

DHP AT BHUBANESWAR, ODISHA

The Housing & Urban Development Department, Government of Odisha through Bhubaneswar Development Authority (BDA) allotted 0.43 acres land for construction of Demonstration Houses at Chandrashekharpur, Bhubaneswar, Odisha. The technology used is PREFABRICATED SANDWICH PANEL SYSTEM - Reinforced Expanded Polystyrene sheet core with sprayed concrete for wall & slab. The plan, sections, layout plan of Demonstration Housing Project were approved by Bhubaneswar Development Authority (BDA). BMTPC has completed construction of 32 Demonstration Houses (G+3).

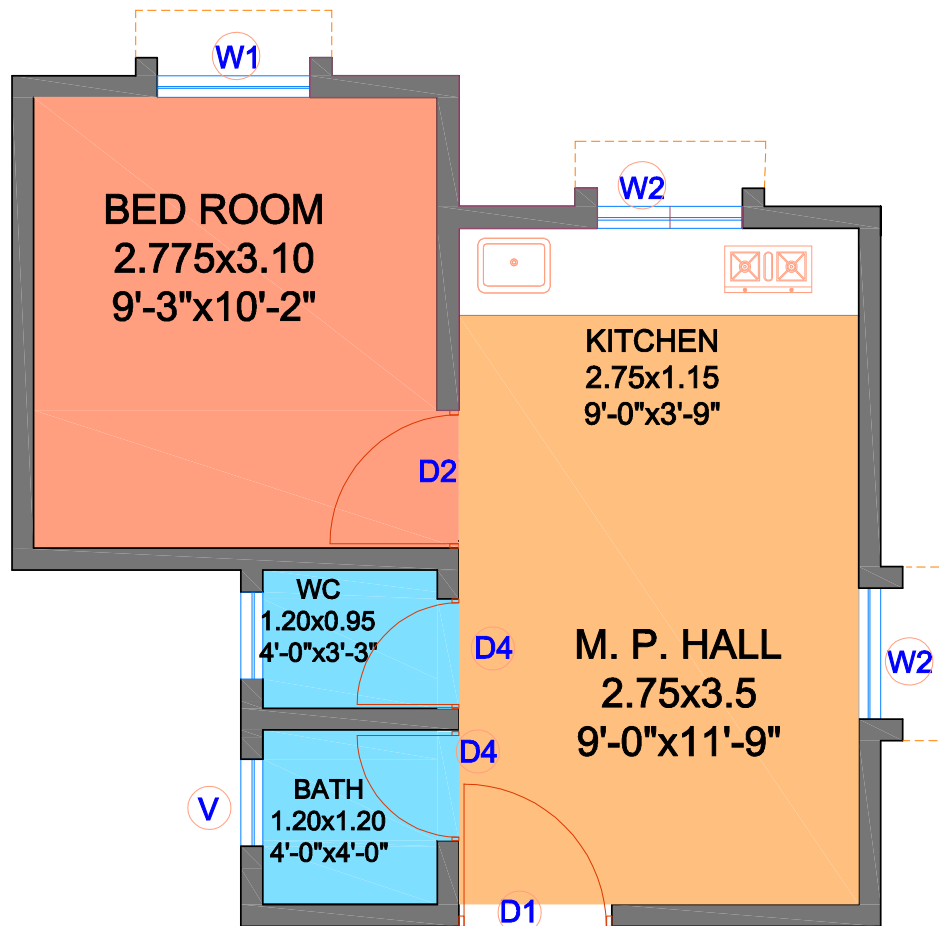
Besides Pradhan Mantri Awas Yojana (Urban), the other Partnering & Funding agencies for the project were Department For International Development (DFID) & National Housing Bank (NHB). DFID and NHB are working on "Making affordable housing market work for faster & sustained economic growth" in eight identified low income States in India and one of the strategies is to test innovative technologies and approaches for Green construction. Under this strategy, NHB and DFID have become partners with BMTPC in Demonstration Housing Project implemented in Odisha and provided partial financial support.



Layout Plan



Typical Floor Plan



Unit Plan

Project Profile

- Location: Chandrashekharapur, Bhubaneswar, Odisha
- State Level Nodal Agency : Housing & Urban Development Department, Government of Odisha
- Land Allotted by: Bhubaneswar Development Authority (BDA)
- Usage : PMAY(U) Beneficiaries
- Plot area of project : 1023 sqm.
- No. of houses : 32 (G+3)
- Carpet area of each unit : 23.97 sqm.
- Built up area of each unit : 34.10 sqm.
- Total built up area : 1095 sqm.
- Technology Used: PREFABRICATED SANDWICH PANEL SYSTEM - Reinforced Expanded Polystyrene sheet core with sprayed concrete
- Each Unit consists of One living room, one bedroom, cooking space, Bath and WC.
- Includes Earthquake Resistant Features.
- Infrastructure facilities : Pathways with concrete pavers, boundary wall, water supply work, horticulture work, UGT, septic tank, drainage & disposal and external electrification using solar panels, rain water harvesting, etc.
- Year of completion : December 2017
- Cost per sqft. without infrastructure : Rs.1442
- Cost per sqft. with infrastructure : Rs.1494



About the Technology

Expanded Polystyrene (EPS) core Panel system is a modern, efficient, safe and economic construction system for the construction of buildings. These panels can be used both as load bearing as well as non-load bearing elements. The light weight panels have a sandwich construction with expanded polystyrene as core and self-compacting concrete skins.

The EPS panels consist of a 3-dimensional welded wire space frame utilizing a truss concept for stress transfer and stiffness. EPS panel includes welded reinforcing meshes of high-strength wire, diagonal wire and self-extinguishing expanded polystyrene uncoated concrete, manufactured in the factory and shotcrete is applied to the panel assembled at the construction site, which gives the load bearing capacity to the structure.

EPS panels after shotcrete have the following five components:

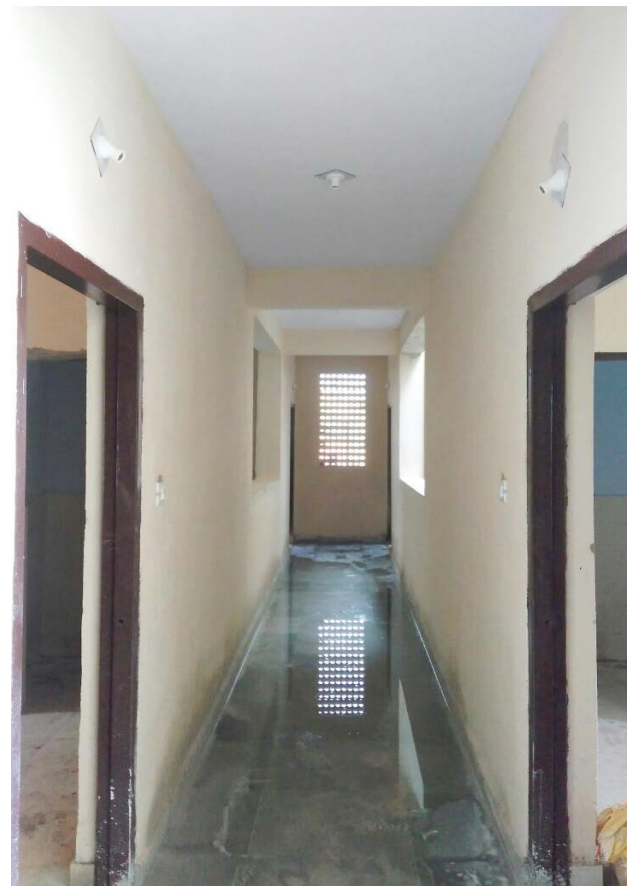
- The outer layer of shotcrete,
- Welded reinforcing mesh of high tension GI wire
- The core of expanded polystyrene sheet
- Diagonal wire (stainless or galvanized wire)
- The inner layer of shotcrete.

In this project, EPS panel have been used as infill panels in RCC framed structure. The thickness of EPS panel is 80mm and 40mm shotcreting/plaster on both side of wall.

Technologies/Specifications for Demonstration Houses

Foundation

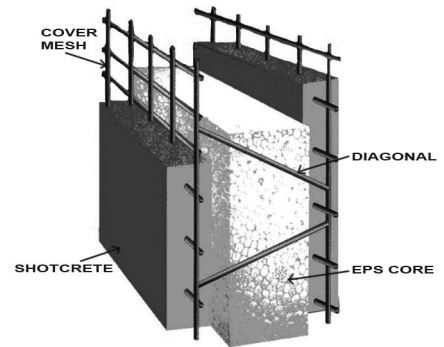
- Isolated Column foundation



Structural System

- RCC framed structure
- Expanded Polystyrene Core Panel System with Sprayed Concrete Structural Plaster for wall/slab/roof

3D CROSS SECTION OF PANEL



Door frames & Doors

- Pressed Steel Door Frame with flush door shutter
- PVC door frame & shutter in toilet

Window frames

- MS Section window frame with guard rail and glazed shutter

Flooring

- Ceramic tile flooring in rooms
- Ceramic tile flooring in WC & Bath
- Kota stone flooring in passage and stair-case



Kitchen Counter

- RCC cooking counter top with marble



Wall finishes

- Oil bound distemper on internal walls
- Weather resistant paint on external walls

Others

- Common area and outside building lighting with solar panels
- Pathways with concrete pavers

The structural design of the DHP has been vetted by NIT Warangal and technical evaluation of the project was carried out by School of Planning & Architecture, New Delhi.

