



## Celebration of World Habitat Day 2013

As a part of the World Habitat Day Celebrations 2013, BMTPC organised Painting Competition for Differently Abled Children on the theme "Urban Mobility" in the categories viz. Mentally Challenged, Hearing Impaired and Visually Impaired. The winners were facilitated during the World Habitat Day Celebration Function in New Delhi on 7<sup>th</sup> October, 2013. The publications which were also brought out to mark the occasion are (i) Special Issue of Newsletter "Nirman Sarika", (ii) Propagation of Cost Effective and Disaster Resistant Technologies through Demonstration Construction, (iii) Disaster Mitigation and Management – Initiatives by BMTPC, and (iv) Methodology for Documenting Seismic Safety of Housing Typologies in India.



## Performance Appraisal Certification Scheme (PACS)

Performance Appraisal Certification Scheme (PACS) being operated by BMTPC, is a third party voluntary scheme for providing Performance Appraisal Certificate (PAC) to manufacturers or installers of a product which includes building materials, products, components, elements and systems etc. after due process of assessment. Since the Scheme is operated for the products/systems where no relevant Indian Standards are available, it is required to first work out the desired specifications for Performance Appraisal.

Technical Assessment Committee (TAC) constituted for the purpose of approval of Performance Appraisal Certificate (PAC) for the various products/systems in its meeting held on 22<sup>nd</sup> November, 2013 has approved issue of PACs for 4 new products/systems namely Advanced Building System (EMMEDUE), Factory Made Modular Building System (Synergy Thrislington), Fluorogypsum Anhydrite Binder and Kooltile. TAC in the said meeting also approved the renewal of PACs for 5 products/systems namely Continuous Sandwich Panel, Marshal Door, FRP Manhole, Polyethylene Underground Septic Tank and Glass Fibre Reinforced Gypsum Building (Rapid wall) System. Further, 5 fresh applications for the systems namely Speed Floor, Light Gauge Steel Structure, Tunnel Forms (Formwork/Shuttering), Concrewall Panels and Quickbuild 3D Panels for issue of PAC have been received from various agencies.



For further details, please contact:

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### From the Desk of the Executive Director

My initiative to start a quarterly newsletter of BMTPC is completing its second year and indeed it is very gratifying moment for me. Writing newsletter gives us the opportunity to look back on our activities and at the same time do introspection so as to improve and work more effectively in days to come.

BMTPC in its effort to put forth cost effective and emerging technologies for the housing is going forward and now a few progressive states are indeed keen to adopt and adapt these construction systems in their future projects of social mass housing. However, the road ahead is difficult one as most of the time these new systems are not able to compete with conventional RCC system for the want of specifications, Indian standards and schedule of rates. Also, being no presence in India, the rates quoted by them are based on certain presumptions.

BMTPC recently started working in this direction and trying to develop SORs and specifications for these new systems. We would also be approaching national and state agencies for their possible inclusion in respective SORs. We are also preparing the detailed technology profiles of new emerging systems so that user agencies can get first-hand information about the new upcoming construction systems.

Any suggestions and cooperation in this direction would be welcome.

  
(Dr. Shailesh Kr. Agrawal)

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## BMTPC's Participation in India International Trade Fair, Pragati Maidan, New Delhi from 14-27 November, 2013

BMTPC participated in HUDCO BuildTech 2013 and put up an exhibition on Alternate and Emerging Building Materials and Construction Systems by hiring a space of 271 sqmt. during India International Trade Fair (IITF) from 14-27 November, 2013 at Pragati Maidan, New Delhi. BMTPC exhibition included participation by thirteen technology providers/ companies in the area of emerging housing technologies by putting up the display within the BMTPC area. These companies displayed various details of products, plants and machineries for light weight synthetic aggregates, Fly ash based building products, fast and pre-fabricated housing technologies, alternative in cements & water proofing materials, stabilized mud & cement based housing technology and environment friendly bio-digester. Having wide range of products and housing technologies for individual houses to mass housing solutions, the exhibitions attracted large number of visitors.



## Construction of Demonstration House for Promotion of Alternate Housing Technologies during IITF 2013

To display the cost effective, alternate and disaster resistant technologies for general public, BMTPC constructed a demonstration house for display at HUDCO BuidTech 2013 during India International Trade Fair at Pragati Maidan from 14-27 November, 2013. The Demonstration Unit having plinth area of 33.15 sqm. consisted of two habitable rooms, kitchen, combined bath & toilet and front and rear court yard with various cost effective and alternate technologies such as Rat-Trap Bond in Flyash Bricks, Cellular Light-weight Concrete Blocks, Hollow Concrete Blocks, Fly Ash Interlocking Blocks, RB slab with Bricks, Filler slab with earthen Pots and Bricks, MCR Tile Roofing, Precast RC Planks and Joists, Bamboo Mat Corrugated Roofing Sheets, Bamboo mat door, Ferro cement Shelves, Sunshades, Kitchen Slab, etc. as well as Earthquake/Cyclone Resistant features.



## Alternate Building Materials & Technologies

### Bamboo Mat Corrugated Roofing Sheets

Bamboo Mat Corrugated Sheet (BMCS) is a roofing sheet made up of adhesive soaked and coated mats assembled and pressed under specified temperature and pressure to obtain sinusoidal or other suitable corrugations. Bamboo Mat Corrugated Sheets (BMCS) are eco-friendly, energy efficient and cost-effective roofing sheets and are alternative to CGI, ACC Sheets.

**Dimensions and Tolerances:** The sheets shall conform to the dimensions and tolerances given in the Table below:

Length (mm)	Width (mm)	Thickness (mm)	Depth of corrugation (D) (mm)	Pitch of Corrugation (P) (mm)
1800	1050	3.8	30	120
2140	1050	3.8	30	120
2440	1050	3.8	30	120
Tolerances				
± 10 mm	± 10 mm	± 10 %	+ 2 mm - 0 mm	± 2 mm

**Required Materials:** Bamboo, Bamboo Mats, Prophylactic Treatment, Adhesive, Preservative.

Indian Standard : IS 15476:2004.

### Initiatives in North Eastern Region

BMTPC has been actively involved in developing bamboo based technologies and promoting these technologies in the North Eastern Region and other bamboo growing areas, by setting up of Bamboo Mat Production Centres for processing of bamboo, encouraging commercial production of bamboo products, construction of demonstration houses etc. The Council is also engaged in providing training to the local artisans in processing of bamboo.



## Emerging Technologies for Building Construction

### GFRG / Rapidwall Building System Technology

The Glass Fibre Reinforced Gypsum (GFRG) Panel System, commonly known as Rapidwall, is an alternate technology for construction of buildings originally developed and being in use for last two decades in Australia. The panels are manufactured in semi-automatic machine using phosphogypsum – an industrial waste from fertilizer plants and glass fibre rovings. GFRG panels are manufactured to a thickness of 124 mm under carefully controlled conditions to a length of 12 m and a height of 3 m. The panel can be cut to required size. The technology has been evaluated by BMTPC under its Performance Appraisal Certification Scheme (PACS). The evaluation of the system is based on various tests performed on the panels. The panels, due to unique configuration and materials have properties different than normal conventional construction. Besides Australia and China, the materials properties, strength and behavior of these panels have been studied in India at IIT Madras.

**Salient Features:** Substantial reduction in the structural weight of the building, no plastering requirement for walls and ceiling, increased speed of construction with less manpower, saving of cement, steel, river sand, burnt clay bricks / concrete blocks and hence saving of energy and reduced CO<sub>2</sub> emissions, contributing to environment protection and mitigate climate change, use of reprocessed/recycled industrial byproducts, waste gypsum.



## Skill Development and Capacity Building

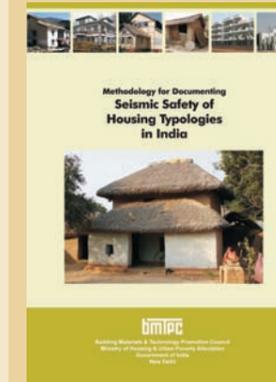
### Training Programme on Building with Bamboo at Shillong, Meghalaya from 2 – 4 December 2013

The Council organised a Training Programme on Building with Bamboo at Shillong, Meghalaya from 2 – 4 December 2013 jointly with Forest Department, Government of Meghalaya and South Asia Bamboo Foundation (SABF). During the programme training were provided to 30 participants. A Bamboo Gazebo was constructed by the participants under the guidance of master crafts mason in Shillong as part of practical training.



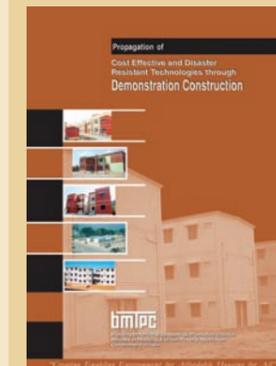
## Recent Publications

### METHODOLOGY FOR DOCUMENTING SEISMIC SAFETY OF HOUSING TYPOLOGIES IN INDIA



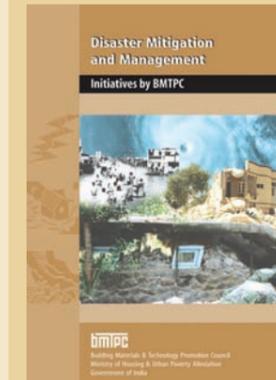
This document describes housing sub-typologies practiced in seismic zones in seven locations in moderate to severe seismic zones in India. With description of an 'Ideal House' of the typology in focus, it identifies deficiencies of the existing houses from seismic safety point of views and also represents a methodology for undertaking technical documentation of housing typologies on a larger scale.

### PROPAGATION OF COST EFFECTIVE AND DISASTER RESISTANT TECHNOLOGIES THROUGH DEMONSTRATION CONSTRUCTION



In order to demonstrate the cost effective and disaster resistant technologies, BMTPC constructed demonstration houses and structures throughout India. This publication depicts the demonstration housing projects undertaken by BMTPC in various parts of the country.

### DISASTER MITIGATION AND MANAGEMENT – INITIATIVES BY BMTPC



BMTPC is continuously striving to establish the proactive approach towards disaster mitigation and management and has been in the forefront in educating and creating mass awareness amongst stakeholder and the common man. This publication brought out the various initiatives taken by BMTPC in the area of disaster mitigation and management.