

PORTABLE LIGHTWEIGHT FOLDABLE MODULE FOR MAKE-SHIFT HOSPITALS AND OTHER NEEDS

An innovative, prefabricated, lightweight and modular structure for rapid installation

CSIR-Structural Engineering Research Centre (CSIR-SERC), Chennai has developed a novel technology for constructing temporary shelters/structures during unforeseen situations/natural calamities in both urban and rural areas. The design utilizes optimum material, is extremely stable, can be erected very quickly and can be used as make-shift hospitals, emergency/temporary shelters, toilet units, etc.

FEATURES / HIGHLIGHTS

- Single foldable unit having total weight around one ton
- The module can be fabricated easily, folded flat for easy transportation and can be erected at the site using a crane
- The wall panels consist of four panels with cladding, provided with hinges and can be folded to the floor level
- Standard size of the module is 6.0m x 3.0m x 2.8m height and can be customized based on the requirement
- Provisions for electricity including lighting is provided as a part of the structure even in the folded condition
- The installation takes less than one hour with 2-3 labour
- Using provisions at different parts of the panel, the roof and walls of the module can be lifted and arranged sequentially. On ensuring perfect erection and alignments, the front and back wall panels can be opened up
- Multiples units can be stacked/arranged together with openings for commuting from one unit to other



TECHNICAL DETAILS

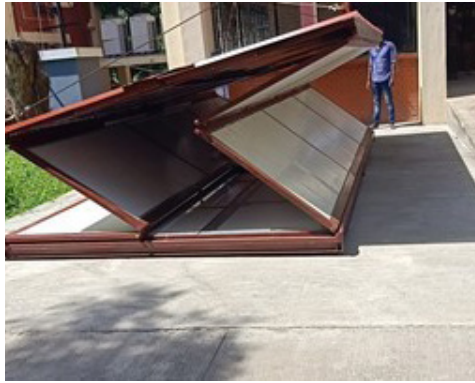
- Structural configuration of the module consists of a steel framed structure made using standard steel sections that are readily available in the market
- Structure is a collapsible modular type, that can be fabricated in a factory and the complete structure in folded condition can be transported to the site for quick installation
- Dimensions of each module is 6m x 3m x 2.8m height and in completely folded stage the dimension is 6m x 3m x 0.3m height. Each module is made up of separate frames joined together using heavy duty structural hinges, the integrity and stability are ensured by using pin and bolt arrangements

PORTABLE LIGHTWEIGHT FOLDABLE MODULE

- Completely folded structure has a total weight of approximately 1300 kg. Can be easily transported to site and placed using a crane on a levelled concreted surface
- Can be easily anchored to the ground using a detachable cleat angle and anchor bolts grouted to the base concrete. The structure can be opened up using a crane and the front/ back door panels can be opened up manually
- The structure is appropriately designed for wind speed of 50m/s besides other dead and live loads



Initial position - transported to the site in completely foldable form



Opening using crane



Half stage of opening



Fully opened structure



Opening of door panes at front and back



Ready to use structure

Sequence of operation for erecting the structure

APPLICATIONS

- Establishment of temporary and emergency housing/shelters during unforeseen events/natural calamities in both urban and rural areas. Can be used as construction site accommodations and portable toilet units
- Establishment of temporary make-shift hospitals during pandemic situations/health emergencies
- High potential for use in strategic sector in the remote/inaccessible areas



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