

### Q. What are the principles of modular planning?

**A. Modular buildings and modular homes** are sectional prefabricated buildings or houses that consist of multiple sections called modules. "Modular" is a method of construction differing from other methods (e.g. "stick-built" and off-site construction). The modules are six sided boxes constructed in an exterior (sometimes, remote) facility, then delivered to their intended site of use. Using a crane, the modules are set onto the building's foundation and joined together to make a single building. The modules can be placed side-by-side, end to end or stacked, allowing a wide variety of configurations and style in the building layout.

The principles of modular planning are as follows:

#### i) Design Considerations:

The entire process of modular construction must place great importance on the design stage. This is where practices such as **Design for Manufacture and Assembly (DfMA)** are used to ensure that assembly tolerances are controlled throughout manufacture and assembly on site. It is vital that there is **enough allowance in the design** to allow the assembly to take up any "slack" or miss-alignment of components.

The use of advanced **CAD systems, 3D printing and manufacturing control systems** are important for modular construction to be successful. *This is quite unlike on-site construction where the tradesman can often make the part to suit any particular installation.*

A reference system is used to co-ordinate spaces and zones for building elements and for components which form them. Rules are set to locate building elements within the reference system. The same is done for sizing building components in order to determine their work sizes. Rules are also set for defining preferred sizes for building components and controlling dimensions of buildings.

#### ii) Zoning Considerations:

Typically, modular dwellings are **built to local, state or council code**, resulting in dwellings from a given manufacturing facility having differing construction standards **depending on the final destination of the modules**. *For example, homes built for final assembly in a hurricane-prone, earthquake or flooding area may include additional bracing to meet local building codes. Steel and/or wood framing are common options for building a modular home.*

#### iii) Strength Considerations:

Modular homes are designed to be stronger than traditional homes by:

- replacing nails with screws,
- adding glue to joints and
- using 10-20% more lumber than conventional housing.

This is to help the modules maintain their structural integrity as they are transported on trucks to the construction site;

However, it is difficult to predict the final building strength since the modules need to endure transportation stresses that traditional homes never experience.