

निर्माण सारिका

A Newsletter of BMTPC

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निर्माण सामग्री एवं प्रौद्योगिकी संवर्द्धन परिषद्
आवास एवं शहरी गरीबी उपशमन मंत्रालय, भारत सरकार

BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL
Ministry of Housing & Urban Poverty Alleviation, Government of India

HIGHLIGHTS

- Completion of Demonstration Housing Project at Trichi, Tamil Nadu
- New Initiatives
- Construction of Informal Markets at various Locations
- Construction of Demonstration Houses in different Regions
- Appraisal and Monitoring of BSUP & IHSDP projects under JNNURM
- World Habitat Day 2008 Celebrations
- Capacity Building Programmes for Construction Workforce
- Capacity Building Programme for SAARC Countries
- Emerging Technologies
- JK Structure Technology
- LLOYD Building Blocks
- International Workshop cum Exhibition on Emerging Housing Technologies at New Delhi

VISION

BMTPC to be world class knowledge and demonstration hub for providing solutions to all with special focus on common man in the area of sustainable building materials, appropriate construction technologies & systems including disaster resistant construction.

MISSION

To work towards a comprehensive and integrated approach for promotion and transfer of potential, cost-effective, environment-friendly, disaster resistant building materials and technologies including locally available materials from lab to land for sustainable development of housing.

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From the Desk of the Executive Director

In a global meltdown and stocks falling down, the construction industry is also not able to cope with and looking forward for an alternate solutions so as to provide housing at an affordable price. Everyone looks for quick technological interventions so that cost could be minimised and at the same time functional, structural and service requirements are met. In such a scenario, it is of utmost importance that we look for alternate building material and construction technologies which are sustainable in harmony with nature and fast changing scenario. Taking cue from our traditional construction materials and practices being used, it can be safely assumed that for a technology to survive, there has to be blend of traditional and the modern. The modern can provide the vitality and stability while the traditional can contribute with recyclable materials that can be accessed easily with an aesthetic ambience and lower costs.

BMTPC have been laying emphasis for use of these technologies which assume a special significance for the housing programmes for the poor now being undertaken by central and state govt. authorities. However, looking back, we find that we could achieve only limited success. The obvious impediments are ignorance and apathy of professionals. To overcome this, BMTPC has been organising awareness programmes, workshops, trainings, capacity building for whole range of construction workforce i.e. starting from policy makers, technocrats to artisans. Recently, we have taken up the task of constructing demonstration structures in different regions of India with cost effective technologies so as to provide live field demonstration to the public and professionals.

In pursuit of wider dissemination, BMTPC constantly publishes useful documents on the technologies and interact with various stakeholders of construction industry. We have given a new look to our website with an objective to provide a knowledge bank for common man in the area of low cost, low energy and disaster resistant building materials and construction technologies. Our newsletter is also an attempt in this direction. In case, the readers have any idea or wish to share their thoughts with us, they are most welcome. There are a few emerging technologies which are being promoted by private sectors in India. We have recently evolved an institutional mechanism for performance evaluation of these upcoming technologies apart from our existing PACS scheme. Through this, we intend to promote the potential green and cost effective technologies leading towards our common goal of Affordable Housing for All.

Wishing the readers a very Happy, Prosperous and Peaceful New Year 2009.

Shailesh

(Dr. Shailesh Kr. Agrawal)

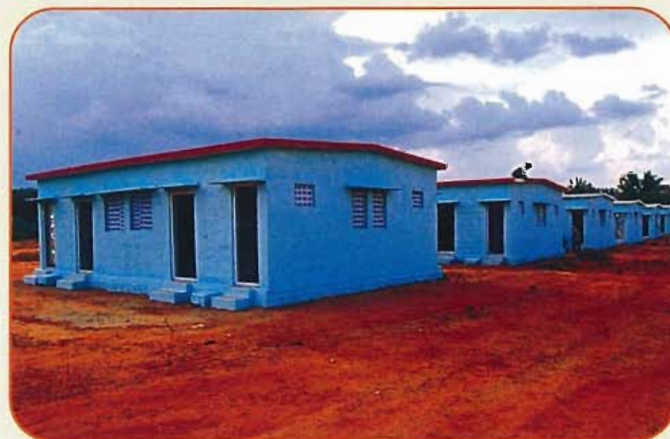
"Creating Enabling Environment for Affordable Housing for All"

Completion of Demonstration Housing Project at Trichi, Tamil Nadu

BMTPC under the erstwhile VAMBAY scheme constructed demonstration houses at Bangalore (Karnataka), Dehradun (Uttarakhand), Nagpur (Maharashtra) and Kudalu (Karnataka). The demonstration houses at Trichi, Tamil Nadu have been completed recently. The brief project profile is as under :

PROJECT PROFILE

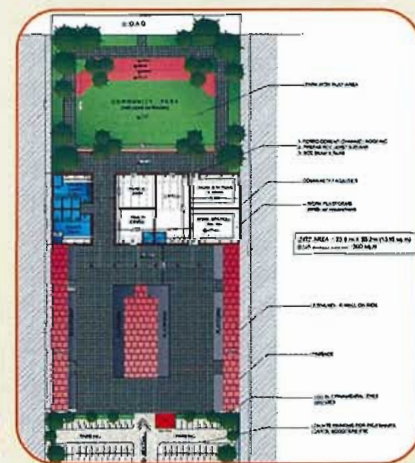
Location of site	: Nagamangalam, Trichi
No. of Units	: 100
Built-up area of a unit	: 172 sq.ft.
Unit consist of	: One multipurpose room, 1 kitchen, 1 bath room and WC
Technologies used	: Flyash solid blocks, filler slab, precast RCC door frames
Cost per unit	: Rs. 40,000
Cost per sqft.	: Rs.232/-
Nodal State Agency	: Tamil Nadu Slum Clearance Board



New Initiatives

Construction of Informal Markets at various Locations

The Council has initiated construction of model informal markets in Gumla, Jharkhand and Vishakhapatnam, Andhra Pradesh. The necessary infrastructure such as water supply, electricity and other public amenities required in the premises will be provided by the State authorities. The sites have been chosen to cater to many urban slum dwellers as well as inhabitants of nearby villages who are in the trading of hand made petty items, agriculture, forest products etc. The informal markets will have platform for trading on time sharing basis, Health Centre, work status for married women, reading rooms, crotch etc. The informal market at Gumla is being implemented through Gumla Municipal Corporation whereas informal market at Vishakhapatnam through Greater Vishakhapatnam Municipal Corporation.



Informal Market Layout

Construction of Demonstration Houses in different Regions

The Council has embarked upon a project for construction of demonstration houses using innovative, green and disaster resistant technologies in different regions with the twin objectives of creating awareness and large scale dissemination of innovative, cost effective, green and disaster resistant construction technologies. Various State Governments were approached for identification of suitable land for construction of demonstration houses. The land has been identified at Amethi (UP), Durg (Chhatisgarh) and Bhopal (Madhya Pradesh).

The possession of land at Amethi has been taken and the work has been awarded for construction of 24 demonstration houses including onsite infrastructure development. The project at Durg have also been initiated through Durg Municipal Corporation for construction of 72 demonstration houses on cost sharing basis (50:50). The drawings and estimates have been prepared for undertaking these projects. The drawings and estimates for construction and demonstration houses at Bhopal (Madhya Pradesh) are also under preparation.



Model Unit Plan

Appraisal and Monitoring of BSUP & IHSDP projects under JNNURM



BMTPC has been designated as one of the Appraisal Agencies for the projects under BSUP sub-component of JNNURM by the Ministry of Housing & Urban Poverty Alleviation, Government of India. Appraisal of following Detailed Project Reports from Delhi and Meghalaya were carried out during this quarter (1st October 2008 to 31st December 2008):

Delhi

- Slum Relocation project at Baproula (2144DUs), Phase-II Delhi :
- Slum Relocation project at Bawana, (704DUs), Delhi :
- Slum Relocation project at Nangali Sarkarwati, Najafagrh, Delhi : (480 Dus)

Meghalaya

- Integrated Slum Development housing project at Shillong (168 Dus)

BMTPC has also been designated as Central Monitoring Agency for BSUP and IHSDP projects under JNNURM. As Central Monitoring Agency, the Council is responsible for monitoring the execution of the projects being implemented in various parts of the Country. The monitoring of these projects, involves inspection and reporting the physical and financial progress of the projects and accomplishment of reforms vis-à-vis originally sanctioned/agreed parameters.

During the period, the Council undertook Monitoring work successfully by undertaking field visits and physical verification of implementation of projects in various States. Actual site photographs were taken and monthly progress report on status of project was intimated to the MoHUPA. The visits for monitoring of the BSUP & IHSDP projects were undertaken in the following cities/towns:

BSUP Projects

Andhra Pradesh - Hyderabad (3 projects); Vijaywada (6 projects); Visakhapatnam (7 projects)

Haryana - Faridabad (2 projects)

Gujarat - Surat (5 projects); Vadodra (1 project); Ahmedabad (3 projects)

Maharashtra - Pimpri Chinchwad (7 projects); Mumbai (3 projects)

Tamil Nadu - Chennai (10 projects); Madurai (4 projects)

Madhya Pradesh - Bhopal (9 projects); Indore (2 projects)

IHSDP Projects

Uttar Pradesh - Afzalgarh; Nahtaur; Dadri; Dankaur; Rabupura; Ujhani; Ghaziabad

West Bengal - Taki

Rajasthan - Sadri; Rani Nagar; Sojat; Pali; Falna; Bali; Tonk



World Habitat Day 2008 Celebrations



As part of the World Habitat Day Celebrations 2008, BMTPC organised Painting Competition for Differently Abled Children i.e. Autistic, Mentally challenged (6 to 10 years), Mentally challenged (above 10 years), Visually Impaired and Hearing Impaired at 15 schools in NCR region on the theme "Rapid Urbanization and its Impact on Environment". About 180 children participated in the competition. The prizes were awarded to 25 selected entries by the Hon'ble Minister of State (Independent Charge) for Housing & Urban Poverty Alleviation during the celebrations of World Habitat Day on 6th October, 2008 at Vigyan Bhawan, New Delhi.

The Council also organized a Design Idea Competition for Low Cost Houses suitable for Rural Areas providing cost-saving, energy & time efficiency and disaster resistant construction techniques thereby leading to improving quality of life of rural masses. Entries were invited from architecture, engineering, planning students/ practicing engineers, architects /consultancy firms/government, public & private sector institutions, for designing of a house of 25 sqm. built-up area at a cost ranging between Rs.50,000-60,000. The best two entries were awarded prizes by the Hon'ble Minister of State (Independent Charge) for Housing & Urban Poverty Alleviation during the celebrations of World Habitat Day 2008.

On the occasion of World Habitat Day, the Council also brought out the following:-

- Nirman Sarika – Special Issue of Newsletter highlighting issues related to the theme, "Harmonious Cities", of World Habitat Day.
- Special issue of "NBM&CW" on cost effective, environment-friendly, energy-efficient building materials and construction technologies with a focus on BMTPC for disseminating information to the masses.
- CD version of Vulnerability Atlas of India 2008. Through the CD, users can refer in an interactive mode the whole Atlas and get information about hazard scenario with respect to earthquake, cyclone and floods of each States and UTs and risk involved to the housing stock of each district of the country.



Capacity Building Programmes for Construction Workforce

Training Programme on "Cost Effective Building Materials and Housing Technologies" at Basti (U.P.)

BMTPC organized a Training Programme on "Cost Effective Building Materials and Housing Technologies" for semi-skilled construction workers and third year civil engineering students of the Polytechnic from 17th- 19th November, 2008 under M/o HUPA and UNIDO approved Action Plan 2008 jointly with Institute for Infrastructure and Human Resource Development Centre, Vidisha, M.P at Basti, Uttar Pradesh.

During this programme, lectures, hand-on training and demonstration on the various cost effective and alternative building materials and housing technologies were provided to the participants. More than 100 construction workers and civil engineering students of polytechnic participated in the three days training programme.



Workshop on "Field Level Applications of Appropriate Building Materials and Construction Technologies" at Rohtas (Bihar)



A workshop on "Field Level Applications of Appropriate Building Materials and Construction Technologies" was organized from 24-26 December, 2008 at Tilothu Mahila Mandal, Nirmiti Kendra, Rohtas, Bihar in association with ICAMT - UNIDO. Fifty selected Engineers, policy makers, decision makers, government officials, and users attended the three days Workshop. Apart from field level demonstration of alternative building materials and construction technologies, topics such as Construction scenario in India, Use of local materials and construction practices, Various options for walling, roofing and flooring materials, Ferrocement building technologies and Success stories of VAMBAY were covered during the event. Hon'ble Deputy Chief Minister of Bihar presided over the concluding session of the workshop.

Capacity Building Programme for SAARC Countries

An Inter-Ministerial meeting was held in the Ministry of Statistics & Programme Implementation (MoSPI) regarding formulation of projects for SAARC countries. The Secretary, MoSPI desired that a detailed project proposal may be submitted by BMTPC. Accordingly, BMTPC prepared a proposal for "Capacity Building on Performance based



Design & Retrofitting of Buildings against Earthquakes for SAARC Countries" and submitted to the Ministry of HUPA for onward submission to Ministry of Statistics & Programme Implementation. Accordingly, a Capacity Building Programme on "Performance Based Design and Retrofitting of Buildings against Earthquakes" under SAARC Social Charter was organized during 20th-24th October, 2008 in New Delhi.

Nominations were invited from SAARC countries through Ministry of External Affairs, Govt. of India and the participants from Afghanistan, Bhutan, Bangladesh, Maldives, Sri Lanka and India

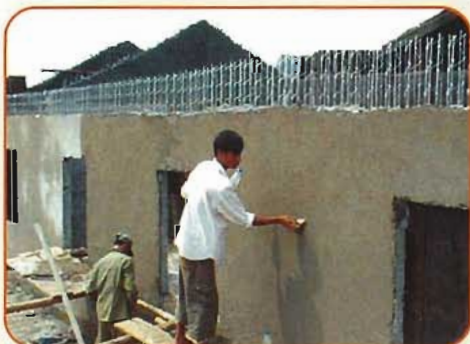
participated in the Capacity Building Programme. Faculty included National Seismic Advisor, Ministry of Home Affairs, earthquake experts from IIT Kanpur, Roorkee, Chennai, Mumbai and Delhi, senior officials from GSI, IMD, DTTDC and BMTPC. Certificate of participation were distributed by Joint Secretary (Housing), MoHUPA, Joint Secretary (SAARC), MEA, Govt. of India and ED (BMTPC). The participants found the program quite useful and express their interest for organization of such type of Programmes in their country.



Emerging Technologies

JK Structure Technology

JK STRUCTURE SYSTEM (A German Technology) allows the construction of high-quality, low-cost and environment and culture-friendly Houses and Buildings. The JK SYSTEM which is illustrated in details hereafter, is based on the JK PANEL, a "tri-dimensional metallic structure". The JK Panel is a galvanized steel mesh Panel, cast and expanded in a continuous process from a 0.065 inch (1.6mm) thick and 11.5 inch (29cm) wide galvanized steel sheet coil. On site, the JK PANELS are ready to be assembled, easy to handle (they weight only



26 Lbs/ 12 kg each), and quick to install (each panel builds approx. 37 sq.ft. of wall or ceiling).

JK Houses

JK HOUSES are entirely, including the roof and the base, made of JK PANELS. Alleviated concrete, a special mix of concrete and expanded polystyrene beads, hence incorporating both the thermal and the sound insulation is injected into a STEEL STRUCTURE made of JK PANELS reinforced with galvanized steel wire studs and steel rods.

The Concrete Base and the Foundations of the Houses are prepared in a classical way. They can be made from regular, poured, "heavy" concrete, but more generally the use of alleviated concrete or at least of one more layer of alleviated concrete, will provide good thermal insulation and good comfort from the ground also. Prior to the pouring of the

concrete of the base, the JK PANELS are tied to the soldered wire mesh and to the iron rods in the base and in the foundation and assembled in accordance with the design of the House. They are then held together by specially made galvanized steel wire studs, which fit one into the other, horizontally and vertically, to form the complete skeleton of the construction, roof included.

The assembled JK PANELS form a rigid, extremely robust, self-supporting steel skeleton, comprising the outside walls and all other load bearing walls and



partitions, the floors, ceilings and roof. Doors and walls are then simply "cut out", using steel scissors or other steel cutters. All cut-offs are recovered and re-used. Templates of doors and windows are positioned.

Both sides of each JK PANEL are then covered with a galvanized wire mesh/ fencing mesh, which is clipped to the JK PANELS, and will serve as a frame when the alleviated concrete is injected.

"Alleviated" or "light" concrete is then injected with a special concrete pump. This pump can operate from a distance of 60 metres and to a height of up to 60 metres (almost 20 floors). The alleviated concrete is a custom made mixture of cement, lime, fibre, sand and custom coated expanded polystyrene (EPS) micro beads (1 to 3 mm), resulting in a low-density concrete (500 kgs/m³), incorporating thermal and phonic insulation.

The injected walls are then finished/smoothened from both sides. The advantages of JK Structure are :

- Forms a true and quasi-homogeneous composite, with incomparably better properties than plain steel reinforced concrete,
- Offers excellent thermal and phonic insulation
- Has walls that "breathe",
- Is completely resistant to fire,
- Offer complete protection against earthquakes and hurricanes and,
- Is immune to termites and other insects.

(Note : Reproduced from the literature of JK Structure)

LLOYD Building Blocks

Lloyd insulations, a pioneer in the field of thermal insulation has developed a state-of-art building design concept, which is a landmark for modern, energy efficient & aesthetically pleasing building construction:

Pre Engineered Building Sections for Structure

Technically designed steel columns, rafters, purlins & gutters not only give the pace to construction but optimally utilizes the available space. All these structures follow the latest building code (IBC2006), Design Code (AISC 2005) & supply/ erected as per ISO 9001: 2000, 14000:2004, 18001:1999 standards.

Lloyd Panel System for Facades & Partitions:

Environment friendly CFC free Polyurethane Foam or Non Combustible Rockwool Rockwool Insulation is sandwiched in between two Pre color coated Galvanised/ Galvalume Steel Sheets. Available in Thickness from 60-



200 mm and upto the length of 12 mtrs. These panels are bolted to the steel structure and glass fascias are fitted in between the panels.

- Aesthetic features such as Fascias, parapets & curved eaves greatly enhance the architectural appearance of the building & empower designers to create unique buildings.
- Energy Efficient Roof & Wall system: When building is insulated with standard thickness and density of insulation material, power consumption is dramatically reduced, which turns out as an Economical Advantage.

Advantages of Lloyd Building Blocks:

- Highly energy efficient buildings
- Energy saving construction materials
- Insulated roofing & wall cladding
- Aesthetically pleasing environment
- Fully furnished world class interiors
- Tailor made faster construction



International Workshop cum Exhibition on Emerging Housing Technologies at New Delhi

BMTPC organised an International Workshop and Exhibition on Emerging Housing Technologies in New Delhi during 24th-25th Nov, 2008. The event was inaugurated by Ms. Kiran Dhingra, Secretary, Ministry of Housing & Urban Poverty Alleviation in the presence of Shri S.K.Singh, Joint Secretary (Housing), MoHUPA. The main objective of the Workshop was to bring important players in the area of innovative and emerging housing technologies from India and abroad at one platform so as to showcase the building products and housing technologies through exhibition and seminar in the presence of users and policy makers. The workshop was attended by more than 150 participants including government representatives, architects, engineers, planners, policy makers and users.

Eight private sector companies/organizations exhibited their innovation in building materials and construction technologies at the exhibition by erecting the actual super

structure using product and technologies being promoted by them. The Council also prepared a booklet comprising of details of the emerging technologies displayed by various companies and the product/system profile on innovative technologies. The booklet was released by the Secretary (HUPA) during the inaugural function. Some of the technologies exhibited and presented were:

- Rapid Building System/ Rapid Wall Technologies
- Monolithic Concrete Construction
- Bamboo and Bamboo-crete Walling System
- Aerocon Prefab System
- Plastbau® Building System
- Lloyd- PEB, Lloyd Building Blocks
- JK Construction Technology
- Tejas ECO SAFE Panels

For further details, please contact :



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