

Pradhan Mantri Awas Yojana- Housing for All (Urban)

# Comprehensive Implementation Manual for Factory Made Fast Track Modular Building System

Project Proposal



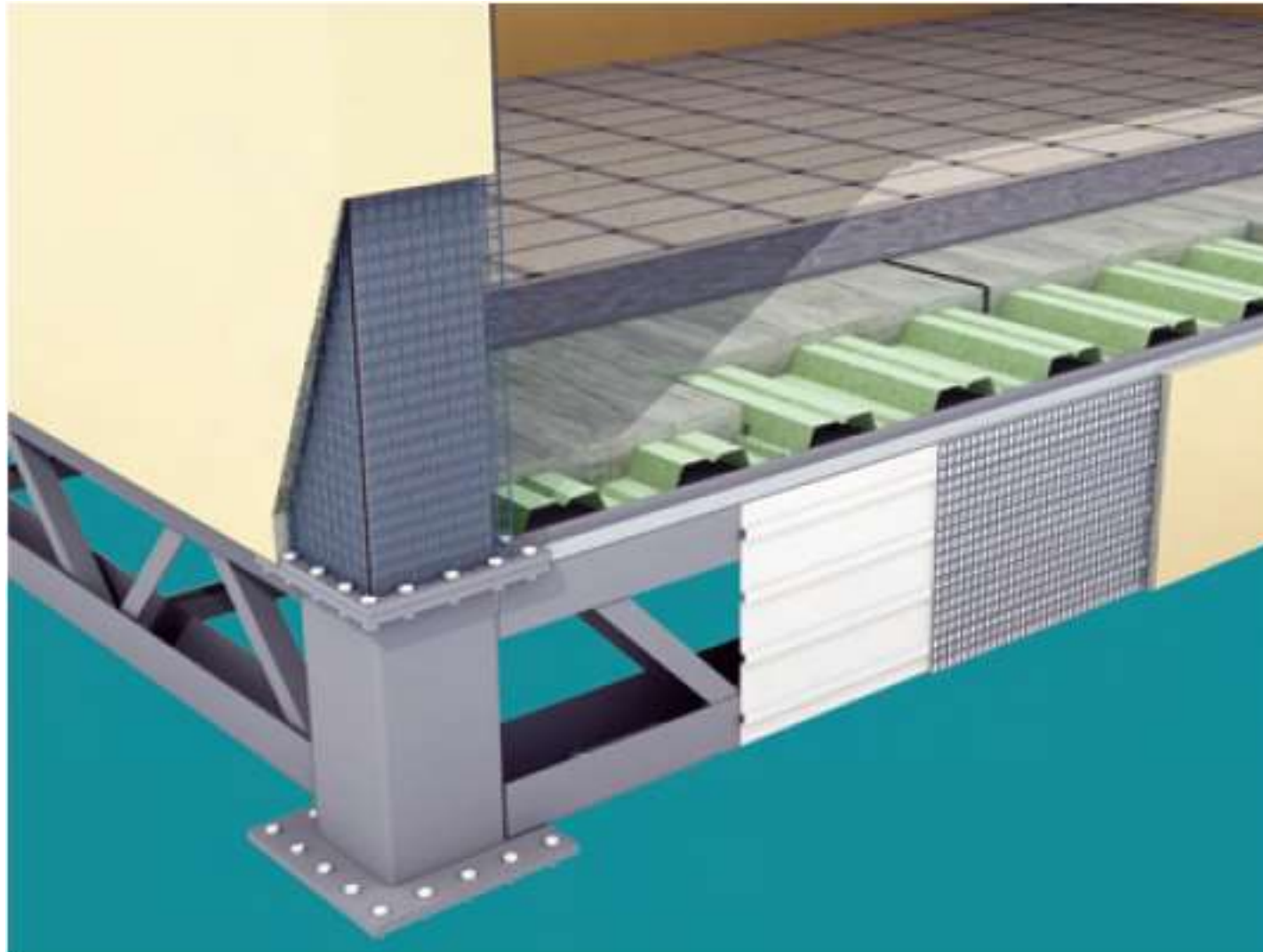
# Introduction

Factory Made Fast Track Modular Building System

# Eight Emerging Technologies (BMTPC)

- Monolithic Concrete Construction System using Plastic - Aluminium Formwork
- Monolithic Concrete Construction System using Aluminium Formwork
- Expanded Polystyrene Core Panel System
- Industrialized 3-S System using Precast RCC Columns, Beams & Cellular Light Weight Concrete Precast RCC Slabs
- Speed Floor System
- Glass Fibre Reinforced Gypsum (GFRG) Panel Building System
- **Factory Made Fast Track Modular Building System**
- Light Gauge Steel Framed Structures (LGSF)

# Factory Made Fast Track Modular Building System



# Factory Made Fast Track Modular Building System



# Goal and Objectives

Factory Made Fast Track Modular Building System

# Goal

- The goal of this project is to ***develop a detailed manual that provides the design, construction and costing details of the Factory Made Fast Track Modular Building System (PAC No. 1011-S/2013)***
- This project is in sync with the following specific objectives of the Technology Sub-Mission:
  - To identify, evaluate and adapt new emerging technologies for facilitating their speedy introduction in the states taking into consideration the diverse geo-climatic and hazard condition of the country.
  - To extend technical support, capacity building and hand holding to state Government by creating a pool of professionals and skilled manpower through association with technical institutes like IITs and NITs.
  - Provide support in planning and designing of housing projects for building affordable housing including technical documentation such as specifications, standards, manuals, etc.

# Objectives

- To accomplish these broad objectives of the Technology Sub-Mission and the goal of this project following specific project objectives are set for the project:
  - **Project Objective 1:** to review the documentation submitted for the PACS scheme for the Factory Made Fast Track Modular Building System (PAC No. 1011-S/2013);
  - **Project Objective 2:** to collect all data relevant to the design, construction and costing of Factory Made Fast Track Modular Building System from the technology provider;
  - **Project Objectives 3:** to visit construction/completed project to see the actual implementation and application of Factory Made Fast Track Modular Building System;
  - **Project Objective 4:** using the above information develop a comprehensive manual for the Factory Made Fast Track Modular Building System.







# Project Activities and Deliverables

Factory Made Fast Track Modular Building System

# Project Activities

- **Project Activity 1:** Collect and collate technical information from the PACS documentation for Factory Made Fast Track Modular Building System.
- **Project Activity 2:** Collect relevant data including design details, construction details, costing details and other pertinent information from the technology provider.
- **Project Activity 3:** Collect data from project site(s) including photographs, construction details, shop drawings, material requirements, labour deployment, equipment requirements, etc.
- **Project Activity 4:** Develop the manual with the following information:
  - Design details
  - Construction details
  - Schedule of items
  - Analysis of rates

# Schedule

<i>ID</i>	<i>Task Name</i>	<i>Duration</i>	<i>Q4 15</i>	<i>Q1 16</i>		
			<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>
1	Project Activity 1	15d				
2	Project Activity 2	60d				
3	Project Activity 3	45d				
4	Project Activity 4	30d				

# Deliverables

- **D1** Collated and compiled information for Factory Made Fast Track Modular Building System
- **D2** Final report with design details, construction details, schedule of items, and analysis of rates for the Factory Made Fast Track Modular Building System

# Scope of Work and Assumptions

Factory Made Fast Track Modular Building System

# Scope of Work and Assumptions

- The deliverables of this project are based on following scope of work and assumptions:
  - The project team in consultation with the HFA Mission Directorate and BMTPC will develop an outline of the final report
  - HFA Mission Directorate and BMTPC will provide support in receiving input from the technology provider
  - Secondary data and information available will be used for developing the final report
  - Designing, engineering or testing activities are not included in the scope of work

# Budget

Factory Made Fast Track Modular Building System

# Budget

	Item	BUDGET (in Rupees)
<b>A</b>	Recurring	
	1. Salaries/Wages	
	Sr. Project Engineer	₹ 1,75,000.00
	Project Associate	₹ 1,00,000.00
	Project Assistant	₹ 75,000.00
	<b>Subtotal</b>	<b>₹ 3,50,000.00</b>
	2. Contingency/Consumables/Stationery, Photocopying, Printing (workshop brochures etc.), postage, Telephone Charges etc.	₹ 62,500.00
	3. Travel (Including site visits, visit to manufacturers' locations etc.)	₹ 3,75,000.00
	4. Other Costs (Purchase of publications, books and codes)	₹ 1,25,000.00
	<b>Total Recurring (A)</b>	<b>₹ 9,12,500.00</b>
<b>B</b>	<b>Non-Consumables (Equipment)</b> (Computer accessories, such as a cameras, printer, scanner, mobile, etc.)	₹ 1,25,000.00
	<b>Total (A+B)</b>	<b>₹ 10,37,500.00</b>
<b>C</b>	Faculty Cost	₹ 4,00,000.00
	<b>Total (A+B+C)</b>	<b>₹ 14,37,500.00</b>
	Institute Overhead @20% (of A+B+C)	₹ 2,87,500.00
	<b>Grand Total</b>	<b>₹ 17,25,000.00</b>

1 The salary structure for the proposed staff is as per norms of RICS

# Excludes service tax and other statutory charges



September 2013

Procedure for the Investigation of Allegations of

## Research and Institutional Consultancy Misconduct



September 2013

## Code of Practice for the undertaking of Research and Consultancy



# Track Record

Factory Made Fast Track Modular Building System

# Multi-Attribute Evaluation Methodology for Selection of Emerging Housing Technologies



Ministry of Housing & Urban Poverty Alleviation  
Government of India

## Innovative Design Solutions for Affordable Housing – Housing for All with Public Spaces for All



Dr. Anil Sawhney\*  
Ph.D. FRICS

Good design plays a pivotal role in affordable housing; this idea has received significant attention that it deserves in the Housing for All (Urban) Scheme Guidelines in the form of a Technology Sub-mission that was launched in June of 2015. This Sub-Mission particularly encourages the utilization of efficient designing and planning for superior housing solutions that will fall within the parameters of this scheme. While the design and construction processes are important, it is the function, performance, end-user acceptance and satisfaction that is of even greater importance. However, this, in turn, makes the task of designing and constructing affordable housing even more challenging. While designing affordable housing, housing providers often have to address several important,

constraining and sometimes even conflicting requirements. Design must be viewed as a catalyst that can substantially improve the construction and use-phase of the building as shown in Fig.1.

A good affordable housing solution, in addition to addressing basic issues of design, must address the following parameters:

1. Social and cultural acceptance plays an important role in affordable housing. Current solutions sometimes carry the stigma that 'low-cost means low-quality'. Appropriate design can eradicate this stereotype. It is also mandatory that while designing affordable housing the providers acknowledge local cultural preferences.
2. 'Liveability' and end-user comfort must be addressed in a much more holistic manner. From the design of indoor spaces to the design of community areas, the interests of end-user must always be held in high regard. Community spaces and areas for social interaction must be interwoven carefully into the design solution. So-

cial cohesion and interaction are fostered when designing takes place while maintaining a perfect balance between human needs, environment and nature.

3. Affordable housing units must be adaptable and amenable to the idea of incremental housing. This is a must for the wholehearted acceptance of such housing by urban poor – especially the younger population of the country.
4. Energy efficiency and sustainability are an integral part of the design process. Passive and bio-climatic design can help in producing an optimal solution to the housing needs of the urban poor. Locally sourced materials and vernacular solutions must also be used. Sensitive adaptations of traditional vernacular building designs with an appropriate mix of modernistic solutions must also be explored.
5. Design must be such that it is easy to construct and with minimal waste. The end product must be easy to operate and maintain. Quite often, the

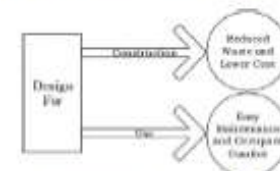


Fig.1: Role of Design in Construction and Use Phases

\* Associate Dean, Director & Professor of Construction, RICS School of Built Environment, AMITY University, Noida











*Roundtable Discussion on*  
***Drivers and Barriers to  
Affordable Housing Technologies  
and Systems in India***

***November 21, 2011***

*Department of Civil Engineering, IIT Delhi*

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IIT Delhi



Planning Commission  
Government of India

Construction Industry Development Council

Ministry of Statistics & Programme Implementation  
Government of India

# INTERNATIONAL CONFERENCE & EXHIBITION

30th January to 1st February 2013, New Delhi

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TATA Research & Development Centre - 14.06.2012

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- MoHUPA
- BMTPC