



## Celebration of World Habitat Day 2014

As a part of the World Habitat Day Celebrations 2014, BMTPC organised Painting Competition for Differently Abled Children on the theme "Voices from Slums" 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 9<sup>th</sup> October, 2014. The publications brought out to mark the occasion are (i) Special Issue of Newsletter "Nirman Sarika", (ii) Building Artisan Certification System, and (iii) Rapid Visual Screening of Buildings of Masonry and Reinforced Concrete as prevalent in India. The publications were released by Shri M.Venkaiah Naidu, Hon'ble Minister of Housing & Urban Poverty Alleviation, Urban Development and Parliamentary Affairs during the World Habitat Day function.



## BMTPC's Participation in India International Trade Fair, Pragati Maidan, New Delhi from 14-27 November, 2014

BMTPC participated in HUDCO BuildTech 2014 and put up exhibition on Alternate and Emerging Building Materials and Construction Systems during India International Trade Fair from 14-27 November, 2014 at Pragati Maidan, New Delhi. BMTPC exhibition included participation by six technology providers/ companies in the area of emerging housing technologies by putting up the display within the BMTPC area. Having wide range of products and housing technologies for individual houses to mass housing solutions, the exhibitions attracted large number of visitors.



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### From the Desk of the Executive Director

Being the last edition for the year 2014, I would like to show my gratitude to all our readers who are being connected through this newsletter. While writing this section, I also learn a lot as each time, I need to bring upon a new aspect of alternate technologies & building materials. In this column, I would like to bring to your kind attention that it is now high time, when we use materials & systems which have less dependence on natural resources, use less water, based on renewable resources & waste products, less dependence on fossil fuel, conserve energy & environment. Think of alternate material & construction system while conceiving, planning & implementing the new construction project and if you can touch upon even a single aspect, I discussed in the preceding line; you would be helping in great deal towards sustainable development. It is not that these alternatives are not available, only thing is, it is in our mindset to use conventional systems and materials such as bricks & concrete. I recommend my readers to go through a draft new chapter being added in National Building Code of India - 2005 as Part 11: Approach to sustainability. It dwells upon all aspects of sustainability in construction and a must read for professional fraternity. It is time now for construction sector to adapt to changing scenario of climate & energy.

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## Workshop on Emerging Building Materials and Construction Technologies, Hyderabad

BMTPC in association with Andhra Pradesh State Housing Corporation Limited organized one day Workshop on Emerging Building Materials and Construction Technologies on October 11, 2014 at Hyderabad. The aim of the workshop was to present Indian and global perspective on emerging technologies and to disseminate up-to-date information, knowledge and experience on design, production, certification and application of alternate building materials and to promote and encourage adoption of emerging technologies for mass housing by various construction agencies. Around 150 engineers of Andhra Pradesh and Telangana State Housing Corporations participated in the Workshop. Ten Technology Providers presented their technologies and building system and interacted with the engineers as well as other stake holders so as to get the feed back and understand the aspirations of the masses as regards quality housing is concerned.



## Second Indo-Norwegian Training Programme on "Seismic Design of Multi-storey Buildings: IS 1893 vs. Eurocode 8"

As per its mandate, BMTPC has always been in the forefront in educating and creating mass awareness amongst common men and professionals through training courses, symposia, conferences and publishing manuals, Guidelines, brochures, etc. for improving Earthquake and Cyclone/Wind Resistance of Housing in collaboration with various technical and academic institutions.

In line with the above, a three days Indo-Norwegian Training Programme "Seismic Design of Multi-storey Buildings: IS 1893 vs. Eurocode 8" from 13-15 October, 2014 was organized by BMTPC jointly with Indian Institute of Technology, Roorkee(IIT Roorkee) and NORSAR, Norway at New Delhi. The programme was attended by around 100 participants mainly structural engineers from different parts of the country.





## Alternate Building Materials & Technologies

### Filler Slabs

Floor and roof construction using filler material / blocks in the bottom part of the slab, replacing unwanted concrete from tension zone, is termed as filler slab. This technique of construction is advantageous over the conventional type of reinforced cement concrete solid slab. This technique involves placing of filler material/block at suitable spacing between the reinforcement grid and then remaining portion of the slab is concreted.

This type of slab construction is lighter in weight, provides better sound and thermal insulation with equal durability as a conventional solid RCC slab. It does also decrease the dead load on all the supporting structural members and thus onto the foundations. It does require skilled manpower for construction of a filler slab. The construction of floor and roof with filler blocks is simple, time tested and ensures speed in construction. For the support of the slab, simple shuttering is adequate.

This type of floor should be used with caution and adequate additional checks; where the floor is likely to be subjected to heavy impact load and vibrations. The filler block may be selected as per local availability. Some examples of filler materials are Mangalore tiles, Hollow concrete block, Burnt clay bricks/pots, Stabilised mud blocks or any locally available inert material fulfilling the properties.

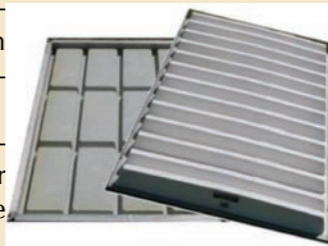


## Emerging Technologies for Building Construction

### Waffle-Crete System

Waffle-crete portable precast building system provides a way to construct durable and long-lasting concrete buildings more quickly, easily and economically than with other systems. The Waffle-Crete system consists of the following core elements:

- Lightweight insulated precast concrete molds
- Insulated curing covers that are used in conjunction with Waffle-Crete molds
- Specialized equipment designed for use with Waffle-Crete molds and covers
- A construction methodology for casting and erecting reinforced concrete panels with Waffle-Crete molds and equipment



The Waffle-Crete system offers the following key benefits:

- Reduce the amount of concrete and steel reinforcement by upto 50% (compared to panels of the same thickness) without compromising structural strength
- Reduce construction time by upto 2/3 when compared to tradition solid concrete and concrete block systems
- Utilize unskilled labour to perform the majority of casting and erection tasks.

Concrete panels cast in Waffle-Crete moulds and then covered with a Waffle-Crete curing cover which can be removed from the mould and erected after 12 hours. This is possible because much of the heat that is produced by curing cement is retrained by Waffle-Crete mould design, which helps to accelerate the curing process. Water vapour is also held in, which minimizes the risk of shrinkage cracks in the surface of the concrete typically caused by evaporation during curing.

Portable equipment that can be set up in a plant or on-site, and mould that are self-curing, assure a consistent quality product using unskilled labour with minimal supervision in almost any location. Modular panels and bolted connections speed the erection process and reduce construction time. The system can be utilized for a variety of structural applications. A good working knowledge of the Waffle-Crete system is essential to the success of a project.

## Skill Development and Capacity Building

### Training Programme on Bamboo Structures for Housing and Construction

The Council organised a Training Programme on Bamboo Structures for Housing and Construction at Haflong, Assam from 29<sup>th</sup> October to 1<sup>st</sup> November, 2014 jointly with Dima Hasao Forest Department, Government of Assam. During the programme, training were provided to 20 participants. During the training programme a Bamboo Toilet was constructed by the participants under the guidance of master crafts mason in Haflong for practical training.

Apart from this, the Council in association with Kerala State Bamboo Mission and Auroville Bamboo Centre & South Asian Bamboo Foundation also organised a training programme on construction of bamboo toilets for private and community during Kerala Bamboo Fest 2014 at Kochi from 1-5 December, 2014. During the programme training were provided to 44 participants. A Bamboo Toilet was constructed by the participants under the guidance of master crafts mason for practical training.



Step-by-Step Construction of Traditional Bamboo Toilet



### Training of Trainers (TOT) Programme on Earthquake Resistant Design & Construction for State Engineers and Architects

The Bihar Institute of Public Administration and Rural Development (BIPARD), Government of Bihar at the behest of the Bihar State Disaster Management Authority requested BMTPC's assistance in conducting Training of Trainers (TOTs) on Earthquake Resistant Design and Construction. In order to impart training, standardised Resource material for Training of Engineers, Architects and Contractors & Builders in earthquake resistant design and construction in the form of a book entitled "Design & Construction of Earthquake Resistant Structures : A Practical Treatise for Engineers & Architects" was published.

The series of Training of Trainers (TOTs) Programme was kick started by organisation of Sensitization Programme on "Earthquake Resistant Design and Construction" jointly with IIT Roorkee on 15<sup>th</sup> January, 2013 at Patna. Around 110 participants from various departments of the State Government of Bihar ranging from Executive Engineers to Chief Engineers and other senior level officers and decision makers participated in the Sensitization Programme.

So far eleven batches of Training of Trainers (TOT) programme for engineers have been organised at Patna. The resource persons are from IIT Roorkee, IIT Mumbai, NIT Patna, BMTPC including other experts in the field. At the end of training of each batch, evaluation of trainees has also been conducted through examination.