

An Overview on Modular Construction

Yarlagadda Paul Samuels Vedh ¹, Yarlagadda Paul Richards Vedh ²

(M-TECH Structures) Department of Civil Engineering

Asso. Professor DR. G. Hathiram (Ph. D) Head of Department,

Civil Engineering Dept. KLR Engineering and technology, Palwancha, BhadradriKothagudem,
Telangana, India

Abstract: *Modular construction, as opposed to traditionally built structures, can be finished in approx. fifty percent of the time due to the certainty that the structure is created off-site in a controlled plant surroundings, using the same materials and design attach to the same codes and standards. And it can be completed at a lower cost than traditional built structures.*

INTRODUCTION

Industrialized building system can be defined as the building system in which structural components are manufactured in a factory, on or off site, transported and assembled into a structure with minimum additional site works. And it is one of the improved building systems that are being introduced to achieve the target of faster completion with mass production of the building elements in places out of its final position in a construction.

HOW MODULAR HOUSE DIFFER FROM HOUSE BUILT ON-SITE

- Modular homes are built into the interior, they can be completed in a matter of a few weeks.
- They do not notice the typical on-site delays caused predominantly by the weather.
- Modular homes must conform to specific rules, guidelines and building codes that often improve on those of traditional on-site homes.

WHY MODULAR CONSTRUCTION

- It provides a practical and coherent the method for coordinating the position and dimension of elements, components and spaces in the planning and design of buildings.
- One of the major reasons to adopt modular construction is that not only, but can one save up

to 35% on the initial construction costs like labour and materials, but there are other benefits as well.

- Another main reason is relevant to the quality as one can obtain a suitable quality in the components of any structures that are to be pre-fabricated or pre-cast in the construction factory.
- Sustainability in this construction it can be achieved through the factory production of the modular units.
- For a modular construction project to complete with a good result, proper planning, organization and presenting must exist between various relevant parties involved from the early stage of the project.
- For mass production of building components in factories which ensure good and consistent workmanship and quality.
- To permit standardization, which encourages the use of standardized building components for the construction of different type of building.
- To provide guidance to building component sizing which can reduce the need to further trim and shape the materials to fit together in construction. Hence, reducing the wastage of labour and material.

AIMS

- To achieve the compatibility between building dimensions, span or spaces and the sizes of components or equipment by using related modular dimensions.
- Making the plan simpler and clearer by clear indication of location of the building components in the building, both in respect to each other and a modular grid.
- Simplification of site work.

- Limiting the factor of sizes of building components, so that the linkage is based on modular assessment.
- Facilitating teamwork between designers, manufactures, suppliers & builders.
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CHARACTERISTICS

- Modern design and manufacturing methods involving information technology like usage of Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM).
- Open building concept- permitting hybrid applications, and adaptable to standardization and Modular Construction.
- One of the major characteristics of industrialized building construction is the industrial production of components through pre-fabrication, or sometimes highly mechanized in-situ processes i.e., permanent steel formworks, tunnel forms, etc.
- Reduced labour during pre-fabrication of components and site works.

CLASSIFICATIONS OF MODULES (MOD)

1. Basic module
 2. Multi module
 3. Sub module
- Basic MOD: The fundamental unit of size in a modular coordination and general applications to the building and components. The size of basic module is taken as 100mm and it is denoted by 'M'.
 - Multi MOD: Certain whole multiples of basic module Is expressed as 'M' with prefix as 2M, 3M, 4M etc., are referred to multi module.
 - Sub MOD: Certain submultiples of basic module which are whole simple fractions shall be chosen absolutely necessary for an increment smaller than the basic module.

CONSTRUCTION PROCESS

- Modular components are usually constructed within the assembly lines.
- The whole process of modular construction places its importance on the design stage.

- This is where practices such as design for manufacture and assembly are used to ensure that assembly tolerances and controlled throughout manufacture and assembly on site.
- The use of advanced CAD systems, 3D printing and manufacturing control systems are essential to this construction to be successful. This is a quite not similar to on-site construction, where the skilled worker can make the parts to suit for the particular installation.
- Modules construction may be taken as ten days. And not more than 1 to 3 months.

ADVANTAGES OF MODULAR CONSTRUCTION

- Reduction of site labour
- Cleaner environment
- Faster project completion
- Less site material
- Minimal wastage
- Neater and Safer site
- Lower cost of construction

DRAWBACKS OF MODULAR CONSTRUCTION

- Limited customization
- Limited serviced area
- Payment Plans

COMMON USES OF MODULAR CONSTRUCTION

Below are five of the most popular supplication for modular buildings constructions.

- Medical
- Industrial
- Education
- Housing
- Security

CONCLUSION

Modular structures offer exciting possibilities and meaningful benefits for individuals and trades alike. As appreciation grows and techniques continue to evolve, the prospective for modular construction in making a sustainable and economically vibrant built environment remains vast.

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