

NORTHGATE: SOPHISTICATED MODULAR SOLUTIONS!

INDISTINGUISHABLE FROM SITE-BUILT COUNTERPARTS

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WHAT IS MODULAR CONSTRUCTION?

Modular construction is defined as the creation of three-dimensional or volumetric units that are fitted out in a factory and are delivered to the site as the main structural elements of the building. It is primarily used for the creation of cellular-type buildings consisting of similar room-sized units that are of a size which can be transported and connected on-site to create functional buildings. Modular construction can also include partially or fully open-sided modules, in which two or more modules create larger spaces.



MODULAR MAKES IT POSSIBLE

- Fast Construction
- Cost-Effective
- Eco-Friendly Material
- Less Impact On Business
- Attractive Designs



PERMANENT MODULAR CONSTRUCTION:

THE DYNAMIC IS IN THE DETAILS!

What is Permanent Modular Construction (PMC)?

Permanent modular construction (PMC) refers to the erection of permanent buildings similar to traditional real estate in virtually every way once finished. PMC buildings are subject to the same building codes and requirements as site-built structures, depreciate in much the same manner, and are classified as real property. PMC, modules are retrofitted to existing buildings, or projects are designed around the modular building techniques as a turn-key solution from the start. This industry segment provides construction-related services for the successful design, manufacturing, delivery, installation and finish-out of commercial and multi-family buildings. PMC's innovative, sustainable construction delivery method utilizes off-site, lean manufacturing techniques to prefabricate single or multi-story whole building solutions in deliverable volumetric module sections. The buildings within PMC are manufactured in a safe, controlled setting and can be constructed of wood, steel, or concrete. They can be delivered with mechanical, electrical and plumbing (MEP), fixtures, and interior finishes in less time, with less waste and higher quality control compared to projects utilizing only traditional site construction.

BENEFITS OF PERMANENT MODULAR CONSTRUCTION

Opportunities for Modular Construction

Modular construction has been used for a variety of applications. The project goals may vary, and the design and manufacturing of modules may be adapted according to the specific project's needs. Some of the benefits of permanent modular are as follows:



1. Finesse and Flexibility To Reach Remote And Hard-To-Build Areas.

Modular construction can be used for temporary or permanent housing structures. Opting for permanent modular construction has its benefits. PMC continues to be a significant driver, especially when finding solutions to permanent affordable housing and building in rural and remote communities. Remote areas and hard-to-reach communities often are neglected due to a lack of finding workforce and materials. As a result, these communities remain underserved concerning adequate housing. Remote areas often need help accessing labour and building materials because transportation costs are high, and labour must come from outside a specific area to be well-distributed within the remote community. Modular construction is a potential solution for remote communities as it allows for prebuilt modules to be shipped to remote areas where they are assembled quickly. Modular construction is possible because the modules are pre-built in regions with adequate resources and then sent to remote locations for fast assembly. This approach also has the advantage of minimally disrupting small communities with large development projects.

2. Energy Efficiency Is An Essential Consideration In Modular Construction.

Passive House standards, which aim to achieve thermal comfort with virtually no energy input, require a high degree of airtightness between module walls. Energy Performance Products have developed products that meet these requirements if installed in a controlled construction environment.

Meeting energy efficiency targets on site with modular construction is contingent on the quality of module-to-module joints and attachments on site. Attention to sealing these joints is integral to meeting performance targets.

3. Meeting the Education Sector's Needs with Precise Promptness.

Permanent modular construction delivers innovative solutions while meeting the crucial safety and accuracy requirements while building schools. Constructing school buildings can be time consuming, as school campuses are generally vast. Instead modular structures for schools can be beneficial as this construction process is less time-consuming. Moreover, it relies on the process where the building components are fabricated and manufactured in off-site manufacturing plants. The prefabricated components are then transported and installed on site, saving a lot of time. Moreover, the flexibility of modular structures for schools makes renovation and customization easy. The components can be quickly installed to expand the space and add more rooms, laboratories, washrooms, and other elements to the school building.

4. Serving The Health Sector With Relentless Speed, Safety and Accuracy.

A modular structure can be built instead half the time of a traditionally built structure. The components of modular structures for healthcare can be manufactured while other site operations are in the process. Hence, this construction method is faster than any other method of constructing hospitals, clinics, healthcare laboratories, medical stores, etc. Additionally, it's a cost-saving construction method. The entire process of modular construction takes place quickly, and it takes less time to build modular structures for healthcare, thus reducing the overall cost of the construction. The healthcare industry can no doubt benefit from higher ROI due to the early opening time of the new modular structure.

Modular construction is not a product; it's a process that delivers safe, eco-friendly, comfortable, and accurate modular structures for various industries. Both permanent and temporary modular buildings have made an impeccable contribution in finding quick solutions to building student residences; Temporary workforce housing; Hotels and lodges, and Temporary transitional housing.

Modular construction is safe, sustainable. Modular manufacturers hold themselves to the highest standards available. They must pass the same building codes that traditional construction methods are bound to follow. What's more, modular construction continues to evolve its techniques and is steadily advancing as manufacturing processes are refined. Material quality is improved, enabling it to be better than traditional construction.

DIFFERENCE BETWEEN PERMANENT & TEMPORARY MODULAR STRUCTURES

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PERMANENT

- 1.** Permanent modular structures are installed and fabricated for long-term use. They tend to last for decades, just like any other conventional building.
- 2.** Generally made of concrete and steel in addition to wooden framing.
- 3.** Ideal for purposes that don't require relocation such as office buildings, banks, hospitals, schools, hotels, dormitories, etc.
- 4.** May take 2-4 months or more for construction and installation depending on the size of the building and architecture.
- 5.** Permanent modular structures are costlier to build as they use robust materials like concrete for building.
- 6.** Can be built and attached to the existing structures to match seamlessly with the facade and other structural and technological details of the existing structures.

TEMPORARY

- 1.** Temporary modular structures are installed for a shorter duration i.e. A few months or years. They are durable enough to withstand several rounds of installation and relocation.
- 2.** Mostly wood-based as wood is easier to relocate and reinstall.
- 3.** Best for situations that require quick construction and relocation in the future, such as temporary offices and lavatories.
- 4.** Typically ready in 2 weeks. Can take a maximum of 30-40 days if the project involves a large build.
- 5.** Temporary modular structures are relatively economical and cost less. These structures can be bought, leased, or rented.
- 6.** Cannot be directly connected to the existing structures.

ADVANTAGES OF BUILDING WITH A LOCAL MODULAR BUILDER

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1. Quicker Process:

While the foundation is laid and the groundwork is done, modular units are manufactured offsite at the same time. Modular construction is up to 50% faster than traditional construction.

2. No Delays Due to Weather Conditions:

Modular units are fabricated under controlled conditions inside a factory. This means that even harsh Albertan weather conditions cannot delay the manufacturing procedure.

3. Minimal Site Disruption:

Modular units are manufactured in a factory and are then transported on-site. Modular construction removes about 80% of activities on the location with minimal site disruption.

4. Highly Efficient Buildings:

Our qualified quality control experts inspect and perform quality checks at every stage to ensure that every process goes on efficiently and the modular units are of high quality all the time.

5. Eco-friendly Structures:

Modular structures are much more eco-friendly compared to traditional buildings. The process produces less waste and often use recycled materials without compromising on efficiency.

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THE MODULAR BUILDING CONSTRUCTION PROCESS EXPLAINED

1. How are Modular Buildings Constructed?

A modular building company constructs separate parts or modules in a factory away from the main site the process of modular construction goes in steps.

2. Design

Every construction needs an architectural design. The first step for modular construction is similar. A design is created for the house or building that has to be erected. The designer takes into context the following markers:

- What the client wants, e.g. number of rooms, style of the roof, number of floors, floor design, kitchen design, etc.
- Environment and climatic conditions of the site to determine how many floors can be erected and what material and method should be used to tackle harsh weather.
- The budget of the client.
- Properties of the ground to ascertain the type of foundation.



3. Engineering Reviews

After the designs have been finalized, they go to the engineering department for a review of the standards of safety and performance. Engineering reviews are mandatory in order to make sure that the building meets certain codes of building and construction set by the government like the International Energy Conservation Code (IECC).

4. Getting Permits

A construction or major renovation of any building requires permits from the jurisdiction. The client is responsible for getting the permits by appointing a general contractor as his representative so he can acquire the required permits for construction on his property. Failure to do the same results in penalties or even demolition of the building by government officials. The permits generally include:

- Site plan
- Mechanical permit
- Concrete permit
- Building permit
- Plumbing permit

5. Site Development

While the modules for the building are fabricated in the offsite factory, the site is developed for the installation of modules. Firstly, the site is surveyed for contours of the land. Secondly, the land is excavated and graded to a level for the foundation. Then the drainage for the site is laid down and finally the foundation on which the modules are to be installed is constructed.

6. Module Fabrication

The fabrication of the module begins with a welded steel frame loaded onto the assembly line. The base floors, walls and ceilings are then fabricated on the frame and the electrical and plumbing services are added. The module is then insulated with the main floors and walls. Then the interior finishing, including painting and flooring, is completed while the windows and doors are attached. The module is prepared for transportation after the exterior finish is completed.

7. Transportation of modules

After finishing the module fabrication, the modules are transported to the site for installation. The modules are transported by road on trailers or tow trucks. The transportation depends on the design or purpose of the modules. For a big settlement like a workmen's camp, the modules are transported in stages for the installation.

8. Installation

After the modules have been transported, they are set in place to fix the panels and joints. For a permanent or grade foundation, the modules are supposed to be put in place by a crane, while for temporary foundations the modules are placed using simpler mechanical methods. The contractor, then installs and fixes the modules and installs the utility and electrical services.

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