

Identified Emerging Technologies for use in Mass Housing (contd.)

6. Light Gauge Steel Framed Structures (LGSF)

Light Gauge Steel Framed Structures (LGSF) is based on factory made galvanized light gauge steel components. The system is produced by cold forming method and assembled as panels at site forming structural steel framework of a building. After the LGSF frame is erected, appropriate wall panels are fixed and finished.



7. Waffle-crete Building System

Waffle Crete Building system consist of large, structural ribbed precast panels of reinforced concrete, bolted together and the joints between the panels are filled to form the walls, floor and pitched or flat roofs of buildings.



8. Precast Large Concrete Panel System

It is a Precast construction with large panel modular system. Precast building consists of various precast elements such as walls, beams, slabs, columns, staircase, landing and some customized elements that are standardized and designed for stability, durability and structural integrity of the building and assembled at site.



9. Structural Stay-in-place formwork System

COFFOR is a patented structural stay-in-place formwork system to build load bearing concrete wall /structures based on Shear wall concept Coffor advantage is that concrete of wall and slab is poured in single operation to create monolithic structure.



10. Modular Tunnel Form System

Modular Tunnel form is a mechanized system of formwork which allows walls and floors to be casted in a single pour of concrete. With multiple forms, the entire floor of a building can be done in single operation which makes the structure monolithic.



The formwork is stripped out next day and entire is lifted up to next level and prepared for subsequent casting.



Technology Sub-Mission



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“सबका सपना... घर हो अपना”

Technology Sub-Mission : Mission Statement

Sustainable Technological Solutions for Faster & Cost Effective Construction of Houses suiting to Geo-Climatic and Hazard Conditions of the Country under PMAY(U).

Technology Sub-Mission : Objectives

- To identify, evaluate and adapt new emerging technologies for facilitating their speedy introduction in the States/UTs taking into consideration the diverse geo-climatic and hazard conditions of the country.
- Extending technical support, capacity building & handholding to States/UTs Governments by creating pool of professionals and skilled manpower through association with IITs/NITs/SPAs.
- Providing support in planning and designing of projects for building affordable housing including technical documentation such as specifications, standards, manuals etc.
- To facilitate enabling policy framework for use of new emerging and green technologies in the States/UTs .
- Online portal for technologies and best practices including online monitoring & use of GIS.

The Sub-Mission will work on following aspects:

- Design & Planning
- Innovative Technologies & Materials
- Green Building Construction
- Disaster Resistant Design and Construction

Implementaion with Partnership:

As per clause 9.4 & 9.5 of PMAY (U) guidelines:

Centre and State/UT would also partner with willing IITs, NITs and SPAs for developing technical solutions, capacity building and handholding of States and Cities.

State or Region specific needs of technologies and designs would also be supported under this Sub-Mission.

A technical cell has been setup in the Building Materials and Technology Promotion Council (BMTPC) under the Ministry to support the Sub-Mission. A Tachnology Park has been established at Hindustan Prefab Limited(HPL), New Delhi.

Global Housing Technology Challenge - India (GHTC) is being organised to provide sustainable, scalable and adaptable innovative technologies for accelerated affordable housing.

Involvement of other concerned organizations:

Bureau of Energy Efficiency (BEE) has been involved for providing inputs on energy efficiency in housing. National Remote Sensing Center (NRSC), Hyderabad is also involved for geo-tagging of houses and monitoring through satellite based system.

Adoption of New Technologies by Government Agencies:

CPWD has published Schedule of Rates for three new technologies namely, Monolithic Concrete Construction using Aluminum form work, EPS Core Panel System and Light Gauge Steel Framed Structure.

CPWD, DDA & NBCC to adopt three new technologies which have been validated by BMTPC at their construction sites initially in Metropolitan cities of India and where the value of works is Rs. 100 crores or more.

Identified Emerging Technologies for use in Mass Housing

1. Monolithic Concrete Construction System using Plastic/Aluminium Formwork

In this system, in place of traditional RCC framed construction of columns and beams; all walls, floors, slabs, columns, beams, stairs, together with door and window openings are cast-in-place monolithically in one operation using specially custom designed modular formwork made up of Aluminium/Plastic/Aluminium-Plastic Composite.



2. Expanded Polystyrene (EPS) Core Panel System

Expanded Polystyrene (EPS) Core Panel System is based on factory made panels, consisting of self extinguishing EPS sheet, thickness not less than 60 mm, sandwiched between two engineered sheets of welded wire fabric mesh made of high strength galvanized wire of 2.5 mm to 3 mm dia. The panels are finished at the site using minimum 30 mm thick shotcrete of cement & coarse sand.



3. Glass Fibre Reinforced Gypsum (GFRG) Panel Building System

Glass Fibre Reinforced Gypsum (GFRG) Panel is made-up of calcined gypsum plaster reinforced with glass fibers which can be used as load bearing wall. GFRG panel can also be used advantageously as in-fills (non-load bearing) in combination with RCC framed columns and beams. The wall panels can be cut as per dimensions & requirements of the building planned.



4. Industrialized Precast RCC components Technology

The industrialized total prefab construction technology is based on factory made manufactured structural RCC cast components like beam, column, slab etc. which are assembled at site. All components and jointing of various structures are accomplished through on-site concreting along with secured embedded reinforcement of appropriate size, length and configuration to ensure monolithic continuous resilient, ductile and durable behaviour.



5. Factory Made Fast Track Modular Building System (Steel Structure)

Factory Made Fast Track Modular Building System comprises of prefabricated steel structure with different walling components. The steel modules are pre-fitted with flooring, ceiling tiles, electrical and plumbing fittings. The assembled steel modules are transported to the site for installation which is done using crane and other required machineries. Once all the components are assembled and erected at site, appropriate wall panels are fixed.



6. Prestressed precast hollow core slab, beam, column, solid wall system.

Pre-stressed precast RCC technology using hollow core slabs, beams, columns, solid walls, stairs etc. are designed and manufactured in factory, shipped and erected at site.

