Annual Report
2012–2013

bmtpc

Building Materials and Technology Promotion Council
Ministry of Housing & Urban Poverty Alleviation
Government of India

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Ministry of Housing & Urban Poverty Alleviation, Govt. of India
Core -5A, First Floor, India Habitat Centre, Lodhi Road
New Delhi 110003

FOREWORD

It is my proud privilege to present the Twenty-third Annual Report of the Building Materials & Technology Promotion Council for the year 2012-2013.

BMTPC has been into promotion of cost effective, sustainable building materials and disaster resistant construction technologies, primarily based on locally available materials and local skills, since its inception in 1990. BMTPC has the distinction of successfully transferring number of alternate building materials and technologies from laboratory development to their field level applications. However, in the context of ever changing urban scenario and housing shortage specially in urban areas, BMTPC, in recent years, has made concerted and rejuvenated efforts for spreading awareness and disseminating cost effective technologies at large scale. A number of public and private agencies have started using these technologies in their projects for mass housing. Notable amongst them are construction of Industrial Workers Houses by DSIIDC at New Delhi, EWS houses by Greater Noida Industrial Development Authority and residential houses by Surat Municipal Corporation.

In the recent years, the Council has embarked upon the field level application of alternate building materials and construction technologies through demonstration construction of model houses and other structures such as informal Markets, Community Centres, etc. Earlier BMTPC has constructed demonstration houses in Amethi (UP) and Pinjore (Haryana), Community Centre at Ambala (Haryana), informal Market at Vishakhapatnam (Andhra Pradesh) and Bamboo houses and structures in North Eastern Region. Recently, a demonstration housing project with the aim to propagate the alternate building materials and technologies, has also been initiated at Barwaripur, Rae Bareli (U.P.) for which the foundation stone was laid by Hon'ble Chairperson, UPA on 7th November, 2012. These demonstration projects stand a testimony of cost effectiveness and sustainability of technologies being promoted under the umbrella of BMTPC.

The Council is also working towards bringing emerging technologies which are successful elsewhere in the world, to bring economy, quality, environmental protection and speed in housing construction. In this direction, BMTPC earlier invited Global Expression of Interest (EOI) from construction system/technology developers/providers for introducing emerging and alternate cost effective housing technologies suitable to Indian geo-climatic and hazard conditions. The Technology Advisory Group constituted by the Ministry identified eight technologies as potential technologies for mass scale housing. Out of these technologies, three technologies namely, Glass Fibre Reinforced Gypsum Panel System, Monolithic Construction using Plastic Formwork and Monolithic Construction using Aluminium Formwork have been awarded certificate under the Performance Appraisal Certification Scheme (PACS) of BMTPC. During the year, two more emerging technologies have been identified for further study and evaluation. The efforts are being made to include these emerging technologies in Schedule of Rates of CPWD and State PWD.

The Council through its multi-pronged approach within its core mandate of promotion, development and application of innovative and disaster resistant building technologies continued its involvement in the implementation of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) by way of appraising and monitoring the projects under BSUP and IHSDP. The Council has also been involved in capacity building of the municipal functionaries of ULBs in the area of project preparation, appraisal & monitoring and quality assurance & control. Third Party Inspection & Monitoring (TPIM) reports for BSUP and IHSDP under JNNURM are also being reviewed by BMTPC for subsequent releases. Besides, the Council has also been designated as one of the Appraisal Agency for projects under Rajiv Awas Yojana (RAY) and 10% Lump-sum Provision for NER States including Sikkim.

The Council is continuously striving to establish the proactive approach towards disaster mitigation and management and has been in the forefront in educating professionals and creating mass awareness amongst various stakeholders including common man. The National Disaster Management Authority (NDMA) has entrusted BMTPC for the development of updated

Earthquake Hazard Zoning Maps upto district level. In order to provide training to trainers in earthquake resistant design and construction, the Council has joined hands with Bihar Institute of Public Administration & Rural Development (BIPARD), Bihar State Disaster Management Authority (BSDMA), Government of Bihar. Under the programme, a series of training programmes are being organized for the engineers and architects of Government of Bihar. Besides, the Council has published Manual on Seismic Retrofitting of MCD School Buildings at New Delhi - BMTPC's Initiative, Design & Construction of Earthquake Resistant Structures - A Practical Treatise for Engineers and Architects and IITK-BMTPC Earthquake Tips in Hindi.

In order to provide guidance to common man and professionals, the Council has published the Training and Certification Manual for Field and Lab Technicians working with concrete, Manual on Basics of Formwork, GFRG/Rapidwall Building Structural Design Manual, Design Package using Alternate Building Materials & Technologies for West Zone, South Zone and Karnataka. The website of the Council is being updated regularly for inclusion of latest activities and information. There is good response on website in the form of general enquiry about product and services. The Council also organized BMTPCexpo'12 on "Appropriate Building Materials & Housing Technologies" for showcasing the latest, emerging and cost effective trends in the building materials & construction sector at New Delhi. Like preceding years, on the occasion of World Habitat Day 2012, the Council brought out the Special Issue of "Nirman Sarika" on the theme "Changing Cities, Building Opportunities" chosen by the UN-Habitat for the year and organized a painting competition for Differently Abled Children and the winners were felicitated during the World Habitat Day celebrations.

The Ministry of Housing & Urban Poverty Alleviation made concerted efforts to revive the Building Centres and a Committee was set up by HUDCO in consultation with Ministry to look into problems, prospects and proposal for revival of Building Centres. The Council has been assigned the Project on "Rejuvenation and Strengthening of the National Network of Building Centres – Pilot Studies" by HUDCO under HUDCO CSR funding. In the area of skill development, the Council continued its efforts for providing training to the professionals and artisans for the use of alternate building materials and disaster resistant technologies. With a focus on development and promotion of innovative building technologies, specific R&D projects have been undertaken such as Performance of Concrete with Rice Husk Ash as Binding Materials, Development of Energy Efficient Construction Materials for Buildings and Scientific Authentication of Semi-Automatic Brick Masonry Construction.

It is my privilege to place on record the valuable guidance, support and encouragement received from the President, Members of the Board of Management, the Chairman and Members of the Executive Committee and Ministry of Housing & Urban Poverty Alleviation for various programmes undertaken and executed by the Council. Special thanks are due to Planning Commission, Parliamentary Standing Committee on Urban Development, JNNURM & RAY Mission Directorate, MoHUPA, various State Govts., Municipal Corporations and Urban Local Bodies, Ministry of Home Affairs, Ministry of DONER, NDMA, NIDM, MOS&PI, DST, CSIR, IITs, CEPT, IPIRTI, CBRI, SERC, ICI, IIHRD, SEP, SPA, HUDCO, BIS, NHB, NCHF, HPL, CGEWHO, CPWD, NSIC, CIDC, UNDP, UNIDO and UN-Habitat for their continued support and interest in strengthening and supporting the efforts of the Council over successive years.

I would also like to place on record my deep appreciation of the cooperation of our officers and staff members in implementing the Council's activities. The Council acknowledges the support and cooperation received from all officers and staff members of the Ministry of Housing & Urban Poverty Alleviation, which helped the Council to meet its mandate and further its objectives.

(Dr.Shailesh Kr.Agrawal)
Executive Director

CONTENTS

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."

INTRODUCTION

The Building Materials & Technology Promotion Council (BMTPC), registered as Society in 1990, is an organisation fully supported by the Ministry of Housing & Urban Poverty Alleviation, Govt. of India with the objective of bridging gap between the laboratory development and large scale field application of cost effective, sustainable building materials and housing technologies including disaster resistant construction practices.

In order to realise its objectives, BMTPC initiated several multi-faceted activities enshrined in the mandate of the Council so as to create enabling environment for sustainable building construction. Over the years, the Council has been striving for the successful transfer of the innovative, cost-effective, environment-friendly and energy-efficient alternate building materials and technologies at grass-root level. The Council has also embarked upon the field level application of these materials and technologies through demonstration construction of model demonstration housing and other structures such as informal markets, community centre, etc. in different parts of India. In its technology development, promotion and dissemination efforts, the Council developed various technologies for use in housing and building construction including bamboo based housing solutions. The Council also constructed demonstration structures in the North Eastern Region and helped in setting up Bamboo Mat Production Centres to make available the bamboo mats for the production of bamboo mat related products such as corrugated sheets, bamboo boards, etc. leading to employment generation. Apart from bringing out the first ever Vulnerability Atlas of India in 1997 and 2006, the Council regularly publishes valuable guidelines/manuals on disaster resistant construction. In order to create awareness regarding seismic retrofitting, the Council has undertaken retrofitting of few MCD schools in Delhi. The Council has also been designated as one of the Appraisal and Monitoring Agencies for Projects under BSUP and IHSDP under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) & Rajiv Awas Yojana (RAY) which are mission mode programmes of Ministry of Housing & Urban Poverty Alleviation. The Council in recent years has reoriented its approach towards promotion of not only sustainable technologies through intensive evaluation, dissemination but also looking at emerging prefabricated housing technologies from abroad for social mass housing.

Objectives

- ***Building Materials & Construction Technologies :*** To promote development, standardization, mechanization and large scale field application of proven innovative and emerging building materials and technologies in the construction sector.
- ***Capacity Building and Skill Development:*** To work as a Training Resource Centre for capacity building and promotion of good construction practices to professionals, construction agencies, artisans and marketing of building technologies from lab to land.
- ***Disaster Mitigation & Management :*** To promote methodologies and technologies for natural disaster mitigation, vulnerability & risk reduction and retrofitting/ reconstruction of buildings and disaster resistant planning for human settlements.
- ***Project Management & Consultancy:*** To undertake project management and consultancy services including appraisal, monitoring and third party inspection of housing projects under the various Central/State Schemes.

Thrust Areas

- Identification, evaluation of proven and emerging technologies available globally and encouraging joint venture in building materials and construction sector.
- Promoting economy, efficiency and quality in construction.
- Up scaling of technologies, know-how acquisition, absorption and dissemination.
- Field level application of environment-friendly, energy-efficient and disaster resistant technologies for proven, locally available and emerging technologies.
- Formulation of Standards on proven building materials/technologies including emerging technologies/systems and incorporation in the schedule of specifications/rates.
- Documentation of benefits, durability and acceptability of cost effective and innovative building materials and technologies.
- Skill upgradation of professionals and construction workers through capacity building programmes, training programmes, seminars, conferences, workshops, exhibitions nationally as well as internationally.
- Promoting disaster resistant construction technologies.
- Appraisal, monitoring and third party inspection of housing projects including undertaking project management and consultancy services.

MAJOR INITIATIVES AND ACTIVITIES DURING THE YEAR 2012-2013

I. DEMONSTRATION BUILDINGS USING COST-EFFECTIVE TECHNOLOGIES

1. Field level application of cost effective technologies through Demonstration Housing Projects

The most important step towards successful transfer of technologies is through demonstration construction. BMTPC on regular basis constructs demonstration houses and structures using cost-effective and disaster resistant technologies on the land being provided by the State Governments. Also during construction, the public of nearby region, students of Civil Engineering and Architectural colleges and artisans especially masons are sensitized/trained about the alternate materials and technologies.

Demonstration Housing Project at Barwaripur, Rae Bareli, Uttar Pradesh

BMTPC, in continuation of its efforts to demonstrate cost effective, alternate and disaster resistant technologies, is constructing Demonstration Houses in Uttar Pradesh. The State Government has identified the land for construction of demonstration houses at Barwaripur, Rae Bareli. Under the Demonstration Housing Project, construction of 24 dwelling units (G+1) is being undertaken. Each Unit having plinth area of 32 sqm consists of one living room, one bedroom, kitchen, one separate bath and WC. The Demonstration Housing Project also includes onsite infrastructure facilities like internal water supply, sanitation, electrical, pathways, bio-digester, underground tank, street lighting, etc.

The Foundation Stone for the project was laid by Smt. Sonia Gandhi, Hon'ble Chairperson, UPA in the gracious presence of Shri Ajay Maken, the then Hon'ble Minister of Housing & Urban Poverty Alleviation on 7th November, 2012. An exhibition on Alternate Building Materials & Construction Technologies was also organised during the Foundation Stone laying ceremony. The project is being undertaken with the aim to popularize cost effective building materials and technologies in the area as part of BMTPC's mandate to disseminate sustainable technologies. After completion of tendering work, the construction work has been started and excavation work has been completed. The brick work in foundation is in progress.

Demonstration Housing Project at Pinjore, Distt. Panchkula, Haryana

The Council constructed 24 demonstration houses with

Foundation Stone for the Demonstration Housing Project by BMTPC at Rae Bareli, U.P. was laid by Smt. Sonia Gandhi, Hon'ble Chairperson, UPA in the gracious presence of Shri Ajay Maken, the then Hon'ble Minister of Housing & Urban Poverty Alleviation on 7th November, 2012

Smt. Sonia Gandhi, Hon'ble Chairperson, UPA and Shri Ajay Maken, the then Hon'ble Minister of Housing & Urban Poverty Alleviation at BMTPC Display during the Foundation Stone laying ceremony for the Demonstration Housing Project at Rae Bareli, U.P. on 7th November, 2012

Construction work in progress at the Demonstration Housing Project being constructed by BMTPC at Rae Bareli, UP

Demonstration Housing Project constructed by BMTPC at Bitna Road, Pinjore, Haryana was handed over to the local administration by Kumari Selja, Hon'ble Minister of Social Justice and Empowerment, Govt. of India on 8th December, 2012

Demonstration Housing Project constructed by BMTPC at Bitna Road, Pinjore, Haryana was handed over to the local administration on 8th December, 2012

community centre & multi-purpose meditation room at Bitna Road, Pinjore, Distt.Panchkula, Haryana on the land provided by the State Government. Each Unit having plinth area of 411 sqft. consists of one living room, one bedroom, kitchen, one separate bath and WC. The Demonstration Housing Project includes onsite infrastructure facilities like pathways, septic tank, electricity, boundary wall, etc. The Project also includes construction of a Community Centre and a Multi-purpose Meditation Hall.

The alternate housing technologies used in the project are:

Structure

- Step footing in brick masonry for sub-structure
- Blocks/Rat Trap Bond in bricks for wall masonry
- RCC lintel band and roof level band for earthquake resistance.

Roof/Floor

- Precast Reinforced Brick Panel/Filler Slab for roofing
- IPS flooring.

Doors/Windows

- Pre-cast RCC door/window frames in place of traditional frames to achieve cost effectiveness.
- Flush door/window shutters.

Finishing

- Precast stair steps
- Ferrocement sunshades
- Internal plastering
- External walls exposed finish with water proof cement paint.
- Enamel painting on doors/windows.

After completion of the Demonstration Housing Project at Bitna Road, Pinjore, Distt.Panchkula, Haryana, the same has been handed over to the local administration on 8th December, 2012 by Kumari Selja, Hon'ble Minister of Social Justice and Empowerment.

Promotion of Cost-effective Technologies through Construction of Demonstration House during the BMTPCexpo'12

BMTPC organised BMTPCexpo'12 - Exhibition-cum-Seminar on "Appropriate Building Materials & Housing Technologies" at New Delhi from 6-8 November, 2012. In order to demonstrate various alternate housing technologies during the BMTPCexpo'12, a demonstration house was constructed various proven cost effective, environment friendly, energy efficient and disaster resistant technologies

having plinth area of 36.10 Sqm. with living room, bedroom, kitchen alcove, bath-cum W.C. and balcony was showcased.

The Demo House attracted a number of professionals including general visitors. Many of the visitors requested BMTPC to provide technical assistance for construction of such type of houses in their respective region.

The Specifications of the house constructed for demonstration are given hereunder:

Space Norms:

- Plinth Area of 36.10 sqm. with a carpet area of 25.11 sqm.
- Two Habitable Independent Rooms
- Kitchen Alcove
- Combined Bath & Toilet
- Court Yard/Balcony

Building Materials/Construction Technologies:

Masonry:

- One wall with Clay Bricks in 1:4 Cement Coarse sand mortar, in Rat-Trap Bond
- One wall with Fly ash Bricks in 1:4 Cement Coarse sand mortar, in Rat-Trap Bond
- One Wall in Cellular Light-weight Concrete Blocks
- One Wall with Fly Ash Interlocking Blocks

Roofing:

- RCC Filler slab with Bricks/earthen pots as filler material
- MCR Tile Roofing

Openings:

- Arch opening
- Inbuilt Brick Jallies
- Brick on Edge Lintels
- RCC Door Frames
- Steel section glazed window
- Brick Corbelling
- Bamboo mat door
- Ferro cement Shelves, Sunshades, Kitchen Slab

Flooring:

- Precast concrete tile flooring

Finishing:

- Cement Pointing

Earthquake/Cyclone Resistant Features:

- RCC Plinth Bands, Lintel Bands, Roof Band and Vertical Steel Reinforcement at corners & Junctions
- Cement Coarse Sand Mortar of 1:4
- Designed as per NBC, BIS Specifications

Demonstration House constructed by BMTPC to demonstrate various alternate housing technologies during the BMTPCexpo'12 - Exhibition-cum-Seminar on "Appropriate Building Materials & Housing Technologies" at New Delhi from 6-8 November, 2012

Shri Arun Kumar Misra, Secretary, Ministry of Housing & Urban Poverty Alleviation, Govt. of India handing over the Demonstration House constructed by BMTPC during the BMTPCexpo'12 from 6-8 November, 2012 to NSIC

Sustainability:

- Thermal efficiency due to cavity in Rat-Trap Bond Masonry
- Reduction in bricks and mortar quantity due to Cavity in Masonry
- Concrete quantity reduces due to Filler slab, without compromising structural Strength
- RCC Door/Window Frames reduces demand for Timber/Steel
- Brick Jallies eliminates requirements of windows frames and shutters
- Ferro Cement shelves reduces Stone/RCC slab
- No Plastering is required
- Locally available building materials used as per availability and costing
- Use of locally available materials with low Embodied Energy
- Embodied Energy of the house is decreased by about 30 % without increase in cost.

Costing:

- Cost is dependent on geographical area, volume/scale of work and time, however cost of construction with these technologies is about 10% - 15% less than the cost as per standard specifications of CPWD/States PWDs/ Housing Boards/ Development Authority's
- No Complicated construction Techniques
- No Proprietary Items of works as all are covered in BIS

The demonstration house was handed over to National Small Scale Industries Corporation (NSIC) by the Secretary, Ministry of Housing & Urban Poverty Alleviation, Government of India on 6th November, 2012 in the gracious presence of the then Joint Secretary (Housing), Ministry of Housing & Urban Poverty Alleviation.

II. DISASTER MITIGATION - REPAIR, RECONSTRUCTION AND RETROFITTING

1. Preparation of Updated Earthquake Hazard Zoning Maps and Atlases

Looking at the overall importance of seismic hazard in Indian context and associated risks involved, the National Disaster Management Authority (NDMA), Government of India entrusted BMTPC the task of preparing updated earthquake hazard maps up to district level incorporating latest data as available from Survey of India, Census and Geological Survey of India, India Metrological Department etc.

The Council has collected the digital vector database of administrative boundary data of the country upto taluka level required for preparation of maps from Survey of India. The data related to epicentres of earthquakes (upto October 2010) have also been received from India Meteorological Department (IMD).

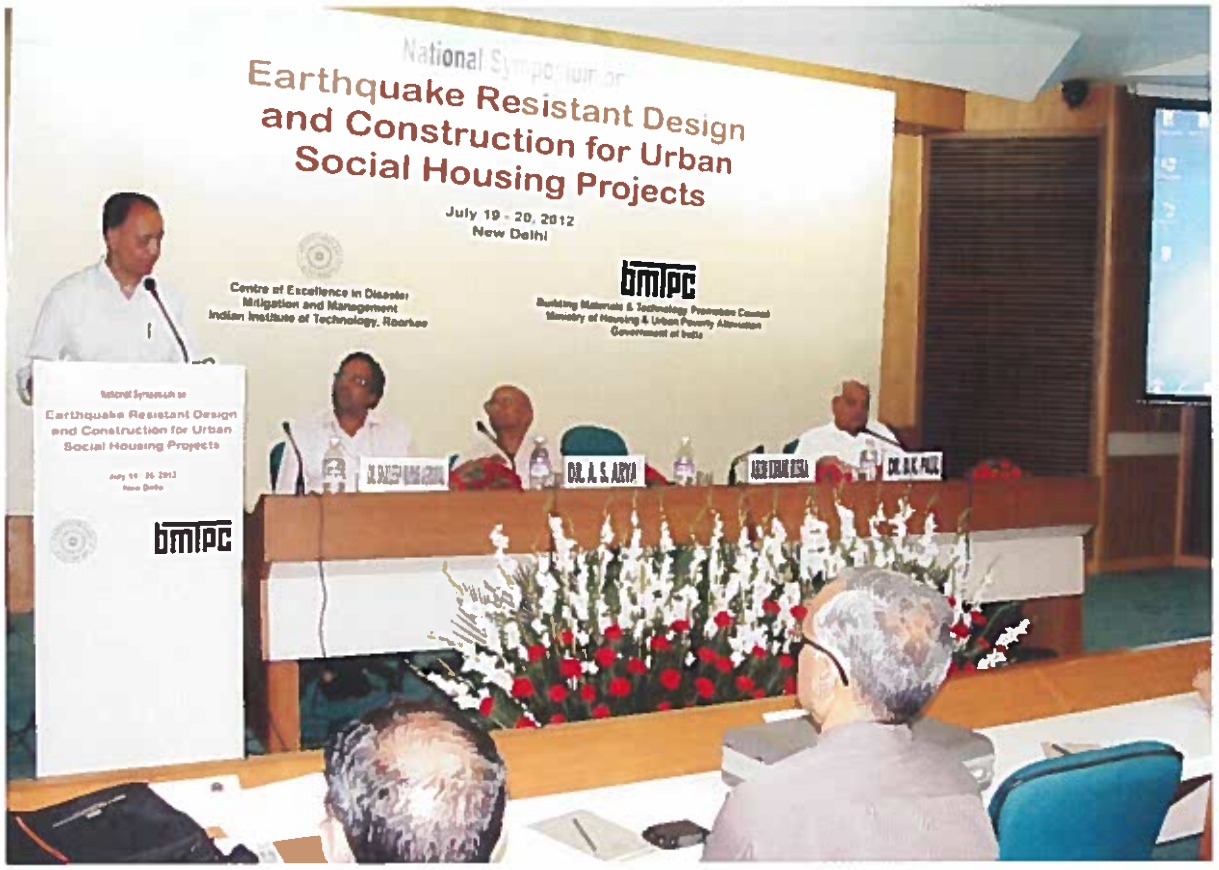
The Council is preparing the earthquake hazard maps for India, 35 States/UTs covering all Districts. Besides country Atlas, BMTPC is also preparing State-wise Atlases delineating various seismic zones. A meeting of the Advisory Group was held on 5th July, 2012 at NDMA to review the progress of the project on Preparation of Upgraded Earthquake Hazard Maps, wherein it was decided that Sub-divisions boundaries (Taluka/Mandal/ Circle/Block) as provided in the Census of India Atlas 2011 is to be taken for developing the maps and atlases. The NDMA has requested Census of India to provide the sub-division boundary data.

The work is currently under progress and district level Maps have been generated for 24 States as per Survey of India updated data. Due to lack of Census of India Atlas data, the Council is preparing maps on the basis of Survey of India boundaries data so that when the data is available from census, the same can be incorporated in the developed maps.

2. Organization of National Symposium on 'Earthquake Resistant Design and Construction for Urban Social Housing Projects'

The frequent occurrence of earthquakes in Indian sub-continent and the huge losses to lives and property on account of faulty construction and non-adherence to the Indian Standards on disaster resistant construction prompted Government of India to enact Disaster Management Act 2005 which entails that capacities need to be built up at all levels so that India becomes disaster resilient. Therefore, all organizations including academic institutions with earthquake engineering background should impart professional training to the professionals so as to comprehend hazard resistant features given in Indian standards and use them while designing and preparing the project report. Also, regular orientation programmes need to be organized to provide the first hand information on hazard resistant practices to all including policy makers.

With the above backdrop, a National Symposium on Earthquake Resistant Design & Construction for Urban Social Housing Projects was organized on July 19-20, 2012 at New Delhi so as to sensitize the State level Engineers



National Symposium on 'Earthquake Resistant Design and Construction for Urban Social Housing Projects' organised by BMTPC for engineers and architects on 20 - 21 July 2012 at New Delhi .

Training Course on 'Earthquake Resistant Design and Construction' organized from 27-29 December, 2012 at New Delhi

and other stakeholders as regards the current practices of earthquake resistant design and Codal provisions and bring forth the vulnerability, risk and other associated issues. The National Symposium was inaugurated by the Secretary, Ministry of Housing & Urban Poverty Alleviation. More than hundred participants from various State level Housing & Urban Development Authorities, Housing Boards, Urban Local Bodies; practicing architects & engineers participated in the National Symposium.

3. Organisation of Training Programmes on "Earthquake Resistant Design and Construction"

BMTPC in its endeavour to promote earthquake resistant design and construction, organizes a series of Short Term Training Programmes on Earthquake Resistant Design and Construction on regular basis.

In this series, the Training Course on 'Earthquake Resistant Design and Construction' was organized from 27-29 December, 2012 at New Delhi in collaboration with Centre of Excellence in Disaster Mitigation & Management, IIT, Roorkee. The participants were mainly engineers and architects at higher and middle level both from public and private organizations.

The second course titled Sensitization Programme on "Earthquake Resistant Design and Construction" was organized on 15th January, 2013 at Patna jointly with IIT Roorkee and BIPARD, Government of Bihar in order to kick-start the series of Training of Trainers (TOTs) Programme for Government of Bihar. The Sensitization Programme was inaugurated by Hon'ble Minister of Disaster Management, Government of Bihar, Ms. Renu Kushwaha. On this occasion, the Hon'ble Minister released the Council's publications namely 'Earthquake Tips' (in Hindi) and Resource Material in form of a book entitled "Design & Construction of Earthquake Resistant Structures : A Practical Treatise for Engineers & Architects". 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 attended the Sensitization Programme.

The lectures were delivered by the Faculty of IIT Rookee, CBRI, BMTPC and other experts in the area in both the courses.

4. 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, specialized Resource material covering various aspects of earthquake resistant planning, design and construction has been prepared in association with Deptt. of Earthquake Engineering, IIT Roorkee and Padmashree Dr.A.S.Arya, Professor Emeritus, IIT Roorkee and Member, BSDMA. Under this project, BMTPC is organising training programmes for Training of Trainers (16 batches for engineers and 10 batches for architects).

BMTPC in association with BIPARD, Government of Bihar kick-started the series of Training of Trainers (TOTs) Programme by organisation of Sensitization Programme on "Earthquake Resistant Design and Construction" jointly with IIT Roorkee on 15th January, 2013 at Patna.

The first batch of the TOTs was organized from 16 to 19 January, 2013. 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 has also been done through examination. Remaining batches of Training of Trainers (TOT) programme is scheduled to be organized in months to come.

5. Preparation of Document on "Seismic Retrofitting of MCD School Buildings at New Delhi – BMTPC's initiative"

National Vision on Disaster Mitigation & Management envisages "to build a safer and disaster resilient India by developing a holistic, pro-active, multi-disaster and technology-driven strategy for disaster management through collective efforts of all Government Agencies and Non-Governmental Organisations." According to an estimate, there are approximately 12 crore buildings in seismic Zones III, IV and V. Most of these buildings are not earthquake-resistant and are potentially vulnerable to high degree of damage or even collapse in the event of a high intensity earthquake. Vulnerability of such high percentage of housing stock in the country, calls for a concerted effort to strengthen and retrofit these buildings. It may not be practically and financially feasible to retrofit all the existing buildings, therefore it is appropriate to prioritise the seismic strengthening and retrofitting of lifeline buildings and other public buildings like primary schools, primary health centres, public offices, post offices, block offices, etc. in phased manner.

Sensitization Programme on "Earthquake Resistant Design and Construction" jointly with IIT Roorkee on 15 January, 2013 at Patna to kick start the TOT Programme on Earthquake Resistant Design & Construction for State Engineers and Architects

Training of Trainers Programme on Earthquake Resistant Design & Construction for State Engineers and Architects from 16-19 January, 2013 at Patna

Booklet on "Seismic Retrofitting of MCD School Buildings at New Delhi - BMTPC's initiative" being released by Kumari Selja, the then Hon'ble Minister of Housing & Urban Poverty Alleviation, during the World Habitat Day on October 1, 2012

Release of Structural Design Manual on Use of Glass Fibre Reinforced Gypsum (GFRG) Panels in Buildings by Secretary, HUPA during the National Seminar on 'Emerging Building Materials and Construction Technologies' organised by BMTPC on 31st July - 1st August 2012 at New Delhi

BMTPC, in its endeavor to demonstrate retrofitting techniques to be adopted in masonry load bearing buildings, had planned seismic retrofitting of few MCD Schools. In the process, BMTPC has so far completed retrofitting of seven school buildings in Delhi. Apart from demonstrating the retrofitting techniques, BMTPC conducts capacity building and awareness programmes during the process of retrofitting.

The present document is brought out to explain the process of retrofitting from planning to execution. It elaborates & documents step by step procedure to be adopted for seismic retrofitting of load bearing masonry structure through drawings and photographs. This documentation was done during the retrofitting work of two MCD school buildings at Vivak Vihar & Lajpat Nagar. Retrofitting techniques have been principally based on IS 13935: 2009 Indian Standard on "Seismic Evaluation, Repair & Strengthening of Masonry Building - Guidelines". It is hoped that this document will be useful for the practicing engineers, architects, Public and Private agencies involved in seismic strengthening, repair and maintenance of the buildings. The document was released by Kumari Selja, the then Hon'ble Minister of Housing & Urban Poverty Alleviation on the occasion of World Habitat Day on October 1, 2012.

6. Development of Methodology for Documenting Seismic Safety of Housing Typologies in India

Nearly 60 percent of the land area (about 66 percent of population) in India is vulnerable to earthquake intensities ranging from moderate to severe. Varying geo-climatic conditions, predominance of certain building materials in a region, living habits of people and hazard scenario influence the typology, basic material and construction technologies of houses in that region. Many devastating earthquakes in past, in regions of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Bihar, Gujarat and North East (falling in severe earthquake Zone V) have led to evolution of home-grown housing technologies, using locally available materials and skills that have been found to be earthquake resistant also. Dhajji Diwari in J&K regions, the Assam type houses in North East and Bhunga Houses in Gujarat are a few prime examples of these evolution.

These traditional safer practices are being forgotten with the influence of modern construction materials, technologies and practices. Much of the construction taking place in moderate to severe earthquake zones incorporates neither the seismic resistant features of traditional construction, nor the salient features of modern engineering. Earthquakes in

recent past have exposed the vulnerability of the existing buildings in the country. Collapse of building during earthquakes is the main cause of human losses, therefore, it is important to follow proactive pre-disaster mitigation and planning approach. For any disaster mitigation planning, it is important to understand the technologies that are existing for building construction in severe earthquake zones of the country, to assess their vulnerability to future earthquake events and identify simple means of strengthening these type of buildings.

BMTPC, in association with C. V. R. Murty (IIT Madras) and his team comprising of experts in the field took the initiative of undertaking a Pilot Study of different typologies of houses and their safety against future earthquakes in the severe to moderate earthquake zones areas of Uttarakhand, West Bengal, Chandigarh, Punjab, Assam, J&K, Gujarat and Bihar.

In this connection, extensive field studies by the Core Group involving local officials of the area concerned and wide consultation with other known experts are being currently organized so as to study the house types, identify deficiencies of the existing houses from seismic safety point of view and develop a methodology for undertaking technical documentation of housing typologies on a larger scale in moderate to severe seismic zones of India.

III. ACTIVITIES IN NORTH-EASTERN REGION

1. Significant Activities in North-Eastern Region

BMTPC is actively involved in developing and promoting bamboo based 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 based products, and construction of demonstration houses/structures. The Council is constantly imparting training to the local artisans in processing of bamboo and making them aware regarding bamboo based construction. The progress of the various activities in the North Eastern Region are:

- Setting up of a Bamboo Mat Production Centre at Nongchram, East Garo Hills, Meghalaya is in advanced stage of completion. An MoU was signed between BMTPC and local agency for implementation of the project. After construction of shed for the Centre, the machines required have been installed. Training to supervisors and local bamboo workers has

Training on the bamboo processing machines at the Bamboo Mat Production Centre established by BMTPC at Dimapur, Nagaland

also been provided on the working of various machines.

- Setting up of Bamboo Mat Production Centre in Nagaland has been initiated. An MoU has been signed between BMTPC and Nagaland bamboo Development Agency (NBDA). After the finalization of site in consultation with NBDA, the machines required for the Centre have been installed by the Agency at the Centre. Training on various machines is being undertaken.

IV. STRENGTHENING THE INFORMATION AND DATABASE IN THE CONSTRUCTION SECTOR

1. Publication of the "Nirman Sarika" – Special Issue of BMTPC Newsletter

On the occasion of World Habitat Day 2012 celebrated by the Ministry of Housing & Urban Poverty Alleviation on 1st October, 2012, BMTPC brought out a Special Issue of its Newsletter "Nirman Sarika" on the theme "Changing Cities, Building Opportunities", chosen by United Nations to mark the occasion. This special publication focused on the various issues related to the theme of the World Habitat Day besides highlighting the activities of the Council. The "Nirman Sarika" was released by Hon'ble Kumari Selja ji, the then Minister for Housing & Urban Poverty Alleviation during the celebration ceremony of World Habitat Day 2012.

2. Publication of Structural Design Manual on Use of Glass Fibre Reinforced Gypsum (GFRG) Panels in Buildings

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. The technology is evaluated by BMTPC under the Performance Appraisal Certified 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, materials properties, strength and behavior of the panels have been studied in India at IIT Madras.

While evaluating the system, it was realized that the design Manual used in Australia for the system, needed appropriate modification to ensure conformity with the prevailing Indian standards and to incorporate the research findings of the studies undertaken at IIT Madras.

Accordingly, the Design Manual has been published by BMTPC as prepared by IIT Madras. The Manual deals with the engineering design aspect of GFRG Panels and provides guidelines to the engineers who intend to design building using GFRG Panels.

This Manual is mandatory and required to be followed for design of any buildings using GFRG Panels being manufactured as per the design specifications. The Manual will serve the purpose for designing the buildings using GFRG Panels and will go a long way in propagating the Rapidwall technology as an alternate technology for building construction.

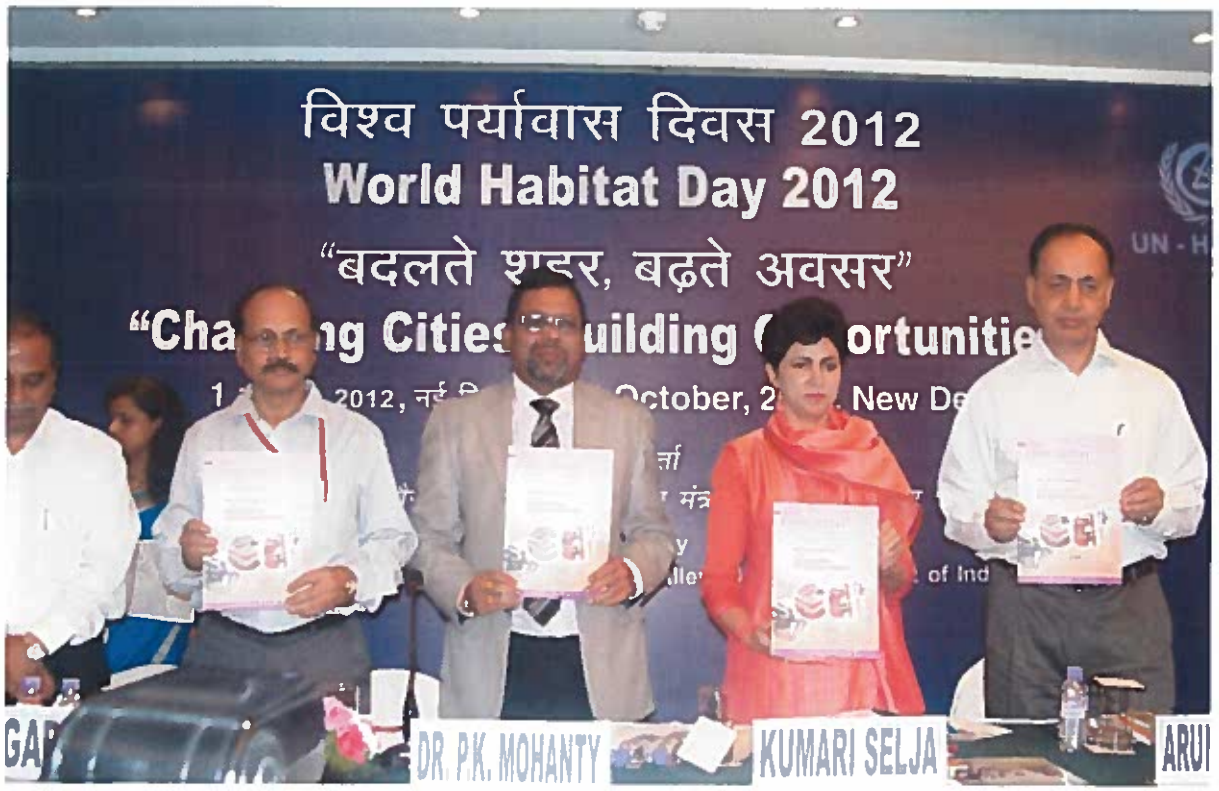
The Manual was released by Shri Arun Kumar Misra, Secretary, Ministry of Housing & Urban Poverty Alleviation during the National Seminar on Emerging Building Materials & Construction Technologies on 31st July 2012 at New Delhi.

3. Publication of Guidelines on "Manual on Basics of Formwork"

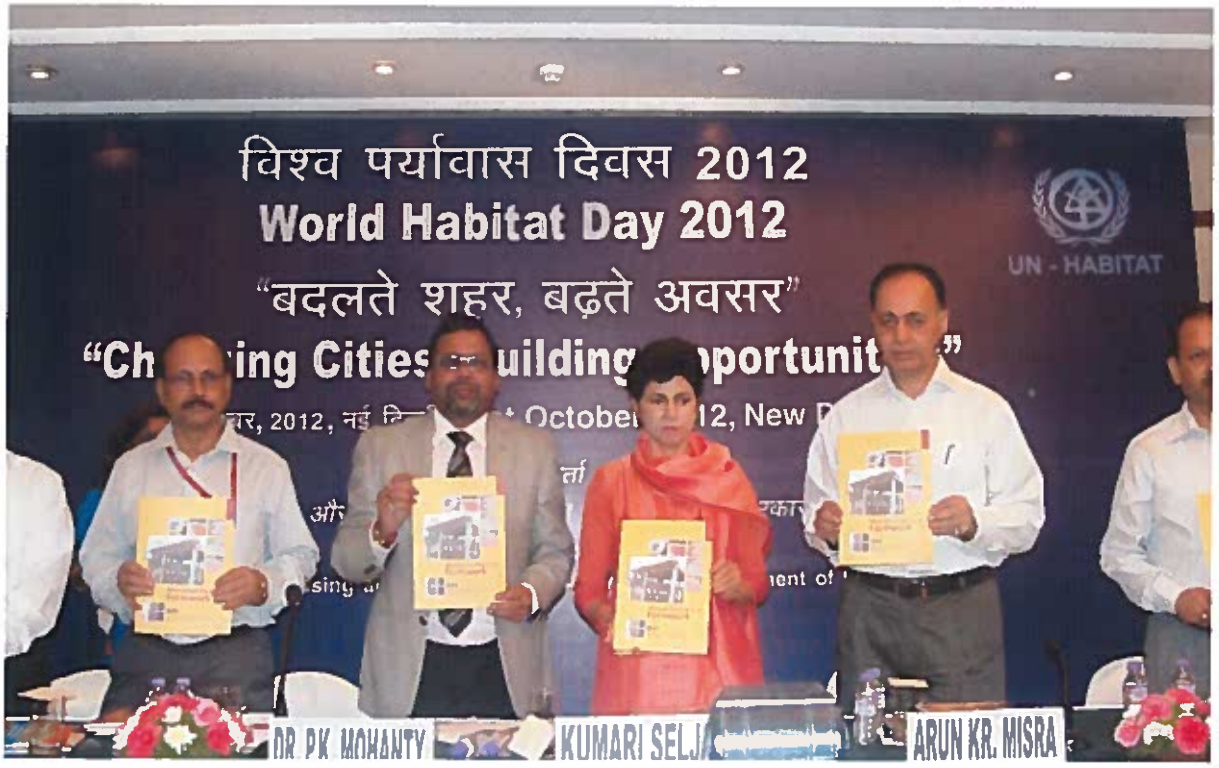
Concrete is the most widely used versatile construction material, which can be moulded to any shape and size depending upon the requirement. The desired shape and size of concrete construction is achieved when it is green through a temporary structure called formwork systems. The formwork systems not only mould the concrete to desired size & shape and control its position and alignment but also supports its own weight, plus the weight of freshly placed concrete and construction live loads. Formwork system, therefore, are critical elements of the overall construction plan and require needed attention. Quality, Safety and Economy are the three basic objectives of the formwork system, which require cooperation and coordination between engineer/architect and the contractor with proper understanding of the materials used, design parameters, erection, stripping, maintenance and good engineering practices.

This publication entitled "Manual on the Basics of Formwork" has been prepared in association with Society for Environment Protection (SEP), Ahmedabad to address all the above issues. The various details given in the Manual along with photographs of good and bad practices, would help, engineers, field supervisors and contractors in developing general understanding of the subject with a few key aspects to be borne in mind for improving quality of formwork system.

The Manual was released by Kumari Selja, the then Hon'ble Minister for Housing & Urban Poverty Alleviation on 1st



Kumari Selja, the then Hon'ble Minister of Housing & Urban Poverty Alleviation, releasing the Special Issue of "Nirman Sarika" brought out by BMTPC during the World Habitat Day on October 1, 2012



Kumari Selja, the then Hon'ble Minister of Housing & Urban Poverty Alleviation, releasing the Guidelines on "Manual on Basics of Formwork" brought out by BMTPC during the World Habitat Day on October 1, 2012

October, 2012 on the occasion of World Habitat Day at New Delhi.

4. Publication of Design Packages Using Alternate Building Materials & Technologies

In order to give fresh impetus for mainstreaming the proven alternate materials and technologies being promoted by BMTPC, the Council undertook initiative of development of Design Packages on alternate house building technologies for various regions of the country having different geo-climatic condition and topography. The design packages include a cluster of 60 houses having carpet area of 25 sqm. each with two habitable rooms, kitchen & toilet, a primary school, a community centre & shops/kiosks with on-site infrastructure development and are customized to the local needs and include regional specific appropriate technologies. The most important aspect is that this effort is not for demonstration but for mass level application of the cost effective technologies which are based on local materials, time tested and economical with respect to conventional technologies.

The Design Packages envisage to facilitate wide spread dissemination and adoption of proven cost effective and sustainable building materials and construction technologies as an alternate to the conventional, in a manner and by a strategy that will promote knowledge, confidence and create enabling environment for the large scale adoption of such materials and technologies in different geoclimatic regions of the country, thus making housing cost effective, accessible and sustainable.

Under this activity, BMTPC has developed six Design Packages using Alternate Building Materials & Technologies namely for West/Central Zone, South Zone, North Zone (Plain), North-East Zone, East Zone and North Zone (Hilly).

Specific emphasis has been laid in selecting the proven and cost effective technologies for developing the Design Packages which are appropriate in the context of the selected zones of the country. In preparation of design package, apart from economy; regional context, disaster resistant features, gender context, disable friendly features, etc. has also been considered. The Design Packages also provide detailed quantities of materials, actual Rate analysis of cost effective technologies, etc. so as to provide all the basic information to help in adopting the packages directly by state agencies.

During the year, three Design Packages have been published for following zones:

- West Zone
- South Zone
- Karnataka

The Design Packages for West Zone was released by Kumari Selja, the then Hon'ble Minister for Housing & Urban Poverty Alleviation on 1st October, 2012 on the occasion of World Habitat Day at New Delhi.

These Design Packages will be helpful to various stakeholders in the construction sector in designing a project using cost effective and alternate building materials & technologies and would go a long way in mainstreaming these alternate technologies into conventional construction practices.

5. Publication of Report on Monolithic Construction for Mass Housing

BMTPC operates a voluntary scheme Performance Appraisal Certificate Scheme (PACS) to give independent opinion on new materials and technologies for which there is no Indian Standard is formulated. Since it is voluntary Scheme, agencies approach BMTPC for evaluation. However, for those technologies, on which there is no such request, but require technical intervention for application in field by government agencies, Executive Committee, BMTPC in its meeting held on 20th August, 2008, set up a Standing Committee for providing guidance for testing and field application and giving technical opinion on the materials/techniques. Accordingly, a Standing Committee consisting of representatives from Structural Engineering Research Institute (SERC), Chennai, National Council for Cement and Building Materials (NCCBM), Ballabgarh; Deptt of Civil Engineering, IIT Roorkee, Roorkee; Bureau of Indian Standard, New Delhi; CPWD, New Delhi; NABL, New Delhi; The Institute of Engineers, Kolkatta; CBRI, Roorkee and Quality Council India, New Delhi was set up.

The Standing Committee considered the details of Monolithic Concrete Construction being used by several agencies using aluminium and plastic formwork and has recommended the guidelines for use of monolithic concrete construction.

These guidelines in the form of a Report on Monolithic Concrete Construction for Mass Housing were published by BMTPC. These Guidelines have already been circulated to various State Government agencies, PWD/Urban Development Deptts., State Level Nodal Agencies involved in slum renewal and construction projects.

Kumari Selja, the then Hon'ble Minister of Housing & Urban Poverty Alleviation, releasing the Book titled "Design Package Using Alternate Building Materials & Technologies : West Zone" brought out by BMTPC during the World Habitat Day on October 1, 2012

Release of Report on Monolithic Construction for Mass Housing by Secretary, HUPA during the National Seminar on 'Emerging Building Materials and Construction Technologies' organised by BMTPC on 31st July - 1st August 2012 at New Delhi

The Manual was released by Shri Arun Kumar Misra, Secretary, Ministry of Housing & Urban Poverty Alleviation during the National Seminar on Emerging Building Materials & Construction Technologies on 31st July 2012 at New Delhi.

6. Compilation of Database of Manufacturers of Alternate Building Materials & Technologies

The Council has initiated compilation of Database of Manufacturers of Alternate Building Materials & Technologies in order to build a repository of these products. The present database encompasses the following materials and systems:

- Foam Concrete Panel
- GRC Panel
- Steel Wire-EPS Composite Panel
- Precast Waffle Unit for Floors/Roofs
- Precast Doubly Curved Shell Unit for Floor/Roofs
- Hook Panel
- Hollow Gypsum Board and Blocks
- Concrete Pavers
- Coloured Cement Tile for Roofing
- Prefabricated Brick Panel for Floor/Roofs
- Reinforced Brick and Reinforced Brick Concrete Slab/Floor/Roofs
- Precast Reinforced Concrete L-Panel for Roofs:
- Precast Solid Cement Concrete Block
- Thin RC Ribbed Slab for Floors and Roofs
- Precast Reinforced/ Prestressed Concrete Ribbed/Cored Slab Units for Floors/Roofs
- Precast Concrete Stone Masonry Blocks
- Hollow and Solid Light Weight Concrete Block
- RCC Doors and Window Frame
- Ferrocement Doors Shutters
- Ferrocement Water Tanks (250-10,000 lt.)
- Concrete Manhole Covers and Frames
- Flyash/Red Mud Polymer Door Shutters
- Rubber wood Flush Door Shutters
- Poplar wood Flush Door Shutters
- Finger jointing & shaping technology
- Micro Concrete Roofing Tiles
- Bamboo Mat Corrugated Roofing Sheets:
- Bamboo Mat Ridge Cap
- Two Storey Bamboo Housing System
- Pre-fab Double walled Composite House
- Straw and Resin Panels
- Wood Fibre Insulation
- Glass Fibre Reinforced Polymer doors and door frames
- Ferrocement Roofing Channels

- Fly Ash Bricks
- Bendable Concrete
- Earth blocks
- Natural touch cotton fiber insulation
- Rice husk ash products
- Recycled materials in concrete
- Concrete canvas

The database will be updated on regular basis to add on more manufacturers and would be made available on the website of the Council so that general public and other stakeholders can make use of the database.

7. Compilation of Data on Energy in Building Materials & Green House Gas Emissions

For working out the energy requirement of building materials, one of the important parameter is the Embodied Energy of the building materials. The Embodied Energy of building materials listed in Energy Code or other documents are based on the study done earlier by various institutions / experts. Since then, there has been change in production technology in many cases. It was, therefore, felt that there is need to re-look into the present value of embodied energy both in local and national context and device a mechanism to collect to collate, update and share it in public domain.

A National Network on embodied Energy Building Materials and Technologies with the involvement of willing technical institutions and technocrats has been created at the behest of BMTPC. They will work towards embodied energy of various materials.

The approach and methodology for development of database are as follows:

- To initiate the activity, firstly various colleges and leading Technocrats will be invited to be a part of the Network on Embodied Energy (NEE). This process has been initiated and as of now 8 to 10 members of the network (including 4 to 5 leading colleges) have already agreed to participate.
- After a basic interaction, a draft embodied energy – data collection framework has been evolved for flyash bricks, hollow blocks, country fired kiln bricks, machine made and wire cut brick.
- A pilot study of one unit each was done to test the model involving students of Nirma University, Gujarat. Similar exercise is being done at other institutions.
- The regional embodied energy data thus generated will be placed online for larger use. To enable this, a

website domain www.embodiedenergy.in has been created and website design has been done.

- The Network is also in the process of identifying the areas of further research in building material's embodied energy or Thermal conductivity etc. which are very important parameters for Green building design but very little information is available on them in regional context. For any such additional activity, network will generate additional resources.

Under the project, the entire exercise will be undertaken in phases. As a part of the first phase, first generation of the Network will be developed as discussed above and pilots will be done at identified colleges in various regions of India. It will be based on these pilot work, Network will structure out the basic system and guidelines for further expansion of the Network and developing systems so as to do more intense data collection work across India and also ways for larger dissemination of the pilot phase work.

8. Preparation of Training Modules for Building Artisans

Under the initiative entitled 'Evolving Building Artisan Certification Program at National Level', the Council evolved a system of eight Certificate Modules for the existing building artisans. As a part of this initiative a benchmark survey of the existing building artisans, construction labourers and contractors was carried out in the State of Gujarat to understand the ground realities of these principal actors of construction sector better. The information coming out of this survey dictated these certificate modules that are meant for them. In other words, these modules and the system have been evolved keeping in mind the ground reality, especially the limitations of our artisans with regard to their education, literacy, comprehension level, and their inability to interrupt their work for a period longer than 3 to 4 days for any training. Along with the certificate curriculum, the training curriculum as well as the candidate assessment method too has been evolved. Many of these modules are hierarchical in nature, and hence, allow one to prepare and ultimately go for more than one certificate. The training modules prepared are:

- Assistant Mason Certificate
- Mason Certificate
- Disaster-Resistant Construction Certificate
- RCC Construction Certificate
- Concreting Certificate
- Bar-Bender Certificate
- Repairs of Masonry and RC Elements in Masonry Building Certificate
- Appropriate Building Materials and Construction Systems Certificate

9. Information Dissemination through Website of the Council

The Website of the Council (www.bmtpc.org) is being visited by professionals of various disciplines globally. It is being used as a reference resource in the area of innovative building materials and construction technologies. The website of the Council acts as a repository on cost-effective building materials and construction in line with its mandate to create enabling environment of affordable housing for all.

There is good response on website in the form of general enquiry about product and services. The website of the Council is regularly updated with latest information such as hire and purchase requirements, Tender Notices, training programmes, Right to Information Act and others as required from time to time.

10. Standardization and Product Evaluation

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.

The 4th and the 5th Meetings of the Technical Assessment Committee (TAC) were held on 14th May, 2012 & 15th March, 2013 respectively for considering approval of PACS for the Glass Fibre Reinforced Gypsum (GFRG) Panel and renewal of PACS for seven products namely (i) Formwork for Monolithic Concrete Construction, (ii) Plastocrete Panel, (iii) Insulated Roof Panel, (iv) Underground Water Storage Tank (Sump), (v) PVC Profile Door, (vi) Endura Door and (vii) Fomura Door. The product manufacturers also made presentations of the innovative products/materials & technologies before the TAC members. PACs have been issued for one product Glass Fibre Reinforced Gypsum (GFRG) Panel and renewed for seven products during 2012-13.

For carrying out surveillance inspection as per the guidelines stipulated for issue of PAC, visit to the production unit of RCF-FACT, Cochin was made by the representatives of BMTPC for inspection and taking samples of the product for getting these tested for performance characteristics from Structural Engineering Division, IIT Madras. For renewal of the above 7 products, visit to the production unit of M/s Sintex Industries Ltd. also made on 31st August & 1st Sept.

2012 for inspection and taking samples of the product for getting these tested for performance characteristics from IPIRTI, Bangalore and CIPET, Ahmedabad. A visit to the production unit of M/s Navin Fluorine International Ltd., Surat was also made for inspection of Fluorogypsum Binder and taking samples of the product for getting these tested for performance characteristics from NCCBM, Hyderabad and Shriram Institute for Industrial Research, Delhi.

Performance Appraisal certificates (PAC) for 24 products have been issued so far covering various items viz. Wooden/FRP/PVC/PUF Doors & Windows, Block Making Machine, Pan Mixer, Recron Fibre, Gypcrete Wall Panel, Brick Kiln Technology, Plastocrete/Insulated/ Sandwich/ Gypsum Panels, Underground Water Storage/ Septic Tanks, FRP Manhole, Monolithic Formwork and Marble Slurry Binder.

A few more applications for issue of PACs for the products viz. Aluminium Formwork, Fluorogypsum Binder, M2 (Emmedue) Panel and R-Panel etc. including few emerging construction system are under active consideration.

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. For the items under considerations, International procedures have been studied. In few cases the specifications recommended by the manufacturers have been modified based on international practices.

One such item is Glass Fibre Reinforced Gypsum (GFRG) Panel manufactured by RCF- FACT, Cochin which was originally developed and used in Austrailia. In order to adept it for Indian conditions, specifications and performance have been modified. For this purpose, detailed Design Manual, Construction Manual and Maintenance Guide have also been prepared.

Technical Inputs to Sectional Committees of BIS

Apart from PACS, the Council is providing technical inputs to various Sectional Committees of Bureau of Indian Standards for formulation of Indian Standards on various subjects related to Civil Engineering such as Cement and Concrete; Flooring, Wall Furnishing and Roofing Materials; Earthquake Engineering; Housing Prefabricated Construction; Hill Area Development; National Building Code; etc.

The two draft Codes, namely Code of Practice for Construction of Wall with Rat Trap Bond Technology and

Code of Practice for Construction of floors and roofs with Filler Slab prepared by BMTPC were circulated by Bureau of Indian Standard to the Members of Construction Practices Sectional Committed CED 13. The Committee in its meeting held on 18th September, 2012 considered the two drafts and decided to process further. Regarding Filler Slab, it was decided that the existing Indian Standard on Reinforced Brick (RB) Slab may be revised to incorporate provision of filler slab. Regarding Rat Trap Bond, it was decided that a single draft Standard on Reinforced Masonry may cover Rat Trap Bond technology.

In the process of issuing Performance Appraisal for GFRG System, the detailed specifications with all tests methods were prepared and made a part of PAC issued by BMTPC on the subject which may act as a reference material for developing Indian Standard later.

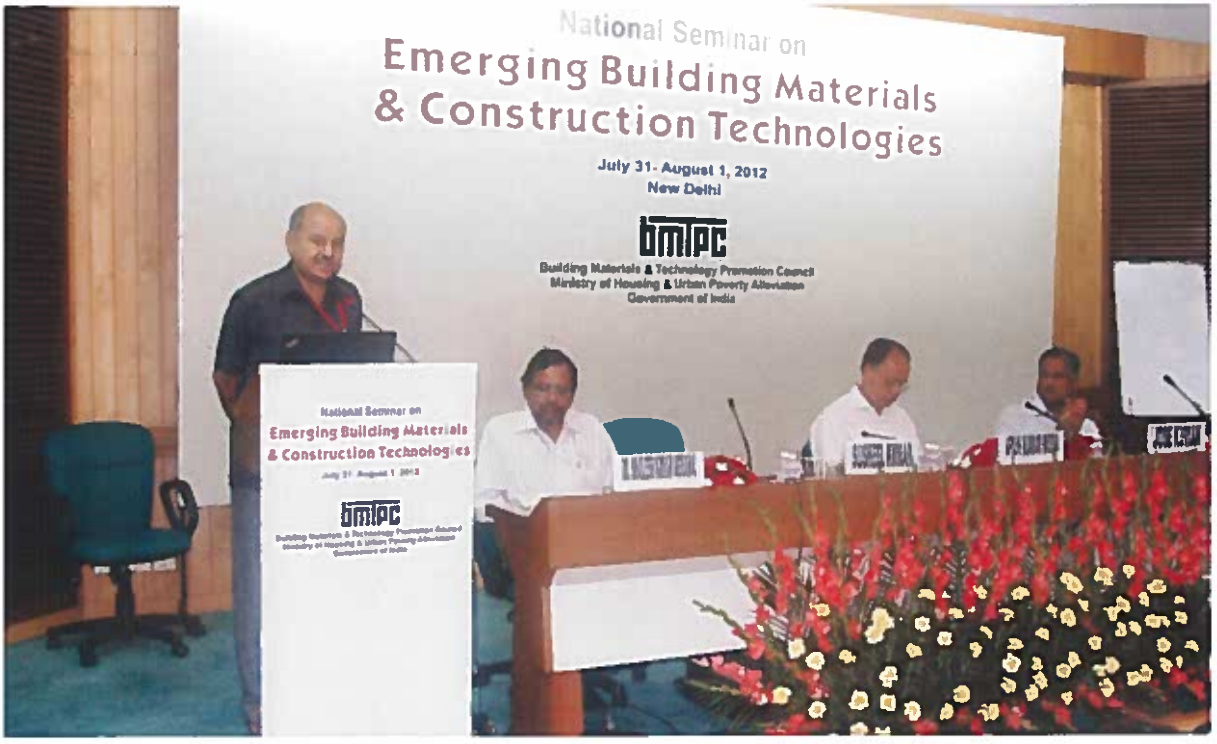
V. PROMOTIONAL AND CAPACITY BUILDING ACTIVITIES AT NATIONAL AND INTERNATIONAL LEVEL

1. Organization of National Consultation on Appropriate Building Technologies

BMTPC organized a National Consultation on Development, Construction and Dissemination of Appropriate Building Technologies on 29th May, 2012 at New Delhi, in order to evolve a comprehensive and integrated transfer mechanism for cost effective building materials and construction technologies from lab to land. The aim of the programme was also to popularize the alternate and emerging technologies developed and promoted by BMTPC so as to get wider acceptability, visibility and perceptible outcome. The Consultation was structured in three Technical Sessions so as to cover most of the enlightened issues. The first Technical Session was on Research & Development in Appropriate Building Materials & Technologies – Identification of New Areas; during the second Session Dissemination and Field Level Application of Appropriate Building Materials & Construction Technologies – improvement & removal of shortcomings and constraints were discussed; and the last Session was on Appropriate Building Materials & Construction Technologies – Views & Initiatives by Builders/Contractors/state Development Authorities.

Around 50 participants from R&D and Academic Institutions, NGOs, Building Centres, Professionals, Manufacturers, Builders, Real Estate Consultants, Housing & Urban Development Authorities, public and private sector

National Consultation on "Development, Construction and Dissemination of Cost Effective Technologies" organised by BMTPC on 29th May, 2012 at New Delhi



National Seminar on 'Emerging Building Materials and Construction Technologies' organised by BMTPC on 31st July - 1st August 2012 at New Delhi

departments/agencies working in the area of housing and building construction participated in the Consultation.

2. Organization of National Seminar on Emerging Building Materials & Construction Technologies

BMTPC organised a National Seminar on Emerging Building Materials & Construction Technologies from 31st July to 01st August, 2012 at New Delhi. The main objective of the Seminar was to bring all important organizations working in the area of upcoming and emerging building materials and construction technologies at a common platform for its large scale application and dissemination at national level. The National Seminar was inaugurated by the Secretary, Ministry of Housing & Urban Poverty Alleviation.

The National Seminar was structured to cover the various aspects of the new and emerging building materials and construction technologies. Although all the stake-holders involved in the construction were invited, the focus was on research institutions and implementing agencies, in order to have discussion on various aspects of emerging construction technologies.

More than 125 participants from state urban development authorities, research institutions, practicing architects/ engineers, academic institutions, systems/ technology providers of emerging technologies participated in the National Seminar. During the National Seminar, the Chief Guest, Secretary, Ministry of Housing & Urban Poverty Alleviation released two publications titled "GFRG/Rapidwall Building Structural Design Manual" and "A Report on Monolithic Construction for Mass Housing".

3. Organization of BMTPCexpo'12 - Exhibition-cum-Seminar on "Appropriate Building Materials & Housing Technologies"

BMTPC organized BMTPCexpo'12 - Exhibition-cum-Seminar on "Appropriate Building Materials & Housing Technologies" at New Delhi from 6-8 November, 2012. Concurrently, three days seminar was also organized to coincide with the exhibition. This exposition on building materials and construction technologies showcased the latest, emerging and cost effective trends in the building materials & construction sector.

In the exposition, 26 companies participated and displayed their products and technologies ranging from precast/pre-fabricated systems, products from waste materials, plant & machinery for making bricks and blocks, ferrocement technologies, bamboo based technologies, Bio-digester technology etc. During the Seminar, presentations were

made on wide range of products and technologies which were showcased in the exhibition such as Flyash building products, machines for concrete bricks & blocks, ferrocement technology, interlocking blocks, Tunnel form system for mass housing, precast housing systems of various types. The Council published all the showcased technologies/products in the form of "Show Directory" which was provided to all visitors.

The BMTPCexpo'12 received over-whelming response from R&D and Academic Institutions, NGOs, Building Centres, Manufacturers, Builders, Housing & Urban Development Authorities, public and private sector departments/agencies working in the area of housing and building construction. Besides a number of serious visitors, around 150 students from the MNIT, Jaipur, Deenbandu Chhotu Ram University of Science & Technology Sonepat, Manav Rachna University Faridabad, Jamia Milia Islamia University, IIT Bombay, NIT Nagpur, NIT Hamirpur visited the exhibition and participated in the Seminar.

The Council also constructed a demonstration house to demonstrate various alternate housing technologies which were showcased during the exposition having plinth area of 36.10 sqm. consisting of two habitable rooms, kitchen, one separate bath, WC and varandah. The demonstration house was handed over to NSIC by the Secretary, Ministry of Housing & Urban Poverty Alleviation.

4. Organization of Road Show on Emerging Fast Track Technologies for Mass Housing

BMTPC organised Roadshow/Exhibition-cum-Seminar on 'Emerging Fast Track Technologies for Mass Housing' at Chennai jointly with Indian Concrete Institute at Convention Centre, Tamil Nadu Trade Promotion Organisation, Chennai from 18-19 December, 2012. The Indian Concrete Institute (ICI), founded in 1982, is the premier organisation for concrete technologists, with captains of industry, cement manufacturers, leading consultants, academicians, educational institutions and research scientists as active members. This was the first of its kind road show organized in Southern Region with the aim that the construction industry will learn the modern ways of construction and adapt them in field so that the dream of adequate and affordable housing for all is realised.

The objectives of the Road Show were:

- To present Indian and global perspective on cost-effective, energy-efficient and ecologically appropriate building materials and housing technologies

BMTPCexpo'12 - Exhibition-cum-Seminar on "Appropriate Building Materials & Housing Technologies" organised at New Delhi from 6-8 November, 2012

Road Show/Exhibition-cum-Seminar on Emerging Fast Track Technologies for Mass Housing organised by BMTPC jointly with Indian Concrete Institute at Chennai from 18-19 December, 2012

- To present the state-of-the-art alternate and emerging technologies for building construction including precast factory made components
- To disseminate up-to-date information, knowledge and experience on design, production, certification and application of alternate building materials
- To promote and encourage adoption of alternate and emerging technologies for mass housing by various construction agencies.
- To identify the problems and prospects in promoting the affordable housing and building construction and develop realistic technological options.

Two days seminar was also be organised to coincide with the Road Show. The various sub-themes deliberated during the two-days Seminar are as given below:

- Precast Concrete Construction
- Monolithic Construction
- Formwork Systems Technologies
- GFRG Rapid Wall System Technologies
- Light weight concrete slabs & precast columns
- Affordable mass housing technologies
- Field applications of innovative housing technologies
- Automation in buildings
- Pre-engineered building systems
- C&D waste recycling
- Innovative, cost-effective building products & technologies

During the Road Show, 22 companies participated and displayed their products and technologies in the area of mass housing. More than 300 participants from R&D, Academic Institutions, NGOs, Building Centres, Manufacturers, Builders, Housing & Urban Development Authorities, public and private sector departments/agencies working in the area of housing and building construction participated in the Road Show.

5. Development of Design Concept for Rural Housing in Western India for IAY and Other Similar Schemes

As per the Report of the Working Group setup by the Government of India on Rural Housing for 11th Five Year Plan, the total rural housing shortage between 2007-2012 is estimated to be 47.3 million. Out of this 90 percent is for the BPL families. In order to cover this ever increasing housing shortage, the Ministry of Rural Development is operating the Indira Awas Yojna (IAY) which primarily help in construction/upgradation of dwelling units for members of SC/ST, freed bonded labours and others falling below the poverty line, non SC/ST rural households by providing them

a lump-sum financial assistance.

The present ceiling as grant of assistance per unit under IAY is Rs. 70,000/- in plain areas and Rs. 75,000/- for hilly difficult areas. IAY Housing Policy is strategically left open ended so that beneficiary can build house as per his/ her requirements and also similarly choose the most appropriate local materials. With varying geo climatic conditions, hazard scenario and living habits of rural masses in different parts of the country, it is important to know the pattern of housing typology, materials availability and living pattern of the people in the area under consideration.

A pilot study was made in the rural areas of Gandhinagar and Anand districts of Gujarat to understand the need of local people for planning and prevailing practices of house construction. In the pilot study, three villages namely Vadali, Anand; Antoli and Jindava, Gandhinagar were considered. Based on the study, it is understood that the basic requirement in these areas is to have atleast a pucca habitable room around which other facilities could be developed as and when finances are available. Verandah was found to be an important element and most used portion of the houses and mostly people prefer kitchen outside adjoining the main structure.

The proposed design concept has been evolved keeping in mind the above requirements within the affordable cost. It provides a pucca livable room of size 4m x 3.5m, using rat trap bond brick masonry and RCC roof. Verandah, being an important part of the dwelling unit, it is planned to give front verandah skeleton i.e framing and spacing element installed to enable the owner to put covering materials himself as per his ability, need and finance available.

To minimize the cost and maximize safety and size of the house, the approach adopted in the design concept is to make main pucca structure as big as possible with necessary earthquake resistant features and give spanning structure for Verandah for future expansion as and when financially feasible. The design developed has been prepared focusing two districts of Gujarat but will also hold good for other regions of Gujarat and other parts of Western India.

6. Development of Design Concept for Rural Housing in Central India for IAY and Other Similar Scheme

Varying geo-climatic conditions, hazard scenario, availability / non-availability of different building materials in the region, living habits of people in different parts of the country

influence the typology of buildings in rural areas. Any planning / design of dwelling units, therefore, need study of local typology, materials availability and living pattern of the people.

A Pilot study was taken in the village Thaura Mehadevan in Amethi Tehsil of U.P to know the present status of housing in the region and to explore the possibility of providing basic shelter need within the existing financial means.

The study revealed that the traditional pattern mainly consists of courtyard in the centre with rooms surrounding it. Walling is generally of mud construction with roofing made of country tiles, supported on traditional wooden trusses. A narrow verandah having a thatched lean to roof is also very commonly used. The study concentrates on typology approach to both house design and specifications for key components of walling and roofing.

The present design concept is based on traditional typology that exists in the region. Incremental growth concept and self help construction utilizing locally available materials have also been given due weightage here. The proposed design further is on the basis of central courtyard and incorporates four stages of extension. First phase covers unit of atleast 20 sqm. plinth area including a WC and bathing space. Depending upon the specifications decided, it may be possible to construct one house within the cost of Rs. 1 lakh.

To assess the implication on cost of various materials option for walling and roofing, a cost matrix has been developed, indicating the plinth area rate of construction that can be achieved assuming no involvement of self-help labour. If beneficiary, construct the house themselves, cost would reduce further. The cost matrix will serve as tool for comparative analysis and decision making for assessing impact of various options available.

7. Skill Development and Capacity Building in the area of Alternate and Cost Effective Building Materials & Construction Technologies

The Council has organised following Capacity Building Programmes during the year:

- Three months Training Programme for Field and Lab Technicians jointly with Indian Concrete Institute (ICI) at Nagpur started on 16 February, 2013.
- Training programme for Masons on Cost Effective Construction Technologies in Rural Areas at Amirgarh, Gujarat during March 7-9, 2013. Thirty participants participated in the training programme. Two audio-visual training modules covering Mortar

and Brick work were prepared and used for the training of masons.

- Training Programme and Exhibition for Supervisors on Low Cost Building Materials & Construction Techniques during March 13-14, 2013 at Building Centre, SATI, Vidisha, MP. Twenty participants participated in the training programme.
- Training programme for Supervisors on Low Cost Building Materials & Construction Techniques during March 18-19, 2013 at IIHRD, Vidisha, Madhya Pradesh. Twenty participants participated in the training programme.
- Training Programme for Supervisor on Effective Supervision of Workers and Improve the Construction Supervisor's Ability during March 20-21, 2013 at RADS Tehri Garhwal, Uttarakhand. Twenty five participants participated in the training programme.
- Training Programme of Masons for Rural Areas on the Manufacturing Process for the Fly Ash based Building Products during March 23-24, 2013 at Adityapur, Jamshedpur. Thirty participants participated in the two days training programme.
- Two days Hands on Mason's Training Programme on 'Quality and Disaster Resistant Construction Practices' from March 23-24, 2013 at Building Centre, Kerala GIDC, Bavla, Gujarat. Twenty participants attended the training programme.
- Short term Training Programme on Design and Construction of GFRG/Rapidwall Building Systems organised jointly with IIT Madras on March 25, 2013 at Chennai.
- Training Programme for Engineers and Supervisors on Green Building Technologies from March 28-29, 2013 at Rural Building Center Kanyakumari, Tamilnadu. Twenty five participants attended the training programme.

8. Celebrations of World Habitat Day 2012

On the occasion of World Habitat Day 2012, the Council undertook the following activities:

Painting Competition for Differently Abled Children

Organised Painting Competition for Differently Abled Children on the theme: "Changing Cities, Building Opportunities". These children included differently abled children in the categories namely (i) Mentally Challenged. (ii) Visually impaired, and (iii) Hearing Impaired children. Out of invited 30 schools, around 1500 students participated in the Painting Competition. From the selected entries sent by

Training programme for Masons on Cost Effective Construction Technologies in Rural Areas during March 7-9, 2013 at Amirgarh, Gujarat

Training Programme for Engineers and Supervisors on Green Building Technologies from March 28-29, 2013 at Rural Building Center Kanyakumari, Tamilnadu.

the respective Schools, the Jury in BMTPC selected the best entries for prizes. The prizes were awarded to winning entries by Kumari Selja, the then Hon'ble Minister for Housing & Urban Poverty Alleviation during the celebrations of World Habitat Day on 1st October, 2012 at New Delhi.

Release of Publications

i. Special issue of Newsletter of BMTPC "Nirman Sarika"
ii. Guidelines on "Manual on Basics of Formwork"
iii. Booklet on "Seismic Retrofitting of MCD School Buildings at New Delhi – BMTPC's Initiative"
iv. Design Package using Alternate Building Materials & Technologies for West Zone"

These publications were released by the then Hon'ble Minister of Housing & Urban Poverty Alleviation, Kumari Selja, during the celebrations of World Habitat Day 2012.

9. Participation in India International Trade Fair, 2012, Pragati Maidan, New Delhi from 14-27 November 2012

BMTPC participated in HUDCO BuildTech 2012 during India International Trade Fair (IITF) from 14-27 November, 2012. BMTPC Display attracted large number of professional, VIPs, foreign delegation and general public which evinced interest in the various innovative building materials and technologies being promoted by the Council. Large number of foreign delegations also visited BMTPC stall. Shri Ajay Maken, the then Hon'ble Minister for Housing & Urban Poverty Alleviation also visited BMTPC Display.

VI. TECHNOLOGY DEVELOPMENT, DIFFUSION AND TRANSFER

1. Identification and Evaluation of Emerging Housing Technologies

BMTPC earlier invited Global Expression of Interest (EOI) from construction system/technology developers/providers for introducing emerging and alternate cost effective housing technologies suitable to Indian geo-climatic and hazard conditions. The Technology Advisory Group constituted by the Ministry identified following seven technologies as potential technologies for mass scale housing:

1) 3S System (Pre-fab / Precast RCC Technologies by M/s B.G. Shirke Construction Technology Pvt. Ltd., Pune.
2) Monolithic Concrete Construction using: Plastic–Aluminium Composite formwork manufactured indigenously by M/s Sintex Industries Ltd., Gujarat.
3) Monolithic Concrete Construction using Aluminium Formwork (Imported) by M/s P.G. Setty Construction

Technology Pvt. Ltd., Mysore.

4) M/s J.K. Structure System using expanded steel mesh panels and polystyrene beads mixed alleviated / concrete.
5) Prefabricated Building Panel System using steel Mesh, Polystyrene core and chipping concrete.
6) Prestressed Precast Prefab technology using hollow core slab, beams columns, solid walls stairs by M/s Simplex Prefab Infrastructure Pvt. Ltd., Mumbai.
7) Precast concrete panel system using concrete welded mesh & plates by M/s Mooreliving Building System (India) Holding.

In addition, Glass Reinforced Gypsum Panel system (GFRG) – popularly known as Rapidwall System, was also studied and evaluated. Field visits to see the construction using different system were made. An exhibition and workshops were also organized at Pragati Maidan and NSIC ground in New Delhi, Kolkata & Chennai for wider dissemination amongst engineers, architects & builders. Two Meetings of TAG were organized to consider various technical details made available by Technology providers on 21st December, 2012 and 14th February, 2013.

Following three technologies were evaluated and Certificates issued under Performance Appraisal Certification Scheme:

1) Monolithic Concrete Formwork by M/s Sintex Industries Pvt. Ltd.
2) GFRG Panel System manufactured by M/s RCF Mumbai
3) GFRG Panel manufactured by FACT – RCF joint venture in Kochi.

Panels of M2 System (EMMDUE) brought from Italy are under testing by NABL accreditated lab, Civil Aid, Bangalore, for various performance characteristics including structural, thermal, acoustic, behavior under rain. The system is being evaluated under PACS.

The Guidelines on Design of Monolithic Concrete System and a Manual on Design of GFRG / Rapidwall System in association with IIT Madras were also brought out and widely distributed.

Additionally, two technologies namely, (1) Ribcore Prefab EPS Panel System by M/s Reliance Innovative Building (RIB) Solution Pvt. Ltd., and (2) Pre Engineered Panel consisting of insulated polystyrene core sandwitched between two layers of galvanized mesh by M/s Beardshell Ltd., Chennai were identified for further study.

Kumari Selja, the then Hon'ble Minister of Housing & Urban Poverty Alleviation, giving away the Prizes to the winners of Painting Competition of Differently Abled Children organised by BMTPC during the World Habitat Day on October 1, 2012

Kumari Selja, the then Hon'ble Minister of Housing & Urban Poverty Alleviation, visiting the Exhibition on Painting Competition of Differently Abled Children organised by BMTPC during the World Habitat Day on October 1, 2012

2. Development of Course Curriculum and Teachers Handbook on Sustainable Building Technology

One of the bottlenecks faced in actual application of sustainable building technologies is lack of awareness among engineers & architects about these. Realising this, BMTPC has taken initiative to develop Course on Sustainable Building Technology for Engineering and Architecture Colleges to enable the budding engineers and architects to get familiar with the sustainable building technologies. Based on a Brain Storming Session, Course Content has been developed, as an elective subject for Engineering Colleges. This covers site selection and planning, environment friendly building materials and technologies, energy and lighting, water conservation technologies & waste water treatment, solid waste management, Green building design and quantification software. The draft syllabus was circulated to various institutions for comments/views.

The syllabus was finalized in the meeting of the Expert Group. The finalized syllabus was forwarded to AICTE, Council of Architecture and other institutions. The Council is also in the process of preparing a textbook cum handbook covering various subjects listed in the syllabus.

3. Development of Criteria for Certification of Ready Mixed Concrete

Ready Mixed Concrete, is defined as concrete mixed in a stationary mixer in a control batching and mixing plant or in a truck-mixer and supplied in the fresh condition to the purchaser either at site or into the purchaser's vehicle. Speed and quality are the two main pillars which distinguishes RMC from site-mixed concrete. One can achieve speed by employing plant and equipment of required capacity, but the quality, it is not only the sophisticated equipment & Plant but also expertise in concrete technology and capability to exercise strict control on process parameters.

The construction scene has undergone major change during the last 10 years. Now RMC plants have sprung up in all major cities of India. Many cement manufacturing industries have taken initiative to set up most of these plants and utilize part quantity of cement production in RMC.

Leading RMC plants have formed an Association, namely, Ready-Mixed Concrete Manufacturers Association (RMCMA) with an idea to make Ready Mixed Concrete (RMC) as most preferred building material of construction in

India. As an unique initiative RMCMA developed quality framework based on practice followed in developed countries like USA and UK for self regulation. The production facilities are subjected to annual audit by external auditor based on check list approved by RMCMA. However, in the absence of any third party certification, there is still lack of confidence in the minds of user agencies about the quality being supplied by such plants. The very purpose of bringing quality concrete construction through RMC compared to site mix concrete is being affected.

With the initiative taken by Ready Mix Concrete Plant Manufacturer's Association themselves, Quality Council of India (QCI) and BMTPC have joined hands for developing the criteria for Certification of Ready Mix Concrete Plant though a Technical Committee represented by CPWD, Delhi Metro, National Highway Authority, CBRI, NCCBM, Leading Structural Engineers and others.

Basic document has already been prepared covering requirements for the production Control of Ready Mixed Concrete which includes requirements of resource managements, plant and equipments, laboratory, key personnel, control on quality of incoming materials, production and delivery, control on process control equipment and maintenance and feed back mechanism.

CPWD and Highway Authority have welcomed this move, and are looking forward to the certification process to start to utilize certified plants for their projects.

4. Development of Design Methodology for Chemically Treated bamboo Reinforced Concrete Members for Low Cost Housing

The Council in association with IIT Kharagpur undertook a project for Development of Design Methodology for Chemically Treated bamboo Reinforced Concrete Members for Low Cost Housing.

Natural calamities in different forms such as flood, cyclone and earthquake etc. cause disasters on different types of structures especially non-engineered structures in rural areas. Thousand of dwelling units get destroyed due to such natural calamities every year. Hence, it is necessary to pay attention to such non-engineered structures to provide safe and economical dwelling units affordable to rural and semi-urban masses. Under the project, it is intended to develop a methodology for improving the efficacy of bamboo reinforced concrete components of buildings using polymers/chemicals on the bamboo surface and thus to increase the interface bonding of bamboo with concrete matrix which will result in a strong, durable and lightweight

concrete. Also, based on the developed materials, dwelling units of different modules will be developed to produce a safe and economical structural form, usable by common people.

Thus, the focus of the present work is as follows:

I. Development of bamboo reinforced concrete members such as column, beam, roof, slab wall and technologies which would be environment conducive and cost effective.

II. Development of modular design of various types of DUs for different group of people. Provision of basic amenities such as a multipurpose room, a bath, a W.C. and a kitchen will be made in each unit.

Following work has been completed under the project:

1. Preliminary work
   - Problem Definition and Model Objectives
   - Literature Study
   - Inventory and Preliminary Information
2. Development of bamboo Reinforced Concrete Members
   - bamboo reinforced concrete beam, column
   - bamboo mat as reinforcing material for wall, slab and roof
   - increase of bond strength through chemical treatment
   - development of design methodology of different members
3. Design and Construction of Model houses
   - Compact design of model building unit
   - Construction of model houses (completed up to roof level)
   - Actual cost estimation of model house (in progress)
   - Demonstration of model houses

Under the project, most of the work has been completed and construction of model houses has reached upto roof level using bamboo reinforced concrete members.

5. Project on Performance of Concrete with Rice Husk Ash as Binding Materials

The Council in association with Centre for Technology Development and Transfer (CTDT), Anna University, Chennai initiated a project to study the Performance of Concrete with Rice Husk Ash as Binding Materials.

The scope of the project is to replace cement in concrete, which is the most preferred and the single largest building

material used by the construction industry. Each one of the constituents of concrete has a negative environmental impact and gives rise to different sustainability issues. The current concrete construction practice is unsustainable because not only it consumes enormous quantities of natural stones, sand and drinking water but also one billion tons a year of cement, which is not an environment friendly material. For production of cement, huge amount of energy is needed and about 8% of atmospheric CO_2 is contributed on account of cement production.

Rice milling industry generates a lot of rice husk during milling of paddy. The rice husk is mostly used as a fuel. Rice Husk Ash (RHA) is about 25% by weight of rice husk when burnt in boilers. It is estimated that about 70 million tons of RHA is produced annually worldwide. This RHA is a great environment threat causing damage to the land and the surrounding area in which it is dumped. Using the waste to make a product is an effective way of making a clean and clear environment.

The methodology proposed for study of performance of concrete with Rice Husk Ash as binding materials is as follows:

- Literature review
- Selection of materials
- Testing of materials
- Optimum RHA content
- Casting RHA concrete
- Testing of RHA concrete
- Results and discussions

The broad outcome of the project would be that by utilizing the super-pozzolanic rich RHA even in small amounts can enhance the workability, strength and impermeability of concrete mixes and as a result the concrete produced is highly durable to chemical attacks, abrasion and reinforcement corrosion. The use of RHA in cement significantly decreases carbon dioxide emissions, reduces the energy needed to calcined limestone and provides alternative solution for safe disposal of RHA and hence convert it into an eco-friendly material.

6. Development of Energy Efficient Construction Materials for Buildings

The Council has initiated a project for development of energy efficient construction materials for buildings in association with Department of Civil Engineering, IIT Roorkee.

Comfort is one of the requirements in buildings, whether it is

a residential, office or mercantile building. Room temperature inside the building is very much influenced by external weather condition. During the hot summers, cooling methods are used to develop comfortable working temperature inside the buildings. During winters, heating is done for the same. Whereas there are a number of cooling & heating techniques in practice, most of them require electrical energy for its operation. Number of hours of cooling or heating in a particular building is not controlled by outside temperature, but also highly influenced by the amount of heat brought in or heat loss caused by wall & roof cladding of the buildings.

Cost, strength, durability, resistance against natural disasters are some of the important issues considered by the architects & engineers while deciding about the material of construction for wall & roof cladding in buildings, However, its thermal insulation properties which are generally ignored. Cost of cooling & heating is controlled by the thermal insulation properties of the cladding materials

Under the project, it is proposed to carryout experimental studies in the laboratory of the Department of Civil Engineering, IIT Roorkee on various types of construction materials used in building construction specially for wall and roof claddings. These include solid masonry walls, cavity walls with and without insulation material, single layer metal sheets and sandwich panels for wall and roof claddings. It is proposed to make single room building units with varying wall and roof claddings and study the difference in external and internal room temperature. Thermal imager and thermal couples will be used to measure surface temperature on wall and cladding units and room temperature in space.

It is envisaged that the outcome of the project would be useful for the architects and engineers in selecting suitable construction materials while designing buildings for various purposes. The selection made will result in saving energy required for cooling and heating in buildings.

7. Project on "Scientific Authentication of Semi Automatic Brick Masonry Construction"

The Council has initiated the project on "Scientific Authentication of Semi Automatic Brick Masonry Construction". Prof. S.N.Sinha, Former Professor, Civil Engineering Department, IIT Delhi has developed the design of the an innovative masonry units and masonry system for semi-automatic masonry construction. Innovative masonry units have interlocking/interfitting projections and depressions, which are self-aligned and self-adjustable. The masonry units shall be hollow resulting in reduced weight

and hence reduced cost. The dead weight of structure reduces resulting in reduced earthquake load. The brick can be made out of any materials such as homogenous mixture of cement, flyash, sand or lime, flyash sand. Clay can also be used to replace sand. Cement required for making such brick are limited to 5% for class A bricks.

The scope of the research project is as under:

- A machine for making innovative interlocking and interfitting masonry units has been designed. It has a free standing steel frame. It is manually operated machine to produce one brick at a time. As the brick is hollow from one side and closed on opposite side, so the design of machine is complex. Therefore, it is proposed to get the machine fabricated and used for manufacture of brick units. The trial brick units shall be made and machine shall be modified if required for its efficient operation and proper manufacture of bricks.
- Large number of brick units shall be manufactured out of homogenous mixture of (a) cement, flyash, sand; (b) lime, fly ash, sand; (c) cement, fly ash, clay; (d) lime, flyash, clay. Optimum proportions of different gradient of mix shall be established for bricks of different class of trial mixes.
- Masonry walls with such brick units shall be made to authenticate the technology. The walls shall be tested to authenticate the structural adequacy of the masonry system at IIT Delhi. It is expected that such brick walls shall be 100% more structurally efficient than the brick walls made with conventional bricks.

After the technology is established, it shall be demonstrated to users such as CPWD, PWD, MCD, NBCC and other private builders. Manufacturers of brick units and construction of a wall shall be demonstrated to the users to facilitate its application in the industry.

8. Techno-economic Feasibility Reports on various Technologies

In order to propagate knowledge on innovative cost effective and disaster resistant technologies being promoted by BMTPC, it was felt necessary to generate awareness among entrepreneurs, Building Centres etc. who may like to establish manufacturing unit on such technologies for their application at the local level. To begin with, the Council short-listed few technologies and developed techno-economic feasibility reports jointly with Jamia Millia Islamia University, Delhi and Indian Plywood Industries Research & Training Institute (IPIRTI), Bangalore.

The Council in the process of possible dissemination and commercialization of the various alternate technologies, published the following "Techno Economic Feasibility Reports" on the website of the Council:

i. Concrete Hollow & Solid Block.
ii. Flyash Lime Bonded Brick
iii. Flyash brick
iv. Mosaic Tiles using Industrial Wastes.
v. Rubberwood Door Shutters

9. Technology Packages/Profiles on various options for Roofing

Construction of flat roofs predominantly involves casting of reinforced cement concrete slabs. Other options such as pre-cast techniques are limited by availability of adequate knowledge and implementation support tools. In view of this, BMTPC constantly publishes literature which supplement useful information regarding technology and its use in the field.

For the purpose, the following Technology Packages/Profiles in two parts were published:

1. ***Technology Brochures***
   - Ferrocement channel roof,
   - Arch panel roof,
   - Funicular roof and
   - RC Plank and Joist roof

2. ***Construction manuals***
   - Ferrocement channel roof,
   - Arch panel roof,
   - Funicular roof and
   - RC Plank and Joist roof

10. Project on "Rejuvenation and Strengthening of the National Network of Building Centres – Pilot Studies" under HUDCO CSR funding

The Council has been assigned a Project on "Rejuvenation and Strengthening of the National Network of Building Centres – Pilot Studies" by HUDCO under HUDCO CSR funding. The Ministry of Housing & Urban Poverty Alleviation made concerted efforts to revive the Building Centres and a Committee was set up by HUDCO in consultation with Ministry to look into problems, prospects and proposal for revival of Building Centres. The Committee has given their recommendations to undertake initially few Pilot Studies so as to understand dynamics of Building Centres. The pilot studies would be the possible approaches and ways towards revitalization of the Building Centres and it may lead to undertake a major programme

under the aegis of the Government of India for taking Building Centre concept forward with renewed and fresh thinking. The Building Centre concept would help in creating enabling environment for affordable housing for all and promotion of alternate & emerging building materials and construction technologies, cost reduction, energy efficiency, disaster preparedness, sustainability, skill upgradation, guidance & counseling to home builders, etc. at grass root level. The funding has been received from HUDCO and as per the recommendation of the Committee, the identified Building Centres have been approached for submission of detailed proposals for possible pilot studies.

VII. JAWAHARLAL NEHRU NATIONAL URBAN RENEWAL MISSION (JNNURM), RAJIV AWAS YOJANA (RAY) – PILOT PHASE AND PROJECTS UNDER 10% LUMP-SUM PROVISION FOR NER STATES INCLUDING SIKKIM

1. BMTPC's Role in Implementation of JNNURM

The Ministry of Housing & Urban Poverty Alleviation, Govt. of India, is implementing Basic Services to Urban Poor (BSUP) and Integrated Housing & Slum Development Programme (IHSDP) under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), Rajiv Awas Yojana (RAY) and projects under 10% Lump-sum Provision for NER States including Sikkim. The activities undertaken by BMTPC in implementation of the JNNURM are as given below:

Appraisal of Detailed Project Reports (DPRs) under JNNURM

BMTPC has been involved in the implementation of the JNNURM sub-components Basic Services to Urban Poor (BSUP) and Integrated Housing & Slum Development Programme (IHSDP) for Appraisal of DPRs, Monitoring of Projects, Third Party Inspection & Monitoring (TPIM) Reviews, and organization of capacity building programmes. The projects appraised by the Council include housing and other infrastructure services such as roads, water supply, sewerage, storm water drains, community facilities, health centres, education facilities etc.

During the year, the Council appraised following 10 DPRs of BSUP projects under JNNURM received from Karnataka (1), Maharashtra (6), Uttarakhand (2) & Mizoram (1). The proposals worth Rs.391.66 crores with Government of India share of Rs.194.29 crores covering 11566 Dwelling Units.

S. No	City/Town	Location	No. of Projects
BSUP			
Karnataka			
1	Mysore	Revised Scheme of Basic services for the construction of 1040 DU's at Ekalavyanagar slum area, Mysore	1
Maharashtra			
2	Nagpur	DPR for "Construction of 1694 Houses at four locations of Nagpur City for Rehabilitation of Urban/Poor under JNNURM-BSUP –PPP scheme	6
3	Nashik	Revised DPR for construction of 1120 DUs at Panchavati area, Nashik under BSUP	
4	Nashik	Revised DPR for construction of 560 DUs at Satpur area, Nashik under BSUP	
5	Nashik	Revised DPR for construction of 2800 DUs at New Nashik, Nashik East, West area, Nashik under BSUP	
6	Pune	Integrated Rehabilitation Project at Hadapsar for Urban Poor Staying in Slums in Ecologically	

S. No	City/Town	Location	No. of Projects
		Dangerous Locations in the City of Pune (REVISED)	
7	Pune	Integrated Rehabilitation Project for the Urban Poor staying in slums in ecologically dangerous locations in the Pune (Warje Slum) under BSUP (REVISED)	
Uttarakhand			
8	Chaksha Nagar	Revised BSUP DPR for Chaksha Nagar Slum (Malin Basti), Dehradun, State of Uttarakhand	2
9	Khala Basti	Revised Detailed Project Report for Khala Basti Slum (Malin Basti), Dehradun, State of Uttarakhand, BSUP	
Mizoram			
10	Aizwal	Revised (Combined) DPR for Lawipu Housing project, Aizawl, Mizoram.	1
		Total No. of BSUP Project Appraised	***10***

Monitoring of BSUP and IHSDP Projects

The Council is also designated as Monitoring Agency for monitoring of the BSUP and IHSDP projects. A detailed monitoring mechanism in consultation with the Ministry of HUPA has been evolved for effective monitoring of these projects. During the period, monitoring visits were undertaken at the following sites:

S. No	City/Town	Location	No. of Projects
BSUP			
Gujarat			
1	Surat	Beneficiaries complaint related to BSUP projects at kosad & Bhestan	1
Uttar Pradesh			
2	Agra	2708 DUs at Agra Nagar Nigam, Agra	1
3	Agra	2708 DUs at Agra Nagar Nigam, Agra	
4	Mathura	BSUP Scheme at Jaisinghpura (108 DUs), Mathura	1
Andhra Pradesh			
5	Hyderabad	Revised BSUP Project for construction of 23239 DUs & provision of Infrastructure Facilities in GHMC Area & Ranga Readdy Dist.Phase –I	2
6	Hyderabad	Revised BSUP Project for construction of 4550 DUs & provision of Infrastructure Facilities in GHMC Area & Ranga Readdy Dist.	
Maharashtra			
7	Mumbai	Proposal For LIG Houses For Textile Mill Workers and Transit Shelter For Tenants of Old Dilapidated Building at Mumbai (12000 DUs)-BSUP	1
	Total No. of Mission Cities Visited		*5*
	Total No. of BSUP Project sites monitored		*6*

S. No	City/Town	Project Visited	No. of Projects
IHSDP			

BMTPC Monitoring Teams visiting various BSUP and IHSDP project sites under Jawaharalal Nehru National Urban Renewal Mission (JNNURM)

S. No	City/Town	Project Visited	No. of Projects
Jammu & Kashmir			
1	Khour	313 DUs Implementation of IHSDP project at Khour	8
2	Ramgarh	50 DUs Implementation of IHSDP project at Ramgarh	
3	Parole	428 DUs Implementation of IHSDP project at Parole	
4	Banihal	57 DUs Implementation of IHSDP project at Banihal	
5	Batot	114 DUs Implementation of IHSDP project at Batote	
6	Nowshera	110 DUs Implementation of IHSDP project at Nowshera	
7	Thanamandi	94 DUs Implementation of IHSDP project at Thanamandi	
8	Poonch	270 DUs Implementation of IHSDP project at Poonch	
Bihar			
9	Supaul	IHSDP at Supaul (207 Dus)	2
10	Madhepura	IHSDP at Madhepura Ph-I (319 Dus)	
Uttar Pradesh			
11	Vrindavan	276 DUs IHSDP Project at Vrindavan	1
Maharashtra			
12	Dondaicha	Implementation of IHSDP at Dondaicha – Varwade Phase –II, Dist. – Dhule (1050 DUs)-IHSDP	1
Karnataka			
13	Gulbarga	786 DUs IHSDP Scheme at Gulbarga, Dist. – Gulbarga -IHSDP	1
Gujarat			
14	Jamnagar	IHSDP - Jamnagar (864 DUs)	1
Tripura			
15	Ranibazar	651 DUs IHSDP Project for Ranirbazar Town.Distt. – East Tripura	1
Madhya Pradesh			
16	Jaora	IHSDP - Jaora (167 DUs)	1
	Total No. of Mission Cities/Towns Visited		*16*
	Total No. of IHSDP Project sites monitored		*16*

Review of TPIM Reports

The Council is undertaking review of Third Party Inspection & Monitoring (TPIM) Reports for BSUP and IHSDP projects. During the year, TPIM Review of the following projects were undertaken and submitted to the JNNURM Mission Directorate:

S.No	Name of State	TPIM Review Reports Submitted to Mission Directorate
1.	Andhra Pradesh	3
2.	Arunachal Pradesh	3

S.No	Name of State	TPIM Review Reports Submitted to Mission Directorate
3.	Assam	1
4.	Bihar	-
5.	Chandigarh	-
6.	Chattissgarh	2
7.	Delhi	3
8.	Gujarat	3
9.	Haryana	4
10.	Himachal Pradesh	-
11.	Jammu & Kashmir	1
12.	Karnataka	11
13.	Kerala	1
14.	Maharashtra	5
15.	Madhya Pradesh	18
16.	Meghalaya	3
17.	Mizoram	3
18.	Nagaland	-
19.	Orissa	30
20.	Punjab	3
21.	Pudducherry	1
22.	Rajasthan	2
23.	Sikkim	1
24.	Tamilnadu	-
25.	Tripura	-
26.	Uttarakhand	3
27.	Uttar Pradesh	22
28.	West Bengal	22
Total		**145**

2. BMTPC's Role in Implementation of Pilot Phase of Rajiv Awas Yojana (RAY)

The Ministry of Housing & Urban Poverty Alleviation, Govt. of India, has designated BMTPC as one of the Appraisal Agency for projects under Pilot Phase of Rajiv Awas Yojana (RAY).

Appraisal of Detailed Project Reports (DPRs) under RAY

The Council also appraised following 20 DPRs of Pilot Projects under Rajiv Awas Yojana (RAY) received from Andhra Pradesh (3), Madhya Pradesh (2), Uttar Pradesh (8), Karnataka (3), Chhattisgarh (1), Mizoram (1), Jammu & Kashmir (1) and Himachal Pradesh (1). The proposals were worth Rs.753.97 crores with Government of India share of Rs.362.65 crores covering 10265 Dwelling Units.

S. No	City/Town	Location	No. of Projects
Andhra Pradesh			
1	Vijayawada	DPR of Dhall Mill Area slum under Rajiv Awas Yojana (RAY Pilot Project-1) in Vijaywada Municipal Corporation	3
2	Vijayawada	DPR of N.S.C Bose Nagar in Vijaywada Municipal Corporation under Rajiv Awas	

S. No	City/Town	Location	No. of Projects
		Yojana (RAY Pilot Project-2)	
3	Visakhapatnam	Pilot Project for insitu Re-development (240 DUs) at Surya Teja Nagar, Visakhapatnam	
Madhya Pradesh			
4	Bhopal	Pilot Project for slums at Arjun Nagar, Jheel Nagar, Shanti Nagar, and Ambedkar Nagar for construction of 1204 DUs in Bhopal	2
5	Ujjain	Pilot DPR of Identified Slums (Harifatak Rajiv Nagar, Lohar Patti, Moti Nagar, Ekta Nagar) for construction of 1196 DUs in Ujjain	
Uttar Pradesh			
6	Rampur	Pilot DPR for Magjeen Mohalla Improvement Project at Rampur	8
7	Rae Bareli	Pilot DPR for identified slums as per Slum free City plan of Rae Bareli City	
8	Kannauj	DPR for Pilot Project for insitu upgradation of Sekhana & Bajariya Sekhana Slum in Kannauj, Uttar Pradesh	
9	Kanpur	Pilot DPR for Harbansh Mohal Slum Improvement project	
10	Kanpur	Pilot DPR for Pokhar Purva Slum Improvement project	
11	Lucknow	Revised Pilot Project for insit Development of 5 Slums in Faizullahganj ward, Lucknow under Rajiv Awas Yojana	
12	Agra	Pilot DPR for identified slums as per Slum free City plan of Agra, City under RAY	
13	Rae Bareli Ph-II	Pilot DPR for identified slums as per Slum free City plan of Rae Bareli City Phase-II under RAY	
Karnataka			
14	Bangalore	DPR for Construction of 900 (G+4) houses including infrastructure at Sulikunte village, Sy no 122 in Varthur Hobli	3
15	Tumkur	DPR for Construction of 1200 DUs (G+2) including infrastructure at Dibbur in Tumkur city	
16	Hubli -Dharwad	DPR for Construction of 1072 houses (G+3) including Infrastructure at Hubli -Dharwad city	
Chhattisgarh			
17	Raipur	Pilot Project for insitu Re-development and relocation at Lalganga Slum in Raipur city	1
Mizoram			
18	Aizwal	Pilot Project At Zuangtui, Aizawl, Mizoram	1
Jammu & Kashmir			
19	Leh	DPR for Leh old Town Upgradation under Rajiv Awas Yojana	1
Himachal Pradesh			
20	Shimla	Pilot Project for Krishna Nagar Slum in Shimla, Himachal Pradesh	1
		Total No. of Projects Appraised	***20***

3. BMTPC's Role in Implementation of projects under 10% Lump-sum Provision for NER States including Sikkim

The Ministry of Housing & Urban Poverty Alleviation, Govt. of India, is implementing projects under 10% Lump-sum Provision for NER States including Sikkim. The Council has been designated as one of the Appraisal Agency for appraising the projects received under 10% Lump-sum Provision for NER States including Sikkim. Following projects have been appraised during the year:

S. No	State	Project Name	No. of Projects
1	ARUNACHAL PRADESH	DPR for Construction of Vendors Market at Dirang	2
2		DPR for Construction of Hostel building for working women, destitute children and old age urban dwelling at Yingkiong.	
3	MIZORAM	DPR for Proposed Urban Resource Centre, Aizwal	1
		Total No. of Project Appraised	**3**

ORGANISATION

The organizational structure depicting different functional units in the establishment of the Council is shown in form a chart at next page. As on 31st March, 2013, BMTPC had a staff strength 40 comprising 21 officers and 19 support staff and technicians/professionals hired on contract on project basis.

The Council has continued following administrative measures for bringing transparency, responsiveness and greater participation of the employees:

- Implementation of modified Byelaws, Recruitment-cum-Promotion Rules and Delegation of Power.
- Internal Committee for smooth and harmonious functioning of the Council:
  - Construction Committee
  - Investment Committee
  - Advertisement Committee
  - Printing Committee
  - Local Purchase Committee
  - Store Purchase Committee
  - Transport Committee
  - Contractual Payment Committee
- The Council has implemented the Result-Framework document (RFD)
- To redress citizen grievances, online handling of the public grievances through centralized public grievances redress and monitoring system has been initiated.
- Nominated an officer as the Director of grievances and an officer as Welfare Officer for smooth functioning of the organization and to find out the solution of the grievances of the staff members.
- SCs & STs Cell for welfare and development of Scheduled Casts & Scheduled Tribes
- Implementation of RTI Act, 2005
- Committee for Prevention of Sexual Harassment of women at workplace.
- Independent audit of implementation of Citizen's Charter.
- Independent audit of implementation of public grievance redressal system.

BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL

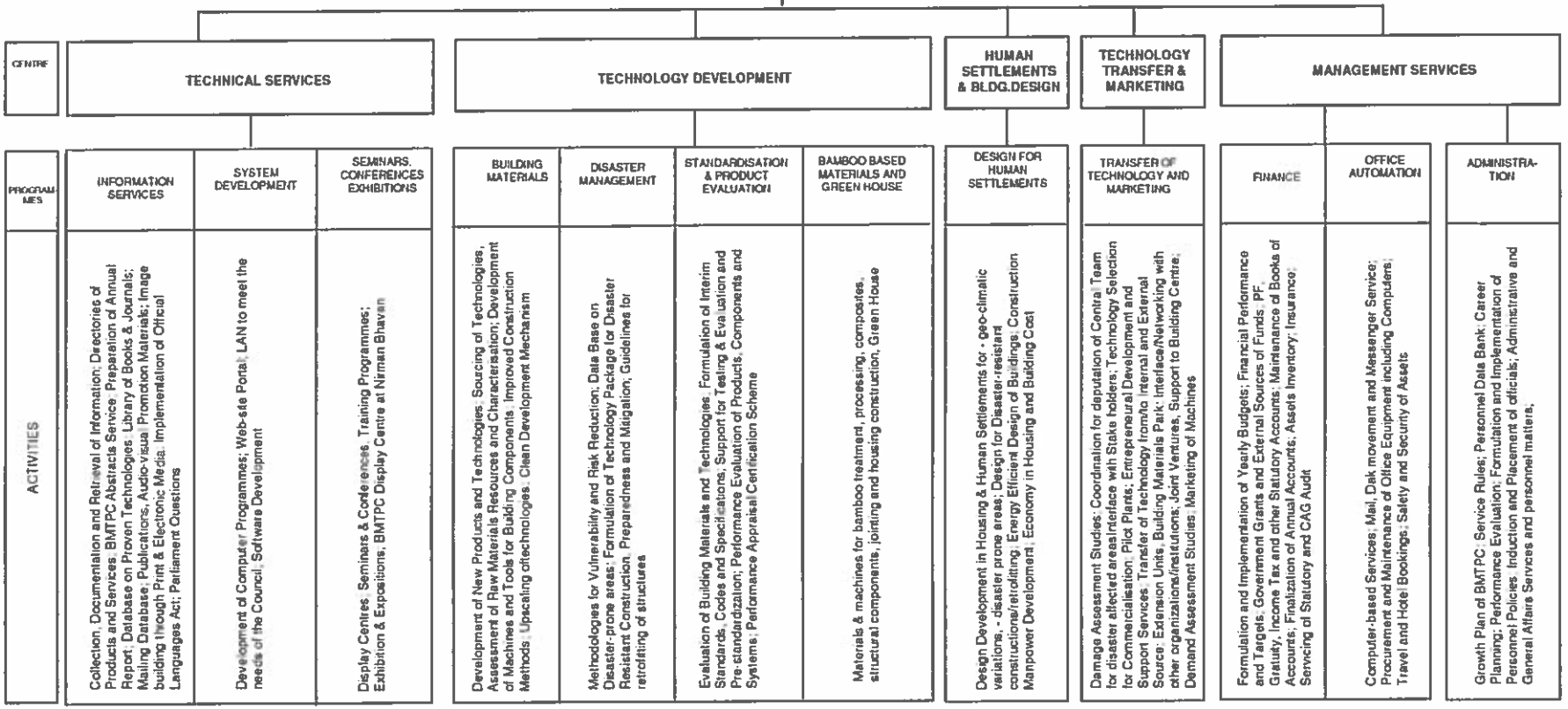
ORGANIZATIONAL STRUCTURE

PRESIDENT
Minister of Housing & Urban Poverty Alleviation

VICE-PRESIDENTS
Minister of State and Secretary, Ministry of HUPA

EXECUTIVE COMMITTEE
Chairman : Secretary, Ministry of HUPA

EXECUTIVE DIRECTOR



STAFF STRENGTH (as on 31.3.2013)

S.No.	Name & Designation	Date of Joining
1.	Dr. Shailesh Kr. Agrawal *Executive Director*	17.01.08
2.	S.Balasrinivasan *Chief-Finance*	08.04.92
3.	J.K.Prasad *Chief-Building Materials*	01.09.03
4.	M. Ramesh Kumar *Chief- Human Settlements & Building Design*	01.04.03
5.	Arun Kumar Tiwari *Chief-Project Monitoring & Training and Administration*	22.07.03
6.	S.K.Gupta *Deputy Chief- Technology, Demonstration Extension & International Cooperation*	26.10.93
7.	Arvind Kumar *Deputy Chief- Management Information Systems*	15.04.99
8.	Dr. Amit Rai *Deputy Chief*	05.11.98
9.	Chandi Nath Jha *Deputy Chief- Standardization & Product Development*	09.09.99
10.	Pankaj Gupta *Deputy Chief-Information & Documentation*	14.10.99
11.	D.P.Singh *Development Officer-Engineering Design & Product Evaluation*	05.10.98
12.	Dalip Kumar *Senior Field Officer- Demonstration Construction & Exhibition*	04.03.91
13.	Alok Bhatnagar *Senior Field Officer- Evaluation & Exhibition*	05.10.98
14.	Akash Mathur *Senior Field Officer- Architect*	01.01.02
15.	S.M.Malhotra *Principal Private Secretary*	09.04.99
16.	Anita Kumar *Sr. Programmer*	03.10.96
17.	M.Ramakrishna Reddy *Liaison Officer (On deputation to Ministry of Corporate Affairs)*	29.10.03
18.	Pankaj Gupta *Personnel Officer*	01.03.94
19.	Praveen Suri *Systems Analyst*	01.09.94
20.	S.S.Rana *Library Officer*	01.04.98
21.	D.Prabhakar *Field Officer*	29.01.04

Superannuation

Richhpal Singh *Senior Field Officer- Demonstration Construction & Administration* (Superannuated on 31.12.2012)	23.02.94

ACCOUNTS

The Council received grants of Rs. 500.00 lakhs from the Ministry of Housing & Urban Poverty Alleviation, Government of India during the FY 2012-2013. In addition, receipts from other sources like Fees, Consultancy, Training, BIPARD, NDMA, HUDCO, JNNURM, Interest, Publications, etc. was Rs. 413.37 lakhs and the total expenditure incurred was Rs. 838.69 lakhs during the year, as per Receipt & Payment Account Statement. A summary of expenditure is given below:

Major Heads	Amount (In Rs.)
• Expenses towards Infrastructure facilities, computers & automation systems	1,17,629
• Expenditure on Salary, Establishment & Administration	3,38,83,656
• Organisation and participation in various Seminars, Conferences, Workshops in India and abroad, Dissemination of technical know-how in form of brochures, leaflets, manuals, guidelines, etc., Capacity building cum hands-on training programmes for professionals as well as construction workforce	1,01,50,842
• Construction of Demonstration Housing Projects and other Structures in different parts of India including Tripura & under Vambay Scheme, expenditure on Financial Assistance for technology development / application and Sponsored Studies	1,66,91,870
• Expenses towards Appraisal, monitoring, capacity building and training programmes, Monitoring Cell and other activities relating to JNNURM, BIPARD, NDMA, Building Centers and others	2,30,25,689
TOTAL	**8,38,69,686**

The Accounts have been audited by M/s Matta & Associates, Chartered Accountants, the balance sheet and the statement of accounts of the year 2012-2013 is placed in the report.

MATTA & ASSOCIATES
Chartered Accountants
H.O.: JD-21C, 2nd Floor, Near J.D. Market, Pitam Pura, Delhi-88
B.O.: 308, RG Trade Tower, Plot No. B-7, Netaji Subhash Place, Pitam Pura, Delhi-34

Phone : 011-27353631, 47013275
E-mail : mattaassociates@gmail.com
Web : www.mattaassociates.com

INDEPENDENT AUDITORS' REPORT

To

The Members,
Building Materials & Technology Promotion Council
NEW DELHI

Report on the Financial Statements

We have audited the accompanying financial statements of **BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL** ("the SOCIETY") registered under the Societies Registration Act. 1860, which Comprise the Balance Sheet as at March 31, 2013 and statement of Income and Expenditure for the year ended and a summary of significant accounting policies and other explanatory information.

Management Responsibility for the Financial Statement

Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position, financial performance in accordance with the Accounting Principles generally accepted in India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Society's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the

circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidences we have obtained are sufficient and appropriate to provide a basis for our unqualified audit opinion.

Basis for Opinion:

Opinion

In our opinion and to the best of our information and according to explanation given to us, the financial statements give the information required in the manner so required and give true and fair view in conformity with the accounting principles generally accepted in India:

(a) In case of Balance sheet, of the state of affairs of the Society as at March 31, 2013;

(b) In case statement of Income and Expenditure Account , of the Surplus for the year ended on that date; and

Report on Other Legal and Regulatory Requirements:

We report that:

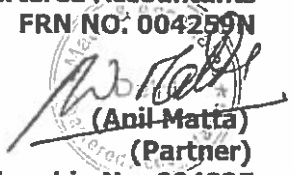
(a) We have obtained all the information and explanation, which to the best of our knowledge and belief were necessary for the purpose of our audit.

(b) In our opinion, proper books of accounts as required by the law have been kept by the Society so far as it appears from our examination of the books.

(c) In our opinion, the Balance Sheet & Statement of Income & Expenditure account dealt with by the report complies with the Accounting Standards issued by the Institute of Chartered Accountants of India.

(d) The Balance Sheet and Statement of Income & Expenditure account dealt with by this Report are in agreement with the books of accounts.

For MATTA AND ASSOCIATES
Chartered Accountants
FRN NO. 004259N



(Anil Matta)
(Partner)
Membership No: 084835

Place: DELHI
Date: 25.09.2013

BALANCE SHEET AS ON 31 MARCH 2013

Amount (₹)

	Schedule	2012-13	2011-12
CORPUS/CAPITAL FUND AND LIABILITIES			
CORPUS/CAPITAL FUND	1	10,00,000	10,00,000
RESERVES AND SURPLUS	2	21,17,65,648	21,00,57,332
EARMARKED FUNDS	3	74,79,974	58,90,967
CURRENT LIABILITIES AND PROVISIONS	4	66,67,249	33,62,329
TOTAL		**22,69,12,871**	**22,03,10,628**
ASSETS			
FIXED ASSETS	5	3,95,24,455	4,05,92,387
CURRENT ASSETS, LOANS & ADVANCES ETC.	6	18,73,88,416	17,97,18,241
TOTAL		**22,69,12,871**	**22,03,10,628**
SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS	14		

S.B. Srinivasan
(S. Balasrinivasan)
Chief - Finance

(Dr. Shailesh Kr. Agrawal)
Executive Director

As per our report of even date attached.
for MATTA & ASSOCIATES
Chartered Accountants

Delhi
Anil Matta, FCA
Partner
M.No. 084835
Firm No. 04259N

Place :Delhi
Date : 25.9.2013

Building Materials & Technology Promotion Council
Ministry of Housing & Urban Poverty Alleviation, Government of India

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 2013

Amount (₹)

	Schedule	2012-13	2011-12
INCOME			
Grants / Subsidies	7	5,00,00,000	5,50,00,000
Fees/Subscriptions	8	1,85,69,000	3,51,84,144
Income from Publications and PAC's Fee etc.	9	3,16,032	5,09,109
Interest Earned	10	1,25,33,114	1,03,83,838
TOTAL (A)		**8,14,18,146**	**10,10,77,091**
EXPENDITURE			
Expenditure on Salary,Establishment & Adminstration	11	3,52,27,417	3,42,70,654
Expenditure on Training Programmes, Seminars/Workshops & JNNURM etc.	12	2,66,11,756	2,52,89,592
Expenditure on Financial Assistance, Sponsored Studies etc.	13	1,66,85,096	1,69,19,994
Depreciation	5	11,85,561	15,71,554
TOTAL (B)		**7,97,09,830**	**7,80,51,794**
Excess of Income over Expenditure (A-B)		17,08,316	2,30,25,297
BALANCE BEING SURPLUS CARRIED TO BALANCE SHEET		**17,08,316**	**2,30,25,297**
SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS	14		

S.B. Srinivasan
(S. Balasrinivasan)
Chief - Finance

(Dr. Shailesh Kr. Agrawal)
Executive Director

As per our report of even date attached.
for MATTA & ASSOCIATES
Chartered Accountants

Delhi
Anil Matta, FCA
Partner
M.No. 084835
Firm No. 04259N

Place : Delhi
Date : 25.9.2013

Building Materials & Technology Promotion Council
Ministry of Housing & Urban Poverty Alleviation, Government of India

RECEIPTS & PAYMENT ACCOUNT FOR THE YEAR ENDED 31 MARCH 2013

Amount (₹)

	2012-13		2011-12	
RECEIPTS				
1 **Opening Balance**				
Cash Balances in hand		1,64,267		61,949
Bank Balances				
With Scheduled Banks:				
- On Deposit Account	12,00,84,236		11,42,56,576	
- On Savings Accounts:				
- Canara Bank (Parliament Street)	3,59,81,669		17,20,318	
- Canara Bank (Hauzkhas)	3,35,471		27,81,984	
- Canara Bank, Bangalore	98,400		2,31,979	
- State Bank of Hyderabad (Scope Complex)	49,73,431	16,14,73,207	1,67,22,473	13,57,13,330
2 Grants-in-aid from Central Government (Ministry of Housing & Urban Poverty Alleviation)		5,00,00,000		5,50,00,000
3 Receipts towards Fees/Consultancy & Training/Conferences/JNNURM, IPOMs etc		2,62,14,750		3,51,84,144
4 Security Deposit etc		1,80,837		-
5 Loan & advances(Net)		22,64,567		-
6 Income from Publications etc.		3,16,032		5,09,109
7 Interest Earned		1,23,60,919		1,73,82,879
Total		**25,29,74,579**		**24,36,51,411**
PAYMENTS				
1 Purchase of Fixed Assets	1,17,629		10,06,123	
2 Expenditure on Salary, Establishment & Administration	3,38,83,656		3,40,01,102	
3 Loan & advances(Net)	-		34,82,456	
4 Expenditure on Training Programmes, Seminars/Workshops, etc.	1,01,50,842		69,13,975	
5 Expenditure on Financial Assistance, Sponsored Studies, etc.	1,66,91,870	6,08,43,997	1,68,42,872	6,22,46,530
6 Earmarked funds				
Construction of Demonstration Buildings with cost effective technologies and technology Demonstration-cum-Production Centre in Tripura	3,09,760		2,88,586	
Capacity Building Training Programme on IPOMS, Quality Assurance and TPIM	54,222		20,35,333	
Modal Amendment in Town & Country Planning Act, Zonning Regulation	5,36,801		30,993	
BIPARD	4,13,083		-	
NDMA	17,78,120		-	
Rejuvenation and strengthening of Building Centers	29,28,000	60,19,986	-	23,54,912
7 Expenditure on JNNURM		1,70,05,703		1,76,12,495
8 **Closing Balance**				
Cash Balances in hand		1,50,685		1,64,267
Bank Balances				
With Scheduled Banks:				
- On Deposit Account	13,14,52,624		12,00,84,236	
- On Savings Accounts:				
- Canara Bank (Parliament Street)	3,25,88,749		3,59,81,669	
- Canara Bank (Hauzkhas)	3,51,287		3,35,471	
- Canara Bank, Bangalore	1,99,087		98,400	
- State Bank of Hyderabad (Scope Complex)	43,62,461	16,89,54,208	49,73,431	16,14,73,207
Total		**25,29,74,579**		**24,36,51,411**

(S. Balasrinivasan)
Chief - Finance

(Dr. Shailesh Kr. Agrawal)
Executive Director

As per our report of even date attached.
for MATTA & ASSOCIATES
Chartered Accountants

Anil Matta, FCA
Partner
M.No.-084835
Firm No.-04259N

Place :Delhi
Date : 25.9.2013

SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31 MARCH 2013

Amount (₹)

SCHEDULE 1- CORPUS/CAPITAL FUND	2012-13		2011-12	
Balance as at the beginning of the year		10,00,000		10,00,000
TOTAL		10,00,000		10,00,000

SCHEDULE 2- RESERVES AND SURPLUS	2012-13		2011-12	
1. Capital Reserve				
Opening Balance	8,59,94,559		8,49,88,436	
Addition during the year	1,17,629	8,61,12,188	10,06,123	8,59,94,559
2. Excess of Income over Expenditure				
Opening Balance	12,40,62,773		10,20,43,599	
Add : Amount transferred from Income & Expenditure A/c	17,08,316		2,30,25,297	
	12,57,71,089		12,50,68,896	
Less transferred to Capital Reserve	1,17,629	12,56,53,460	10,06,123	12,40,62,773
TOTAL		21,17,65,648		21,00,57,332

SCHEDULE 3- EARMARKED FUNDS	2012-13		2011-12	
1 Construction of Demonstration Buildings with cost effective technologies and technology Demonstration-cum-Production Centre in Tripura				
Opening Balance	20,88,190		23,76,776	
Less : Utilisation/Expenditure during the year	3,09,760	17,78,430	2,88,586	20,88,190
2 Model amendments in Town and Country Planning Act., Zonning Regulations				
Opening Balance	5,36,801		5,36,801	
Less : Amount refunded during the year	5,36,801	-	-	5,36,801
3 Establishment of Bamboo Mat Production Centres in North-Eastern States				
Opening Balance	18,41,598		18,72,591	
Less : Utilisation/Expenditure during the year	-	18,41,598	30,993	18,41,598
4 Construction of Demonstration Houses in Mizoram				
Opening Balance	-	3,14,343		3,14,343
5 Capacity Building Training Programme on IPOMS, Quality Assurance and TPIM				
Opening Balance	11,10,035		31,45,368	
Less : Utilisation/Expenditure during the year	8,944		20,35,333	
Add : Adjustment during the year	1,00,000	12,03,091	-	11,10,035
6 NDMA PROJECT				
AMOUNT RECEIVED DURING THE YEAR	19,20,750			
Less : Utilisation/Expenditure during the year	17,60,120	1,60,630		-
7 BIPARD PROJECT				
AMOUNT RECEIVED DURING THE YEAR	6,80,000			
Less : Utilisation/Expenditure during the year	5,15,118	1,64,882		-
8 Rejuvenation and strengthening of Building Centers				
AMOUNT RECEIVED DURING THE YEAR	49,45,000			
Less : Utilisation/Expenditure during the year	29,28,000	20,17,000		-
TOTAL		74,79,974		58,90,967

SCHEDULE 4- CURRENT LIABILITIES AND PROVISIONS	2012-13	2011-12
CURRENT LIABILITIES		
- Outstanding Liabilities	57,58,163	26,34,080
- Security Deposit	8,39,114	6,58,277
- Balance of funds received for developing building bye-laws	19,972	19,972
-Liability towards Bilaspur project under VAMBAY	50,000	50,000
TOTAL	66,67,249	33,62,329

Malla & Associates * Chartered Accountants * Delhi

Building Materials & Technology Promotion Council

Ministry of Housing & Urban Poverty Alleviation, Government of India

SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31 MARCH 2013

Amount (₹)

SCHEDULE 5- FIXED ASSETS	GROSS BLOCK			DEPRECIATION			2012-13 NET BLOCK	2011-12 NET BLOCK
	Cost as at 1.4.12	Additions	Total	Upto 1.04.12	Current year	Upto 31.03.13	As at 31.03.13	As at 31.03.12
Office Building at IHC (Lease hold)	3,43,19,817	-	3,43,19,817	-	-	-	3,43,19,817	3,43,19,817
Furniture and Fixtures	33,66,602	62,404	34,29,006	23,32,246	1,08,363	24,40,609	9,88,397	10,34,356
Office Equipments	1,89,89,139	-	1,89,89,139	1,63,13,649	4,01,324	1,67,14,973	22,74,166	26,75,490
Computers/ Peripherals	1,61,21,526	-	1,61,21,526	1,54,92,233	3,77,576	1,58,69,809	2,51,717	6,29,293
Air conditioners	6,99,204	32,736	7,31,940	4,73,346	38,789	5,12,135	2,19,805	2,25,858
Fan & Coolers	32,916	22,489	55,405	31,209	3,629	34,838	20,567	1,707
TV and VCR	3,80,450	-	3,80,450	2,71,817	16,295	2,88,112	92,338	1,08,633
Exhibits, Panels, Display Models	1,20,84,905	-	1,20,84,905	1,04,87,672	2,39,585	1,07,27,257	13,57,648	15,97,233
	8,59,94,559	1,17,629	8,61,12,188	4,54,02,172	11,85,561	4,65,87,739	3,95,24,455	4,05,92,387
Previous Year (2011-12)	8,49,88,436	10,06,123	8,59,94,559	4,38,30,618	15,71,554	4,54,02,172	4,05,92,387	4,11,57,818

SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31 MARCH 2013

Amount (₹)

SCHEDULE 6 - CURRENT ASSETS, LOANS, ADVANCES ETC.	2012-13		2011-12	
A. **CURRENT ASSETS:**				
1. Cash in hand		1,50,685		1,64,267
2. Bank Balances				
- On Deposit Account	13,14,52,624		12,00,84,236	
- On Savings Accounts:				
- Canara Bank (Parliament Street)	3,25,88,749		3,59,81,669	
- Canara Bank (Hauz Khas)	3,51,287		3,35,471	
- Canara Bank (Bangalore)	1,99,087		98,400	
- State Bank of Hyderabad (Scope Complex)	43,62,461	16,89,54,208	49,73,431	16,14,73,207
B. **LOANS, ADVANCES AND OTHER ASSETS**				
1. Loans to staff		35,39,362		43,24,409
2. Advances and other amounts recoverable in cash or in kind or value to be received				
a. Income tax, Service tax & Other advances Recoverable	39,45,968		32,45,970	
b. Security Deposit (space) Refundable	5,35,590	44,81,558	4,20,000	36,65,970
3. Interest Accured		1,02,62,583		1,00,90,388
TOTAL (A + B)		18,73,88,416		17,97,18,241

SCHEDULES FORMING PART OF INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED AS ON 31 MARCH 2013

SCHEDULE 7- GRANTS/SUBSIDIES (Irrevocable Grants & Subsidies Received)	2012-13	2011-12
Central Government (Ministry of Housing & Urban Poverty Alleviation, Government of India)	5,00,00,000	5,50,00,000
TOTAL	5,00,00,000	5,50,00,000

SCHEDULE 8 - FEES/SUBSCRIPTIONS	2012-13	2011-12
1 Seminar/Programme Receipts	-	7,75,245
2 a) Appraisal Fees from Ministry of Housing & Urban Poverty Alleviation	1,85,69,000	2,93,03,000
b) Monitoring Fees from Ministry of Housing & Urban Poverty Alleviation	-	51,05,899
TOTAL	1,85,69,000	3,51,84,144

SCHEDULE 9- INCOME FROM PACS FEE, PUBLICATION ETC.	2012-13	2011-12
Receipts towards sale of publications, PACS etc	3,16,032	5,09,109
TOTAL	3,16,032	5,09,109

SCHEDULE 10- INTEREST EARNED	2012-13	2011-12
1 On Term Deposits With Scheduled Banks	1,16,16,048	94,83,212
2 On savings Accounts With Scheduled Banks	8,37,749	8,53,287
3 On Income Tax Refund	2,100	-
4 On Loans: Employees/Staff	77,217	47,339
TOTAL	1,25,33,114	1,03,83,838

Mehta & Associates Chartered Accountants

SCHEDULES FORMING PART OF INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED AS ON 31 MARCH 2013

Amount (₹)

SCHEDULE 11- EXPENDITURE ON SALARY, ESTABLISHMENT & ADMINISTRATION	2012-13	2011-12
1 Pay and Allowances	2,59,15,685	2,22,20,766
2 Contribution to Provident Fund	24,94,408	22,57,788
3 Leave Travel Concession	4,03,475	3,07,876
4 Recruitment Expenses	5,12,113	-
5 Medical Expenses	13,78,737	9,69,721
6 Consultancy/Retainership & Honorarium	2,00,300	1,83,500
7 Administration Expenses Apportioned	43,22,699	83,31,003
Total	**3,52,27,417**	**3,42,70,654**

SCHEDULE '12' - EXPENDITURE ON DISSEMINATION / SEMINARS/WORKSHOPS, TRAINING PROGRAMMES ETC.	2012-13	2011-12
1 Exhibition and publicity & Advertisement	41,81,713	29,38,068
2 Seminar and Conference Expenses	24,66,674	18,86,740
3 Printing & Publication	22,21,826	16,35,587
4 Books and Periodicals	99,469	1,09,425
5 Technology transferand training Programmes etc	7,35,345	15,06,903
6 JNNURM Expenditure including Adminstration Expenses	1,69,06,729	1,72,12,869
Total	**2,66,11,756**	**2,52,89,592**

SCHEDULE '13' - EXPENDITURE ON SPONSORED STUDIES, FINANCIAL ASSISTANCE, ETC.	2012-13	2011-12
A. SPONSORED STUDIES		
1 Upscaling and modernisation of production technologies for wider application and commercialiasation I	18,03,000	8,23,475
2 Vulnerability reduction risk assesment and disaster resistant construction technologies III	6,74,160	6,55,407
3 Development of technology on use of Bamboo in Housing I	4,89,250	5,85,000
4 Standardisation and product evaluation activities I	26,160	4,83,841
5 Strengthehing the data base technology dissemination and demonstration capabilities I	16,80,231	23,24,980
Sub-Total	**46,72,801**	**48,72,703**
B. FINANCIAL ASSISTANCE FOR TECHNOLOGY DEMONSTRATION AND APPLICATION		
1 Dissemination and demonstration of cost effective technologies — I	91,23,990	54,51,744
2 Promotion of disaster resistant technologies and seismic strenghtening of building II	19,900	2,41,210
3 Capacity Building of construction professionals and workers — II	13,64,205	54,59,937
4 Promotion and application of bamboo based technologies in housing construction I	15,04,200	8,94,400
Sub-Total	**1,20,12,295**	**1,20,47,291**
Total	**1,66,85,096**	**1,69,19,994**

SCHEDULE 14: SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS

1 **Significant Accounting Policies**

a) **System of Accounting** - The accounts have been prepared to comply with all material aspects with applicable principals in India and notified Accounting Standards.

b) **Fixed Assets** - Fixed assets are stated at cost of acquisition and depreciation is provided at written down values rates and in the manner as specified in the Income Tax Act 1961.

c) **Retirement Benefits** -

1.The Council contributes to its own Provident Fund Trust which is recognized by the Income Tax authorities and the contributions paid during the year to Provident Fund Trust are charged to revenue.

2. Liability in respect of Gratuity to employees is provided for by way of annual premium paid to LIC under Group Gratuity Scheme.

3 Liability in respect of Leave Encashment payable to the employees is provided for by way of annual premium paid to LIC of master policy and the premium paid is charged to revenue.

d) **General** - Accounting policies not specifically mentioned are otherwise in consonance with generally accepted accounting practices.

2 **Contingent Liabilities** - Claims against the Council not acknowledged as debts - NIL.

3 In opinion of the Management, the amount on realisation of current assets, loans and advances in the ordinary course of business would not be less than the amount at which they are stated in the Balance Sheet. Further, provision for all known liabilities has been made in the accounts.

4 As there being no taxable income under the Income Tax Act, 1961, provision for Income Tax has not been made in the accounts. The Coucil is regularly depositing TDS, Service Tax and other statutory liabilities. The Same have been deposited timely except a few TDS cases.

5 In respect of office space at India Habitat Centre, Lodhi Road, New Delhi, the exact cost has not been apportioned by IHC amongst the different allottees. As such a sum of Rs. 3.43 crores has been capitalized by the Council on the basis of calls/payment made to IHC.

6 Administration expenditure from the current year has been apportioned equally to grants as well as JNNURM expenditure.

7 Figures have been rearranged & regrouped where ever required and all the above said information has been given by the management and relied upon by the auditors.

S.B. Srinivasan
(S. Balasrinivasan)
Chief - Finance

(Dr. Shailesh Kr. Agrawal)
Executive Director

As per our report of even date attached.
for MATTA & ASSOCIATES
Chartered Accountants

Matta & Associates * Delhi * Chartered Accountants

Anil Matta, FCA
Partner
M.No. 084835
Firm No. 04259N

Place :Delhi
Date : 25.9.2013

PARTICIPATION IN NATIONAL AND INTERNATIONAL EVENTS

I. EXHIBITIONS

During the year, the Council actively participated in the following exhibitions which have helped in sharing knowledge and experience in cost effective, environment friendly and energy efficient building materials, construction technologies and simple machines for production of building components including emerging technologies:

- Exhibition on Cost-effective Energy-efficient Technologies for Housing and Building from 25th April, 2012 organized by PHDCCI at New Delhi.
- Exhibition on Science & Technology Expo – 2012 from 07-09 June 2012, Ranikhet, Uttrakhand.
- Exhibition "10th Infra Educa 2012" organised by Friendz Exhibitions & Promotions Pvt. Ltd. from 7-8 July, 2012 at Agra.
- 16th National Exhibition on "India Marching towards an Advanced Nation" organised by Central Calcutta Science & Culture Organisation for Youth from 7-11 September, 2012 at Kolkata.
- 28th NCCE & National Seminar on "Role of Infrastructure for Sustainable Development" organised by The Institution of Engineers (India) Roorkee Local Centre from 12-14 October 2012, Roorkee.
- 2nd Vision Haryana 2012, a Mega exhibition organised by Friendz Exhibitions & Promotions Pvt. Ltd. from 28-30 October, 2012, Sirsa, Haryana.
- Exhibition on Emerging Housing & Building Technologies organised by BMTPC at HUDCO Build Tech, 2012 during India International Trade Fair from 14-27 November, 2012 at Pragati Maidan, New Delhi.
- International Conference and Exhibition on Good Urban Governance for Making Cities Work "Municipalika" organised by Good Governance India Foundation from 13th – 15th March, 2013 at Greater Noida.
- International Conference on Advanced Materials for Energy Efficient Buildings "AME^{2}B-2013" organised by CSIR-CBRI-Roorkee from 13-15 February, 2013 at New Delhi.
- 36th Rural Exhibition-cum-Fair Sundarban Mela-2013

from 3-12 January, 2013 at Canning Town, South 24 Paraganas, West Bengal.

- 16th Banga Sanskriti Utsav-2013 from 4-13 January, 2013, Kalyani, Nadia, West Bengal.

II SEMINARS/ CONFERENCES/ WORKHOPS/TRAINING PROGRAMMES etc.

- Training Programme on Building Materials and Technologies in different Geoclimatic regions at CPWD Training Institute, Ghaziabad, April 25, 2012.

- Training Programme on Building Materials for Earthquake Resistant Structures at ABES Technical Institute Ghaziabad organised by ICI, April 28, 2012.

- Seminar on Alternate & Cost Effective Technology of Housing in the programme organized by Development Alternatives at their office on 15 May 2012.

- Annual Conference of Relief Commissioners / Secretaries, Department of Disaster Management of States/UTs to review the state of preparedness for South-West Monsoon 2012 held on 28 May, 2012 at Vigyan Bhawan, New Delhi.

- National Consultation on 'Development, Construction and Dissemination of Cost Effective Technologies' organized by BMTPC on 29 May, 2012 at Gulmohar Hall, IHC, New Delhi.

- Training programme for SAARC countries on 'Techniques for Earthquake Resistant Structures for Engineers and Architects' organised by Department of Earthquake Engineering, IIT, Roorkee from 28 to 29 June 2012 at Roorkee.

- National Symposium on 'Earthquake Resistant Design and Construction for Urban Social Housing Projects' was organized on 20th – 21st July 2012 by BMTPC at New Delhi.

- National Seminar on 'Emerging Building Materials and Construction Technologies' was organized on 31st July – 1st August 2012 by BMTPC at New Delhi.

- Twenty-eighth National Convention of Civil Engineers organised by Civil Engineering Division Board (CVDB) on 12th October, 2012 at Roorkee.

- BMTPCexpo'12 - Exhibition-cum-Seminar on Appropri-

Shri Ajay Maken, the then Hon'ble Minister for Housing & Urban Poverty Alleviation at BMTPC Dispaly during India International Trade Fair 2012.

BMTPC Display at Exhibition "10th Infra Educa 2012" from 7-8 July, 2012 at Agra

ate Building Materials & Housing Technologies' organised by BMTPC on November 6-8, 2012 at NSIC New Delhi.

- EAS-India Workshop-2012: Building Regional Framework for Earthquake Risk Management on 8-9th November 2012 organized by NIDM, Ministry of Home Affairs at New Delhi.

- 11th NAREDCO National Convention held on 7-8th December 2012 at New Delhi on "Sustainable Housing for Masses : Introspection and Way Forward".

- International Workshop on "Innovations in Repair and Rehabilitation of Structures" organised by Indian Concrete Institute during 17-18 December 2012 at CPWD Training Institute, Ghaziabad.

- Road Show : Exhibition-cum-Seminar on Emerging Fast Track Technologies organised by BMTPC in collaboration with Indian Concrete Institute during 18-19th December 2012 at Chennai.

- Three-week Foundation Training Programme of Trainee AEEs (Civil & Elect.) of CPWD (UPSC-2010) organised by Indian Institute of Public Administration in December 2012 at New Delhi.

- Short Term Training Programme on "Codal Practices on Earthquake Resistant Design and Construction" organised by BMTPC in collaboration with IIT, Roorkee during 27-29 December 2012 at New Delhi.

- Training of Trainers (TOT) for Engineers and Architects on Design & Construction of Earthquake Resistant Structures for the Bihar Government organized by BMTPC jointly with Bihar Institute of Public Administration & Rural Development (BIPARD) and Bihar State Disaster Management Authority (BSDMA) from 14-17th January 2013 at Patna.

- 18th Annual Convention & National Seminar on "Training, Skill Upgradation and Competence Development in Building Industry" organized by Indian Buildings Congress from 17th to 19th January 2013 at New Delhi.

- Workshop on Habitat/Housing organized by TIFAC on 12th February 2013 at New Delhi.

- International Conference on "Advanced Materials for Energy Efficient Buildings" organized by CSIR-CBRI

during 13-15th February, 2013 at New Delhi.

- Training Programme for Architects/Structural /Construction engineers on Design & Construction of GFRG/Rapidwall Buildings organized by IIT, Chennai from 25th to 28th March 2013 at Chennai.

III TECHNICAL COMMITTEE/ WORKING GROUPS /MEETINGS ETC.

- Standing Committee on Urban Development held on 2nd April, 2012 at Parliament House in connection with Oral Examination of Grants (2012-13).

- Panel Meeting for Development of Criteria for RMC Plant Certification, April 11, 2012 at New Delhi.

- Cement & Concrete Sectional Committee – CED 2, BIS, April 19, 2012 at New Delhi.

- High level committee formed by HUDCO visited Bengaluru & Thruvananthapuram between 20-22 April 2012 for interaction and discussions with Building Centres and other officials of KESNIK & KARNIK to initiates the Pilot Project on Building Centres.

- Panel Meeting for Development of Criteria for RMC Plant Certification, April 23, 2012 at New Delhi.

- Meeting of State Ministers for Urban Development/ Housing under the Chairpersonship of Hon'ble Minister of Housing & Urban Poverty Alleviation regarding Legislation on Real Estate (Regulation & Development) Bill 2012 held on 28 April, 2012 at New Delhi organized by the Ministry of HUPA.

- Meeting of the Steering Committee for Disaster Management, NDMA, April 30, 2012 at New Delhi.

- Meeting for categorization of houses according to the material used in floor, wall and roof of the house for finalizing the Housing table for the census 2011 held on 1 May, 2012 at Nirman Bhawan organised by the Ministry.

- Meeting of State Disaster Management Authority Bihar Chaired by Hon'ble Chief Minister, BIHAR in connection with Engineers Training in association with BIPARD, May 8-9, 2012 at Patna.

- The 4th meeting of Technical Assessment Committee (TAC) of Performance Appraisal Certification Scheme (PACS) held on 14 May, 2012 at New Delhi.

- Review meeting of BSUP Projects of Gujarat State, 6-7 June 2012 at Surat.

- 132nd meeting of CSMC and 128th meeting of CSC of JNNURM held on 15 June 2012 at New Delhi.

- Meeting held on 3 July 2012 under the Chairmanship of Secretary (HUPA) at New Delhi with Namibian delegation on best ways to improve their National Housing programme.

- Meeting of Expert Group to review the progress of the implementation of the project on 'Preparation of Upgraded Earthquake Hazard Maps and Atlases' up to District level held on 5 July 2012 at New Delhi.

- Meeting on 'Seismic Hazard Microzonation' held on 6 July 2012 at New Delhi.

- Panel Meeting for Development of Criteria for RMC Plant Certification, July 10, 2012 at New Delhi organized by BMTPC.

- Meeting of Parliamentary Standing Committee on examination of the subject "The progress of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) including implementation of Urban Infrastructure Development Scheme in Small and Medium Towns (UIDSSMT) held on 18 July 2012 at New Delhi.

- 133rd Meeting of CSMC and 129th meeting of CSC held on 19 July 2012 at New Delhi.

- 2nd Review Meeting of Core Group on 'Drafting of Retrofitting Policy Guidelines' held on 24th July 2012 at NDMA, New Delhi.

- Meeting on 'Biodigester Technology' developed by DRDO, Ministry of Defence under the Chairmanship of Secretary (HUPA) held on 30th July 2012 New Delhi.

- Meeting of the Sub-Committee on "Habitat" – Technology Vision 2035 organized by TIFAC, Department of Science and Technology on 9th August 2012 at New Delhi.

- Meeting with President, Nirman Vikas Anusandhan Sansthan, Raipur-NGO and deliberated on their proposal on getting technical support from BMTPC for construction of 1400 low cost houses in Haryana.

- Meeting with IIT, Delhi on cost effective emerging housing technologies on 4th September 2012 at New Delhi.

- 82nd Governing Council meeting of NAREDCO held on 5th September 2012 at IHC, New Delhi.

- 3rd Meeting of CSMC under RAY held on 11th September 2012 at New Delhi.

- A series of meetings of Expert Committee on Rejuvenation and Strengthening of National Network of Building Centres.

- Meeting to discuss the new technology 'Rapid Wall Building System' in the Chamber of Secretary (HUPA) with Shri Ashish Pathak, Head Business Development, Builtech Building Elements Ltd. held on 13th September 2012.

- 134th Meeting of CSMC and 130th meeting of CSC under JNNURM held on 14th September 2012 at New Delhi.

- Press Interaction chaired by Kumari Selja, Hon'ble Minister of Housing and Urban Poverty Alleviation and Culture held on 22nd September, 2012 at New Delhi.

- 1st Research Advisory Board Meeting of Development Alternatives held on 25th September, 2012 at New Delhi.

- CFI Workshop on "Indian Construction Industry" held on 27th September 2012 at New Delhi.

- NDMA's 8th Formation Day organized at Vigyan Bhawan, New Delhi.

- World Habitat Day function organized on 1st October 2012 by M/o HUPA at India Habitat Centre, New Delhi.

- Disaster Reduction Day organized by National Disaster Management Authority (NDMA) and National Institute of Disaster Management (NIDM) held on 10th October 2012 at New Delhi.

- Civil Engineering Division Council Meeting of BIS, 10th October 2012 at New Delhi.

- Meeting for review of States of Punjab, Haryana, Jharkhand, M.P. and Chhattisgarh under JNNURM held on 29th October 2012 at New Delhi.

- Meeting 'Biodigester Technology' under the Chairmanship of Secretary (HUPA) held on 2nd November 2012 at New Delhi.

- 135th Meeting of CSMC and 131st meeting of CSC under JNNURM held on 9th November 2012 at New Delhi.

- 136th Meeting of CSMC and 132nd meeting of CSC under JNNURM held on 29th November 2012 at New Delhi.

- Meeting of Expert Group for Syllabus for Engineering Courses & Architectural Courses, December 2, 2012 at New Delhi.

- 4th Meeting of CSMC under RAY held on 5th December 2012 at New Delhi.

- 41st Executive Committee meeting of BMTPC held on 12th December 2012 at New Delhi.

- 5th Meeting of CSMC under RAY held on 21st December 2012 at New Delhi.

- 137th Meeting of CSMC and 133rd meeting of CSC under JNNURM held on 21st December 2012 at New Delhi.

- Meeting of Technology Advisory Group (TAG) for identification of emerging technologies, December 21, 2012 at New Delhi.

- 6th Meeting of CSMC under RAY held on 11th January 2013 at New Delhi.

- 138th Meeting of CSMC and 134th meeting of CSC under JNNURM held on 11th January 2013 at New Delhi.

- 49th meeting of the Research Council organised by CSIR-Structural Engineering Research Centre (SERC) held on 21st and 22nd January 2013 at Chennai.

- Meeting with TERI for identifying possible areas of cooperation in the field of Green Building Materials held on 25 January 2013 at TERI Gram, Gurgaon.

- Doors & Windows Sectional Committee, CED 11 of BIS, January 29, 2013 at New Delhi.

- 7th Meeting of CSMC under RAY held on 30 January

2013 at New Delhi.

- 139th Meeting of CSMC and 135th meeting of CSC under JNNURM held on 30 January 2013 at New Delhi.
- 140th Meeting of CSMC and 136th meeting of CSC under JNNURM held on 30 January 2013 at New Delhi.
- Meeting of RMC Certification Committee, February 1, 2013 at New Delhi.
- Meeting of Technology Advisory Group (TAG) for Emerging Technologies, February 14, 2013 at New Delhi.
- Meeting to discuss the revival of 88 Building Centres of Andhra Pradesh and other areas of collaboration with MoRD organized by HUDCO on 15th February 2013 at New Delhi.
- 8th Meeting of CSMC under RAY held on 28 February 2013 at New Delhi.
- Steering Committee Meeting for RMC Certification at QCI, March 3, 2013 at New Delhi organized by QCI.
- 42nd Executive Committee meeting of BMTPC held on 6th March 2013 at New Delhi.
- 9th Meeting of CSMC under RAY held on 8th March 2013 at New Delhi.
- 141st Meeting of CSMC and 137th meeting of CSC under JNNURM held on 8th March 2013 at New Delhi.
- Meeting of the Technical Assessment Committee on PACS on 15th March 2013 at New Delhi.
- 142nd Meeting of CSMC and 138th meeting of CSC under JNNURM held on 20th March 2013 at New Delhi.
- A series of meetings to consider the proposal received from the State Government under National Bamboo Mission.
- A series of meeting for awarding the projects under Pilot Project on Rejuvenation and Strengthening of National Network of Building Centres.
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IV OTHER ACTIVITIES

- Assessed the claim of M/s North East Roofing Pvt. Ltd. Kamrup under Central Capital Investment Subsidy Scheme (CCIS), 2007 of Department of Industrial Policy and Promotion, Ministry of Commerce and Industry. Also attended the meeting of Empowered Committee under North East Industrial and Investment Promotion Policy (NEIIPP), 2007 to consider the Central Capital Investment Subsidy (CCIS) claims held on 30 October, 2012.

- Discussions with Principle Secretary, Rural Housing Govt. of UP regarding construction of rural houses under Lohia Grameen Avas Yojna. Various alternate technologies based on locally available materials and few emerging technology and building systems were presented before the Principle Secretary. A matrix of various technological options was provided to Rural Housing Department, Government of Uttar Pradesh.

- Technical support was provided to Nirman Vikas Anusandhan Sansthan, Raipur for preparation of Detailed Project Report for construction of houses for weavers in Panipat, Haryana.

ANNEXURE II

PAPERS PRESENTED/PUBLISHED

- Presentation on Building Materials and Technologies in different Geoclimatic regions at the Training Programme organized by CPWD on April 25, 2012 at CPWD Training Institute, Ghaziabad.

- Presentation on Building Materials for Earthquake Resistant Structures organised by Indian Concrete Institute (ICI) on April 28, 2012 at ABES Technical Institute, Ghaziabad.

- Presentation on Alternate & Cost Effective Technology of Housing in the programme organized by Development Alternatives on May 15, 2012 at New Delhi.

- Presentation on Issues and Problems during National Consultation on Development, Construction and Dissemination of Alternate Building Technologies" organised by BMTPC on May 29, 2012 at New Delhi.

- Presentation on Emerging Technologies for Housing & Building Construction during National Seminar on Fast Track Construction for Housing Sector in India organised by ICI West Bengal Centre on June 9, 2012 at Kolkata.

- Presentation on innovative cost effective housing technologies and emerging technologies during the visit of high level delegation from Namibia in the meeting held under the Chairmanship of Secretary (HUPA) on 3rd July 2012 at New Delhi.

- Presentation on Seismic Retrofitting and Lessons Learnt from Earthquakes during National Symposium on Earthquake Resistant Design & Construction for Urban Social Housing Projects organized by BMTPC on 19-20 July, 2012 at New Delhi.

- Presentation on Appropriate Housing Technologies for Affordable Housing during the Visit of delegation from Human Settlements Portfolio Committee of the Kwa Zulu Natal Province of the Republic of South Africa's Study Tour to the Ministry of HUPA on August 28-29, 2012 at New Delhi.

- Presentation on Emerging Technologies for Housing & Building Construction during CFI Workshop "Indian Construction Industry : The Quest for Quality" at 2nd Delhi Build, 2012 organized by ITEE on September 27, 2012 at New Delhi.

- Presentation on BMTPC's efforts in the area of Innovative and Low Cost Housing during the visit of delegation from the Ministry of Housing & Urban Development of the Government of Burkina Faso held on 3rd October, 2012 at New Delhi.

- Presentation on Alternate and Emerging Technologies for Housing & Building Construction during National Seminar on Role of Infrastructure for Sustainable Development organized by Civil Engineering Division Board (CEDB), The Institution of Engineers (India) on October 12-14, 2012 at Roorkee.

- Paper on Building Opportunities through Green Constructions published in NCHF News Letter, October 2012.

- Paper on New Generation Environment-Friendly Building Materials published in BMTPC Nirman Sarika, October, 2012.

- Paper on Harit Nirman ke Madhyam se Bhawan Banane ke Awsar (Hindi) published in BMTPC Nirman Sarika, October, 2012.

- Paper titled Prospective Housing Technologies for Mass Housing in India published in 11th National Convention on "Sustainable Housing for Masses: Introspection & Way Forward" NAREDCO, December 8, 2012, New Delhi.

- Paper on Alternate Building Technologies for Sustainable Development published in Proceedings of the Exhibition-cum-Seminar on Emerging Fast Track Technologies for Mass Housing, December 18-19, 2012, Chennai.

- Presentation on Innovative cost effective and Emerging Technologies during Three-week Foundation Training Programme of Trainee AEEs (Civil & Elect.) of CPWD (UPSC-2010) organized by Indian Institute of Public Administration on 20th December, 2012 at New Delhi.

- Presentation on Urban Construction in India - Current State and Potential of Emerging Technologies during Indian-German Workshop on "Resource Efficiency and Health Aspects related to Urban Construction in India organized by WKI on January 30, 2013 at New Delhi.

- Paper titled Potential Housing Technologies identified by BMTPC for Social Mass Housing in India published in Proceedings of the International Conference on Advanced Materials for Energy Efficient Building - AME^{2}B-2013,

February 13-15, 2013, New Delhi.

- Paper on Prospective Housing Technologies for Mass Housing in India published in UKIERI Concrete Congress on Innovations in Concrete Construction, 5 - 8 March 2013, Jalandhar, Punjab.

- Presentation on Potential Housing Technologies identified by BMTPC for Social Mass Housing in India during Municipalika 2013 "Safe, Healthy, Green, Inclusive and Smart Cities" on March 15, 2013 at Greater Noida.

ANNEXURE III

PUBLICATIONS BROUGHT OUT DURING THE YEAR

1. Training and Certification Manual for Field and Lab Technicians working with concrete
2. GFRG/Rapidwall Building Structural Design Manual
3. Guidelines on "Manual on Basics of Formwork
4. Seismic Retrofitting of MCD School Buildings at New Delhi - BMTPC's Initiative
5. Design & Construction of Earthquake Resistant Structures - A Practical Treatise for Engineers and Architects
6. Design Package using Alternate Building Materials & Technologies : West Zone
7. Design Package using Alternate Building Materials & Technologies : South Zone
8. Design Package using Alternate Building Materials & Technologies : Karnataka (South Zone)
9. IITK-BMTPC Earthquake Tips in Hindi
10. "Nirman Sarika" - Special Issue of Newsletter highlighting issues related to the theme, "Changing Cities, Building Opportunities" of World Habitat Day 2012.

ANNEXURE IV

VISITORS FROM FOREIGN COUNTRIES

1. A high level delegation from Namibia comprises of Hon. Priscilla Beukes, Deputy Minister for Regional, Local Government, Housing & Rural Development, Mr. Simwanza Simenda, Dy. Permanent Secretary, Ministry of Regional Local Government, Housing & Rural Development, Mr. Cornelius Thaniseb, Dy. Director, Housing, Ms Aily Helao, Chief Works Inspector, Housing & Ms Veronica Nainguedja, Chief Accountant, Housing Finance, Namibia visited the Ministry of HUPA on July 3, 2012. BMTPC apprised the visiting delegation about the innovative cost effective housing and emerging technologies.

2. The delegation from Human Settlements Portfolio Committee of the Kwa Zulu Natal Province of the Republic of South Africa undertook a Study Tour and visited Ministry of HUPA on August 28, 2012 for studying the low cost housing system, infrastructure and housing development in India. BMTPC made a presentation on the cost effective housing as well as emerging technologies. The visiting delegation shown keen interest in the various alternate technologies.

3. A delegation from the Ministry of Housing & Urban Development of the Government of Burkina Faso visited BMTPC on 3rd October, 2012 and detailed discussions were held on appropriate construction technologies for the construction of social housing in Burkina Faso.

4. A delegation led by H.E. Mr. Yacouba Barry, Minister of Housing & Urbanization of Burkina Faso & others along with H.E. Ambassador of Embassy of Burkina Faso, New Delhi visited BMTPC on March 20, 2013 for interaction on mutual cooperation in the area of cost effective innovative housing construction and emerging technologies.

ANNEXURE V

PERFORMANCE EVALUATION OF RFD FOR FY 2012-13

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6						Performance	
Objective	Wt.	Actions by Outputs	Success Indicators	Unit		Target / Criteria Value					Achievement		
					Rt Wt.	Excel. 100%	V.G 90%	Good 80%	Fair 70%	Poor 60%		Raw Score	Wt. Score
1. To promote development, standardisation, mechanisation and large scale field application of proven innovative and emerging building materials and technologies in the construction sector.	50	**Action 1**											
		• National Seminar on development, construction and dissemination of cost-effective technologies with R&D Institution / IITs and other agencies	• Organisation of one no. of National Consultation	Date	2	31.5.2012	30.6.2012	31.7.2012	-	-	29.5.2012	100	2
		Action 2											
		• National Seminar on Emerging Building Materials & Technologies	• Organisation of one no. of Seminar	Date	1	30.6.2012	31.7.2012	31.8.2012	-	-	31.7.2012	90	0.9
		Action 3											
		• Initiating R&D Studies, Developmental work and Pilot Projects with S&T Institutes on the identified subject in seminar / workshop already conducted including upscaling / upgradation of potential technologies with involvement of the industry	• Initiation of atleast three studies for development of building materials & components	Nos.	2	3	2	1	-	-	3	100	2
		• Interaction with concerned industries and financial institutions, to work out the strategy to take the identified	• Compilation of Database of Manufacturers of Alternate Building Materials & Technologies	Date	2	28.2.2013	31.3.2013	30.4.2013	31.5.2013	30.6.2013	31.3.2013	90	1.8

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6					Achievement	Performance	
Objective	Wt.	Actions by Outputs	Success Indicators	Unit		Target / Criteria Value							
					Rt Wt.	Excel. 100%	V.G 90%	Good 80%	Fair 70%	Poor 60%		Raw Score	Wt. Score
		potential technologies forward for commercialization with their participation	• Formulation of 4 technology package on various technologies	Nos.	2	4	3	2	1	-	4	100	2
		Action 5											
		• Preparation of feasibility reports	• Publication of four Feasibility Reports	Nos.	2	4	3	2	1	-	4	100	2
		Action 6											
		• Preparation of database on Energy Requirements of Building Materials and technologies	• Compilation of data on energy in building materials & green house gas emissions	Date	1	31.1.2013	28.2.2013	31.3.2013	30.4.2013	31.5.2013	Under progress	0	0
		Action 7											
		• Building Materials & Technology Exposition	• Organisation of Exposition either during India International Trade Fair or at any other venue or event	Date	2	30.11.2012	31.12.2012	31.1.2013	28.2.2013	31.3.2013	30.11.2012	100	2
		Action 8											
		• Design Packages on Alternate Cost effective Tech.	• Publication of four Design Package	Nos.	2	4	3	2	1	-	3	90	1.8
		Action 9											
		• Developing design packages using cost effective technologies for Indira Awas Yojana for different regions of the Country	• Preparation of 3 Design Package	Nos.	2	3	2	1	-	-	2	90	1.8
			• Organisation of two training programmes for masons/ artisans in rural region	No. of persons	2	60	50	40	30	20	60	100	2
		Action 10											
		• Framing up specifications, designs, code of practices and schedule of rates	• Preparation of 2 nos. Specifications, 2 nos. of Code of Practices	Nos.	2	4	3	2	1	-	3	90	1.8

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6					Achievement	Performance	
Objective	Wt.	Actions by Outputs	Success Indicators	Unit		Target / Criteria Value							
					Rt Wt.	Excel. 100%	V.G 90%	Good 80%	Fair 70%	Poor 60%		Raw Score	Wt. Score
			• Preparation of criteria for certification of Ready Mix Plant with Quality Council of India	Date	2	31.10.2012	30.11.2012	31.12.2012	31.1.2013	28.2.2013	31.12.2012	80	1.6
			• Evaluation of atleast four technologies/ systems under PACS	Nos.	2	4	3	2	1	-	4	100	2
		Action 11											
		• Study & Promotion of Emerging Technologies	• Evaluation of four technologies	Nos.	4	4	3	2	1	-	3	90	3.6
		Action 12											
		• Identification of new emerging technologies	• Identification of technology/ system providers	Date	3	31.1.2013	28.2.2013	31.3.2013	30.4.2013	31.5.2013	31.1.2013	100	3
		Action 13											
		• Pilot Projects on Demonstration Construction	• Initiation of pilot housing projects with State Govts.	Nos.	4	2	1	-	-	-	1	90	3.6
		Action 14											
		• Promotion of Rapid Wall Construction System	• Publication of GFRG/ Rapidwall Manual	Date	1	30.6.2012	31.7.2012	31.8.2012	30.9.2012	31.10.2012	30.6.2012	100	1
			• Organisation of one workshop	Date	1	31.12.2012	31.1.2013	28.2.2013	31.3.2013	30.4.2013	25.3.2013	71.94	0.72
			• Initiation of construction of 8-storey building at Mumbai	Date	2	31.3.2013	30.4.2013	31.5.2013	30.6.2013	31.7.2013	Project dropped	0	0

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6					Achievement	Performance	
Objective	Wt.	Actions by Outputs	Success Indicators	Unit		Target / Criteria Value							
					Rt Wt.	Excel. 100%	V.G 90%	Good 80%	Fair 70%	Poor 60%		Raw Score	Wt. Score
		Action 15											
		• Training Programme on Bamboo based technologies in North Eastern Region for structural use of bamboo in housing construction	• Organisation of two Training programmes	Nos.	2	2	1	-	-	-	Under Progress	0	0
		Action 16											
		• Dissemination of information through print & electronic media including website upkeeping including sensitization of PACS Scheme	• Periodic sharing of information through journals, magazines, website and press releases	Nos.	1	5	4	3	2	1	5	100	1
			• Preparation of publications	Nos.	2	4	3	2	1	-	4	100	2
		Action 17											
		• Organizing Exhibitions/Road Shows for display of emerging/cost effective technologies including machineries in metro cities	• Organisation of one exhibition/ roadshow	Nos.	1	1	-	-	-	-	1	100	1
			• Preparation of Display Panels, Exhibits, Models	Date	1	30.9.2012	31.10.2012	30.11.2012	31.12.2012	31.1.2013	30.9.2012	100	1
		Action 18											
		• Participation in important Exhibitions related with Building Materials & Construction Technologies in India and abroad	• Participation in seminars/ workshops/ exhibitions	Nos.	2	5	4	3	2	1	10	100	2
2. To work as a Training Resource Centre for capacity building and	15	**Action 1**											
		• Establishing BMTPC as a Training Resource Centre	• Preparation of four training modules	Nos.	4	4	3	2	1	-	4	100	4

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6					Achievement	Performance	
Objective	Wt.	Actions by Outputs	Success Indicators	Unit		Target / Criteria Value							
					Rt Wt.	Excel.	V.G	Good	Fair	Poor		Raw Score	Wt. Score
						100%	90%	80%	70%	60%			
promotion of good construction practices to professionals, construction agencies, artisans and marketing of building technologies from lab to land.			• Organisation of training programmes	Nos.	4	5	4	3	2	1	5	100	4
		Action 2											
		• Pilot Training Programme for BMTPC-Indian Concrete Institute (ICI) Certification Scheme for Field and Lab Technicians	• Organisation of 2 Training Programmes on pilot basis	Nos.	2	2	1	-	-	-	1	90	1.8
		Action 3											
		• Developing Syllabus and Course materials for elective subject on sustainable building technologies for civil engineering and architects	• Development of Syllabus	Date	3	30.9.2012	31.10.2012	30.11.2012	31.12.2012	31.1.2013	30.9.2012	100	3
			• Organization of Interactive meet with AICTE and Council of Architecture	Date	2	31.12.2012	31.1.2013	28.2.2013	31.3.2013	30.4.2013	23.4.2013	62.33	1.25
3. To promote methodologies and technologies for natural disaster mitigation, vulnerability & risk reduction and retrofitting/ reconstruction of buildings and disaster resistant planning of human settlements.	10	**Action 1**											
		• Organizing certified training programmes with IIT Roorkee	• Organisation of two training programmes	Nos.	5	2	1	-	-	-	2	100	5
		Action 2											
		• Capacity building and hand holding of State Engineers on disaster resistant construction involved in preparation of housing projects of our Ministry	• Organisation of one programme	Nos.	5	1	-	-	-	-	1	100	5
4. To undertake project management and consultancy services including appraisal, monitoring and third party inspection of housing projects under the various Central/ State	13	**Action 1**											
		• Appraisal of projects under JNNURM / RAY	Submission of Appraisal Reports	% of project received	2	100	90	80	70	60	No. of Project Received: 28 No. of Project Appraised: 28	100	2

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6					Achievement	Performance	
Objective	Wt.	Actions by Outputs	Success Indicators	Unit		Target / Criteria Value							
					Rt Wt.	Excel. 100%	V.G 90%	Good 80%	Fair 70%	Poor 60%		Raw Score	Wt. Score
Schemes (funding from other sources)		**Action 2**											
		• Monitoring of project sites under JNNURM	Submission of Monitoring Reports	% of project monitored	2	100	90	80	70	60	No. of Project Received: 23 No. of Project Monitored: 23	100	2
		Action 3											
		• TPIM Review	Submission of TPIM Review Reports	% of project reviewed	2	100	90	80	70	60	No. of TPIM Received through Mission Dirct: 145 No. of TPIM Reviewed: 145	100	2
		Action 4											
		• Capacity Building programme on quality assurance & TPIM	Organization of capacity building programmes in different States	% of request from Mission Directorate.	2	100	90	80	70	60	No. of request Received: 3 No. of prog. organised: 3	100	2
Other activities being undertaken with project specific funding from other than grant-in-aid		**Action 5**											
		• Implementation of India-Africa Technical Cooperation Programme (Ministry of External Affairs) – Total project cost : Rs.87 crores	• Signing of MoU with two Member States	No.	1	2	1	-	-	-	Under progress	0	0
			• Finalisation of land & other formalities for project components with two Member States	No.	1	2	1	-	-	-	Under progress	0	0
		Action 6											
		• Preparation of Districts Earthquake Hazard Maps and Atlases (National	• Preparation of Earthquake Hazard Maps (24 states) at districts, state and	Date	2	30.11.2012	31.12.2012	31.01.2013	28.02.2013	31.03.2013	31.1.2013	80	1.6

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6					Achievement	Performance	
Objective	Wt.	Actions by Outputs	Success Indicators	Unit		Target / Criteria Value							
					Rt Wt.	Excel. 100%	V.G 90%	Good 80%	Fair 70%	Poor 60%		Raw Score	Wt. Score
		Disaster Management Authority, MHA)	country level										
		Action 7											
		• Preparation of Course Modules and conduction of Training of Trainers for Engineers & Architects on Earthquake Resistant Design & Construction (BIPARD, Govt. of Bihar)	• Preparation of Course Modules and conduction of TOTs	Date	1	28.02.2013	31.03.2013	30.4.2013	-	-	28.2.2013	100	1
• Efficient Functioning of the RFD System	3	Timely submission of RFD for 2012-13	On-time submission	Date	2	5.3.2012	8.3.2012	9.3.2012	10.3.2012	11.3.2012	7.3.2012	0	0
		Timely submission of Results for 2012-13	On-time submission	Date	1	1.5.2013	2.5.2013	3.5.2013	4.5.2013	5.5.2013	30.4.2013	100	1
• Administrative Reforms	5	Implement ISO 9001	Prepare ISO 9001 action plan	Date	1	1.5.2013	2.5.2013	3.5.2013	4.5.2013	5.5.2013	Under progress	0	0
			Implementation of ISO 9001 action plan.	Date	2	25.3.2013	26.3.2013	27.3.2013	28.3.2013	29.3.2013	Under progress	0	0
		Implement mitigating strategies for reducing potential risk of corruption	% of implementation	%	2	100	95	90	85	80	100	100	2
• Improving Internal Efficiency / responsiveness / service delivery of Ministry / Department	4	Implementation of Sevottam	Independent Audit of Implementation of Citizen's Charter	%	2	100	95	90	85	80	100	100	2
			Independent Audit of implementation of public grievance redressal system	%	2	100	95	90	85	80	100	100	2
Total	100												84.27

ANNEXURE VI

ANNUAL ACTION PLAN
2013-2014

VISION, MISSION, OBJECTIVES AND FUNCTIONS

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.

Objectives:

- Building Materials & Construction Technologies : To promote development, standardisation, mechanisation and large scale field application of innovative and emerging building materials and technologies in the construction sector.

- Capacity Building and Skill Development: To work as a Training Resource Centre for capacity building and promotion of good construction practices to professionals, construction agencies, artisans and marketing of building technologies from lab to land.

- Disaster Mitigation & Management : To promote methodologies and technologies for natural disaster mitigation, vulnerability & risk reduction and retrofitting/ reconstruction of buildings and disaster resistant planning for human settlements.

- Project Management & Consultancy: To undertake project management and consultancy services including appraisal, monitoring and third party inspection of housing projects under the various Central/State Schemes.

Functions:

1. Identification, evaluation of innovative and emerging technologies available globally and encouraging joint venture in building materials and construction sector.
2. Promoting economy, efficiency and quality in construction.
3. Upscaling of technologies, know-how acquisition, absorption and dissemination.
4. Field level application of environment-friendly, energy-efficient and disaster resistant technologies for innovative, locally available and emerging technologies.
5. Formulation of Standards on innovative building materials/technologies including emerging technologies/systems and incorporation in the schedule of specifications/rates.
6. Formulation of Standards/Specifications for Affordable Housing
7. Documentation of benefits, durability and acceptability of cost effective and innovative building materials and technologies.
8. Skill upgradation of professionals and construction workers through capacity building programmes, training programmes, seminars, conferences, workshops, exhibitions nationally as well as internationally.
9. Promoting disaster resistant construction technologies.
10. Appraisal, monitoring and third party inspection of housing projects including undertaking project management and consultancy services.
11. Publication of user manuals, guidelines, compendiums, directories, brochures, techno-feasibility reports, video films, demonstration CDs, interactive website, blogs including documentation of success stories.

ANNUAL ACTION PLAN OF BMTPC FOR FY 2013-14

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6				
Objective	Wt.	Actions by Outputs	Success Indicators	Unit	Rt Wt.	Target / Criteria Value				
						Excel.	V.G	Good	Fair	Poor
						100%	90%	80%	70%	60%
1. To promote development, standardisation, mechanisation and large scale field application of innovative and emerging building materials and technologies in the construction sector.	60	**Action 1** • Promotion of New and Emerging Building Materials and Construction Technologies	• Approval of new and emerging technologies by TAG	Nos.	6	5	4	3	2	1
			• Preparation of Technology Profiles including Cost Analysis	Nos.	4	5	4	3	2	1
			• Incorporation of emerging technologies in CPWD/States Schedule of Rates	No. of States	2	3	2	1	-	-
			• Interactions with State Govt. and Real Estate Developers/ Builders jointly with the Technology Providers	Nos.	2	2	1	-	-	-
		Action 2 • Cooperation with R&D and Academic Organizations in the area of New and Emerging Building Materials and Construction Technologies	• Organization of two brain storming sessions for possible areas of cooperation with R&D institutions both India & abroad	Nos.	2	2	1	-	-	-

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6				
Objective	Wt.	Actions by Outputs	Success Indicators	Unit	Rt Wt.	Target / Criteria Value				
						Excel.	V.G	Good	Fair	Poor
						100%	90%	80%	70%	60%
			• One to one meetings for preparation of strategy & methodologies and finalisation of Memorandum of Understanding	Date	1	30.11.2013	31.12.2013	31.1.2014	28.2.2014	31.3.2014
			• Selection and initiation of R&D projects	Nos.	3	3	2	1	-	-
		Action 3 • Formulation of Standards/ Specifications for Affordable Housing	• Preparation of Standards/ Specifications for various States	Nos.	3	4	3	2	1	-
			• Advocacy to the State Govts. for adoption of Standards/ Specifications in their SOR	Nos.	2	2	1	-	-	-
		Action 4 • Organisation of Exhibition for promotion of emerging/ cost effective technologies	• Organisation of one exhibition during IITF or any other location	Nos.	5	1	-	-	-	-
		Action 5 • Establishment of Permanent Display Centre at venue provided by HUDCO at New Delhi	• Establishment of Centre	Date	2	31.1.2014	28.2.2014	31.3.2014	-	-

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6				
Objective	Wt.	Actions by Outputs	Success Indicators	Unit	Rt Wt.	Target / Criteria Value				
						Excel.	V.G	Good	Fair	Poor
						100%	90%	80%	70%	60%
		Action 6 • Implementation of Performance Appraisal and Certification Scheme	• Organization of national level seminar on PACS	Date	3	31.12.2013	31.1.2014	28.2.2014	31.3.2014	-
			• Evaluation of products/systems and Award of PACS	Nos.	6	5	4	3	2	1
		Action 7 • Construction of Demonstration Housing Project at Rae Bareli	• Completion of the project	Date	7	30.11.2013	31.12.2013	31.1.2014	28.2.2014	31.3.2014
		Action 8 • Dissemination of information through print & electronic media including website upkeeping	• Periodic sharing of information through journals, magazines, website, advts. and preparation of display material	Date	4	31.3.2014	-	-	-	-
			• Preparation of publications	Nos.	4	3	2	1	-	-
		Action 9 • Participation in important Exhibitions related with Building Materials & Construction Technologies	• Participation in seminars/ workshops/ exhibitions	Nos.	4	5	4	3	2	1

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6				
Objective	Wt.	Actions by Outputs	Success Indicators	Unit	Rt Wt.	Target / Criteria Value				
						Excel.	V.G	Good	Fair	Poor
						100%	90%	80%	70%	60%
2. To work as a Training Resource Centre for capacity building and promotion of good construction practices to professionals, construction agencies, artisans and marketing of building technologies from lab to land.	15	**Action 1** • Organisation of training programme for engineers, architects and masons on field level application of cost effective technologies at ongoing project at Rae Bareli, UP	• No. of engineers and architects trained	No.	2	25	20	15	10	-
			• Nos. of masons trained	Nos.	2	40	30	20	10	-
		Action 2 • Organisation of training programmes for artisans on already developed training modules	• Organisation of training programmes	Nos.	3	4	3	2	1	-
		Action 3 • Implementation of Project on "Rejuvenation and Strengthening of the National Network of Building Centres – Pilot Studies" – sponsored by HUDCO under CSR (Project cost Rs.98.90 lakhs)	• Pilot Studies on Rejuvenation and Strengthening of the National Network of Building Centres	Nos.	8	16	14	12	10	8

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6				
Objective	Wt.	Actions by Outputs	Success Indicators	Unit	Rt Wt.	Target / Criteria Value				
						Excel.	V.G	Good	Fair	Poor
						100%	90%	80%	70%	60%
3. To promote methodologies and technologies for natural disaster mitigation, vulnerability & risk reduction and retrofitting/ reconstruction of buildings and disaster resistant planning for human settlements.	6	**Action 1** • Organization of Training of Trainer Programmes for engineers and architects of Bihar Govt. through BIPARD	• Organisation of TOT Programmes	% of request received from BIPARD	3	100	90	80	70	60
		Action 2 • Preparation of updated Earthquake Hazard Maps for National Disaster Management Authority (Project cost Rs.76.83 lakh)	• Preparation of remaining Earthquake Hazard Maps for 11 States/UTs	Date	3	30.9.2013	31.10.2013	30.11.2013	31.12.2013	31.1.2014

Column 1	Col 2	Column 3	Column 4		Col 5	Column 6				
Objective	Wt.	Actions by Outputs	Success Indicators	Unit	Rt Wt.	Target / Criteria Value				
						Excel.	V.G	Good	Fair	Poor
						100%	90%	80%	70%	60%
4. To undertake project management and consultancy services including appraisal, monitoring and third party inspection of housing projects under the various Central/State Schemes (funding from other sources)	8	**Action 1** • Appraisal of projects under JNNURM / RAY	Submission of Appraisal Reports	% of project received	2	100	90	80	70	60
		Action 2 • Monitoring of project sites under JNNURM / RAY	Submission of Monitoring Reports	% of project monitored	2	100	90	80	70	60
		Action 3 • TPIM Review	Submission of TPIM Review Reports	% of project reviewed	2	100	90	80	70	60
		Action 4 • Capacity Building programme on quality assurance & TPIM	Organization of capacity building programmes in different States	% of request from Mission Directorate.	2	100	90	80	70	60

Sl.No.	Objective	Weight	Actions	Success Indicator	Unit	Weight	Target/Criteria Value				
							Excellent	Very Good	Good	Fair	Poor
							100%	90%	80%	70%	60%
*	Efficient Functioning of the RFD System	3	Timely submission of Draft RFD (2013-14) for approval	On-time submission	Date	2.00	15/05/2013	16/05/2013	17/05/2013	20/05/2013	21/05/2013
			Timely submission of Results for RFD (2012-13)	On-time submission	Date	1.00	01/05/2013	02/05/2013	05/05/2013	06/05/2013	07/05/2013
*	Administrative Reforms	4	Implement ISO 9001 as per the approved action plan.	% Implementation	%	2.00	100	95	90	85	80
			Prepare an action plan for Innovation	On time submission	Date	2.00	30/07/2013	10/08/2013	20/08/2013	30/08/2013	10/09/2013
*	Improving Internal Improving Internal Efficiency /responsiveness / service delivery of Ministry / Department	4	Implementation of Sevottam	Independent Audit of Implementation of Citizen's Charter	%	2.00	100	95	90	85	80
				Independent Audit of implementation of public grievance redressal system	%	2.00	100	95	90	85	80