects, so careful planning for logistics, sequencing, and coordination is essential to ensure the work proceeds smoothly and efficiently.



Image 1: iStock.com/dima_sidelnikov



Factory Built

On-site installation with machinery



Image 3: iStock.com/JARAMA

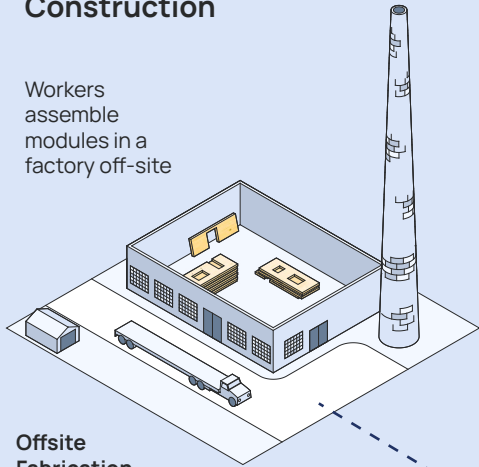


Transported by Truck

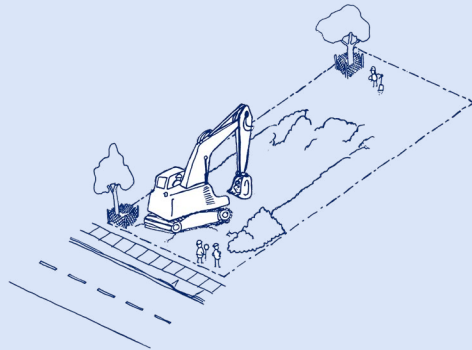
Image 2: iStock.com/DEBOVE SOPHIE

Prefab Construction

Workers assemble modules in a factory off-site



Offsite Fabrication

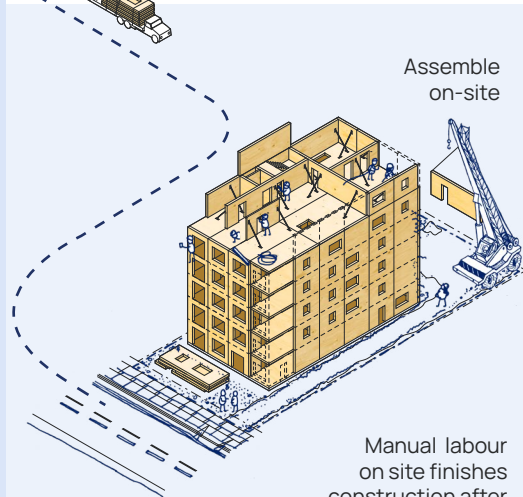


Site Work & Foundation

Prefab is Faster to Build.

With prefabricated construction, you can build the structural elements of a project off-site at the same time as doing site work, like excavation and foundations. This is known as parallel processing and is why prefab can be built more quickly than site-built projects.

Modules shipped to site



Assemble on-site

Manual labour on site finishes construction after assembly

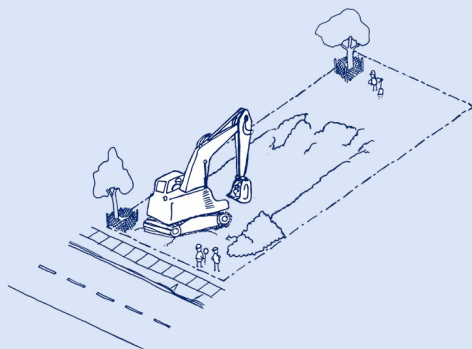
Assembled on Site

Project Complete!

Construction takes less time with prefab

Site-Built Construction

Manual labour on site carries out all construction work



Site Work & Foundation

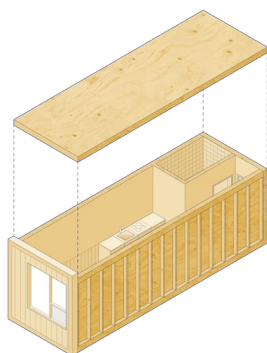


Build on Site

Project Complete!

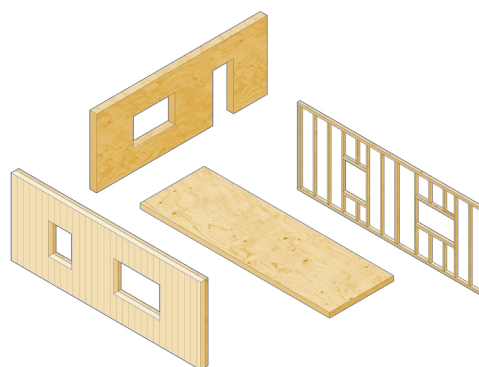
Different Types of Prefab

Prefab construction can mean many different things. It encompasses a wide range of systems, from fully finished, room-sized modules that arrive ready to stack, to individual structural panels assembled on site. Each system has its own strengths, suited to different design goals, site constraints, and budgets. They are often combined with each other, or with traditional construction methods. Prefab components can be built from wood, steel, or concrete, but this guide focuses on prefabricated wood systems. Wood is a common building material in Canada, and generally offers better environmental performance and lower cost than steel or concrete alternatives. Understanding the differences between the three wood systems described below is key to choosing the right approach for your project.



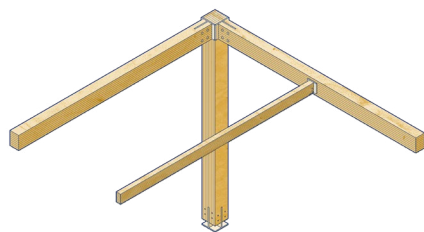
Volumetric Modular (wood)

Complete three-dimensional modules are built in a factory, including both interior and exterior finishes. The modules are then transported to the site and stacked to form the building. This approach is best suited to projects with repetitive unit layouts, it can offer the fastest path to occupancy.



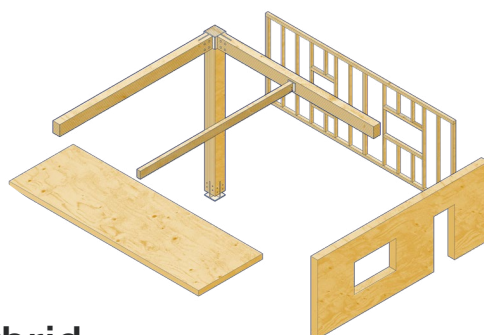
Panelized

Prefabricated wall, floor, and roof sections are trucked to the site and assembled piece by piece. Panels can be made from mass timber or light wood framing. This system offers greater design flexibility than volumetric modular and is generally easier and less costly to transport.



Mass Timber Post-and-Beam

Large engineered wood products, such as glulam beams and columns, form the primary load-bearing structure. This guide focuses on post-and-beam systems rather than mass timber wall panels. Components arrive on site pre-cut and ready for assembly, and exposed wood can serve as a finished interior surface.



Hybrid

Each system can be used on its own, but they're often combined with other systems or traditional construction. Combining (for example, a mass timber structure with panelized walls) allows you to draw on the strengths of each and can help address specific site or budget constraints.

Volumetric Modular

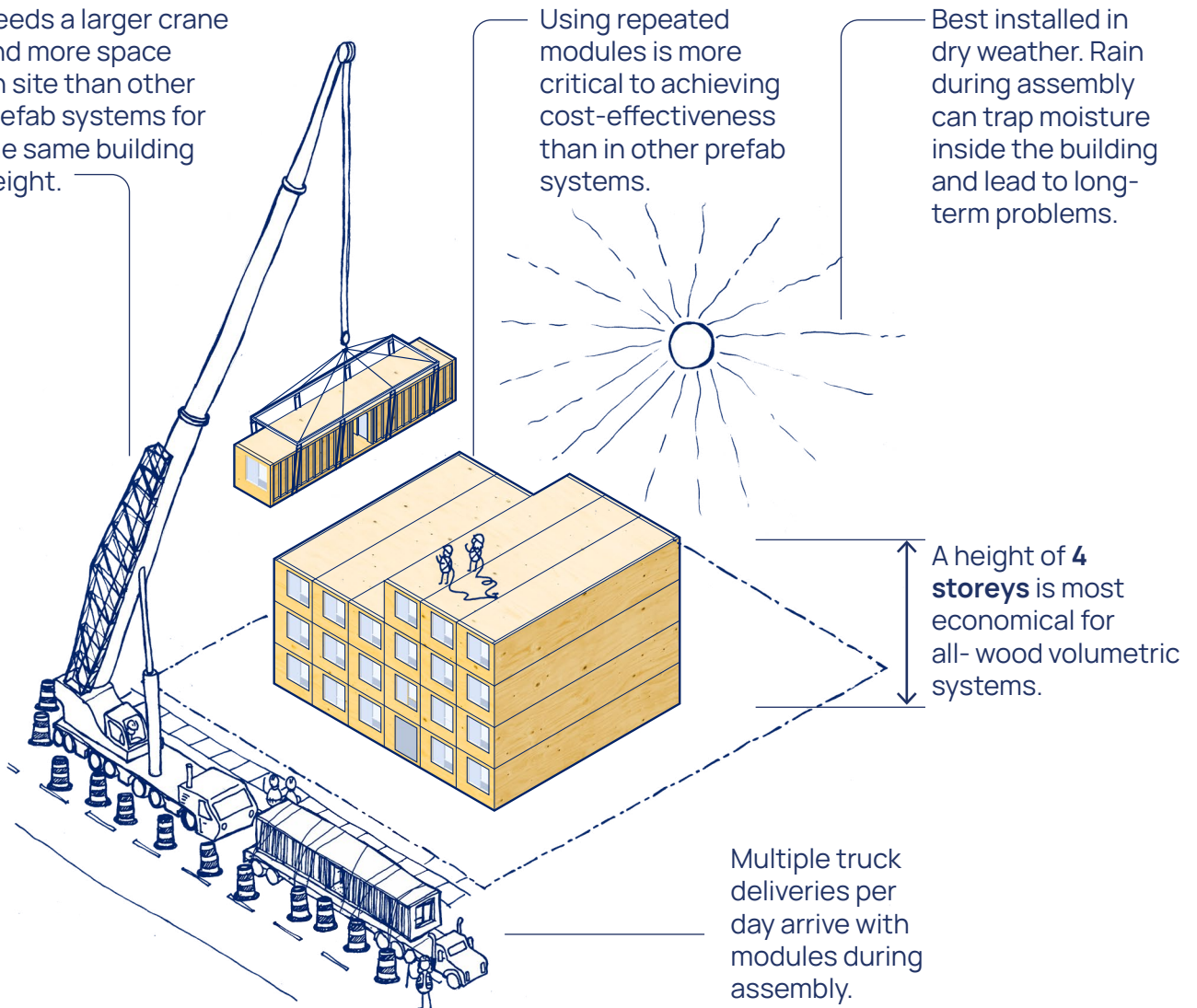
(also known as 3D modular, or Modular construction)

Volumetric modular construction uses fully finished, three-dimensional units built in a factory, complete with walls, floors, ceilings, and mechanical systems such as plumbing and electrical. Because so much work is done before the units arrive, finishing the building on site can be faster than with the other two systems. However, modules must be handled carefully during transport and installation to prevent damage. Volumetric modular is most cost-effective when units are small, simple, and repetitive (such as studio apartments), although more varied layouts are possible at an additional cost. Finally, transport routes and crane logistics require more careful planning than for the other two systems.

Needs a larger crane and more space on site than other prefab systems for the same building height.

Using repeated modules is more critical to achieving cost-effectiveness than in other prefab systems.

Best installed in dry weather. Rain during assembly can trap moisture inside the building and lead to long-term problems.



Larger sites make it easier to crane the three-dimensional modules into place and stack them on site. If your site does not have space for a crane, you may need to get permission from the city to use part of the public roadway, which can be expensive. >>



Exterior finishes can also be applied in the factory. In this project the tan cladding was pre-installed and the dark gray strips which cover the joints between modules were finished on site. The joint caps create a grid-like pattern across the facade that is inherent to the system. Pre-finishing the exterior can help reduce on-site construction time. >>



More generous interior common spaces can be built using volumetric modular construction by combining multiple modules. In this case, the floor area and ceiling height are constrained by the maximum dimensions of a module, which are limited by transport regulations. >>



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Case Study: Peterson Place

Developed as a rapid-response solution to homelessness, Peterson Place utilized volumetric modular construction to deliver 38 supportive housing units in just nine months. By manufacturing the 57 modules off-site in Manitoba while site foundations were poured in Surrey, the project significantly accelerated occupancy compared to traditional methods. The finished modules arrived with interiors largely complete, showcasing how modular prefabrication can urgently address social housing needs with minimal site disruption.



Manufacturer: Nomadic
Company Region: AB
Architect: Nomadic (Design-Build)
Developer / Contractor:
BC Housing / Nomadic

Ownership Type: Supportive
Address: 13245 King George Blvd, BC
Year Built: 2021
Build Timeline: 10 Months
Unit Count: 38

No. of Storeys: 3
Gross Area: 21,500 sf

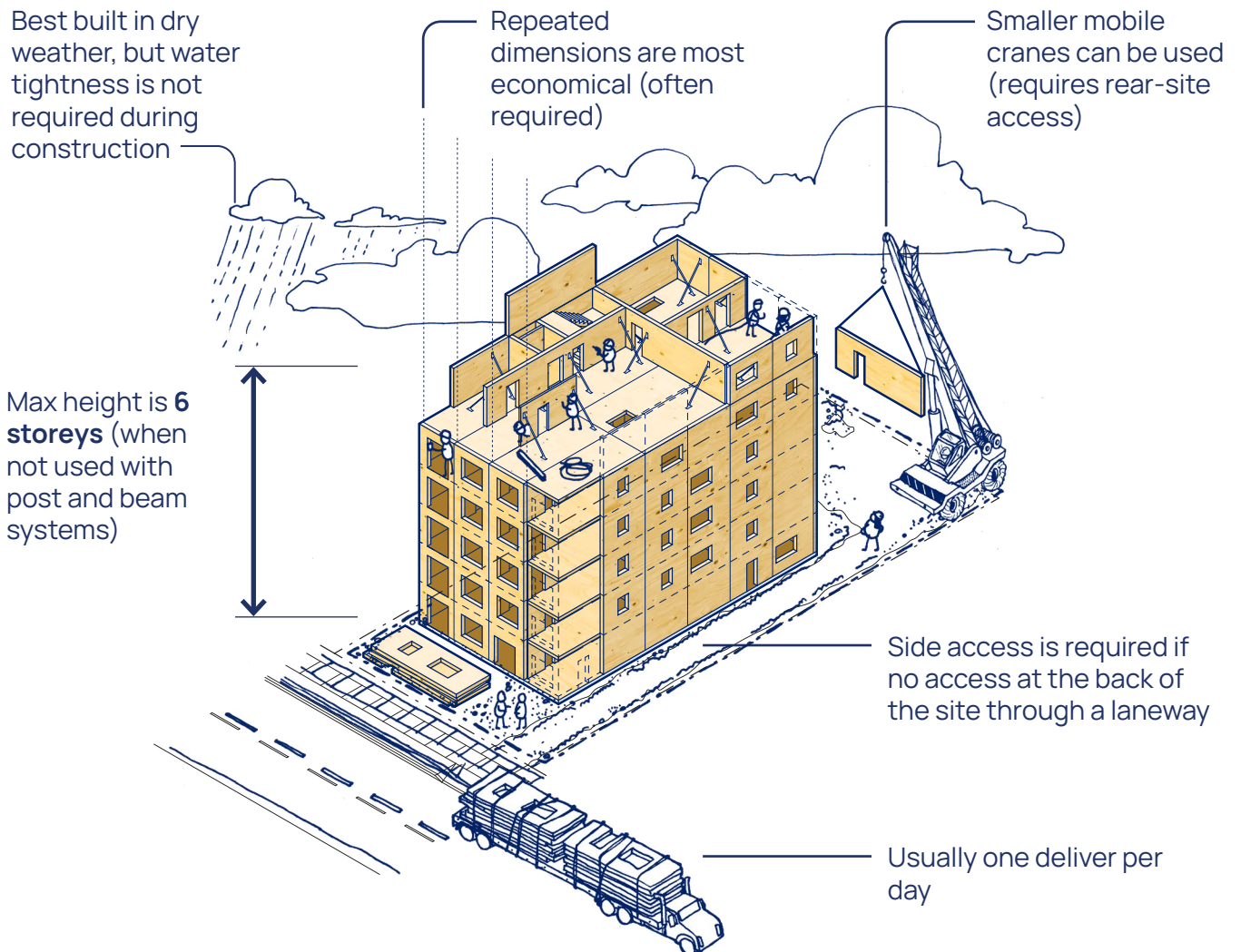
This image shows the completed building where an exterior walkway was incorporated into the base unit module.

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Panelized

(Also known as flat-pack modular, CLT Panels [Cross-Laminated Timber])

Panelized construction is a 2D system that uses flat wall and floor panels that are manufactured in a factory and then assembled at the building site. These panels can be made from mass timber or light-wood framing, and they can also work with post-and-beam systems (see pg. 12-13). This section focuses on load-bearing panel systems, where the panels themselves are the building's main structure. Usually, panels arrive without interior or exterior finishes, which are added after installation. Although this takes more time than volumetric modular systems, it offers greater flexibility for the building's layout and exterior design. Panelized systems are easier to transport than fully assembled modules, need less space on site, and can use smaller cranes, making them a good choice for tighter or more constrained sites.



Prefabricated mass timber wall panels are craned into place and stacked vertically on site. The panels provide the structure only. In some cases, it is possible to expose the structural panels and use the wood as an interior finish, which can create a warm and inviting environment. >>



Panelized components can include insulation or finished surfaces (cladding) on exterior panels, but most, like the project shown here, install the finished material on site. >>



Using a hybrid system that combines mass timber panels with posts and beams can enable the creation of larger more open spaces. This can be desirable for common spaces in cooperative buildings. >>



Image Credits: © 2026 Assembly Corp. All rights reserved. No part of this image may be reproduced, distributed, or transmitted in any form or by any means without Assembly Corp.'s prior written permission.

Case Study: 1602-1604 Queen Street East

By using precision-manufactured timber panels, the construction team minimized noise, waste, and traffic disruption in a busy neighbourhood. The lightweight structure allowed for a faster build on a tight site that would have been difficult with concrete. Designed to Passive House standards, the high-performance building envelope ensures exceptional energy efficiency and comfort for residents, proving that high-density housing can be delivered efficiently.



Prefabrication Company:
Fab Structures / Assembly Corp
Company Region: QC / ON
Architect: SMV Architects

Developer / Contractor: Assembly Corp
Ownership Type: Rental
Address: 1602-1604 Queen St. E., ON
Year Built: 2021

Build Timeline: 9 Months
Unit Count: 20
No. of Storeys: 6
Gross Area: 22,540 sf

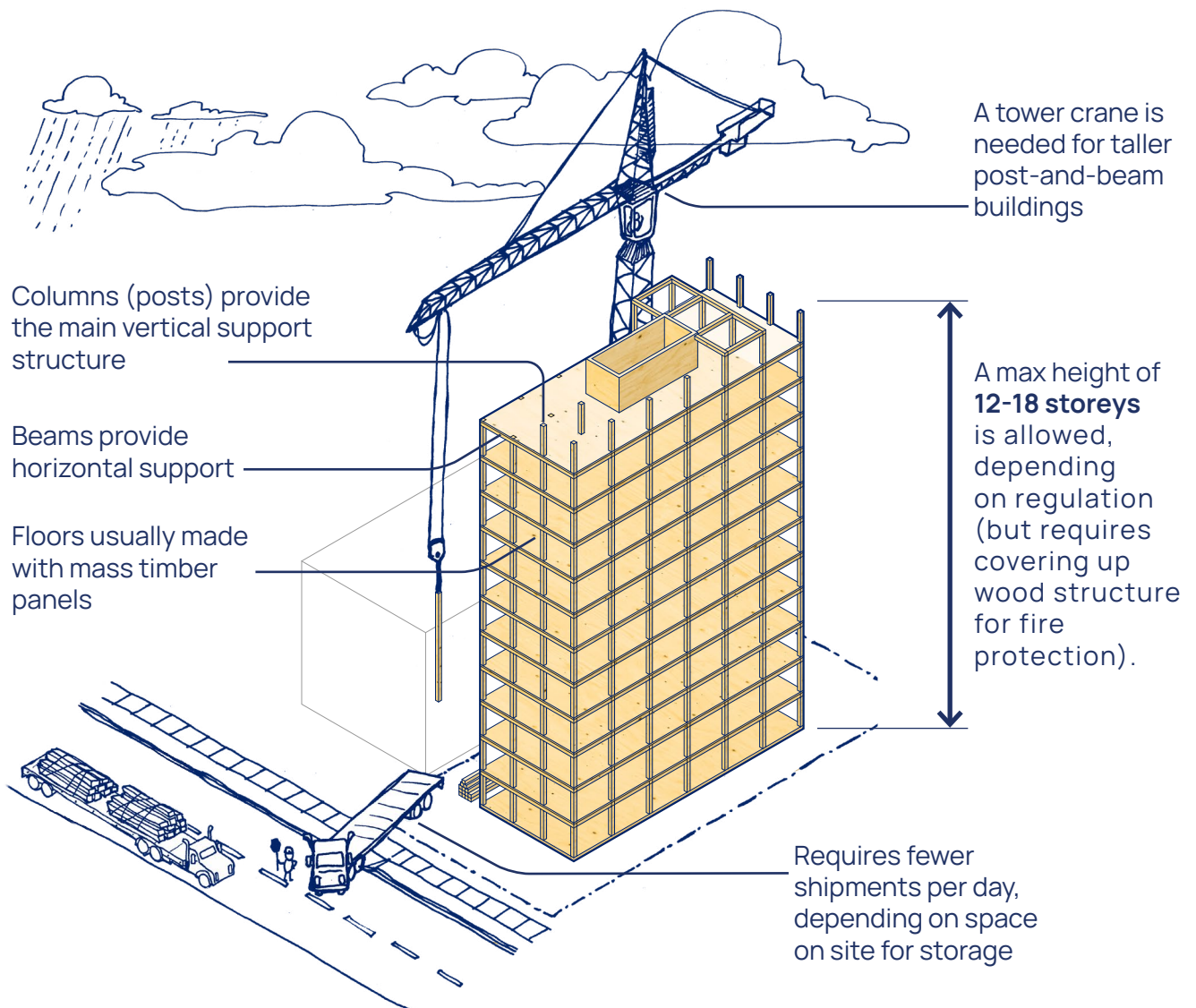
This image shows two developments using the same system, with a variable design of the buildings facades

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Mass Timber

(also known as Post-and-Beam Mass Timber, Cross-Laminated Timber (CLT), glulam)

Mass timber refers to large, structural, engineered wood products. This section focuses on post-and-beam systems. Instead of relying on walls for support, this system uses vertical columns and horizontal beams to carry a building's load. These beams can span long distances without requiring walls for support, giving designers more flexibility in how they can arrange interior spaces, compared to the other systems. Post-and-beam mass timber is also a strong structural system capable of supporting taller buildings than the other two systems covered here. The trade-off is cost: this system tends to be the most expensive of the three approaches, due to the complexity of the structural connections and the materials involved.



Mass timber uses large structural components made from many smaller pieces of wood laminated together. The striped texture shows this composite construction. Because it can span long distances, mass timber creates open floor plates and flexible wall layout. > >

Arbora
Image Credit: © 2026 Adrien Williams. All rights reserved.



For this project, exterior cladding is applied on-site rather than in the factory. While this adds some construction time, it allows for greater customization of the facade and a more varied exterior appearance than is typical of other prefabricated systems. > >

Arbora
Image Credit: © 2026 Adrien Williams. All rights reserved.



Using a hybrid system of mass timber floor panels with posts and beams in common spaces can achieve longer spans and larger interiors. This flexibility comes with trade-offs in cost and construction time.

Image Credit: iStock.com/JARAMA.



Case Study: Arbora

Situated in Montreal's Griffintown, Arbora is one of the world's largest mass timber residential complexes, spanning three eight-storey buildings. The use of Cross-Laminated Timber (CLT) panels and glulam beams enabled open, spacious unit designs. The exposed wood ceilings and columns create a unique, warm environment for residents. The prefabricated timber structure enabled a rapid erection schedule, reducing the overall construction timeline while delivering a premium, sustainable living environment.



Prefabrication Company:
Nordic Structures
Company Region: QC
Architect: Lemay / Provencher Roy

Developer / Contractor: Grifdor
/ LSR GesDev / Sotramont
Ownership Type: Condo / Retail
Address: 305 Rue de la Montagne, QC
Year Built: 2016-2019

Build Timeline: 3 Years
(Phased)
Unit Count: 434
No. of Storeys: 8
Gross Area: 597,560 sf

Image of the exterior facade of Arbora
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an entitlement or legal advice

What fabricators are close to you?

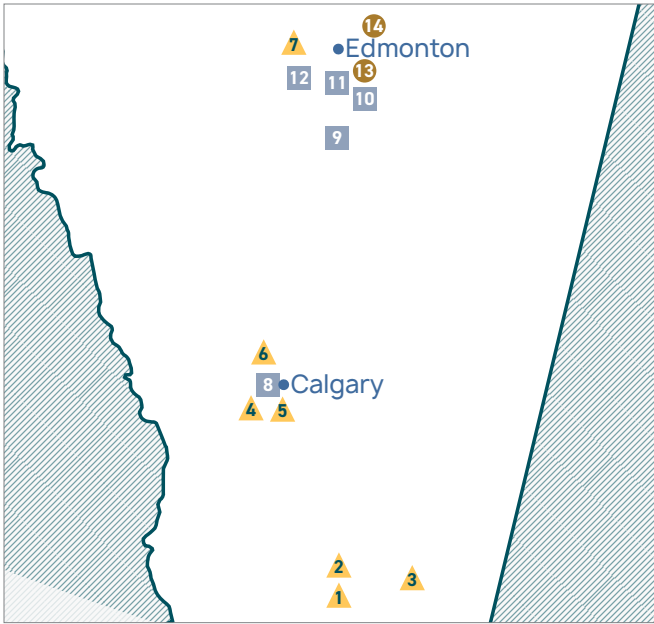
It is best to source from manufacturers that are close to you. Here's a non-exhaustive map showing their locations as of February 2026



- Prefabricated Manufacturers in Canada**
- ▲ Volumetric Systems
 - Panelized Systems
 - Mass Timber Systems

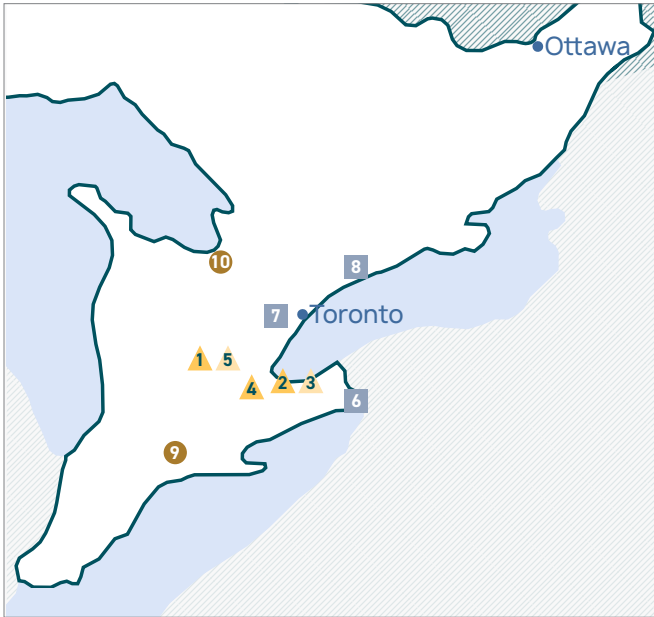


- BC**
- ▲ 1 Nexus Modular Solutions
 - ▲ 2 Metric Modular
 - ▲ 3 Built Prefab
 - ▲ 4 ATCO - Kamloops
 - 5 BC Passive House
 - ▲ 6 West Eco SIPs
 - 7 Intelligent City Inc.
 - 8 Fraserwood Industries
 - 9 StructureCraft
 - 10 Mercer Okanagan
 - 11 Kalesnikoff
 - 12 Spearhead



AB

- ▲ 1 Triple M Housing
- ▲ 2 SRI Homes - Regent
- ▲ 3 ROC Modular Inc.
- ▲ 4 ATCO - Calgary
- ▲ 5 ATCO - Calgary
- ▲ 6 MODUS Structures
- ▲ 7 Northgate Modular
- 8 ZyTech - Calgary
- 9 ZyTech Edmonton
- 10 ACQBuilt
- 11 Magwall Inc.
- 12 All-Fab
- 13 Western Archrib - Edmonton
- 14 Western Archrib - Gibbons



ON

- ▲ 1 ATCO - Cambridge
- ▲ 2 ATCO - Grimsby
- ▲ 3 Fero International Inc. / ED Modular
- ▲ 4 BECC Modular Homes
- ▲ 5 Z Modular
- 6 Thermapan
- 7 H+ME Technology
- 8 Structural Panels Inc.
- 9 Element5
- 10 Timmerman



QC

- ▲ 1 Maison Usinex
- ▲ 2 RCM Group
- ▲ 3 Pro-Fab -
- ▲ 4 Pro-Fab -
- ▲ 5 Batitech
- 6 Fab Structures
- 7 Maisons Laprise
- 8 Nordic Structures
- 9 Art Massif

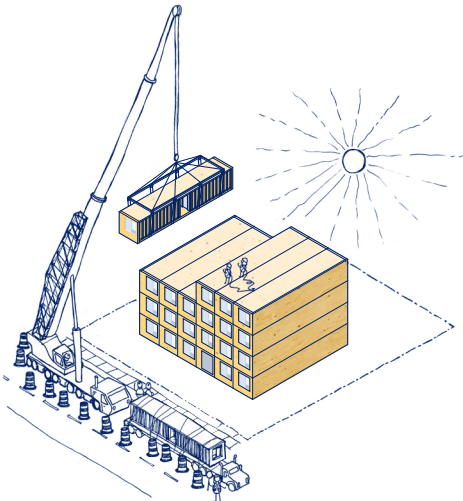
How to design effectively with prefab systems

When working with prefab, it is important to begin by understanding the opportunities and constraints of the system you choose. Designing a building around your space needs and then adapting it to a prefab system later in the process can result in costly inefficiencies. Working with designers and builders who have prior experience with your chosen system, or who have incorporated a trusted manufacturer into their team from the outset, is key to a successful outcome.



Build a strong team

One of the most important steps in building with prefab is assembling a strong team, including an architect, a general contractor, and a prefab manufacturer. Some team members may perform more than one role; for example, some manufacturers also act as the builder. Whichever team you assemble, each member should have experience with the specific prefab system you are planning to use.

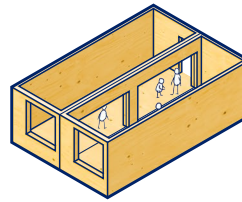


Understand the limits of your site and the scale of your building when considering which system to use

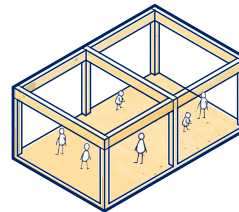
The size of a site can have a big impact on the system you choose. Panelized and mass-timber systems often work well on smaller or more constrained sites. Volumetric modular often requires a minimum number of units and larger site areas to be feasible.

Understand how different structural systems shape shared spaces

Structure can have a huge impact on the quality of open shared spaces. Column-and-beam systems can create open, unobstructed spaces well suited to shared areas and community rooms. It is still possible to achieve larger spaces with systems that rely on load-bearing walls for structure, but they typically offer less spatial flexibility.



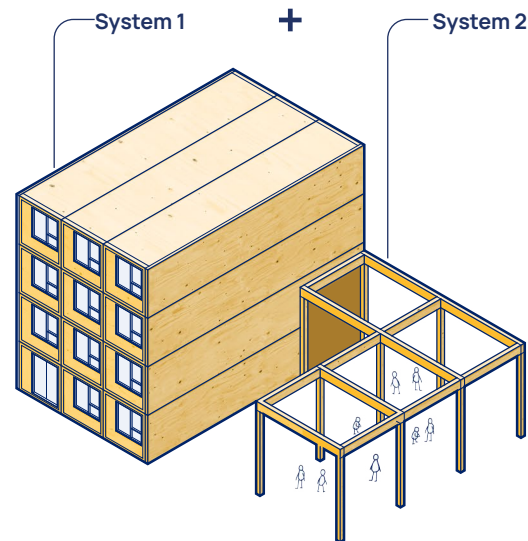
Prefab Walls can obstruct open spaces



Column and beam systems can make clear open spaces

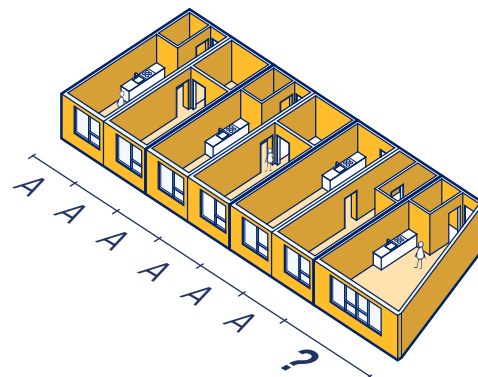
Combining systems can add flexibility, but also complexity

Some prefab systems are better suited to small, repetitive spaces while others excel at large, open ones. Combining systems can leverage the benefits of multiple systems but can also introduce additional coordination and costs. The location of larger open spaces within the building also affects ceiling height. Your design team should be able to help you evaluate the opportunities and challenges associated with a hybrid approach.










Balance customization and repetition

Prefab systems deliver the best value and schedule impacts when the design repeats. Most prefab residential buildings have highly repetitive structural bays and room layouts. Before customizing unit types or room layouts, check the potential impacts these decisions may have on construction quality, schedule, and budget.



A comparison of prefab systems

The chart below provides a high-level comparison of the three project types across Site Feasibility, Design Flexibility, Off-site Scope, and Durability. This is meant to be a high-level generalization of key characteristics. Systems vary by manufacturer, and their performance can be impacted by a number of different factors.

Prefab Type	Mass Timber	Panelized	Volumetric Modular
Performance Category Site Flexibility	 <ul style="list-style-type: none"> Works for most sites Best value when building tall which requires sites where taller buildings are allowed 	 <ul style="list-style-type: none"> Works on most sites (including small sites and odd-shaped lots) 	 <ul style="list-style-type: none"> Often requires larger sites for staging, storage, and crane
Design Flexibility	 <ul style="list-style-type: none"> Most efficient when using repetitive elements, but allows for some flexibility in layouts 	 <ul style="list-style-type: none"> Most efficient when using repetitive elements, but allows for some flexibility in layouts 	 <ul style="list-style-type: none"> Least Flexible Most efficient when using repetitive layouts and structure
Off-Site Scope	 <ul style="list-style-type: none"> Primarily structural Elements Often built in combination with panelized components 	 <ul style="list-style-type: none"> Primarily structural elements Some panels can include insulation or finished surfaces (cladding) on exterior panels 	 <ul style="list-style-type: none"> In-factory work includes plumbing, electrical, and interior finishes like tile and drywall Occasionally exterior finishes
Durability	 <ul style="list-style-type: none"> Structural durability is high Other components' longevity varies by materials and detailing 	 <ul style="list-style-type: none"> Structural durability is high Other components' longevity varies by materials and detailing 	 <ul style="list-style-type: none"> Factory-installed finishes can be damaged during transport Poor assembly can result in moisture issues

List of Terms

Cassette

A flat, prefabricated section of a floor or roof. Think of it like a giant, structural puzzle piece that gets dropped into place by a crane.

Design for Manufacturing and Assembly

A design philosophy where architects plan the building specifically so its parts can be easily made by factory machines and quickly snapped together on-site just like designing a Lego set.

“Just in Time” (JIT) Shipping

“Just in Time” (JIT) is a logistics strategy essential for constrained sites. Instead of storing materials on-site for weeks, prefabricated components are delivered on a precise schedule to arrive exactly when the crane is ready. This critical coordination prevents congestion, protects materials from weather, and keeps the assembly process flowing seamlessly.

MEP: Mechanical / Electrical / Plumbing

MEP stands for Mechanical, Electrical, and Plumbing which act as the building’s “nervous system.” In prefabrication, these systems are often integrated off-site. For modules, this means pre-installed piping and wiring; for panels, it involves pre-drilled chases. This integration significantly reduces on-site labor, minimizes trade clashes, and improves overall system quality compared to traditional field installation.

Modular

“Modular” broadly refers to using standardized, repeatable units that fit together to form a whole. Produced under controlled plant conditions, these modules are designed for easy transport and assembly. By breaking a complex building into manageable components, projects achieve economies of scale and streamline the manufacturing process.

Modular Cribbing

Modular cribbing refers to temporary, reusable support structures used during the installation process. Often made of interlocking blocks or timber, this system provides a stable base for setting expansive modules or heavy equipment on uneven ground. It is essential for leveling and stabilizing components safely before they are permanently secured to the foundation.

Off-Site Construction

The overarching term for any building process that happens away from the actual property (usually in a climate-controlled factory) before being brought to the site.

Parallel Processing

Parallel processing is a major advantage of prefabrication. While the site is being prepped and the foundation poured, the building's superstructure is simultaneously being built in the factory. This overlapping schedule allows vertical construction to begin immediately after the foundation is cured, potentially shaving months off the total project timeline.

Prefabrication (Prefab)

Prefabrication, or "prefab," is the umbrella term for manufacturing building components off-site before final assembly. It ranges from simple pre-cut frames to finished apartment modules. The core philosophy is to move work from the unpredictable job site to a controlled factory environment, improving safety, quality control, and reducing waste.

Site Staging

"Site Staging" is the logistical plan for organizing the construction site to ensure a smooth workflow. It dictates where cranes are positioned, how delivery trucks enter and exit, and where materials are temporarily placed. In prefabrication, effective staging is critical because large components must be moved from the delivery vehicle to their final position with minimal handling, often requiring precise choreography in tight urban spaces.

Staging Yard

A staging yard is a designated area near the site where components are temporarily stored before lifting. In prefabrication, "Just in Time" delivery aims to keep this area small. However, a buffer zone is vital for inspecting arriving components and rigging them for the crane, ensuring the installation timeline stays on track.

Tolerance

Tolerance is the allowable limit of variation in dimensions. A key challenge is the gap between factory precision and site reality. Successfully joining tight factory tolerances with rougher site conditions requires precise surveying and connections to ensure prefabricated parts fit perfectly onto the foundation.

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