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निर्माण सारिका

A Newsletter of BMTPC

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BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL

Ministry of Housing & Urban Poverty Alleviation, Government of India

भाग 2, अंक 2 अप्रैल – जून 2013, नई दिल्ली Vol.2, Issue 2, April - June 2013, New Delhi

Training Programme on Building with Bamboo at Imphal, Manipur

The Council organised a Training Programme on Building with Bamboo at Impal, Manipur from 26 - 29 June 2013 jointly with Manipur State Bamboo Mission, Forest Department, Government of Manipur and South Asia Bamboo Foundation (SABF). The main objectives of the training programme encompasses • Spreading awareness about Bamboo and its importance for sustainable development • Creating human resources in the field of construction • Providing exposure of the trainees to the practical application sites and the various techniques of the construction involved, and • Promotion of bamboo Entrepreneurs throughout the region.

During the Training Programme, a Bamboo Gazebo was constructed by the participants under the guidance of master crafts mason at Kangla fort, Imphal for practical training. The outcome of the programme is to develop and promote bamboo housing in Manipur particularly in low cost housing, eco tourism, IAY, community centres, schools, etc. The Gazebo was handed over to Deptt. of Arts & Culture, Govt. of Manipur, Imphal. This Training Programme was attended by 25 participants from the region.

Bamboo Gazebo at Kangla, Imphal

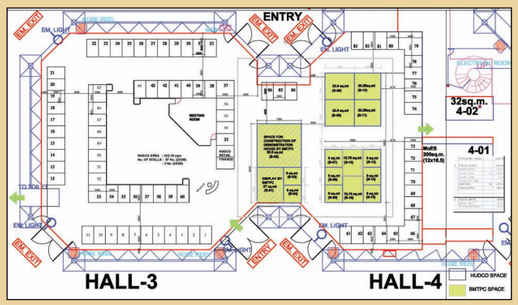
Forthcoming event...

BMTPC's Display in HUDCO BUILD TECH 2013 during India International Trade Fair from 14 - 27 November, 2013 at Pragati Maidan, New Delhi

BMTPC has been working towards smooth transfer of cost effective, energy-efficient, environment-friendly and disaster resistant building materials and construction technologies from lab to land since inception. Like previous years, BMTPC is joining hands with Housing & Urban Development Corporation (HUDCO) for the organisation of HUDCO Build Tech 2013 during India International Trade Fair (IITF) from 14 - 27 November, 2013 at Pragati Maidan, New Delhi at Hall No.4. The theme of the BMTPC's Pavilion would be "Appropriate Building Materials and Construction Technologies". The main attraction of the BMTPC Display would be the demonstration of proven cost effective technologies as well as emerging housing technologies from India as well as abroad.

Exhibitor's Profile:

- Prefabricated Housing System
- Bricks, Blocks, Ferro-cement Building Components
- Monolithic Concrete Construction Technology
- Prefabricated Panels
- Biodigester Toilets
- Bamboo based Technologies
- Technologies for Mass Housing
- Housing Projects using Alternate Technologies
- Equipment and Machinery
- New and Emerging Building Materials & Products
- Water Proofing



Layout of HUDCO Build Tech 2013

For Space booking or any clarifications & queries, please contact Shri Sharad Kumar Gupta, Dy. Chief (TDE&IC), Email: guptaksharad@gmail.com (Mob:09899006567) and Dr. Amit Rai, Dy. Chief, Email: raiamit@hotmail.com (Mob: 09899572300).

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From the Desk of the Executive Director

In the backdrop of tragedy that struck Uttarakhand in mid of June 2013, it is opportune time to introspect the way we keep constructing using concrete especially in the hilly region where nature has bestowed us innumerable alternative materials to build with. BMTPC, since its inception has been promoting use of local material & skills for different geo-climatic regions of India. The use of local materials coupled with modern know-how would not only help reduce the impact of these disasters of large scale but also help in preserving the ecology of the region. These construction practices have very less carbon footprint and production can be done at decentralized locations by the local people with little training.

The concept of building centres given by Govt. of India revolves around local materials & skills only, but of late, majority of these building centres are in dormant stage. Now, again efforts are being made to rejuvenate them so that these centres can act as nodal agencies to promote good construction practices. The building centres can also play a major role after any disaster for reconstruction work. The example of Bhuj earthquake is in front of all of us. BMTPC at present is undertaking pilot studies for Rejuvenation and Strengthening of the National Network of Building Centres and looking forward to evolve a business model for ailing Building Centres.

Any suggestion in this direction is welcome.

(Dr. Shailesh Kr. Agrawal)

Published by:

Building Materials & Technology Promotion Council, New Delhi

Brain Storming Session for Identification of Possible Areas of Cooperation with R&D Institutions

BMTPC has been working in the field of development and promotion of appropriate technologies from lab to field, disaster resistant technologies, capacity and skill development for more than last two decades. A number of building materials and technologies have been developed, standardized and are being used in the field with success over the years. With the field experience of use of some of the known technologies, it has been felt that there is a need to take stock of current knowledge so as to bring further improvement. Also, there is a need to identify areas of plausible Research and Development in cost effective, environment friendly & energy efficient building materials and construction technologies for sustainable housing.

With the above backdrop, one day Brain Storming Session for Identification of Possible Areas of Cooperation on Alternate and Emerging Housing Technologies with R&D Institutions was organized by the Council on 12th June, 2013 at New Delhi. About 40 participants from various academic and R&D organizations, Technology/System providers participated in the Brain Storming Session.

Visit of Technical Team for Post-flood Reconstruction and Rehabilitation Work in Uttarakhand

A Team comprising of the officials of Ministry of Housing & Urban Poverty Alleviation along with technical officials of HUDCO, BMTPC & HPL led by Shri D.S. Negi, PS to Hon'ble Minister HUPA, OSD - JNNURM & RAY and Director - NBO, visited Dehradun on 6th and 7th July 2013 to extend help and support for rehabilitation and restoration activities being undertaken by Uttarakhand Government. The team also met the Chief Minister, Government of Uttarakhand in Dehradun in the wake of flash floods occurred in the region. As per preliminary assessment report, 238 villages has been severely affected and more than 5000 houses have been damaged during the disaster. The Ministry of HUPA has decided to provide financial help to Uttarakhand Government to the maximum extent possible and also technical support for reconstruction and rehabilitation work in disaster affected areas of the State through construction of demonstration houses and imparting training to the artisans and capacity building of Engineers/Architects of the Urban Local Bodies.

Alternate Building Materials & Technologies

Solid and Hollow Concrete Block

Precast solid/hollow cement concrete blocks are used as masonry units for walls. The blocks are made to required shape and size to fit the different construction need. They include stretcher, corner, double corner or pier, jamb, header, bull nose, and partition block, and concrete floor units.

- Hollow (open and closed cavity) load bearing concrete blocks (Grade A–Min. Density 1500 kg/m^3).
- Hollow (open and closed cavity) non-load bearing concrete blocks (Grade B–Density 1100 to 1500 kg/m^3)
- Solid load-bearing concrete blocks and non-load bearing concrete blocks (Grade C–Density not less than 1800 kg/m^3)

Size of Concrete Blocks (Open and Closed Cavity):
Length: 400, 500 or 600 mm
Height: 200 or 100 mm
Width: 50, 75, 100, 150, 200, 250 or 300 mm.

Material to be used for production:
A well-graded concrete mix made of cement, aggregate, flyash, chemical admixture of appropriate type and grade and water are used for manufacturing of block.

Manufacturing process: Manufacturing can be done either manually using steel mould and vibrator or mechanically. The process involves batching and mixing of ingredients, casting, demoulding, water curing and drying.

Physical properties of blocks

- Compressive strength (28 days):

Type	Grade	Density of block	Min. average compressive strength of units	Min. compressive strength of individual units
		kg/m^3	N/mm^2	N/mm^2
Hollow (open and closed cavity) load bearing unit	A(3.5)	Not less than 1500	3.5	2.8
	A(15.0)		15.0	12.0
	B(3.5)	Less than 1500 but not less than 1100	3.5	2.8
Solid load bearing unit	C(4.0)	Not less than 1800	4.0	3.2

- Water absorption not greater than 10%
- Drying shrinkage not greater than 0.06%
- Moisture movement not greater than 0.09%

Referred Standard - IS 2185 (Part-1):2005.

Emerging Technologies for Building Construction

Industrialized 3-S System using Cellular Light Weight Concrete Slabs & Precast Columns

The industrialised total open prefab construction technology is based on factory mass manufactured structural prefab components conforming to norms of relevant IS standards and BIS certification mark, wherever applicable. In this system, dense concrete hollow column shell of appropriate size are used in combination with precast lightweight reinforced autoclaved cellular concrete slabs for floors and roofs.

The hollow columns are grouted with appropriate grade of in-situ concrete. All the connections and jointing of various structures are accomplished through in situ concreting along with secured embedded reinforcement of appropriate size, length and configuration to ensure monolithic continuous resilient ductile behaviour.

Materials used:

Concrete, Cellular light weight concrete Slabs, Precast column

Specification:

As per relevant Indian Standards; IS 2185-Part 3 specification for autoclaved cellular concrete blocks, IS 6041 construction of autoclaved cellular concrete block masonry, IS 6072 autoclaved reinforced cellular concrete wall slab, IS 6073 autoclaved reinforced cellular concrete floors and roof slab.

Skill Development and Capacity Building

Training Module and Certification System for Construction Workers

BMTPC initiated the project for evolving a system for certification modules for existing building artisans. The initiative was jointly taken up with the support of NCPDP and titled as "Evolving Building Artisan Certification Program at National Level". After undertaking benchmark survey of the existing building artisans, construction labourers and contractors, the certificate curriculum, the training curriculum as well as the candidate assessment method have been evolved. The certification modules prepared are : • Assistant Mason certificate, • Mason certificate, • Disaster resistant construction certificate, • RC construction certificate, • Concreting certificate, • Bar bender certificate, • Repairs of masonry and RC elements in masonry building certificate, • Appropriate building materials and construction systems certificate.

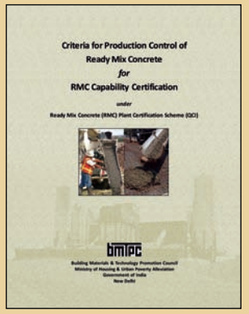
Training Programme for Masons on Cost Effective Housing Technologies at Rae Bareli, U.P.

The Council initiated construction of Demonstration Houses at Barwaripur, Rae Bareli, Uttar Pradesh, which consists of 24 dwelling units (G+1) having each unit with plinth area of 32 sqm consisting of one living room, one bedroom, kitchen, one separate bath and WC. The construction of second floor has reached upto lintel level.

The project is a live example of field level application of cost effective building materials and disaster resistant technologies in the region. As the demonstration project evinced interest amongst local people regarding technologies being used in the project, the Council organised a Training Programme for 22 Masons on Cost Effective Housing Technologies on April 21-22, 2013.

Recent Publications

CRITERIA OF PRODUCTION CONTROL OF READY MIXED CONCRETE FOR RMC CAPABILITY CERTIFICATE

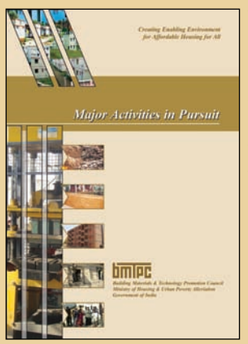


BMTPC jointly with Quality Council of India (QCI) & Ready Mixed Concrete Plant Manufacture's Associations (RMCMA) prepared the Criteria of Production Control of Ready Mixed Concrete for RMC Capability Certificate. The document provides the basic criteria on which QCI has initiated the certification of RMC plants in order to maintain desired quality and standard of RMC plants.

EXPLANATORY HANDBOOK ON PERFORMANCE APPRAISAL CERTIFICATION SCHEME (PACS)

The Explanatory Handbook on Performance Appraisal Certification Scheme (PACS) brought out by BMTPC elaborates all the aspects of PACS and dispels the various doubts about the Scheme for the benefit of prospective applicants. PACS is a third party operated voluntary scheme for providing PAC to a manufacturer/supplier of a product which includes building materials, products, components, elements and system etc. after due process of assessment.

MAJOR ACTIVITIES IN PURSUIT



The Council has prepared the brochure on Major Activities in Pursuit so as to present various activities of the Council during last 5 to 6 years in pictorial form. BMTPC in line with the mandate given, works in areas such as Technology Development & Promotion, Emerging Technologies, Demonstration Construction, Disaster Mitigation, Bamboo in Construction, Information Dissemination, Skill Upgradation, JNNURM & RAY and milestones.