

## Inauguration of Demonstration Housing Project at Saraswathi Nagar, Venkatachalam Mandal, SPSR Nellore, Andhra Pradesh

BMTPC has initiated construction of model demonstration housing projects in Andhra Pradesh, Odisha, Telangana, Bihar, Tamil Nadu & Uttar Pradesh, etc. so as to spread awareness and disseminate new emerging systems across India.

In the process, BMTPC has constructed 36 Demonstration Houses using GFRG panel technology and a Community Centre building using alternate technologies like flyash blocks, filler slab, etc. at Saraswathi Nagar, Chowtapalem Village, Venkatachalam Mandal, SPS Nellore, Andhra Pradesh. The Demonstration Housing Project was designed by IIT Madras who has certified GFRG technology for mass housing.

Shri M.Venkaiah Naidu, Hon'ble Minister of Housing & Urban Poverty Alleviation, Urban Development and Information & Broadcasting, Government of India inaugurated the Demonstration Housing and Community Building Project on September 3, 2016 constructed by BMTPC in collaboration with IIT Chennai, FRBL Kochi and APSHCL, AP.

The project has evinced interests amongst construction fraternity and the project has already been visited by professionals, entrepreneurs and developers.



## Celebration of World Habitat Day 2016



As a part of the World Habitat Day Celebrations 2016, BMTPC organised Painting Competition for Differently Aabled Children on the theme "Housing at the Centre" 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 October 3, 2016. The publications which were also brought out to mark the occasion by BMTPC are (i) Special Issue of Newsletter "Nirman Sarika", (ii) Guidebook on Earthquake Resistant Design and Construction (iii) Magdarshika for Masons – "राजमिस्त्री के लिए दिशा निर्देश", (iv) Pocket Book on Emerging Construction Systems.

For further details, please contact:

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### From the Desk of the Executive Director

Disaster mitigation and management is an integral part of any development which takes place in a developing country like ours. With the launch of Pradhan Mantri Awas Yojana (PMAY) and infrastructure development taking place at fast pace, it is call of the day that safety aspects against natural hazards are dovetailed in the projects right from the inception. BMTPC has been front runner in this area and imparting not only training to the professionals, artisans but also publishing useful documents, guidelines to help engineers, architects and implementing agencies so as to ensure hazard resistant construction.

Taking it forward BMTPC joined hands with NDMA and published first ever Earthquake Hazard Zoning Maps & Atlases not only of India but also state-wise delineating districts, sub-districts depicting earthquake hazard as per IS 1893-2002, seismic zoning map of India. These state atlases are ready reckoner for the people to know the earthquake hazard of the area they are living in.

For wider outreach, BMTPC is also developing a mobile-application on earthquake hazard atlas. It's our endeavor to build India as earthquake resilient country so that there are no losses of lives in the event of future earthquake.

*Shailish*  
(Dr. Shailesh Kr. Agrawal)

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## Release of Earthquake Hazard Zoning Maps and Atlases



Shri M.Venkaiah Naidu, Hon'ble Minister of Housing & Urban Poverty Alleviation, Urban Development and Information & Broadcasting, Government of India and Shri Rao Inderjit Singh, Hon'ble Minister of State for Urban Development and Housing & Urban Poverty Alleviation released the Earthquake Hazard Zoning Maps and Atlases brought out by NDMA and BMTPC on September 20, 2016 at New Delhi.

NDMA with the technical assistance of BMTPC have prepared the Earthquake Hazard Zoning maps of India as a whole, every State and UT of the country and even each District, taking the details upto the sub-district namely, Tehsil, Talukas, Blocks, etc. This information can be used by every citizen of the country by looking at the District Hazard Zoning Map to know in which intensity zone his/her village is and then to approach the knowledgeable authorities for guidance about his/her safety from a future earthquake occurrence in the area.

The updated Earthquake Hazard Zoning Maps are based on Seismic zones as per IS 1893 (Part1) – 2002, District Boundary as per 2012 Survey of India data, Sub-division Boundary as per Census of India 2011 data, Epicentres of earthquakes



of 4.0 and above as per IMD data, Seismo Tectonic details as per Seismotectonic Atlas of India of GSI. The additional features in the maps are Housing Data and Population data (Census 2011), Railway Lines, Golden Expressway & National Highway, Rivers & Waterbodies.

## Emerging Technologies for Building Construction

### LIGHT GAUGE STEEL FRAMED STRUCTURE (LGSFS) SYSTEM

Light Gauge Framed Steel Structure (LGSFS) is a term commonly used to refer to steel members that are produced by roll forming by CNC automatic machines designed as per codal requirements. These members may be wall studs, tracks, floor joist, roof rafters, roof trusses bridging or noggings members, furring channels or related accessories which are assembled with special type of screws and bolts.

LGSFS framed structures can be built to meet the seismic and wind load specification in the country. Light gauge steel members come in a variety of thickness making it possible to increase the strength of a member without increasing the size of depth. It can be designed to provide large unsupported spaces.

LGSFS is used successfully for housing, commercial and other structures in many countries around the world. It is typically ideal for one to three storey high buildings, specially in residential homes, apartments. Due to its flexibility, fast construction and durability, this technology has great potential for countries like India.

#### Method of Construction

Necessary foundation arrangement is to be designed and provided to support the PRE-ENGINEERED STRUCTURES conforming to relevant Indian standards on the basis of soil investigation. The plinth is made minimum of 600 mm high from the main road crown level. Superstructure is made up of LGSFS frame work designed to withstand all loads such as dead load, live load, wind load as per IS 875 and seismic load as per IS 1893 (Pt 1) for all possible combination.

Sufficient provision are made in the structure for fixing door, window, sun shades, sanitary installations, electrical fittings and fixtures etc. The sections should be with dimples for flush screws fixing the section at site and should be suitable for concealed wiring / plumbing system. Hot rolled section complying IS 2062 with minimum yield strength of 250 MPa can be used in the areas where use of LGSFS is not sufficient from the loading criteria. The structural system to be securely fixed to the civil structural foundation system.

For walls, the exterior face of the building is provided with single layer of fibre cement board of 9 mm thickness as per IS 14862, type A, category 3. Internal walls are fixed with 9 mm thick Type A, Category 3 fibre cement fibre board in isolation or in combination with gypsum board. All boards are required to comply with fire resistance indices conforming to relevant Indian Standard. The grooves are filled with PU sealant. The internal surface is finished with jointing compound, jointing tapes to attain smooth finish and a coat of primer to be applied on the board.

The voids between external and internal sheeting are filled with mineral / rock/ glass wool of 50 mm thick covered with

high strength mesh like aluminum foils.

#### Special features

The special features of the system encompasses:

##### High Precision

- Fully integrated computerized system with CNC machine providing high accuracy upto 1 mm.

##### Structural

- High strength to weight ratio. Due to low weight, significant reduction in design earthquake forces. Chance of progressive collapse are marginal due to highly ductile and load carrying nature of closed spaced studs/joists.

##### Speed in Construction

- Construction speed is very high. A typical four storeyed building can be constructed within one month.

##### Saving in foundation

- Structure being light does not require heavy foundation.

##### Mobility

- Structural elements can be transported any place including hilly areas to remote places.
- Structure can be shifted from one place to another without wasting of materials.

##### Environment friendly

- Steel used can be recycled when required.



### Guidelines on "Utilization Of Construction & Demolition (C&D) Waste in Construction of Dwelling Units & Related Infrastructures

BMTPC has prepared the Guidelines for Utilization of Construction & Demolition (C&D) Waste in Construction of Dwelling Units & related Infrastructures in association with C-FARM, New Delhi. Utilization of Construction and Demolition waste in construction activities is a burning topic. Recently Ministry of Environment Forest and Climatic Change, Govt. of India has brought out C&D Waste Management Rule 2016 defining the waste, duties of waste generator, duties of local authorities, service providers and Pollution Control Boards, criteria for site selection for storage and processing or recycling facilities for construction and demolition waste etc.

In many industrialized countries, C&D waste is being recycled and used for housing and infrastructure. In India also, some of the state governments have taken steps to process and use C&D waste in construction. In Delhi and Gujarat, plants have been set up to process the C&D waste for gainful utilization. It is required to set up such facilities in other parts of the country also.

The Guidelines covers International scenario of use of C&D waste, Indian scenario of availability & generation of C&D waste, potential of use of C&D waste in building sector with suggestion for specific uses and a Road Map for Gainful utilization of C&D waste in housing sector.

In order to sensitize and create awareness about the important points of the Guidelines amongst different stakeholders, a National Workshop was organised on September 23, 2016 at New Delhi. The Workshop was inaugurated by Dr. N.Chatterjee, Secretary, Ministry of Housing & Urban Poverty Alleviation.

About 150 delegates from Municipal Corporation, Pollution Control Board, Technical Institution, Construction Industry and C&D waste Processors & Equipment Suppliers participated in the workshop.

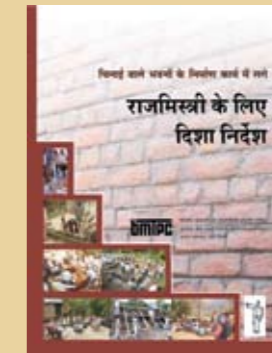
## Recent Publications

### Guidebook on Earthquake Resistant Design and Construction



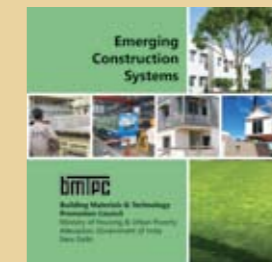
The Guidebook on Earthquake Resistant Design and Construction will help the common man who has no idea/exposure to earthquake engineering and in making his house seismically safe. The Guidebook covers the details of earthquake safe construction and also provide direction to evaluate the seismic capacity and vulnerabilities of a house/ building for future earthquake.

### Magdarshika for Masons – "राजमिस्त्री के लिए दिशा निर्देश"



यह मार्गदर्शिका चिनाई वाले भवन निर्माण कार्य में लगे राजमिस्त्री के लिए है। इस मार्गदर्शिका में अच्छी गुणवत्ता वाले और टिकाऊ चिनाई वाले भवनों के निर्माण कार्य करने के लिए ईंट, पत्थर और कंक्रीट ब्लॉक से सुरक्षित, मजबूत और सही संरचना बनाने के लिए जरूरी जानकारी को उपलब्ध कराया गया है।

### Pocket Book on Emerging Construction Systems



BMTPC have brought out the Pocket Book on Emerging Construction Systems with a view to sensitize professionals including common man. The Pocket Book presents general information on the technologies in pictorial form.

### Special Issue of Newsletter "NIRMAN SARIKA"



Like preceding year, BMTPC has brought out a Special Issue of its Newsletter "Nirman Sarika" on the World Habitat Day 2016 theme "Housing at the Centre". The special publication focuses on important issues related to the theme.