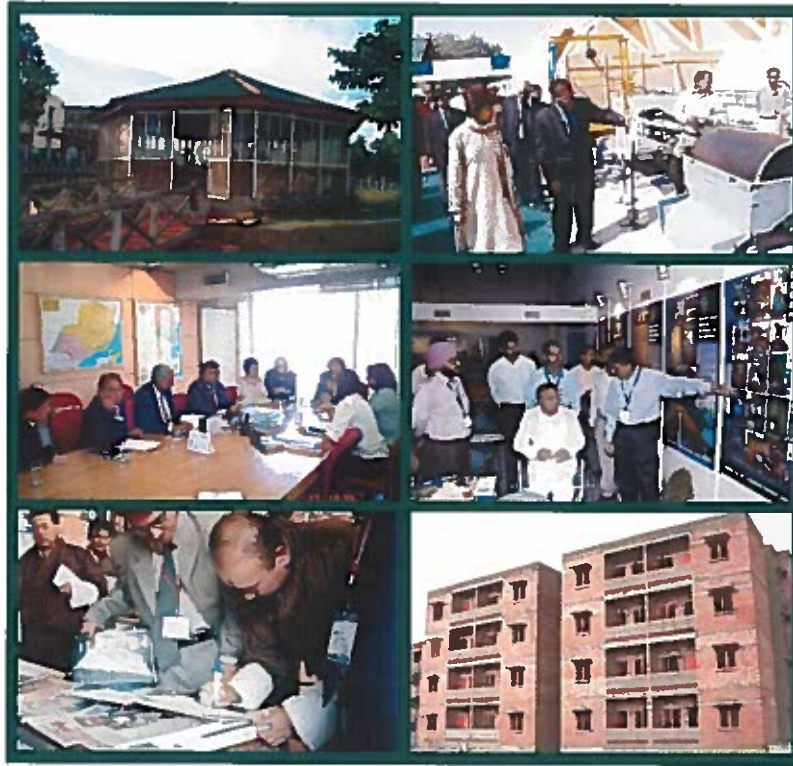


वार्षिक रिपोर्ट Annual Report 2005-2006



BMTPC

निर्माण सामग्री एवं प्रौद्योगिकी संवर्द्धन परिषद्

आवास एवं शहरी गरीबी उपशमन मंत्रालय, भारत सरकार

Building Materials and Technology Promotion Council

Ministry of Housing & Urban Poverty Alleviation, Govt. of India



Annual Report 2005-2006



Building Materials & Technology Promotion Council
Ministry of Housing & Urban Poverty Alleviation, Govt. of India
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FOREWORD

It is with pleasure that I present the sixteenth Annual Report of the Building Materials & Technology Promotion Council for the year 2005-06.

In its endeavour to transfer of technologies from lab to field, in recent past BMTPC has made rapid strides in the field level application of innovative and disaster resistant building technologies. It has emerged as a frontal organization in promoting capacity building of professionals, architects & artisans by organizing series of training programmes and skill development programmes at various locations. The Council has intensified its multifaceted initiatives in disaster mitigation and management. It has also embarked upon a well defined strategy to strengthen its promotional activities, giving special emphasis to development of new technologies and their commercialization in viable enterprises.

After the successful completion of VAMBAY-based 252 model demonstration houses at Bangalore, such Demonstration houses have been taken up in the States like Uttaranchal, Maharashtra, Chhattisgarh, Karnataka and Tamil Nadu. These projects serve the twin objectives of replication and promotion through demonstration of field level application of innovative building technologies. A large number of innovative technologies for walling and roofing components such as precast RCC door frames, solid & hollow concrete blocks, Fly ash bricks, Filler slab, Plank & Joist Roof etc. have been adopted in these projects. With a specific thrust on adoption of bamboo based building technologies, BMTPC has undertaken construction of demonstration structures in Mizoram and Tripura, which include Houses, OPD Buildings, Library buildings, Picnic huts & Schools. During construction of these structures, local contractors, masons and artisans were provided training on the use of Bamboo in building construction. The council has also provided Technical support to Delhi State Industrial & Infrastructure Development Corporation (DSIIDC) for construction of 3164 houses for Industrial workers in Bawana, New Delhi. This is one of the first examples of a mass housing project adopting cost effective and environment friendly building technologies. Quite a few State Housing Boards and Improvement Trusts have approached BMTPC for Technical support in adoption of these innovative technologies.

During the year the Council has undertaken series of initiatives to strengthen its activities for disaster mitigation and management. The foremost being the revision of the Vulnerability Atlas of India, which was published in 1997. The revised Atlas will include digitized State-wise hazard maps and housing risk tables as per Census 2001. It is envisaged that these digitized maps would significantly contribute to evolution of pro-active strategies for disaster management. The council has been organizing Technical workshops on "Model Building Bye-laws", sponsored by Ministry of Home Affairs. During the year, seven such workshops have been organized in the states of Chattisgarh, Bihar, Assam, Uttar Pradesh, Tripura, Himachal Pradesh and Meghalaya. Technical support has been provided to the National Task Force for a special study of Lakshadweep Island to assess vulnerability to various hazards and evolution of mitigation & prevention measures.

In the aftermath of massive earthquake in Jammu & Kashmir in October 2005, a series of initiatives have been taken by the Council for relief and rehabilitation. Besides being a part of Central Team, BMTPC helped in conducting training of engineers of State Government in disaster mitigation. Impressive technical literature in the form of Brochures & charts in local language (Urdu) were widely circulated. BMTPC has initiated the process for retrofitting of Kupwara hospital which will be a landmark contribution to the area. This initiative is almost first of its kind. The Council has also taken an initiative for demonstration of retrofitting techniques for seismic strengthening of MCD School Buildings in Delhi.

In order to create employment opportunities and to make use of Bamboo as a construction material, the Council has taken special initiative to establish Bamboo Mat Production Centres in Meghalaya, Tripura and Mizoram. This will have multi-pronged effect through increased productivity, quality and training to create employment opportunities in North Eastern States.

In line with the endeavours of the Council to strengthen the Information and Data base in the construction sector, a number of publications have been brought out during the year. Various publications have been compiled and brought out in CD form, for easy reach of information in a consumer friendly format.

On the occasion of World Habitat Day, the Council brought out a poster titled "Helping in Building Healthy Habitat", highlighting the Programmes of Ministry of Urban Employment & Poverty Alleviation. The yearly publication of "Building Material News" was also brought out on this occasion. BMTPC also organised a painting competition for children of MCD schools and the winners were given awards during the World Habitat Day celebrations. With constant inputs, the Council's website is a frequently visited site and attracted lot of attention of stakeholders nationally and internationally.

BMTPC has increased its efforts in organizing a series of structured training programmes, on multifaceted areas of concern in the housing and building construction for engineering professionals and construction workers including women. Such programmes address the critical issues of Quality Control, Durability of Structures, Earthquake Resistant construction, Concrete Design, Water Proofing, Quality Assurance etc.

The Council gave renewed impetus to the activities in the international arena by hosting the visit of foreign delegations from Sudan, Nigeria, Mozambique, Venezuela, World Bank, Maldives and Dubai, besides organizing an International Expert Group meeting in Bangalore with support from UNIDO-ICAMT and ICS-Italy. The Council is also partnering with CVG, Govt. of Venezuela and Standards & Quality Control Authority, Ministry of Works & Human Settlements, Royal Govt. of Bhutan for establishing Technology Demonstration cum Production Centre for production of pre-cast building components.

Ministry of Urban Employment & Poverty Alleviation has designated BMTPC as one of the Appraisal agencies for appraising the DPRs for Basic Services for Urban Poor (BSUP) under Jawaharlal Nehru National Urban Renewal Mission (JNNURM). Besides appraising the DPRs from M.P, Rajasthan and Karnataka, the Council has formulated Technical and Administration checklist and guidelines for preparation of DPRs. The Council has made detailed presentations to stakeholders in different locations.

With a focus on mandate of the Council to develop innovative building technologies, specific projects have been taken up such as development of Wood substitutes from Needle Felt Technology, Bamboo Mat Ridge Cap, Light Weight Interlocking Block Masonry, Setting up of Pilot Plant for production of Reactive Silica from Rice Husk and Bamboo based prefabricated modular houses.

I would like to place on record the valuable guidance and encouragement received from the President, Members of the Board of Management, the Chairperson and Members of the Executive Committee for the various programmes undertaken and executed by the Council. Special thanks are due to Ministry of Home Affairs, Ministry of DONER, DST, CSIR, IITs, CEPT, IPIRTI, SERC, HUDCO, BIS, NHB, CPWD, NSIC, CIDC, UNIDO and UN-Habitat for their continued support and interest in strengthening the efforts of the Council over successive years.

I would also like to place on record my 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.


(R.K.Celly)
Executive Director

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MISSION STATEMENT OF BMTPC

Develop and operationalise a comprehensive and integrated approach for technology development, transfer and investment promotion to encourage application of environment-friendly & energy-efficient innovative materials, manufacturing technologies and disaster resistant construction practices for housing and buildings in urban and rural areas.

INTRODUCTION

The Building Materials & Technology Promotion Council (BMTPC) was set up in 1990 by the then Ministry of Urban Development (now Ministry of Urban Employment & Poverty Alleviation), Government of India, as an apex level inter-ministerial institution for promotion, development and large scale dissemination of appropriate, cost-effective, eco-friendly and energy-efficient building materials and technologies. The successive National Housing and Habitat Policies have laid emphasis on adoption of an integrated and holistic approach to delivery of low-cost housing projects and schemes through innovation, R&D and technology promotion of waste-based and local building materials. The Council has been striving towards achieving the objectives of the Housing Policy.

Objectives

- To promote development, production, standardization and large-scale application of cost-effective innovative building materials and construction technologies in housing and building sectors.
- To promote manufacturing of new waste-based building materials and components through technical support, facilitating fiscal concessions and encouraging entrepreneurs to set up production units in different urban and rural regions.
- To develop and promote methodologies and technologies for natural disaster mitigation, vulnerability and risk reduction and retrofitting/reconstruction of buildings and disaster resistant design and planning practices in human settlements.
- To provide support services to professionals, construction agencies and entrepreneurs in selection, evaluation, upscaling, design engineering, skill upgradation and marketing for technology transfer, from lab to land, in the area of building materials and construction.

Thrust Areas

- Improving the policy environment for sustained growth of cost-effective building materials, production and availability.

- Promotion of production units of building materials/components based on Flyash, Redmud, Phosphogypsum, agricultural residues and other wastes and by-products.
- Modernisation of small scale and village level building materials production units in rural and urban areas.
- Promoting economy in construction costs.
- Formulation of standards for local building materials.
- Strengthening industrial extension services for attracting more investment in building materials sector by working with national and international agencies.
- Upscaling of technologies, know-how acquisition, absorption and dissemination.
- Assessing vulnerability and risk in natural disaster, prone areas.
- Promoting disaster resistant construction technologies.
- Global technology search and encouraging joint ventures in building materials and construction sector.

MAJOR INITIATIVES AND ACTIVITIES DURING THE YEAR 2005-2006

I. DEMONSTRATION BUILDINGS USING COST-EFFECTIVE TECHNOLOGIES

1. Construction of Demonstration Houses under VAMBAY

The Ministry of Urban Employment & Poverty Alleviation has assigned BMTPC the task of construction of demonstration houses using cost effective technologies within the ceiling limit prescribed under VAMBAY. During the year, the Council has undertaken construction of Model Demonstration houses in the States of Chhattisgarh (Bilaspur), Maharashtra (Nagpur), Karnataka (Kudulu), Uttaranchal (Dehradun), Tamil Nadu (Trichy). The salient features and status of the projects are as under:

Nagpur (Maharashtra)

The Demonstration Housing Project at Nagpur, Maharashtra comprises of 70 dwelling units having Ground +1 structure with built up area of each unit as 181 sqft. and future expandable area of 88sqft. The project consists of 10 blocks, each block having 7 dwelling units. There are 4 dwelling units on ground floor and 3 dwelling units on first floor. USP of the project is that all the occupants on the first floor will also get future expandable area in the form of open terrace. The cost of model unit is Rs.275 per sq.ft.

The project is a live example of field level application of cost effective building materials. Some of these are:

- i) Under-reamed piles for foundation
- ii) Solid/Hollow blocks using flyash/gypsum for Masonry
- iii) Filler slab for floor/roof
- iv) Precast RCC door frames
- v) Door shutters from wood substitutes
- vi) RCC lintel and tie beams at ground level for earthquake resistance

Work upto Ground Floor roof level in seven blocks and upto lintel level in remaining blocks has been completed. A production unit for manufacture of precast building components to be used for construction have been set up at site.

Bilaspur (Chattisgarh)

In Bilaspur, 100 houses are being constructed for slum dwellers. There is row type housing with 12 Dwelling Units (DU) in one Block, 8 DUs at Ground Floor and 4 units at First Floor. By selecting this design, open expandable space has been provided to occupants on First Floor. The area of each DU is 181 sqft. and the cost per sq.ft. is Rs.222/-. Technologies and building components used in this project are:

- i) Flyash Bricks for walling
- ii) Precast RCC Beam and curved planks for roofing.
- iii) Ferrocement Stair Case
- iv) RCC Door Frames
- v) Precast RCC chajjas etc.

Dehradun (Uttranchal)

In Dehradun, 100 houses are being constructed at three different locations in single storey. The houses being constructed at each location are 28 units, 38 units and 34 units. This project is special in a way that these demonstration houses are being constructed for lepers who were living in dilapidated kuccha houses at the same location. The area of each DU is 181 sqft. and the cost per sq.ft. is Rs.250/-. Cost effective technologies which have been used in this project are as under:

- i) Precast RCC planks and joists for roofing.
- ii) Solid concrete blocks for walling
- iii) RCC door frames
- iv) Precast elements like Chajjas, shelves etc.

Construction of 49 units have been completed upto/above Plinth level. The foundation work in remaining 51 units is in progress.

Kudulu (Karnataka)

There are 70 Dwelling Units having Ground+2 structure. The area of each DU is 201 sqft. and the cost per sq.ft. is Rs.298/-. Cost effective technologies which are being used in this project are:

- i) RR masonry in foundation and plinth
- ii) Solid concrete block masonry using flyash bricks in superstructure
- iii) Precast R.C. planks and joist system for ground and first floor slab
- iv) RCC door frames

The work has been awarded for construction of demonstration houses. It is likely to be started within a fortnight.

Trichi (Tamilnadu)

There are 100 dwelling units of single storey designed in cluster approach. The area of each DU is 172 sqft. and the cost per sq.ft. is Rs.232/-. Cost effective technologies which have been used in this project are:

- i) RR masonry in foundation and plinth
- ii) Concrete block masonry using Flyash bricks in superstructure
- iii) Filler slabs
- iv) RCC door frames

The work has been awarded for construction of demonstration houses. It is likely to be started within a fortnight.

The progress on various projects is being monitored by a Project Management Committee for VAMBAY.

2. Demonstration Structures in Mizoram and Tripura

BMTPC has undertaken construction of 10 demonstration structures, each, using bamboo based technologies in Mizoram and Tripura. These includes houses, OPD buildings, Library buildings, Picnic huts, Schools, etc. The cost of construction is considerably reduced by 25% to 30% using bamboo based technologies for different types of structures as compared to conventional construction. During constructing various types of structures local contractors, masons, artisans were provided training on use of bamboo in building construction. The specifications used are:

- Treated bamboo columns and beams,
- Ferrocement walls using bamboo grid reinforcement,
- Treated bamboo trusses, rafters and purlins,
- Bamboo mat board in wooden frames for door shutters,
- Bamboo mat corrugated roofing sheets,
- Locally available wood for door & window frames
- IPS flooring, etc.

The Council has already constructed 9 structures in Mizoram and the construction work of last structure i.e. school building has reached above plinth level.

Five Demonstration structures with Bamboo Based Technologies in Tripura have also been completed during the year. The work on remaining five structures is in progress.

3. Technical assistance to IFFCO Foundation

IFFCO Foundation, New Delhi has approached the Council for providing technical assistance for construction of 100 dwelling units using cost-effective construction technologies for EWS in Punjab. Four alternate designs have been submitted to IFFCO Foundation for their consideration.

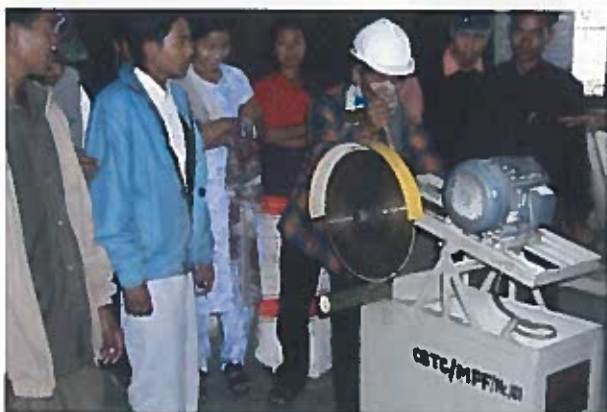
4. Technical Back-up Support for Construction of Industrial Workers Houses by DSIDC

The Council is providing Technical support and guidance for construction of 3164 houses for Industrial workers in Bawana Industrial Township, New Delhi being constructed by the Delhi State Industrial Development Corporation (DSIDC).

Construction of Demonstration Structures in Mizoram and Tripura



Bamboo Mat Production Centres in North Eastern Region



The cost of a house worked out to Rs. 350 per sq.ft. The materials used in the construction of the houses are flyash bricks in rat trap bond, RCC planks and joists, ferrocement shelves, sunshades and steps.

This is the first example of large housing project based on cost effective and environment friendly technologies. Out of 3164 houses, the Hon'ble Chief Minister of Delhi handed over 500 houses to industrial workers on February 21, 2006. The work on the remaining houses is under progress.

II. DISASTER MITIGATION - REPAIR, RECONSTRUCTION AND RETROFITTING

1. Updating the Vulnerability Atlas of India brought in 1997 by BMTPC with respect to earthquakes, cyclones and floods

The Ministry had constituted a Peer Group for updating and revising the Vulnerability Atlas of India brought out in 1997. The proposed revised Atlas will include digitized State-wise hazard maps and housing risk tables as per Census 2001. Digitised maps would significantly improve their use in planning of development works, evolving pro-active strategies for retrofitting and micro-zonation and analyzing nature and extent of damage after a region is hit by a hazard.

The Earthquake hazard maps, fault/thrust details received from GSI and Wind & Cyclone hazard map of India were digitized. Earthquake epicenters of magnitude 5 & above received from India Metrological Department (IMD) were also digitized. Both these maps & other details are presently being verified by members of the Peer group for finalization. Flood Hazard Maps have been digitized and it has been forwarded to Central Water Commission for verification and finalization. In the period, Peer Group has met 6 times apart from various meetings of sub-committees. Risk Tables for all the districts as per 2001 census data have been prepared. The final report of the Peer Group will be submitted to the Ministry of Urban Employment & Poverty Alleviation shortly.

2. Organisation of One-Day Technical Workshop on Model Building Byelaws - sponsored by Ministry of Home Affairs

As reported last year, the Council was asked by the Ministry of Home Affairs to organize one-day Technical Workshops on Model Amendments in Town and Country Planning Act, Zoning Regulation, Development & Control Regulation and Building Regulation for safety against natural hazards. During the year BMTPC organized workshops in the

following States wherein officials from respective State Govt. Depts. participated:

Raipur, Chhattishgarh	-	April 20, 2005,
Patna, Bihar	-	May 31, 2005.
Guwahati, Assam	-	July 1, 2005
Lucknow, UP	-	July 15, 2005
Agartala, Tripura	-	July 30, 2005
Shimla, HP	-	September 22, 2005
Shillong, Meghalaya	-	November 11-12, 2005

The Council will be organizing workshops in Delhi, Haryana, Punjab, J&K, Jharkhand, Tamil Nadu, Maharashtra, Andaman & Nicobar, Manipur, Nagaland, Arunachal Pradesh, Sikkim and Mizoram during next year.

3. Technical Support to National Task Force for a Special Study of Lakshadweep Island

Government of India, Ministry of Home Affairs had constituted a National Task Force for a Special Study of Lakshadweep Island to assess vulnerability to various hazards and suggest mitigation/prevention measures under the chairmanship of Dr.A.S.Arya, National Seismic Advisor and Chief-Building Materials, BMTPC as its Member Secretary. The Council provided technical support for the study. The Task Force submitted its report to the Ministry of Home Affairs.

This report has been prepared to identify the natural and man made hazards and the major factors underlying or enhancing the vulnerabilities. Recommendations are made for immediate as well as long terms measures to reduce the risk in future. Task Force recommended some immediate measures to reduce the isolation of the islands by better connectivity electronically as well as by air and sea travel facilities.

4. Technical Assistance to Govt. of Tamil Nadu for Construction of houses

The Council provided technical inputs to Govt. of Tamil Nadu for construction of 20 units each using steel structures with Coir Composite Panel, Coir Composite Door/Window Shutters, MCR etc., in Tsunami affected areas of Chennai and Cuddalore.

BMTPC called for "Expression of Interest (EOIs)" from various agencies in the field of coir based building products for awarding the work for construction of temporary shelters for Tsunami victims in Cuddalore district of Tamil Nadu. EOIs received are being evaluated.

5. BMTPC's Initiatives after Earthquake in J&K

An earthquake of magnitude 7.6 (Richter Scale) hit on 8th October, 2005 with epicenter located at Muzaffarabad in Pakistan, just near the LOC, only 140 km from Srinagar in Kashmir. The impact of earthquake was so intensive that it caused extensive damages in the State of Jammu & Kashmir and mainly in Baramula and Kupwara districts of Kashmir valley.

BMTPC represented the Ministry of Urban Employment & Poverty Alleviation, Govt. of India, in the Central Team to have on the spot assessment of the situation in the wake of earthquake in Jammu & Kashmir for Central assistance.

Subsequently, the Council was involved in training of 300 engineers of State Government in disaster mitigation, management and preparedness with IIT Roorkee.

In order to disseminate information on good practices of construction and retrofitting, a set of 10 posters describing techniques of retrofitting and booklet titled "Simple ways to Earthquake Safety" for earthquake resistant construction of houses using local materials in Jammu & Kashmir region affected by the recent earthquake, are being prepared in Urdu & English languages.

6. Initiatives for Retrofitting of Sub-District Hospital in Kupwara, J&K

During the visit of the Central Team to earthquake affected area of J&K, it was observed that Sub-District hospital in Kupwara had suffered damage due to earthquake. It was also observed that the hospital had number of deficiencies in so far safety against earthquake is concerned. During the discussion with Divisional Commissioner, Srinagar and Dr.A.S.Arya, National Seismic Advisor, GOI, it was suggested that the hospital being a lifeline building could be taken for seismic strengthening by BMTPC to demonstrate the retrofitting techniques for safety against earthquakes.

Accordingly, BMTPC deputed an expert to J&K to assess the condition of Sub-District Hospital in Kupwara. A retrofitting plan has been prepared and the actual retrofitting work is being undertaken.

7. Initiatives for Demonstration of Retrofitting Techniques for Seismic Strengthening in MCD School Buildings

In most of the disasters resulting from earthquakes, the inadequacy of the buildings, to standup against the seismic forces is the single most cause of the loss of life and loss of

property. In recent earthquakes, number of lives were lost under the debris of the buildings that collapsed in the quake. It is important to ensure that the new structures are adequately strong. But even more important is to strengthen or retrofit the existing structures, especially the public buildings like schools, community centres, primary health centres, anganwadis, etc. as also the place of work. The mitigation measures in the form of retrofitting could significantly reduce chances of collapse in an event of future earthquake thus saving human lives.

Keeping this in mind, BMTPC has taken lead to carry out the retrofitting of 12 MCD school buildings, one in each 12 Municipal wards in Delhi, so that the awareness could be generated among the people as well as various government agencies about the need and techniques of retrofitting. With the help of MCD Officials, schools have been identified for retrofitting. To begin with, seismic strengthening and retrofitting of MCD School building at Indian Airlines Colony, Vasant Vihar was initiated.

8. Organization of Indo-Norwegian Workshop on “Seismic Hazard and Risk Assessment”

On the occasion of completion of the collaboration under Indo-Norwegian Institutional Cooperation between Department of Earthquake Engineering, IIT Roorkee and NORSAR, the Council organized an Indo-Norwegian Workshop on “Seismic Hazard and Risk Assessment” from March 18 – 19, 2006 jointly with IIT Roorkee.

The objective of the workshop was to bring scientists and engineers together in the areas of seismic hazard and risk, earthquake response, vulnerability of structures and earthquake resistant design, and to share the professional experiences and new advanced in the field of earthquake engineering.

9. Appraisal of Project Proposal for Micro-Zonation of Kangra Area of Himachal Pradesh for BRGM, France

Representative of BRGM, France (Delhi office) has approached BMTPC regarding appraisal of project proposal for Micro-Zonation of Kangra Area, Himachal Pradesh under Indo-French Working Group on Urban Development. The Council undertook indepth study of the project proposal and submitted its observations to BRGM for further action.

III. ACTIVITIES IN NORTH-EASTERN REGION

1. Important Activities in North-Eastern Region to Promote Use of Local Resources and Disaster Resistant Construction Practices

In the modern context when forest cover is fast depleting and availability of wood is increasingly becoming scarce, the research and development undertaken in past few decades have established and amply demonstrated that bamboo could be a viable substitute of wood and several other traditional materials for housing and building construction sector and several infrastructure works. Its use through industrial processing have shown a high potential for production of composite materials and components which are cost-effective and can be successfully utilised for structural and non-structural applications in construction of housing and buildings.

The Council is actively involved in developing bamboo based technologies and promoting these in the North-Eastern Region by encouraging commercial production of bamboo based products, construction of demonstration structures, setting up of Bamboo Mat Production Centres. The Council is undertaking following activities in the North-Eastern Region:

Establishment of Bamboo Mat Production Centres

BMTPC, in cooperation with Cane & Bamboo Technology Centre (CBTC), Guwahati and State Governments, is establishing two Bamboo Mat Production Centres each in the States of Assam, Tripura, Mizoram and Meghalaya. The main objectives of Bamboo Mat Production Centres are to provide uninterrupted supply of bamboo mats to the manufacturing units of bamboo based building components for increasing the productivity, quality, to provide training in mat production process and to create employment opportunities in the North Eastern region. In the first phase, the Council is setting up Bamboo Mat Product Centres at Kowaifung, Tripura; Sairang and Bualpui, Mizoram and Sokhar Nongtluh Village, Meghalaya.

For setting up Bamboo Mat Production Centres, local NGO's have been finalized in consultation with State Govt. to run the Centre in effective manner. Machines required for establishment of 4 Bamboo Mat Production Centres are presently under fabrication & likely to be installed shortly. The shed at Kowaifung, Tripura has already been completed. Shed construction in remaining 3 locations is in progress.

The Council in cooperation with CBTC is also providing training on bamboo mat production to the artisans from each Bamboo Mat Production Centres. The production capacity of each production centre will be 300 mats per day. It is estimated that the each Centre will be able to produce the mat at the rate of Rs.35 per mat and would be able to sell at the rate of Rs.45 per mat. This will provide employment generation of nearly 150 women/men per day i.e. 45,000 women/men days per year per Centre. Besides the above, the Centres can also generate income by supplying bamboo sticks made out of bamboo waste, to the artisans for making handicraft items. The mats produced by Bamboo Mat Production Centres are likely to utilized by various manufacturers who are producing Bamboo Mat Corrugated Roofing Sheets, Bamboo Mat Boards etc.

Construction of Demonstration structures

Under the two projects sanctioned by the Ministry of Urban Employment & Poverty Alleviation, Council is putting up 10 Demonstration buildings using cost effective building technologies in order to propagate use of locally available bamboo for cost-effective, disaster resistant construction technologies in Mizoram and Tripura. In Mizoram, 9 structures have been completed and in Tripura work on 5 structures have been completed during the year. Remaining structures are in advanced stages of construction.

Establishment of Technology Demonstration cum Production Centre

The Council is also establishing a Demonstration-cum-Production Centre for promoting cost effective innovative building materials near Agartala for which State Govt. has already identified a site. Action was initiated for preparation of tender documents for construction of shed and other infrastructure facility for award of work.

IV. STRENGTHENING THE INFORMATION AND DATABASE IN THE CONSTRUCTION SECTOR

1. Publication of the Special Issue of Newsletter on the theme "Millennium Development Goals and the City" on the occasion of World Habitat Day, 2005

The Council brought out a Special Issue of Building Materials News on the theme of the World Habitat Day "Millennium Development Goals and the City". The Building Materials News was released by Shri Prithviraj Chavan, Hon'ble Minister of State in the Prime Minister's Office and Kumari Selja, Hon'ble Minister of State (I/C) for Urban Employment & Poverty Alleviation, on the occasion of the World Habitat Day on 3rd October, 2005 at New Delhi. The

World Habitat Day 2005 Celebrations



Shri Prithviraj Chavan, Hon'ble Minister of State in the Prime Minister's Office and Kumari Selja, Hon'ble Minister of State (IC) for UEPA releasing the Poster titled "Helping in Building Healthy Habitat" highlighting Schemes/Programmes of MoUE&PA on the occasion of World Habitat Day on 3rd October, 2005



Shri Prithviraj Chavan, Hon'ble Minister of State in the Prime Minister's Office and Kumari Selja, Hon'ble Minister of State (IC) for UEPA releasing the CD titled "Strengthening the Technological Base of Building Materials Industry" which includes BMTPC's Publications in detail on the occasion of World Habitat Day, 2005



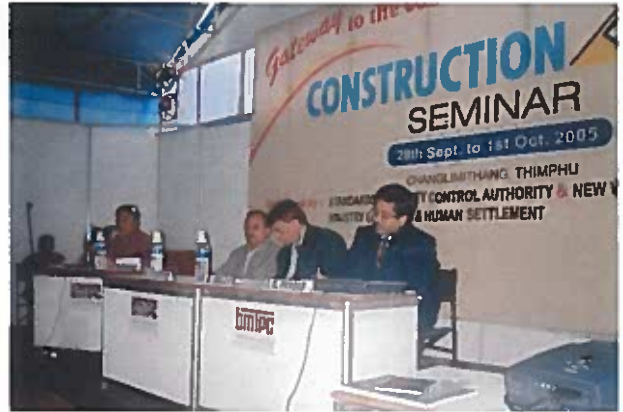
Shri Prithviraj Chavan, Hon'ble Minister of State in the Prime Minister's Office and Kumari Selja, Hon'ble Minister of State (IC) for UEPA releasing the BMTPC's Newsletter on the occasion of World Habitat Day, 2005



Kumari Selja, Hon'ble Minister of State (IC) for UEPA awarding the prizes and certificates to the winners of State Level Painting Competition organised in MCD Schools by BMTPC on the occasion of World Habitat Day, 2005

Construction Expo 2005 & Technical Seminar

Thimpu, Bhutan



publication contains articles on different aspects related to the theme. This publication has been very widely circulated to all those interested in the subject.

2. Release of CD titled "Strengthening the Technological Base of Building Materials Industry"

In order to disseminate the information, the Council brought out a CD titled "Strengthening the Technological Base of Building Materials Industry" which includes the following publications in PDF format:

1. Areas of Activity
2. BMTPC helps in Commercialization of Innovative Building Materials Technologies
3. Environment Friendly Building Materials & Construction Technologies
4. Grah Nirman Main Vishesh Savdhania - in Hindi
5. Saste Makan Hetu Vibhinn Vikalp Evam Suvidhayen - in Hindi
6. Useful Tips for House Builders
7. Strengthening Technological Base of the Building Materials Industry
8. Local Vegetable Fibres + Industrial & Mineral Waste for Composite Materials
9. Machines Developed by BMTPC
10. An Introduction to the Vulnerability Atlas of India
11. Performance Appraisal Certification Scheme
12. Catalogue for Machines
13. National Network on Building Technology
14. Green Houses for ITBP at Leh
15. Bamboo - A Material for Cost-Effective and Disaster Resistant Housing
16. Technologies for Poverty Alleviation

Brief information on Priced Publication and Video Films was also included in the CD

The CD was released by Shri Prithviraj Chavan, Hon'ble Minister of State in the Prime Minister's Office and Kumari Selja, Hon'ble Minister of State (I/C) for Urban Employment & Poverty Alleviation on 3rd October, 2005 on the occasion of World Habitat Day, 2005.

3. Release of Poster titled "Helping in Building Healthy Habitat" highlighting Schemes/Programmes of MoUE&PA

To celebrate the World Habitat Day 2005, the Council on behalf of the Ministry of Urban Employment & Poverty Alleviation brought out a poster titled "Helping in Building Healthy Habitat" highlighting Schemes/Programmes of MoUE&PA. The poster was released Shri Prithviraj Chavan,

Hon'ble Minister of State in the Prime Minister's Office and Kumari Selja, Hon'ble Minister of State (I/C) for Urban Employment & Poverty Alleviation on 3rd October, 2005 on the occasion of World Habitat Day, 2005. The poster was circulated widely amongst the stakeholders of the Ministry and BMTPC.

4. Publication of "Earthquake Tips – Learning Earthquake Design and Construction"

A Booklet titled "Earthquake Tips – Learning Earthquake Design and Construction" was brought out by the Council during the year. The EQ Tips are part of project of bringing total 24 Tips jointly with IIT Kanpur.

This publication is very useful to all concerned interested in safety of buildings. The Tips cover topics such as basic introduction to earthquakes and terminology such as magnitude and intensity, concepts of earthquake resistant design, and aspects of a seismic design and construction of buildings. Utmost care is taken to ensure that despite complexity of the concepts, the Tips are simple and unambiguous. To ensure the highest quality of technical contents, every Tip has been carefully reviewed by experts, both within and outside India and their feedback were used before finalizing the Tips.

5. Information Dissemination through Website of the Council

The Website of the Council (www.bmtpc.org) is very popular among stakeholders including academics and working professionals and is being used as reference source. The Council has been receiving impressive response on website in the form of general enquiry about product and services, marketing leads, trade enquiries, publication sales, joint ventures etc, regularly. During the current financial year, it has generated the traffic of 9,28,000 hits and 62,800 user browsed the contents and downloaded free publications for getting information on cost effective, environment friendly, energy efficient and disaster resistant construction technologies.

The website of the Council is regularly updated to effect latest information such as hire and purchase requirements, Tender Notices, training programmes, Right to Information Act and others as required from time to time.

As on 31st March, 2006, the internet search engine www.google.com, which is the world's most popular search engine has ranked the Council's website as per following against the relevant keywords

Relevant Keywords for the Council	Rank Position	Against Total No. of reference reported
Building Materials	4 th	31,50,00,000
Waste Based Building Material	2 nd	4,24,00,000
Alternate Building Materials	7 th	9,69,00,000
India Building Materials	1 st	44,100,000
Bamboo Sheets	10 th	16,20,000
Recycled Building Material	16 th	1,22,00,000
Phosphogypsum Building Materials	1 st	22,300
Red Mud Building Materials	1 st	42,50,000
Innovative Building Materials	2 nd	6,39,00,000

6. Standardization and Product Evaluation

Performance Appraisal Certification Scheme (PACS)

The Council is running a Third Party Assessment Scheme namely Performance Appraisal Certification Scheme (PACS) for providing Performance Appraisal Certificate to manufacturers/suppliers/installers of a product which includes building materials, products, components, elements, systems etc after due process of assessment.

Shri B. Majumdar, Former Director General, CPWD was appointed as President, BMTPC Board of Agreement with effect from 7th February 2006 for three years. During the period of reporting, Following companies/manufacturers have applied and shown their interest for procuring the Performance Appraisal Certificate under the Scheme. The names of the firms and the product for which the certification is desired alongwith status are as under:

Name of Applicant	Product	Status
Kutty Flush Doors and Furniture Co. Pvt. Ltd., Chennai	HDF panelled door shutter	Provisional PAC issued
Kutty Flush Doors and Furniture Co. Pvt. Ltd., Chennai	HDF moulded raised panel door shutter	Provisional PAC issued
Susanji Udyog Pvt. Ltd., Hyderabad	Pan Mixer	Provisional PAC issued
Susanji Udyog Pvt. Ltd., Hyderabad	Block Making Machine	Provisional PAC issued
Gypcrete Building India (P) Ltd., Chennai	Gypcrete panels / Rapid wall panels	Provisional PAC issued
Reliance Industries, Ahmedabad	RECRON 3S Fibre to be used in concrete and mortar	Provisional PAC issued
A B Composites Pvt. Ltd., Kolkata	NFTC Door shutters	Under testing

Name of Applicant	Product	Status
A B Composites Pvt. Ltd., Kolkata	NFTC Roofing Sheet	Under testing
Development Alternatives, New Delhi	Vertical Shaft Brick Kiln Technology	Draft PAC under circulation
Neptune Equipments, Mehsana, Gujarat	Flyash Brick making plant	Factory inspection done
Contech Chemicals	Construction Chemicals	Preliminary Application received
Rightvision (India) Private Limited	HDPE Cover Blocks of various size and shapes	Preliminary Application received
Sintex Industries Ltd., Kalol, Gujarat	Factory Made PVC doors	Detailed application awaited

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.

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

1. Capacity Building Programmes

With the emergence of new building materials, advancement of technologies and the need for disaster resistant construction to mitigate the effect of natural disasters, it is important that working professionals regularly update their knowledge and understanding of subjects. Realising this need of capacity building of professionals, BMTPC has continued its efforts in organizing structured training programmes on subjects related to advancement in the area of building materials for working professionals on regular basis. Brief on the Training Programme organized during the year are as follows:

- ***Training Programme on "Durability of Concrete and Concrete with Blended Cement", March 30 – April 1, 2005, New Delhi***

The important and major aspect of concrete is its durability which can be defined as its ability to resist weathering

action, chemical attack, abrasion, or any other process of deterioration. It will retain its original form, quality, and serviceability when exposed to its environment. Keeping this important aspect in view, the Council conducted a Training Programme covering following important sub themes:

- Durability of Concrete – Introduction
- Durability of Concrete as per IS 456
- Alkali – Aggregate Reaction
- Durability of Concrete under adverse conditions - case studies
- Deterioration of Concrete by Chemical Reactions
- Quality requirements of Materials for Durable Concrete
- Corrosion of embedded Steel in Concrete and Repair and Rehabilitation of Structures
- Concrete in sea water
- Role of blended cements for improved Performance and Durability of Concrete Structures
- Design aspects for Durable Concrete Structures
- Repair and rehabilitation of fire damaged concrete structures

16 senior delegates from Government, Public and Private Sector organizations participated in the Training Programme.

- ***Training Programme on “Earthquake Resistant Buildings – Planning, Design & Construction Aspect”, November 24-26, 2005, New Delhi***

The Council organized a Training Programme to enhance the Capacity of engineers and architects in the area of Earthquake Resistant Buildings – Planning, Design and Construction Aspects from 24-26 November, 2005. The topics included in the Training Programme were:

- Earthquake Vulnerability Scenario in India
- Seismo-Tectonics of Indian Sub-continent
- Disaster Management Helix
- Vulnerability Assessment and Retrofitting of Masonry Buildings
- Earthquake Provision for Masonry Buildings and Ductile Detailing for RCC Buildings
- Construction of Earthquake Resistant Houses Using Cost- Effective Technologies – a case study
- Codal Provisions for Earthquake Resistant Design of Buildings
- Vulnerability Assessment and Retrofitting of RCC Buildings
- Seismic Resistant Design of Structures
- Building Damage During Earthquakes

Faculty included National Seismic Advisor, MHA and other experts in the field. 32 delegates representing Govt. &

Semi-Govt. organizations, PSUs and Private Companies attended the Training Programme.

On the suggestion of the Secretary, Ministry of Urban Employment & Poverty Alleviation and feedback received from the participants, the Council has taken policy decision to have a field visit for its future training programmes.

- ***Training Programme on “Concrete Mix-Design & Quality Control” was conducted during 18-20 January, 2006, New Delhi***

In building construction concrete mix design is an important aspect to satisfy the specific requirements of durability, workability, strength on one hand and optimising the construction cost in a situation of continuous rising in the cost of materials. The Council organized a structured Training Programme from 18 to 20 January, 2006, covering following sub themes for construction engineers and managers.

- Types of Cement and Their Application
- Chemical Admixture
- Aggregates and Water
- Mineral Admixture
- Concrete Mix Design Method and Examples
- Properties and tests on Fresh and Hardened Concrete
- Concrete Mix Design and Acceptance criteria as per IS
- Durability of Concrete
- Quality Control and Quality Assurance in Concrete Construction

22 senior and middle level working professionals representing various government, public and private sector organisations participated in the Training Programme. The Council arranged a field visit to Central Road Research Institute, New Delhi, and ACC – RMC Plant, Faridabad in order to give practical exposure to delegates. Executive Director, BMTPC presided over the valedictory session and distributed participation certificates to delegates.

- ***Training Programme on “Water Proofing and Damp Proofing Materials & Techniques for Buildings & Structures”, 1-3 February, 2006, New Delhi***

The leakages and dampness in buildings and structures are major problems, leading to deterioration and affecting their durability. The solutions range from various types of coatings, sealants, additives, admixtures and many other combinations. It becomes difficult for the user and even for the professionals to select and provide appropriate solutions to the specific problem.

Training Programmes organised by BMTPC



Technical Workshops on Model Byelaws for Safety Against Natural Hazards organised in various States



Keeping above in view, the Council conducted a Training Programme with an objective to give an exposure to participants about the basic principles and mechanism of water proofing, good practices of construction, preventive measures in vulnerable areas and specific solutions for specific problems.

35 participants from Government, Public and Private Sector organization got benefited from the Training Programme. Shri Sameer Surlaker, Expert Water Proofing & Construction Chemicals presided over the valedictory session and distributed participation certificate to delegates.

- ***Training Programme on "Quality Assurance in Construction" was conducted during 20-22 March, 2006***

Construction activity in the country accounts to about 50 percent of our plan outlays. Improper planning and lack of adherence to quality in construction, causes time over run and affects quality and durability of the structures. Further a big share of money is spent every year in the country on account of maintaining structures. It is, therefore, utmost important that we go for proper Quality System from planning stages of any project till completion of the project. However implementing a construction quality assurance program is not always an easy task. Keeping this in view the Council conducted a Training Programme on the Quality System in construction with the following sub-themes:

- Quality and Durability in Design and Construction.
- Project Planning Tools and their quality aspect in Indian Construction Industry
- Role of ISO 9000 in Construction Industry
- Statistical Quality Control
- Evaluation and Rating System for Construction Agencies for quality construction
- Relevance of ISO 9000 in Civil Construction
- Need for Integrated approach for construction
- Quality Control in Construction
- Techno-Legal and Vigilance Matters in Civil Construction

21 senior delegates representing Governments, Public and Private Sector organizations participated in the Training Programme. All delegates were exposed to the quality systems being adopted by Delhi Metro Rail Corporation through taking them to one of the casting facility of DMRC. The practical exposure was well received and appreciated by all delegates as the Quality System in Construction practiced by DMRC is highly regarded because of its importance for General Public. The valedictory session was presided by Executive Director, BMTPC who distributed participation certificates to delegates.

2. International Expert Group meeting on “Appropriate Technologies for Sustainable Buildings”

An International Expert Group Meeting on “Appropriate Technologies for Sustainable Buildings in Developing Countries” was organized in cooperation with International Centre for Science & High Technology (ICS), Trieste, Italy and International Centre for Advancement of Manufacturing Technology (ICAMT-UNIDO), India at Bangalore during November 7-9, 2005.

The event was attended by seven International participants from six countries namely; Italy, Tanzania, Sri Lanka, Pakistan, Bhutan, Nepal and 30 national participants from all over the country as well as 10 local participants from Bangalore.

The International Expert Group Meeting was inaugurated by the Principal Secretary (Housing), Govt. of Karnataka on November 7, 2005 and Special Technical Session on November 8, 2005 was chaired by the then Secretary (UEPA), Government of India. The event was fully supported by ICS-UNIDO with BMTPC playing the role of nodal coordinating and implementing agency for organizing this event including identifying and inviting resource persons, participants and other technical support. The International Expert Group Meeting culminated in form of a series of action points.

Recommendations

- There is a need for extensive networking and co-operation amongst developing countries in South-East Asian and African regions, for promotion dissemination, development and application of innovative and appropriate technologies for sustainable buildings in developing countries.
- National Governments need to promote productivity as well as bridge the gap between research findings and wide scale application by promoting investment and technology transfer amongst the developing countries of the regions.
- Constitution of a “Working Group” with BMTPC, ICS and ICAMT-UNIDO as the core institutions. The Working Group would strive to identify the Universities, R&D institutions, local enterprises in the area of innovative building materials and construction technologies, through which linkages can be established for technical cooperation in the South East Asian and African regions.
- “Regional Resource Center” to be established to cater to the growing needs of the building industry in developing countries of the South East Asia and Africa.

Recognizing that BMTPC has extensive networking at national and international level, it is proposed that the Council is designated as the nodal point for the proposed Regional Resource Centre and supplements the initiatives of the "Working Group" recommended by the Expert Group Meeting.

- The "Regional Resource Centre" in co-operation with the Institution to be identified by the Working Group, would strive to design a region wise specific database structure of technological, economical and ecological properties of local resources so that there could be inventarised for sustainable development of the housing and building sector. It would also help in identifying specific opportunities for such local resources and development of cost-effective housing solutions as per the local requirements. It would endeavour to provide assistance for technology transfer and export of innovative technologies.
- Regional Resource Centre to design and conduct training courses for Engineers, Technicians and Scientists and to design country specific capacity buildings programmes aiming at generating awareness and facilitation large scale adoption of innovative Building Materials & Housing Technologies.
- ICS & ICAMT UNIDO be requested to organize such multilateral meetings at least once every year in different countries of South East Asia and Africa.
- The initiative of inter-regional co-operative effort, within the framework of Government. of India and UNIDO's ongoing programme on low cost housing, aiming at sharing of Knowledge, Experience and Skills needs to be actively promoted and implemented in pre-decided time frames.
- All the Knowledge of the Designs, Standards, Specifications and Codes of practices of disaster Resistant Houses should be compiled and given to all such countries, which unfortunately face the Natural Disasters.
- The International agencies like UNIDO, ICS, UNCHS, World Bank, UNDP and UNEP should be requested to encourage Technology sharing Training in adopting of cost effective housing technologies and setting up a demonstration projects for large scale dissemination of these Technologies, in collaboration with Housing Agencies, Ministries of the respective countries.

3. Training Programme on "Field Level Applications of Appropriate Building Materials and Construction Technologies"

A Training Programme was organised on "Field Level Applications of Appropriate Building Materials and Construction Technologies" from 23-25 February, 2006 at

Building Technology Park, Avas Vikas Limited, Jaipur jointly in co-operation with AVL, Jaipur and International Centre for Advancement of Manufacturing Technology (ICAMT-UNIDO), India.

The programme was organized with an objective to provide training on field level applications of various cost-effective construction technologies including pre-fabricated building components to the petty contractors, masons & workers, who were not so well versed with these technologies. Thirty participants actively participated in three days training programme. Necessary toolkit was also given to them during hands on training.

4. Faculty Orientation programme on “Alternate Building Materials & Technologies”

BMTPC organized Faculty Orientation programme on Alternate Building Materials & Technologies during 20-21 May, 2005 at Centre for Sustainable Technologies, IISC, Bangalore. The topic of deliberation covered Alternate materials, walling & roofing system, structural masonry, quality control etc. It was recommended to prepare course material, Draft Book, Question bank & model question papers etc. related to Alternate Building Materials & Technologies and induction of this programme in session of academic year of concerned department of the Institute.

5. Painting Competition on the occasion of World Habitat Day 2005

The Council organised a State Level Painting Competition in MCD Schools on the theme saving environment, cleanliness, conservation of water and general awareness for celebrating the World Habitat Day - 2005. 24 MCD schools recommended by Municipal Corporation of Delhi, participated in the competition. The Council received a large number of paintings prepared by school children of MCD Schools. The best paintings were awarded cash prize and certificates during the celebration of World Habitat Day on 3rd October, 2005 by Kumari Selja, Hon'ble Minister of State (IC) for Urban Employment & Poverty Alleviation in the august presence of Shri Prithviraj Chavan, Hon'ble Minister of State in the Prime Minister's Office.

6. Visit of Delegation from Sudan

A delegation from 'Artisans Cooperative Union Society of Sajana' Sudan visited BMTPC during June 7-12, 2005. The delegation visited the Industrial Workers Housing Construction site at Bawana where housing construction is being undertaken on large scale using innovative materials

& construction techniques. A visit was also organized to Demonstration-cum-Production Centre at Greater Noida.

The delegation took keen interest in the machines developed and promoted by BMTPC and was interested in setting up a demonstration centre in their own country.

7. Visit of Delegation from Maldives

A delegation representing a construction agency from Maldives visited BMTPC's regional Office & Business Promotion Cell at Bangalore to study various cost effective building materials & technologies that could be adopted in Tsunami Rehabilitation at Maldives. The delegation showed keen interest in the cost effective technologies being promoted by BMTPC.

8. Visit of Delegation from World Bank

World Bank's two member team visited BMTPC to seek its opinion about quality, suitability for application and environment friendliness of three products/technologies namely Fly Ash Lime Gypsum (FAL-G) Bricks, Vertical Shaft Brick Kiln (VSBK) Technology & Gypcrete panels for their eligibility for Carbon Credit under Clean Development Project (CDM). The world banks team appreciated BMTPC's role as facilitator of clean technologies.

9. Visit of Delegation from Dubai

A Delegation for Dubai Economic Development Authority (DED), Govt. visited BMTPC to discuss modalities for tie-up between DED and BMTPC in the field of low cost housing. It was desired by the visiting delegation that BMTPC may participate in their future exhibitions where newly developed products and technologies could be displayed.

10. Participation in India International Trade Fair, 2005, Pragati Maidan, New Delhi from 14-27 November 2005

BMTPC participated in Hudco-Buildtech and Techmart pavilions during India International Trade Fair (IITF) from 14-27 November, 2005. BMTPC stalls in Buildtech and Techmart 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 from Panama, Sri Lanka, Nigeria, Dubai, Venezuela, etc., visited BMTPC stalls.

VI. TECHNOLOGY DEVELOPMENT, DIFFUSION AND TRANSFER

1. Initiative for establishment of Technology Demonstration-cum-Production Centre at Rai Barelie, UP

The Council is undertaking establishment of Technology Demonstration-cum-Production Centre in Rai Barelie, UP with Feroz Gandhi Institute of Technology, Rai Barellie for promotion of cost effective technologies in the region. The officials of Feroz Gandhi Institute of Technology visited Technology Demonstration-cum-Production Centre at Greater Noida to see the performance of machines and infrastructure facility of the Centre. The site for establishment of the Technology Demonstration-cum-Training Centre at Rai Barelli, has been finalized.

2. Initiative for establishment of Technology Demonstration-cum-Production Centre at Panchkula, Haryana

The Council is also establishing Technology Demonstration cum Production Centre in cooperation with Shivalik Development Board, Panchkula, Govt. of Haryana. The site at Sarak Pur, Rai Pur Rani Block has been identified as the possible location for the establishment of the proposed Centre in consultation with ADC, Panchkula.

3. Setting up of Permanent Exhibition at Vidisha, Madhya Pradesh

Under the umbrella of this National Network, the BMTPC aims at establishing Strategic Partnerships with academic and other knowledge based institutions; private & public sector construction agencies; building material manufacturers; national/regional & international organizations engaged in investment & technology promotion; professional associations & chambers of commerce & industry; NGOs and CBOs engaged in housing construction; R&D & standardization organizations; and training/HRD institutions.

In earlier years, two permanent exhibitions were established at BVB College of Engineering & Technology, Hubli and Centre for Environment Planning & Technology (CEPT), Ahmedabad. The Council has taken an initiative to establish Permanent Exhibition at Smrat Ashok Technological Institute, Vidisha, Madhya Pradesh.

4. Setting up of Technology Demonstration Centre at Puerto Ordaz, Venezuela

The Embassy of Indian in Caracas, Venezuela, identified a nodal agency Venezuelan Corporation of Guayana (CVG), a public enterprise under Ministry of Basic Industries and Mines, Government of Venezuela, for establishment of

Technology Demonstration Centre at Puerto Ordaz, Venezuela. Accordingly, two member delegation comprising of officials from MoUE&PA and BMTPC, visited Venezuela during May, 2005 to work out the modalities for setting up of Technology Demonstration Centre with the machines available in Caracas. In consultation with MoUEPA and Indian Embassy at Caracas, the machines were handed over to the Venezuelan Corporation of Guayana (CVG). The 15 machines were installed at the identified site at CVG and also assisted CVG engineers in planning and infrastructural requirements in operation of this Technology Demonstration Centre.

As a follow up, Ms. Arminda Cardozo, Project Manager, CVG International, Government. of Venezuela visited BMTPC to discuss the various modalities for establishment of Technology Demonstration Centre at Puerto Ordaz with help of BMTPC machines. Visits were organized to housing project in Bawana being constructed with technical support of BMTPC & Demonstration cum Production centre, Greater Noida to see the functioning of machines & production of cost-effective & environment friendly building components. A draft MoU for cooperation between BMTPC and CVG was prepared and was submitted to CVG for their concurrence.

5. Cooperation Programme with Royal Government of Bhutan

On the invitation from Standards and Quality Control Authority (SQCA), Ministry of works & Housing Settlement, Royal Govt. of Bhutan, the officers of Council visited Bhutan for feasibility study of establishment of Technology Demonstration-cum-Production Centre in Bhutan. A complete feasibility report was prepared and submitted to SQCA for further action. The same has been approved by the concerned Ministry of Bhutan. A draft MoU has also been given to SQCA for operationalising the project.

BMTPC participated in Construction Expo - 2005 organised by Ministry of Works and Human Settlement, Royal Govt. of Bhutan from 28th September to 1st October, 2005 at Thimpu, Bhutan. The Expo was inaugurated by Hon'ble Prime Minister of Bhutan, who showed very keen interest in BMTPC's pavilion and desired increased interaction between concerned department/Ministries of Bhutan and BMTPC, for transfer of technologies specially on application of bamboo.

On this occasion, the Council organized a One Day Workshop "Technology Options for Cost Effective and Earthquake Resistant Construction in Housing" in collaboration with SQCA. Five presentations covering cost effective materials/technologies, earthquake resistant

construction, vulnerability of houses to natural hazards, performance evaluation of materials and retrofitting of buildings for safety against earthquakes were presented. It was chaired by Secretary, Works & Human Settlements, Royal Govt. of Bhutan and attended by more than 100 engineers from different parts of Bhutan.

6. Market & Commercial Feasibility study of Fly Ash bricks/blocks and Paving blocks

M/s Grasim sponsored "Market & Commercial Feasibility study of Fly Ash bricks/blocks and Paving blocks at three places namely Delhi, Mumbai & Hyderabad" project was successfully completed and a detailed presentation of the outcome of this project was made by BMTPC to M/s Grasim Industries Ltd at their Mumbai Office. The report covered details mainly with regard to demand volume estimation, proposed location and infrastructure of the plant, financial viability of the project with plant capacity based on market demand, etc. Based on the report submitted earlier, M/s Grasim has already set up a Fly Ash brick plant in Hyderabad and is in the process of setting up a plant in NCR.

7. BMTPC's Role in Implementation of Jawaharlal Nehru National Urban Renewal Mission (JNNURM)

The Prime Minister of India launched Jawaharlal Nehru National Urban Renewal Mission (JNNURM) with aim to encourage reforms and fast track planned development of identified cities. Focus is to be on efficiency in urban infrastructure and service delivery mechanisms, community participation, and accountability of ULBs/ Parastatal agencies towards citizens. BMTPC was selected by MoUEPA, GoI as one of the Appraisal Agencies for appraisal of Detailed Project Reports received under Basic Services to Urban Poor (BSUP) and Integrated Housing and Slum Development Programme (IHSDP) which are sub components of JNNURM under M/o UE&PA, GoI. The prime objective of BSUP is make provision of basic services to urban poor including security of tenure at affordable prices, improved housing, water supply, sanitation and ensuring delivery through convergence of other already existing universal services of the Government for education, health and social security. It appraised four Detailed Project Reports (DPRs) from Bhopal Municipal Corporation under BSUP, seven DPRs from the State of Karnataka under IHSDP & three proposals from Haryana under BSUP. In case of Bhopal, Central Grant has been approved and sanctioned. DPRs from Karnataka and Faridabad lacked complete information as per the check list.

Four Detailed Project Reports (DPRs) from Bhopal Municipal Corporation which were approved by CSMC envisaged construction of more than 5000 dwelling units for identified slum households with all necessary infrastructures such as water supply, sanitation and ensuring delivery through convergence of other already existing universal services of the Government for education, health and social security.

8. Fiscal Incentives

In order to improve the investment climate for production of cost-effective, eco-friendly and energy efficient building materials based on agro-industrial wastes, the Department of Revenue, Govt. of India was persuaded through the Ministry of Urban Employment & Poverty Alleviation for providing fiscal incentives like excise duty and custom duty exemptions for several items. Based on the recommendations of BMTPC the following Excise and Custom duty concessions/exemptions have been granted in the Union Budget for the year 2005-06. These concessions have greatly helped wide scale commercialization of innovative material technologies developed in India and abroad.

- Goods in which more than 25% by weight of Red mud or Press mud or blast furnace slag or all is used
- Good in which not less than 25% by weight flyash or phosphogypsum or both is used,
- Ready Mixed Concrete,
- Clay bricks other than fire-clay bricks
- Sand Lime bricks
- Roofing tiles
- Burnt clay tiles Conforming to IS 3367 (07/06)
- Good Manufactured at the site of construction of building for use at such site
- Cement bonded Particle Boards
- Jute Particle Board
- Rice Husk Board
- Glass Fibre Reinforced Gypsum Board
- Sisal Fibre Board
- Baggase Board

The above incentives particularly granted at the Central Government level has created a confidence amongst the entrepreneurs and investors at the national level. This has further given a boost to higher investments for setting up production units of new materials in different states.

VII. HIGHLIGHTS OF SOME OF THE PROJECTS/STUDIES DURING THE YEAR

1. Development of Wood Substitute from Plant Fibre based Composites using Needled Felt Technology

Plant fibres such as jute, sisal, coir, have been used as reinforcements in polymers to produce composites with specific strength properties adequate to replace glass fibre reinforced plastics as well as wood-based products for various applications. However, owing to the high cost of polymers, the fibre content in plant fibre composites (PFC) should be as high as possible to make them economically competitive with wood-based materials. With this in view RRL (T) had developed a prepreg sheet molding process at laboratory scale for making coir-PF composite with fibre content above 70% using needled felt of the fibre. The composite properties can be varied in a wide range by controlling the density and resin content to meet the requirements of wood-based materials that are currently used in building industry and for general engineering applications. Some of the products, paneling materials and furniture parts, were field tested and they have been in use over a decade without showing degradation in appearance as well as properties.

Fabrication of PFCs using needled felt is a new development. Hence, for commercialization of the process and products, there exists a need for convincing the entrepreneurs the techno-economical feasibility of the process and market potential of the products. The project aims at creating a pilot plant facility in view of facilitating commercialization of the process and products by way of providing technology package, samples for market survey, demonstration of the process and training of technical personnel. Since the process is applicable to all plant fibres, the scope of the pilot plant is long lasting.

The main objectives of the project are:

- i. To set up a pilot plant by incorporating an indigenous needle felting machine in the composite processing
- ii. To generate Process flow sheet, products specifications and techno-economic data for Coir- PF and Sisal-PF composites.

On successful completion of the objectives, this pilot plant can be used for developing wood substitute from various plant fibres.

The final output of the project will be development of process know-how and product specification for coir and sisal fibre composites paneling materials for commercial production.

2. Setting up of Pilot Plant for Production of Reactive Silica from Rice Husk

The reactive silica from rice husk produced by the controlled firing of rice husk/partially burnt rice husk is an excellent pozzolana for the production of high performance concrete. If added in optimum quantity, it enhances a number of properties of the concrete. While the flow characteristics of the fresh concrete is favourably altered, reactive silica improves a number of mechanical and chemical properties of the hardened concrete. This overall quality improvement is attributed to the excellent control imparted by rice husk on alkali-silica reaction. The reactive silica added concrete has been found to have high compressive strength and exceptional resistance to chloride ion penetration and other chemical attacks.

The laboratory level investigation already carried out in the Phase-I of the study last year, for the preparation of reactive silica from rice husk shows that at the optimum conditions of firing, the product measured a surface area of 118-147 m²/g with a loss in ignition of 4-4.5%. The lime reactivity is 95-100 mg CaO/g of the sample. The sample contained about 95% SiO₂ by weight. Encouraged by the result of Phase-I of the study the Council has undertaken a project for setting up a micro-pilot level testing and process scale up for the production of reactive silica (Phase II).

The Phase II activities of the project aims at the micro-pilot plant tests for the production of reactive silica from rice husk/partially burnt rice husk on 'continuous' way and to scale up the process to a commercial level. The data already generated at the laboratory during Phase I was taken as a basis for the present work. The activities planned are Cleaning of the rice husk/partially burnt rice husk, 'Ashing' in a micro-pilot rotary kiln, Cooling, Pulverisation, Industrial application test and Process scale up.

The main objectives of the Phase II of the Project are as follows:

- i. To carry out micro-pilot scale experiments for cleaning, ashing, cooling and pulverisation.
- ii. Data generation
- iii. Bulk production of about 100 Kgs of reactive silica for industrial application test
- iv. Process scale up
- v. To carry out experiments in a suitable fluidised bed reactor.

Production of reactive silica from rice husk is a viable technology, used in other countries. Indian Standard Design Code IS 456:2000 also permits use of rice husk ash as

supplementary cementations material for use in concrete.

This project was taken up by BMTPC so as to make available the technology commercially available.

3. Development of Technology for Construction of Two Storeyed Bamboo Housing System

Bamboo based houses are well known since centuries back. Technology for one-storey bamboo house has already been developed in India and several houses have been constructed in various parts of the country.

However, due to scarcity of land in urban and semi-urban area, it is necessary to build multi-storied houses. Hence, it is necessary to develop technology to construct two-storied houses with bamboo which will be aesthetically attractive, durable and accommodated with modern facilities.

Bamboo houses will be eco-friendly and will replace wood and other environmentally hazard materials in house construction. Further, bamboo housing will generate employment opportunities both in rural and urban sector.

The main objectives of the project are to:

- Develop an architectural design of a two-storey house with bamboo.
- Design and development of various housing components including jointing system from bamboo to construct two-storey building.
- Develop technology for construction of the two storey house with components.

4. Development of Bamboo Mat Ridge Cap for Roofing with Bamboo Mat Corrugated Sheets

The Council, earlier, developed and commercialized a technology for manufacture of Bamboo Mat Corrugated Sheets (BMCS). One such unit in Meghalaya is presently manufacturing BMCS. Since use of BMCS have already started in the housing activities as roofing material, it has become very much necessary to develop Ridge cap for covering the top/corners of roof made out of BMCS.

The existing practice for covering rooftop/ corners of the buildings with BMCS is with the help of Bamboo Mat Board (BMB). The BMB which is flat panel may bend to cover the joints. In order to bend the panel and make it flexible for fixing it as Ridge cap, the thickness of panel should not exceed 2 mm. The BMB of 2 mm thick may restrict the number of plies to two at the time of manufacture where as the normal practice of making BMB is with three plies and

above for stability and strength.

The objectives of the project are:

- i. Design and Development of appropriate profile and size for Ridge Cap to be produced with BMB out of Bamboo Mats.
- ii. Fabrication of suitable dies which are to be fixed to a Hydraulic hot press of platen size 1450 mm X 650 mm.
- iii. Trial runs to produce the Ridge Cap and to carry out improvements and modifications if necessary.
- iv. Testing and performance evaluation.

A major output will be the technology package for the manufacture of Ridge Cap with bamboo mats suitable for use in roofing of building made with BMCS. The package will be available in the form of detailed technological parameters ready for commercial adaptation.

5. Development of Prefabricated Modular Houses using Bamboo based Composites

Over the last two decades, disaster management has seen a paradigm shift from "relief and response" to "prevention, mitigation and preparedness". There are initiatives to set appropriate standards for relief management in post-disaster situations. Some of the issues that emerge again and again is the design and management of re-construction programmes particularly in housing. In view of this, there is an urgent need to develop prefabricated modular housing system using bamboo based technologies in the context of handling emergency housing after disasters. Favouring mass production of house components, prefabrication reduces wastage and material cost by 15-20%. Prefabrication has the capability to make a difference in economic, social and environmental terms.

Project components:

- Design & development of pre-fab modular housing system using bamboo based technologies
- Testing and evaluation of components developed
- Design and construction of prefab modular prototype house
- Design and fabrication of shock table and testing of prototype house for earthquake resistance developed
- Standardization of components to construct demonstration houses
- Construction of demonstration house at IPIRTI complex
- Workshop on prefab housing developed under this project.

Benefits

- Prefabricated bamboo components in contrast to onsite construction reduces construction cost by allowing more rigid selection of quality bamboo culms for use in the

most appropriate application.

- Construct and erect at site quickly.

6. Development of Light Weight Interlocking Block Masonry with IIT, Madras

The conventional load bearing masonry has several shortcomings which adversely affect the performance and productivity. The construction output of conventional burnt clay brick masonry is not able to cope up with the present day requirement of the construction industry. They are heavy because of the higher density of the units, and massive in thickness due to non-availability of high strength bricks. Thus the total load on the supporting structure and foundation is very large and attract large inertial forces. Hence there is a need to evolve alternative to conventional brick masonry for use in seismically vulnerable areas. The adequate strength and low inertia force can be achieved by adopting lightweight high strength concrete blocks. Hence development of lightweight interlocking block-mortarless masonry will accelerate the masonry construction, reducing the labour intensiveness along with making it more earthquake resistant.

This project aims at developing a lightweight high strength masonry system. The essential characteristics of which is lightweight, high-strength, accelerated construction technique, while meeting ductility demand. An ideal lightweight concrete suitable for structural application should meet both the requirements of strength as well as the density. This project first aims to develop methodology to produce lightweight-high strength interlocking blocks with foam concrete and evolving mix proportioning guidelines for the same. The objective is to produce foam concretes with high strength to density ratios. The next step is to study the behaviour of unreinforced, grouted, partially reinforced and reinforced hollow lightweight interlocking block masonry wall panels with different practical slenderness ratios subjected to axial and eccentric compression and lateral loading. A suitable design criteria for unreinforced and partially reinforced lightweight interlocking block masonry under static loading is proposed to be developed based on the above detailed experimental investigations.

ORGANISATION

The Chart on the next page shows the organization of different functional units in the establishment of the Council. As on 31st March, 2006 BMTPC had a staff strength 45 comprising 20 officers and 25 support staff and technicians/professionals hired on contract.

With the opening of economy and consequent rising investments in industrial sector, building materials and construction industry has also gradually attracted investments both from Indian and foreign entrepreneurs higher than before during recent years. In keeping with the mandate of BMTPC to stimulate and facilitate action at various levels the Council has been learning from the rising demands on its tasks from different segments of users. Such tasks, interalia, include domestic and foreign investment, stimulating information flows and developing support functions and improving infrastructure to meet the changing needs of housing and building construction sector. In the last couple of years, need was felt for some reorganization of different operational units within establishment. The restructuring aims not only to bring clarity in its various functional wings but also on improving the overall efficiency to match the increasing demand on its services from various government departments and different sections of housing and building construction sector. On the pursuance of the Ministry, draft amendments in Bye-laws, delegation of powers have been proposed along with employees conduct rules and recruitments rules and have been sent to the controlling Ministry for consideration.

BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL

ORGANIZATIONAL STRUCTURE

PRESIDENT

Minister of Urban Employment & Poverty Alleviation

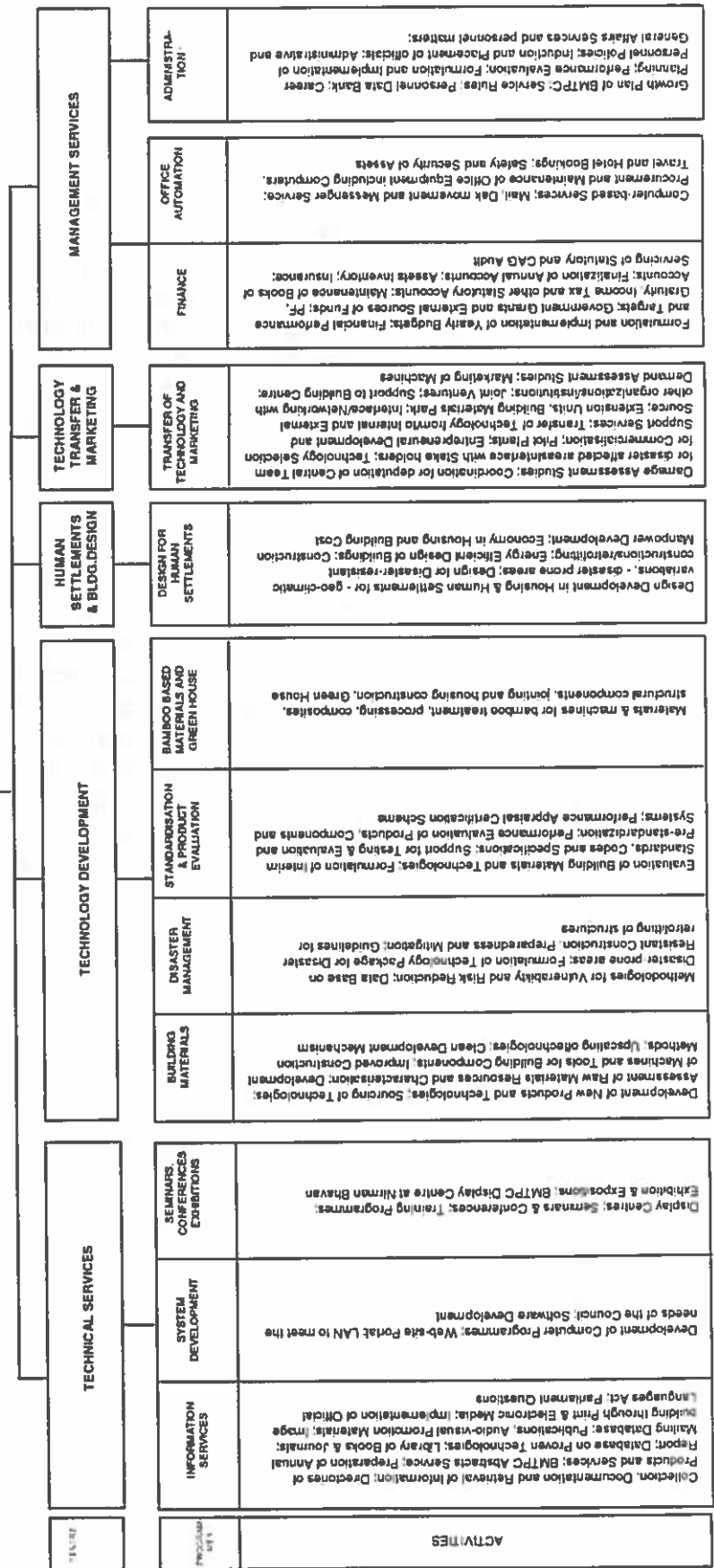
VICE-PRESIDENT

Min. of State and Secretary, Ministry of UE&PA

EXECUTIVE COMMITTEE

Chairperson : Secretary, Ministry of UE&PA

EXECUTIVE DIRECTOR



STAFF STRENGTH (as on 31.3.2006)

<u>S.No.</u>	<u>Name & Designation</u>	<u>Date of Joining</u>
1.	R.K.Celly <i>Executive Director</i>	01.09.05
2.	S. Balasrinivasan <i>Chief-Finance</i>	08.04.92
3.	J.K. Prasad <i>Chief-Building Materials</i>	01.09.03
4.	I. J.S. Sidhu <i>Chief-Project Monitoring & Training</i>	16.09.99
5.	S. K. Garg <i>Deputy Chief- Financial Planning</i>	24.03.92
6.	M. Ramesh Kumar <i>Deputy Chief-Management Information Systems</i>	01 .04.93
7.	Arun Kumar Tiwari <i>Deputy Chief-Standardisation & Production Evaluation & Administration</i>	22.07.03
8.	S. K. Gupta <i>Deputy Chief- Technology, Demonstration Extension & International Cooperation</i>	26.10.93
9.	Arvind Kumar <i>Systems Manager</i>	15.04.99
10.	Dr. Amit Rai <i>Development Officer- Building Materials-Product Development</i>	05.10.98
11.	Chandi Nath Jha <i>Development Officer- Building Materials -Product Evaluation</i>	09.09.99
12.	Pankaj Gupta <i>Development Officer- Engineering Design & Performance Evaluation</i>	14.10.99
13.	D. P. Singh <i>Development Officer – Demonstration, Construction & Exhibition</i>	05.10.98
14.	Richpal Singh <i>Personnel Officer</i>	23.02.94
15.	Dalip Kumar <i>Systems Analyst</i>	04.03.91
16.	Alok Bhatnagar <i>Library Officer</i>	05.10.98
17.	Akash Kumar Mathur <i>Field Officer -Product Evaluation</i>	01.01.02
18.	S. M. Malhotra <i>Principal Private Secretary</i>	09.04.99
19.	Anita Kumar <i>Sr. Programmer</i>	03.10.96
20.	M.Krishna Reddy <i>Liason Officer (On deputation to Ministry of Coal)</i>	29.10.03

Resignations/Retirements (on superannuation)

<u>S.No.</u>	<u>Name & Designation</u>	<u>Date of Joining</u>
1.	Shri M.N.Mathur <i>Executive Director (Addl.Charge)</i> <i>(upto 31.08.2005)</i>	01.12.04
2.	Dr. Vishnukant S. Chatpalli <i>Chief- Technology Marketing</i> <i>(upto 31.07.2005)</i>	01.08.03
3.	Vijo Cherian <i>Senior Field Officer- Architecture</i> <i>(upto 31.07.2005)</i>	03.09.01

ACCOUNTS

The Council received grants of Rs.452.00 Lakhs from Ministry of Urban Employment & Poverty Alleviation. The Council has also brought forward grants sanctioned by Ministry of Urban Employment & Poverty Alleviation to the tune of Rs.761.80 lakhs from the previous year.

The total expenditure incurred during the period from April, 2005 to March, 2006 was Rs.6,06,54,265 as detailed below:-

Major Heads	Amount (In Rs.)
• Expenditure on Sponsored Studies	47,86,848
• Seminar, Conference, Workshop & Dissemination of Information expenses	88,63,876
• Purchase of Fixed Assets	66,437
• Expenditure on Financial Assistance for technology development/application	62,93,874
• Staff Loans and advances	8,40,879
• Personnel Expenses	1,72,60,482
• Administration and Other Expenses	72,07,877
• Expenditure on construction of demonstration houses under Valmiki Ambedkar Awas Yojana	85,80,805
• Expenditure on Construction of demonstration houses in Mizoram	7,14,721
• Establishment of Bamboo Mat Production Centres in North-Eastern States	38,68,033
• Expenditure on various programmes against receipts from Ministry of Home Affairs and others	11,93,479
• Expenditure for Construction of Demonstration buildings with cost effective technologies & Demonstration-cum-Production Centre in Tripura	9,76,954
TOTAL	6,06,54,265

The Accounts have been audited by M/s M. S. Sekhon & Co., Chartered Accountants, the balance sheet and the statement of accounts of the year 2005-2006 is placed later in the report.

M. S. SEKHON & CO.
CHARTERED ACCOUNTANTS
170, MADHUVAN,
DELHI-110092

AUDITOR'S REPORT

The Members
Building Materials & Technology Promotion Council
NEW DELHI

1. We have audited the annexed Balance Sheet of 'BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL', a Society Registered under the Societies Registration Act, 1860, as on 31st March, 2006 together with the Income and Expenditure Account and Receipts and Payment Account for the year ended on that date. These financial statements are the responsibility of the Council's Management. Our responsibility is to express an opinion on these Financial Statements based on our audit.

We conducted our audit in accordance with the accounting standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

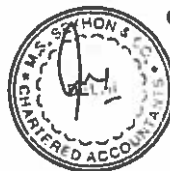
2. We further report that :

- (i) We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit ;
- (ii) In our opinion, proper books of account have been kept by the Council, so far as appears from our examination of the books of the Council ;
- (iii) The Balance Sheet, Income and Expenditure Account and the Receipts and Payment Account dealt with by this report are in agreement with the books of account ;

3. In our opinion and to the best of our information and according to the explanations given to us, the said accounts read with the Accounting Policies and Notes forming part thereof give a true and fair view :

- (i) In the case of the Balance Sheet of the State of Affairs of the Council as on 31st March, 2006 ;
- (ii) In the case of the Income And Expenditure Account of the excess of Expenditure over Income for the year ended on that date ; and
- (iii) In the case of the Receipts and Payment Account of the receipts and payments made during the year ended on that date.

PLACE : DELHI
DATED : 04.08.2006



FOR M.S. SEKHON & CO.
CHARTERED ACCOUNTANTS
Rajiv Tandon
[RAJIV TANDON]
PARTNER
MEMBERSHIP NO. 87343

BALANCE SHEET AS ON 31 MARCH 2006

	Schedule	Amount (Rs.)
<u>CORPUS/CAPITAL FUND AND LIABILITIES</u>		
CORPUS/CAPITAL FUND	1	1,000,000
RESERVES AND SURPLUS	2	87,633,228
EARMARKED FUNDS	3	62,014,924
CURRENT LIABILITIES AND PROVISIONS	4	3,872,874
TOTAL		154,521,026
<u>ASSETS</u>		
FIXED ASSETS	5	42,469,824
CURRENT ASSETS, LOANS, ADVANCES ETC.	6	112,051,202
TOTAL		154,521,026
SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS	15	

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

(R.K.Celly)
Executive Director

As per our separate Report attached.
for M.S.Sekhon & Co.,
Chartered Accountants



(Rajiv Tandon)
Partner

Delhi
Date : 4th August, 2006



INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 2006

	Schedule	Amount (Rs.)
INCOME		
Grants / Subsidies	7	45,200,000
Fees/Subscriptions	8	1,224,590
Income from Royalty, Publication etc.	9	1,420,672
Interest Earned	10	7,042,993
TOTAL (A)		54,888,255
EXPENDITURE		
Establishment Expenses	11	17,260,482
Other Administrative Expenses etc.	12	7,234,643
Expenditure on Training Programmes, Seminars/Workshops etc.	13	8,876,672
Expenditure on Financial Assistance, Sponsored Studies etc.	14	11,080,722
Depreciation	5	1,912,573
TOTAL (B)		46,365,092
Balance being excess of Income over Expenditure (A-B)		8,523,163
Less: Depreciation for earlier years	5	33,241,445
BALANCE BEING DEFICIT CARRIED TO BALANCE SHEET		24,718,282
SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS	15	

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

(R.K. Celly)
Executive Director

As per our separate Report on the Balance Sheet
for M.S.Sekhon & Co.,
Chartered Accountants



(Rajiv Tandon)
(Rajiv Tandon)
Partner

Delhi
Date : 4th August, 2006



RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31 MARCH 2006

Amount (Rs.)

RECEIPTS

Opening Balance

Cash Balances in hand (including cheques/drafts and imprest)

- Cash in hand	292,858	
- Cheques in hand	4,504,941	4,797,799

Bank Balances

With Scheduled Banks

- On Current Account with Canara Bank (Parliament Street)	6,346	
- On Deposit Account with Canara Bank	82,560,000	

On Savings Accounts:

- Canara Bank (Parliament Street)	9,582,093	
- Canara Bank (Hauzkhas)	2,395,364	
- Canara Bank (Bangalore)	2,211,947	
- Canara Bank Parliament Street (VAMBAY Project)	6,890,033	103,645,783

Grant-in-aid from Central Government (Ministry of Housing & Urban Poverty Alleviation) 45,200,000

Fees/Subscriptions 1,224,590

Income from Royalty Publication etc. 1,345,672

Amount recovered during the year 3,384,386

Interest Earned 5,452,392

Receipts for Consultancy, Security Deposit etc. 880,705

Total **165,931,327**

PAYMENTS

Purchase of Fixed Assets 66,437

Establishment Expenses 17,260,482

Other Administrative Expenses, etc. 7,207,877

Expenditure on Training Programmes, Seminars/Workshops etc. 8,663,876

Expenditure on Financial Assistance, Sponsored Studies etc. 11,080,722

Staff Loan & Advances (Net) 840,878

Earmarked funds

Construction of Demonstration Buildings with cost effective technologies and technology Demonstration-cum-Production Centre in Tripura 976,854

Establishment of Bamboo Mat Production Centres in North-Eastern States 3,888,033

Construction of Demonstration Houses in Mizoram 714,721

Construction of Demonstration Houses Under Valmiki Ambedkar Awas Yojana (VAMBAY) 8,580,805

Expenditure on various programmes against receipts from Ministry of Home Affairs and others 1,183,479

Closing Balance

Cash Balances in hand (including cheques/drafts and imprest)

- Cash in hand	83,259	
- Cheques in hand	12,013	75,272

Bank Balances

With Scheduled Banks:

- On Current Account with Canara Bank (Parliament Street)	140,656	
- On Deposit Account with Canara Bank	94,488,602	

On Savings Accounts:

- Canara Bank (Parliament Street)	2,102,375	
- Canara Bank (Hauzkhas)	5,732,681	
- Canara Bank (Bangalore)	466,361	
- Canara Bank Parliament Street (VAMBAY Project)	2,271,115	105,201,790

Total **165,931,327**

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

(R.K. Celly)
Executive Director

As per our separate Report on the Balance Sheet
for M.S.Sekhon & Co.,
Chartered Accountants

(Rajiv Tandon)
Partner



Delhi
Date : 4th August, 2006



Building Materials & Technology Promotion Council

Ministry of Housing & Urban Poverty Alleviation, Government of India

SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31 MARCH 2006

	Amount (Rs.)
SCHEDULE 1- CORPUS/CAPITAL FUND	
Corpus Fund	1,000,000
TOTAL	1,000,000

SCHEDULE 2- RESERVES AND SURPLUS

1. Capital Reserve

As per last Account	77,557,405	
Addition during the year	66,437	77,623,842

2. Excess of Income over Expenditure

Opening Balance	34,794,105	
Less: Excess of Expenditure over income transferred from Income and Expenditure Account	24,718,282	
	10,075,823	
Less transferred to Capital Reserve	66,437	10,009,386

TOTAL	87,633,228
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RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31 MARCH 2006

Amount (Rs.)

RECEIPTS

Opening Balance

Cash Balances in hand (including cheques/drafts and imprest)

- Cash in hand	292,858	
- Cheques in hand	4,504,941	4,797,799

Bank Balances

With Scheduled Banks

- On Current Account with Canara Bank (Parliament Street)	6,346	
- On Deposit Account with Canara Bank	82,560,000	

On Savings Accounts:

- Canara Bank (Parliament Street)	9,582,093	
- Canara Bank (Hauzkhas)	2,395,364	
- Canara Bank (Bangalore)	2,211,947	
- Canara Bank Parliament Street (VAMBAY Project)	6,880,033	103,645,783

Grant-in-aid from Central Government (Ministry of Housing & Urban Poverty Alleviation) 45,200,000

Fees/Subscriptions 1,224,590

Income from Royalty, Publication etc. 1,345,672

Amount recovered during the year 3,384,386

Interest Earned 5,452,392

Receipts for Consultancy, Security Deposit etc. 880,705

Total 165,931,327

PAYMENTS

Purchase of Fixed Assets 66,437

Establishment Expenses 17,260,482

Other Administrative Expenses, etc. 7,207,877

Expenditure on Training Programmes, Seminars/Workshops, etc. 8,863,876

Expenditure on Financial Assistance, Sponsored Studies, etc. 11,080,722

Staff Loan & Advances (Net) 840,879

Earmarked funds

Construction of Demonstration Buildings with cost effective technologies and technology Demonstration-cum-Production Centre in Tripura 976,954

Establishment of Bamboo Mat Production Centres in North-Eastern States 3,868,033

Construction of Demonstration Houses in Mizoram 714,721

Construction of Demonstration Houses Under Valmiki Ambedkar Awas Yojana (VAMBAY) 9,580,605 14,140,513

Expenditure on various programmes against receipts from Ministry of Home Affairs and others 1,193,479

Closing Balance

Cash Balances in hand (including cheques/drafts and imprest)

- Cash in hand	63,259	
- Cheques in hand	12,013	75,272

Bank Balances

With Scheduled Banks:

- On Current Account with Canara Bank (Parliament Street) 140,656

- On Deposit Account with Canara Bank 94,488,602

- On Savings Accounts:

- Canara Bank (Parliament Street) 2,102,375

- Canara Bank (Hauzkhas) 5,732,581

- Canara Bank (Bangalore) 466,361

- Canara Bank Parliament Street (VAMBAY Project) 2,271,115 105,201,790

Total 165,931,327

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

(R.K. Celly)
Executive Director

As per our separate Report on the Balance Sheet
for M.S.Sekhon & Co.,
Chartered Accountants

(Rajiv Tandon)
Partner



Delhi
Date : 4th August, 2006



Building Materials & Technology Promotion Council

Ministry of Housing & Urban Poverty Alleviation, Government of India

SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31 MARCH 2006

	Amount (Rs.)
SCHEDULE 1- CORPUS/CAPITAL FUND	
Corpus Fund	1,000,000
TOTAL	1,000,000

SCHEDULE 2- RESERVES AND SURPLUS

1. Capital Reserve

As per last Account	77,557,405	
Addition during the year	66,437	77,623,842

2. Excess of Income over Expenditure

Opening Balance	34,794,105	
Less: Excess of Expenditure over income transferred from Income and Expenditure Account	24,718,282	
	10,075,823	
Less transferred to Capital Reserve	66,437	10,009,386

TOTAL	87,633,228
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SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31 MARCH 2006

Amount (Rs.)

SCHEDULE 3- EARMARKED FUNDS

1 Construction of Demonstration Buildings with cost effective technologies and technology Demonstration-cum-Production Centre in Tripura		
Opening Balance	10,854,977	
Less : Utilisation/Expenditure during the year	976,954	9,878,023
2 Establishment of Bamboo Mat Production Centres in North-Eastern States		
Opening Balance	15,033,984	
Less : Utilisation/Expenditure during the year	3,868,033	11,165,951
3 Construction of Demonstration Houses in Mizoram		
Opening Balance	1,429,064	
Less : Utilisation/Expenditure during the year	714,721	714,343
4 Construction of Demonstration Houses Under Valmiki Ambedkar Awas Yojana		
Opening Balance	48,862,412	
Less : Utilisation/Expenditure during the year	8,605,805	40,256,607
TOTAL		62,014,824

SCHEDULE 4- CURRENT LIABILITIES

CURRENT LIABILITIES

1 Outstanding Liabilities		69,741
2 Amount received for Indo Polish Project		60,600
3 Security Deposit		731,185
4 Advance against Sale of Machines		88,920
5 Balance of funds received for developing building bye-laws		20,812
6 Balance of funds received for Model amendments in Town and Country Planning Act., Zonning Regulations		2,901,616
TOTAL		3,872,874





Building Materials & Technology Promotion Council

Ministry of Housing & Urban Poverty Alleviation, Government of India

SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31 MARCH 2006

Amount (Rs.)

	GROSS BLOCK		DEPRECIATION				NETBLOCK	
	Cost as at 1.4.05	Additions After 01.10.05	Total	Upto 1.04.06	For Earlier years	Current year		Upto 31.03.06
	As at 31.03.06							
Office Building at IHC (Lease hold)	34,319,817	-	34,319,817	-	-	-	34,319,817	
Furniture and Fixtures	3,073,004	-	3,073,004	-	1,356,339	171,666	1,544,999	
Office Equipments	16,001,179	24,367	16,025,546	-	12,783,760	484,441	2,757,345	
Computers/ Peripherals	12,155,500	42,070	12,197,570	-	11,078,754	658,669	460,147	
Air conditioners	505,775	-	505,775	-	286,151	32,944	186,680	
Fan & Coolers	32,916	-	32,916	-	27,888	754	4,274	
TV and VCR	265,450	-	265,450	-	113,843	22,741	128,866	
Exhibits, Panels, Display Models	11,203,764	-	11,203,764	-	7,594,710	541,358	3,067,696	
Total	77,557,405	66,437	77,623,842	-	33,211,446	1,912,673	42,469,824	



**Building Materials & Technology Promotion Council**

Ministry of Housing & Urban Poverty Alleviation, Government of India

SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31 MARCH 2006

Amount (Rs.)

SCHEDULE 6 - CURRENT ASSETS, LOANS, ADVANCES ETC.**A. CURRENT ASSETS:**

1. Cash Balances in hand

- Cash in hand	63,259	
- Cheques in hand	12,013	75,272

2. Bank Balances

With Scheduled Banks:

- On Current Account with Canara Bank (Parliament Street)	140,656	
- On Deposit Account with Canara Bank	94,488,602	
- On Savings Accounts:		
- Canara Bank (Parliament Street)	2,102,375	
- Canara Bank (Hauzkhas)	5,732,681	
- Canara Bank, Bangalore	466,361	
- Canara Bank Parliament Street (VAMBAY Project)	2,271,115	105,201,790

B. LOANS, ADVANCES AND OTHER ASSETS

1. Loans to staff

3,262,574

2. Advances and other amounts recoverable in cash or in kind or value to be received

a. Amount recoverable & other advances	1,429,885	
b. Security Deposit (Rent)	420,000	
c. Tax deducted at source recoverable	71,080	1,920,965

3. Interest Accrued on FDR's

1,590,601

TOTAL (A + B)**112,051,202**

**SCHEDULES FORMING PART OF INCOME & EXPENDITURE ACCOUNT FOR THE
 YEAR ENDED AS ON 31 MARCH 2006**

Amount in Rs.)

SCHEDULE 7- GRANTS/SUBSIDIES (Irrevocable Grants & Subsidies Received)	
Central Government (Ministry of Housing & Urban Poverty Alleviation, Government of India)	45,200,000
TOTAL	45,200,000

SCHEDULE 8 - FEES/SUBSCRIPTIONS	
1 Seminar/Programme Receipts	622,590
2 Consultancy Receipts	602,000
TOTAL	1,224,590

SCHEDULE 9- INCOME FROM ROYALTY, PUBLICATION ETC.	
Receipts towards sale of publications, Licence fee, PACS etc	1,420,672
TOTAL	1,420,672

SCHEDULE 10- INTEREST EARNED	
1 On Term Deposits With Scheduled Banks	6,661,305
2 On savings Accounts With Scheduled Banks	324,085
3 On Loans: Employees/Staff	57,603
TOTAL	7,042,993

SCHEDULE 11- ESTABLISHMENT EXPENSES	
1 Pay and Allowances	11,824,112
2 Contribution to Provident Fund	769,108
3 Contribution to LIC Group Gratuity Scheme	2,507,624
4 Leave Travel Concession	121,594
5 Contribution to LIC Group Leave Encashment Scheme	1,297,811
6 Medical Expenses	695,546
7 Consultancy/Retainership & Honorarium	44,687
TOTAL	17,260,482



**SCHEDULES FORMING PART OF INCOME & EXPENDITURE
 ACCOUNT FOR THE YEAR ENDED AS ON 31 MARCH 2006**

Amount (Rs.)

SCHEDULE 12- OTHER ADMINISTRATIVE EXPENSES, ETC.		
1	Travel and Local transport	2,609,178
2	Office maintenance	1,712,543
3	Postage, Telephone and Fax	856,916
4	Office rent	755,496
5	Printing and stationery	362,120
6	Contingency Expenses	293,998
7	Rates & Taxes	268,229
8	Electricity charges	204,113
9	Books and periodicals	74,612
10	Professional charges	58,968
11	Membership Fee	20,200
12	Audit Fee	14,326
13	Bank Charges	3,944
TOTAL		7,234,643

SCHEDULE '13' - EXPENDITURE ON SEMINARS/WORKSHOPS, TRAINING PROGRAMMES ETC.		
1	Advertisement	332,619
2	Exhibition and publicity	1,736,458
3	Seminar Expenses	1,034,162
4	Training Programmes	321,681
5	Technology transfer	5,111,603
6	Printing & Publication	340,149
Total		8,876,672





SCHEDULES FORMING PART OF INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED AS ON 31 MARCH 2006

Amount (Rs.)

SCHEDULE '14' - EXPENDITURE ON FINANCIAL ASSISTANCE, SPONSORED STUDIES ETC.

1 SPONSORED STUDIES

Preparation of digitised Vulnerability Atlas of India	116,387.00	
Film on machines developed and promoted by BMTPC	60,000.00	
Development of wood substitute from plant fiber using needle felt technologies	350,000.00	
Development of process for the production of reactive silice from rice husk	900,000.00	
Preparation of posters and booklets for safe construction in J&K	112,200.00	
Development and investigation on lightweight foam concrete interlocking Block Masonry	643,150.00	
Assesment of the demand of construction materials in India for the period 2003- 2013	170,000.00	
Development of design and implementation of Industrial Workers Housing at Bawana, New Delhi	160,000.00	
Preparation of housing designs for 19 Zones vulnarable to natural disasters	125,000.00	
Development of prefabricated modular houses using bamboo base technologies	612,500.00	
Development of bamboo mat ridge cap for roofing applications	400,000.00	
Use of Industrial by-products and unprocessed micro fillers for making cost effective mortar	25,000.00	
Technical study of JJ Clusters of Delhi to ascertain existing building materials and technology inputs in their construction	25,000.00	
Characterisation and Development of Water reducing Agent from Coal Tar industry	30,000.00	
Preparation of the Directory of construction equipment and machinery manufacturers in India	362,500.00	
Preparation of hand book on properties of construction materials available in Vishakapatnam Region	50,000.00	
Formulation of guidelines for assesment of strength and performance of existing buildings	129,400.00	
Market survey of fly ash cement bricks/ blocks in Delhi, Mumbai & Hyderabad	515,711.00	4,786,848

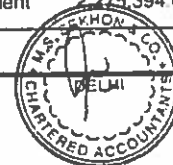
2 FINANCIAL ASSISTANCE FOR TECHNOLOGY DEVELOPMENT APPLICATION

Setting up of Technology Demonstration cum production centre at Belgaum	880,830.00	
Construction of Demonstration structures using bamboo based technologies in New Delhi	54,728.00	
Strengthening the production base of HPL, New Delhi	316,916.00	
Retrofitting of MCD School building at Vasant Vihar, New Delhi	204,500.00	
Setting up of Technology Demonstration cum Production centre at village Naggal, Panchkula	434,480.00	
Setting up of a Permanent Exhibition Centre at Vidisha (MP)	500,000.00	
Setting up of a Technology Demonstration cum Training Centre at Rai Barelie (UP)	414,395.00	
Retrofitting of sub- district hospital at Kupwara, J&K	427,550.00	
Construction of model semi permanent shelters for Tsunami affected people in Tamil Nadu	480,000.00	3,713,399

3 Expenditure on Implementing Schemes on Construction of Demonstration Housing Using Disaster Relstant Technologies and Innovative Stream for Rural Housing and Habitat Development

Contribution to the project on construction of demonstration houses using disaster resistant technologies.	305,081.00	2,580,475
Contribution to the project under innovative stream for Rural Housing and Habitat Development	2,275,394.00	

11,080,722





Building Materials & Technology Promotion Council

Ministry of Housing & Urban Poverty Alleviation, Government of India

SCHEDULE 15: SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS

1 Significant Accounting Policies

- a) **System of Accounting** - The financial statements are prepared on the basis of historical cost convention on accrual basis and are in accordance with generally accepted accounting practices.
- b) **Fixed Assets** - Fixed assets are stated at cost of acquisition and depreciation is provided at the rates and in the manner as specified in the Income Tax Act 1961
- c) **Retirement Benefits** -
Liability in respect of gratuity to employees is provided for by way of premium paid to Life Insurance Corporation of India under Group Gratuity scheme.
Liability in respect of leave encashment payable to the employees is provided for by way of premium paid to Life Insurance Corporation of India for master policy and the premium paid is charged to revenue.
The council contributes to its own Provident Fund Trust which is recognised by the Income Tax authorities and the contributions paid during the year to Provident Fund Trust are charged to revenue.
- d) **Foreign Currency Transactions** - Transactions denominated in foreign currency are accounted at the exchange rate prevailing on the date of the transaction.
- e) **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.

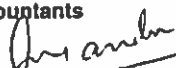
- 3 In the opinion of the Management, the value on realisation of current assets, loans and advances in the ordinary course of business would not be less than the amount at which they are stated in the Balance Sheet. Further provision for all known liabilities has been made in the accounts.
- 4 In view of there being no taxable income under the Income Tax Act, 1961, provision for Income Tax has not been made in the accounts.
- 5 As per the suggestion of the Office of the Principal of Director of Audit, Economic and Service Ministeries, the Council did not provide depreciation on assets upto the accounting year ended 31st March 2005. However, from the current financial year, the Council has provided depreciation on assets as per the rates specified in the Income Tax Act. Depreciation amounting to Rs. Rs.35154018/- (including Rs.33241445/- on account of arrears of depreciation) has been provided in the accounts during the year.
- 6 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.
- 7 Deposits with Banks include a fixed deposit of Rs. 72,268/- pledged with Canara Bank in connection with Bank Guarantee issued by it in favour of Department of Value Added Tax, Govt. of NCT of Delhi.
- 8 Figures have been rounded off to the nearest rupee.

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


(R.K. Celly)
Executive Director

As per our separate Report on the Balance Sheet
for M.S.Sekhon & Co.,
Chartered Accountants




(Rajiv Tandon)
Partner

Delhi
Date :4th August, 2006

PARTICIPATION IN NATIONAL AND INTERNATIONAL EVENTS

I. EXHIBITIONS

In order to popularize cost effective, environment friendly and energy efficient building materials, construction technologies and simple machines for production of building components, the Council has actively participated in the following exhibitions during the year:

National

- "SHRISHTI-2005 Techno Fair" at BVB College of Engineering & Technology, 12-15 May, 2005 Hubli, Karnataka.
- 9th National Expo organized by Central Calcutta Science & Cultural Organisation, 1-9 September, 2005, Kolkatta
- BUILDTECH-2005 during India International Trade Fair, 2005 organized by HUDCO, 14-27 November, 2005, Pragati Maidan, New Delhi.
- TECHMART-2005 during India International Trade Fair, 2005 organized by NSIC, 14-27 November, 2005, Pragati Maidan, New Delhi. BMTPC was awarded prize in Institutional category by NSIC.
- 6th National Convention & Exposition "Housing for All" organized by NAREDCO, 20-21 January, 2006, New Delhi.
- 3rd North East Trade Expo organized by ITPO and DONOR, 7-14 March, 2006, New Delhi.
- BMCT 2006 organised by BAI and FICCI, 18-21 March, 2006, New Delhi.

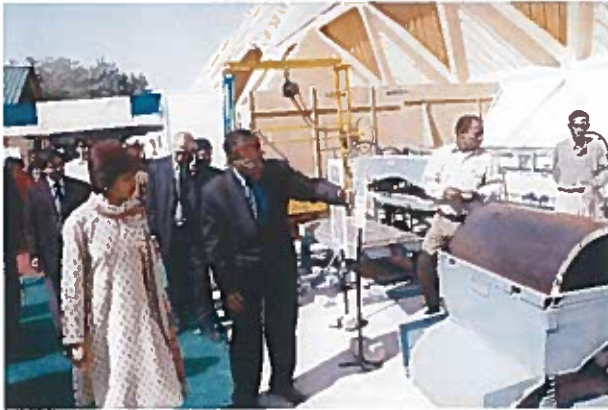
International

- "Construction Expo 2005" organized by SQCA, Government of Bhutan 29 September to 1 October, 2005, Thimpu, Bhutan.

II SEMINARS/CONFERENCES/WORKSHOPS/TRAINING PROGRAMMES

- One Day Technical Workshop on Model Building Byelaws, organized by BMTPC, 20 April, 2005, Raipur, Chhattisgarh...J.K.Prasad
- One Day Technical Workshop on Model Building Byelaws, organized by BMTPC, 31 May, 2005, Patna, Bihar...J.K.Prasad
- One Day Technical Workshop on Model Building

BMTPC's Presence in Important Events



Foreign Delegates at BMTPC's Display



- Byelaws, organized by BMTPC, 1 July, 2005, Guwahati, Assam...J.K.Prasad
- One Day Technical Workshop on Model Building Byelaws, organized by BMTPC, 15 July, 2005, Lucknow, UP...J.K.Prasad
 - One Day Technical Workshop on Model Building Byelaws, organized by BMTPC, 30 July, 2005, Agartala, Tripura...J.K.Prasad
 - Seminar organized by Coir Board on "Cluster Base Development of Coir Industry" 2 September, 2005, New Delhi...I.J.S.Sidhu
 - National Workshop on "Appropriate Building Materials and Technologies" organized by Tsunami Relief and Rehabilitation Centre, Government of Tamil Nadu, UNDP, 6 September, 2005, Chennai...I.J.S.Sidhu
 - One Day Technical Workshop on Model Building Byelaws, organized by BMTPC, 22 September, 2005, Shimla, HP...J.K.Prasad, I.J.S.Sidhu
 - One Day Workshop on "Technology Options for Cost Effective and Earthquake Resistant Construction in Housing" organized by BMTPC with SQCA, 29 September, 2005, Thimpu, Bhutan...R.K.Celly, J.K.Prasad
 - 8th Convention on Construction – Development of Physical Infrastructure Synergic Approach, organized by CIDC, 20-22 October, 2005, New Delhi...J.K.Prasad, S.K.Garg, C.N.Jha, Pankaj Gupta
 - Industry Consultation on the Draft EIA Notification 2005, organized by FICCI, 25 October, 2005, New Delhi ...I.J.S.Sidhu
 - International Expert Group Meeting on "Appropriate Technologies for Sustainable Buildings", organized by BMTPC jointly with UNIDO-ICAMT, 7-9 November, 2005, Bangalore...R.K.Celly, I.J.S.Sidhu, Amit Rai
 - Seminar on Good Governance, organized by PHDCCI, 9 November, 2005, New Delhi...R.K.Celly, D.P.Singh
 - One Day Technical Workshop on Model Building

Byelaws, organized by BMTPC, 11-12 November, 2005, Shillong, Meghalaya...J.K.Prasad

- Training Programme on "Earthquake Resistant Buildings – Planning, Design & Construction Aspect", organized by BMTPC, 24-26 November, 2005, New Delhi ...J.K.Prasad, S.K.Garg, Arvind Kumar
- State Level Bamboo Consultative Meet organized by NABARD, 25 November, 2005, New Delhi ... I.J.S.Sidhu
- International Congress on Flyash Utilisation organized by TIFAC, DST, 4-7 December, 2005, New Delhi ... R.K.Celly, J.K.Prasad and C.N.Jha
- Indian Carbon Market Group – Cost and Benefits of CDM Project – The Indian Experience organized by ICMG, 14 December, 2005, New Delhi... R.K.Celly, I.J.S.Sidhu
- One day "Technology Seminar" organised by Research Engineers International, India and Bentley Systems, 14 December 2005, New Delhi...Arvind Kumar
- Workshop on "Role of Management Consultancy in Resource Efficiency" organized by CIDC, 17 December, 2005, New Delhi ... I.J.S.Sidhu
- Workshop on "Establishment of Roaster for Training Institutions" under the World Bank assisted TN Govt. project, 19 December, 2005, Chennai ... I.J.S.Sidhu
- Workshop on "Seismic Retrofitting of Building" organized by CDO, CPWD, 20 December, 2005, New Delhi ... R.K.Celly
- 8th National Consultancy Congress on Sustainable Development : Role of Consultants organized by CDC, 16-17 January, 2006, New Delhi ... I.J.S.Sidhu
- Training Programme on Rural Development conducted by HSMI, 16-20 January, 2006, Itanagar... D.Prabhakar
- Training Programme on "Concrete Mix-Design & Quality Control" organized by BMTPC 18-20 January, 2006, New Delhi...J.K.Prasad, S.K.Garg, Arvind Kumar
- Seminar on "Energy Efficient Building Materials"

organized by TERI, 1 February, 2006, New Delhi...I.J.S.Sidhu

- Training Programme on "Water Proofing and Damp Proofing Materials & Techniques for Buildings & Structures", organized by BMTPC, 1-3 February, 2006, New Delhi...J.K.Prasad, S.K.Garg, Arvind Kumar
- Workshop on "Urban Poverty Alleviation for the Northern States" organized by the Ministry of Housing & Urban Poverty Alleviation, 6 February, 2006, Panchkula, Haryana ...I.J.S.Sidhu
- Workshop on JNNURM organized by the Ministry of HUPA and the Government of Maharashtra, 7 February, 2006, Mumbai ...I.J.S.Sidhu
- National Seminar on Urban Development Housing (NSUDH) organized by CEPT, 10-11 February, 2006, Ahmedabad ...R.K.Celly, I.J.S.Sidhu
- Training Programme on "Field Level Applications of Appropriate Building Materials and Construction Technologies", organized by BMTPC jointly with Avas Vikas Ltd. and UNIDO-ICAMT, 23-25 February, 2006, Jaipur...R.K.Celly, I.J.S.Sidhu, Amit Rai
- Seminar on Safety in Construction, organized by IBC, 4 March 2006, New Delhi...S.K.Garg, Pankaj Gupta
- Indo-Norwegian Workshop on "Seismic Hazard and Risk Assessment" organized by BMTPC jointly with IIT Roorkee, 18-19 March, 2006, New Delhi ...R.K.Celly, J.K.Prasad
- Training Programme on "Quality Assurance in Construction" organized by BMTPC, 20-22 March, 2006, New Delhi...J.K.Prasad, S.K.Garg, Arvind Kumar
- 1st National Convention on Green & Intelligent Design & Construction, organized by CEPT, 21-22 March, 2006, Ahmedabad... Pankaj Gupta
- Training on Effective Hazard Analysis and Risk Assessment organized by ASSOCHAM, 31 March, 2006, New Delhi ...Pankaj Gupta
- COGNIZANCE 06 – Annual Festival of IIT Roorkee, 31 March, 2006, Roorkee...R.K.Celly, J.K.Prasad

III TECHNICAL COMMITTEES OF BUREAU OF INDIAN STANDARDS

- Eleventh meeting of Sanitary Appliances and Water Fittings Sectional Committee CED 3, 28 June, 2005...Pankaj Gupta
- Fifth Meeting of Building Sectional Committee, "Clay Products for Buildings", CED 30...C.N.Jha
- Sectional Committee on "Wood Products and other Lignocellulosic Products", CED 20...I.J.S.Sidhu
- Sixth Meeting of "Planning, Housing and Prefabricated construction Sectional Committee", CED 51...J.K.Prasad
- Hardware Sectional Committee of Bureau of Indian Standards...J.K.Prasad

IV OTHER TECHNICAL COMMITTEE/WORKING GROUPS ETC.

- Meeting with the officials of Badarpur Thermal Power Station, Badarpur for establishment of Flyash Processing Unit ...J.K.Prasad, A.K.Tiwari
- Meeting with the delegation of World Bank...R.K.Celly, J.K.Prasad, S.K.Gupta, C.N.Jha
- A series of meetings of the Peer Group on Updation and Revision of the Vulnerability Atlas of India...R.K.Celly, J.K.Prasad, M.Ramesh Kumar, Pankaj Gupta
- A series of meetings of Environment Clearance Committee constituted by Ministry of Environment & Forests on "New Construction Projects and Industrial States"... I.J.S.Sidhu
- A series of meeting of the Committee of Ministry of Urban Employment & Poverty Alleviation on custom Duty and Excise Duty exemption – C.N.Jha, S.K.Gupta
- Meeting with the Officer on Special Duty (Relief & Rehabilitation), Govt. of Tamil Nadu for technical assistance for construction of houses, 22-23 June, 2005, Chennai...I.J.S.Sidhu
- Meeting of Indo French Working Group on Urban Development under the chairmanship of Secretary (UD), 1 June, 2005, New Delhi...I.J.S.Sidhu, Akash

Mathur

- Meeting with representatives of BRGM, Germany regarding Project Proposal for Micro Zonation of Kangra area (HP), 25 August, 2005, New Delhi ...I.J.S.Sidhu
- Meeting with Secretary (UEPA) on Screening of Best Practice Films, 8 September, 2005, New Delhi...R.K.Celly
- 23rd Meeting of the Executive Committee of BMTPC, 12 September, 2005, New Delhi...R.K.Celly
- Meeting with the Canadian delegation on "Disaster Management" organized by Ministry of Home Affairs, 23 September, 2005, New Delhi ...R.K.Celly, I.J.S.Sidhu
- R&D Committee meeting of the Coir Board, 29 September, 2005, Kerala House, Delhi ...I.J.S.Sidhu
- Meeting of Task Force for formulating "New Urban Housing and Habitat Policy" chaired by the Secretary (UEPA), Sept, 2005, New Delhi...I.J.S.Sidhu
- Meeting with Secretary, Coir Board, 19 October, 2005, New Delhi...R.K.Celly
- "Indian Carbon Group Meeting", 14 December, 2005, New Delhi... I.J.S.Sidhu
- BIS meeting of Sectional Committee on "Wood Products and Lingo cellulose", 20 December, 2005, Bangalore...I.J.S.Sidhu
- Technical Committee Meetings of the Sixth International Convention on "Housing for All" organized by NAREDCO, January, 2006, New Delhi...I.J.S.Sidhu
- BIS Meeting of the Committee on "Construction Management", 2 February, 2006, New Delhi...I.J.S.Sidhu
- 24th Meeting of the Executive Committee of BMTPC, 3 March, 2006, New Delhi...R.K.Celly
- Round Table Meeting on "Sustainable Small Scale Brick Production – Challenges and Opportunities", organized by Development Alternative, 17 March, 2006, New Delhi...I.J.S.Sidhu

- Interactive session of Stakeholders to elicit view points of the stakeholders during the visit of Dr. K.K. Yunckellag, Director General, UNIDO organized by UNIDO-ICAMT, 31 March, 2006, Bangalore ...I.J.S.Sidhu
- Series of meetings of IBC's Technical and Organizing Committee for the Seminar on "Cost Management in Buildings projects", New Delhi...I.J.S.Sidhu

V OTHER ACTIVITIES

- A Comprehensive Reply to the List of Points for Parliament Standing Committee on Rural Development, 14 September, 2005. Oral evidence by ED, BMTPC alongwith other officials before the Committee.
- Finalized Recommendations of Sub-Committee under the Chairmanship of CMD, HUDCO for use of Alternate Technologies in the Draft Housing Policy.
- Standing Committee on Parliament on Urban Development for "On-the-Spot Study Tour to Chennai, Port Blair and Kolkatta".
- Participated in the programme organized by HUDCO and Govt. of Haryana for launching of Community Toilet Complex Scheme.
- Prepared and submitted a Project Proposal titled "Technology Upgradation and Strengthening of Indian Building Materials Sector through Clean and Environment Friendly Technologies" for submission to the UNIDO for financial assistance under the Government of India-UNIDO Programme from Department of Industrial Policy & Promotion (DIPP). A presentation was also made before JS, DIPP on 16 February, 2006.
- Submitted an application for Best Practice titled "Vulnerability Atlas of India – An indispensable tool for pre-disaster pro-active approach in Disaster Management" for Dubai International Award to UN-Habitat, Nairobi.
- Prepared the Project Proposal (Expression of interest) for Quality Assurance and Quality Audit Works in the re-construction work for nearly 50,000 houses in 8 Tsunami affected districts of Tamil Nadu.

Project cost approx Rs.10.25 cr. Proposal has been submitted to Govt. of Tamil Nadu and being followed up.

- Provided Technical inputs in preparing the Guidelines to "Apex Co-operative Housing Federations on Safety against Earthquakes published by National Cooperative Housing Federation.
- Coordinated the presentations by SERC, Chennai for sponsored studies on "Formulation of Guidelines for Assessment of the Strength and Performance of Existing Buildings and Recommendations on Retrofitting Schemes to Ensure Resistance to Earthquake" and "Handbook on construction Materials available in Vishakhapatnam Region and Typical Concrete Mix Designs using the Materials". After the presentation, studies have been finalized and accepted by BMTPC.
- Prepared Proposal for Quality Audit of 6000 reconstructed houses in Gujarat, GSDMA Project : After submission of technical proposal earlier, financial proposal including manpower requirement was prepared and sent to GSDMA for their consideration.
- ED, BMTPC visited as a member of Indian delegation to Morocco and Brazil for bilateral cooperation in the field of housing, infrastructure and elimination of hunger and poverty from 11-19 January, 2006.
- In order to increase overall efficiency and effectiveness in the working environment, the Council has initiated a process for its ISO Certification as the activities of the Council have grown manifold. This need has been felt to review overall operation system of the Council and tuned in a line with ISO 9001-2000 certification.
- Introduced the concept of weekly Management Committee Meetings for closer monitoring on ongoing basis. During the year 21 MCM were held almost on every Monday.
- Organized two-day Motivational Training Programme from 22-23 December, 2005, for the officers and staff members of the Council. This programme was conducted to motivate the employees of the Council for equal participation in the activities of the Council.

SPONSORED STUDIES/PROJECTS/VIDEO FILMS COMPLETED DURING THE YEAR

A. SPONSORED STUDIES/PROJECTS

1. Use of industrial By-products & Unprocessed micro fillers for making cost-effective mortar.
2. Guidelines for Noise Abatement in High Rise Building.
3. Technical Study of JJ Clusters of Delhi to ascertain existing building materials and technology inputs in their construction.
4. Preparation of posters and booklet for safe construction in J&K.
5. Preparation of Housing Design for 19 Zones Vulnerable to Natural Disasters.
6. Characterization and development of water reducing agent from coal tar industry.
7. Preparation of handbook on properties of construction materials available in Vishakhapatnam region.
8. Formulation of guidelines for assessment of strength and performance of existing buildings.

B. VIDEO FILMS

1. Film on "Machines Developed & Promoted by BMTPC".

SPONSORED PROJECTS AND STUDIES INITIATED DURING THE YEAR

A. SPONSORED STUDIES INITIATED DURING THE YEAR

1. Development of Light Weight Foam Concrete Interlocking Block Masonry
2. Documentation of design and implementation of industrial workers housing project at Bawana
3. Development of prefabricated modular house using bamboo based technologies
4. Development of Bamboo Mat Ridge Cap for roofing application
5. Preparation of Directory of Construction Equipment and Machinery manufactured in India
6. Development of double storey house using bamboo based technology
7. Preparation of Posters and Booklet for Safe Construction in J&K

B. PROJECTS INITIATED WITH THE FINANCIAL ASSISTANCE FROM COUNCIL DURING THE YEAR

1. Setting up of Technology Demonstration cum Production Centre at Belgaum, Karnataka
2. Strengthening the production base of building components at Hindustan Prefab Ltd., New Delhi
3. Setting up of Technology Demonstration cum Production Centre at Village Naggal, Panchkula, Haryana
4. Setting up of Technology Demonstration cum Training Centre at Rai Bareilly, UP
5. Retrofitting of Sub-District Hospital at Kupwara, J&K
6. Retrofitting of MCD School Building at Vasant Vihar, New Delhi
7. Construction of Model Semi-Permanent Shelters for Tsunami affected people in Tamil Nadu
8. Construction of demonstration structures using bamboo based technologies in New Delhi
9. Setting up of Permanent Exhibition at Vidisha, Madhya Pradesh.

PAPERS PRESENTED/PUBLISHED/PRESENTATIONS

- i. "Durability of Concrete as per IS 456", presented during Training Programme on Durability of Concrete with Blended Cement, 30 March – 1 April, 2005, New Delhi ...J.K.Prasad
- ii. "Performance Appraisal Certification Scheme – An important tool for transfer of technology", published in Indian Concrete Journal...J.K.Prasad
- iii. "Alternative Building Materials and Construction Technologies for Disaster Management" at National Workshop on "Appropriate Building Materials and Technologies" organized by Tsunami Relief and Rehabilitation Centre, Government of Tamil Nadu, UNDP, World Bank, 6 September, 2005, New Delhi ...I.J.S.Sidhu
- iv. "Vulnerability of Houses to Natural Hazards" presented during One Day Technical Seminar on Technology Options for Cost Effective and Earthquake Resistant Construction Technologies, 29 September, 2005, Thimpu, Bhutan...J.K.Prasad
- v. "Adoption of Low Cost Technologies and Innovative Materials and Designs for Slum Upgradation", BMTPC Newsletter, October 2005...J.K.Prasad
- vi. "Role of BMTPC in Disaster Management" presented at Seminar organized by National Cooperative Housing Federation, October, 2005, New Delhi ...J.K.Prasad
- vii. "Vulnerability Scenario of J&K and Use of Local Materials" presented during Training Programme organized in Kupwara and Baramulla, J&K, October, 2005 ... J.K.Prasad
- viii. "Beneficiation of Fly Ash by Processing" during International Congress: Fly Ash India-2005 held during 4-5 December, 2005 in New Delhi ...J.K.Prasad, C.N.Jha
- ix. "Specification and Testing of Flyash and Quality Control", presented during Training Course on Flyash & Its Use in the Work (Course No.35), organized by Central Public Works Department, 10 January, 2006, New Delhi...J.K.Prasad

- x. "Use of Flyash based Building Material Bricks/ Blocks/Light Weight Aggregate/Cellular Concrete/Kerb Stone", presented during Training Course on Flyash & Its Use in the Work (Course No.35), organized by Central Public Works Department, 12 January, 2006, New Delhi...J.K.Prasad
- xi. Presentation on Bamboo Demonstration Project executed by BMTPC in Tripura and Mizoram, Training Programme on Rural Development, 16-20 January, 2006, Agartala, Tripura ...D.Prabhakar
- xii. "Initiatives of BMTPC in promotion and Development of Innovative Building Materials and Construction Technologies" during CEPT-BMTPC "National Seminar on Innovative Building Materials and Construction Technologies, Ahmedabad ...I.J.S.Sidhu
- xiii. "Standards on Water Proofing and Damp Proofing", presented during Training Programme on Water Proofing and Damp Proofing Materials and Techniques for Building and Structures, 1-3 February, 2006, New Delhi ...J.K.Prasad
- xiv. "Need for Strengthening of Techno Legal Regime for Safety against Natural Hazards" presented during workshop organized by Geography Department of Delhi University, March 2006, New Delhi ...J.K.Prasad

PUBLICATIONS BROUGHT OUT DURING THE YEAR

1. Special Issue of Building Materials News on the theme "Millennium Development Goals and the City" on World Habitat Day 2005.
2. Earthquake Tips – Learning Earthquake Design and Construction
3. Corporate Brochure in Hindi and English
4. CD titled "Strengthening Technological Base of Building Materials Industry"

IMPORTANT VISITORS FROM OTHER COUNTRIES

1. Mr. Vladimir Kozharnovich, Programme Manager, UNIDO, Vienna, Austria
2. Mr. Carlos Agostinho Do Rosario, High Commissioner of Republic of Mozambique in India
3. Ms. Arminda Cardozo, Project Manager, CVG International, Venezuela
4. Mr. Eta Saha, Director, MBS Nigeria Ltd., Nigeria
5. Delegation from Dubai
6. Delegation from 'Artisans Cooperative Union Society of Sajana', Sudan
7. Delegation from Maldives
8. Delegation from World Bank

ACTION PLAN FOR THE YEAR 2006-07

BMTPC in its endeavour to promote the use of innovative and environment-friendly building materials and construction technologies, has initiated series of activities for the accomplishment of multi-faceted objects, enshrined in the mandate of the Council. Over the years, the Council has focused on the promotion and development of the innovative, cost-effective, environment-friendly and energy-efficient building materials and technologies. However, off late with the active support of Ministry of Urban Employment & Poverty Alleviation, Council has also embarked upon the field level application of innovative building materials and technologies by way of implementation of the housing projects under the VAMBAY Scheme. The Action Plan for the year 2006-07 of the Council is structured in such a manner that it not only focuses on the various operational areas of the Council but also leads to the tangible results with societal benefits.

The various activities which the Council envisages to undertake during 2006-07 are classified under the operational areas of Disaster Resistant Technologies; Technology Development/Promotion; and Technology Demonstration, Construction & Dissemination.

A. DISASTER RESISTANT TECHNOLOGIES***1. Construction of Demonstration houses using Disaster Resistant Technologies***

Frequent natural hazards in the country like super cyclone of Orissa (1999), devastating earthquake in Gujarat (2001), Tsunami in Andaman and Nicobar Island (2005) have made Government of India to reframe its strategy from post disaster approach to pre-disaster preparedness and mitigation. Therefore, it is proposed to construct Demonstration Houses in seismic Zone IV & V of the country with the twin objectives of creating awareness and strengthening disaster preparedness at the community level and large scale dissemination of disaster resistant construction technologies using innovative and cost effective building materials. During the construction of buildings, the training will also be provided to local artisans, engineers etc. in disaster resistant technologies. Some funding support for the work is proposed to be mobilized from Ministry of Home Affairs.

2. Demonstration of Retrofitting Techniques for Earthquake safety of existing Primary School Buildings of MCD

Considering the importance of school buildings, it is necessary to retrofit these buildings in Delhi which lies in Zone – IV (highly seismic active area), to ensure safety of structures in case of occurrence of earthquakes in future. Initially, it is proposed to take the demonstration of retrofitting in 12 Primary schools of MCD in 12 Education zones of Delhi. The project will help in:

- a. Developing guidelines for evaluation of seismic vulnerability of existing school buildings in high seismic zones.
- b. Formulation of guidelines for seismic retrofitting of deficient buildings of such type.
- c. Enhancement of structural stability of school building to serve as emergency shelters in the event of any disaster.
- d. Dissemination of retrofitting techniques to the community for safety of their own house.
- e. Capacity building of engineers of MCD for undertaking of similar type of activities.

The project will be undertaken jointly with Ministry of Home Affairs.

3. Guidelines for Construction of Houses in areas liable to be affected from Tsunami

Keeping in view the recent devastation in Andaman & Nicobar, Tamil Nadu and other States, it is proposed to develop guidelines for construction of safe houses using local materials, on the pattern of the guidelines, earlier prepared by the Council for earthquakes, cyclones and floods.

B. TECHNOLOGY DEVELOPMENT/PROMOTION

1. Development of Building Components (flooring & wall cladding tiles) using Garnet Sand available in Coastal Region of Tamil Nadu

The Garnet Sand is abundantly available in the coastal region of Tamil Nadu and is being exported to various countries for manufacturing of value added products for building applications. Keeping in view of its potential in production of building components within the country, it is proposed to develop a technology for manufacture of value added building products after characterisation of garnet sand the laboratory facilities of RRL Bhopal would be

utilised for the purpose.

2. Development of Machines for Processing of Bamboo

As a part of extension of earlier development of Bamboo Mat Corrugated Roofing Sheet, it is now proposed to undertake the work of development/improvement of machines such as sliver making, inside and outside knot removing machine, looms for mat weaving, etc. and processing tools for processing of bamboo species available in India.

3. Development of Machines and cost-effective technologies

During past few years, a number of machines for production of cost effective building materials and components is being manufactured in India as well as in abroad. It is necessary to assess the performance of such machines regarding their suitability for producing good quality building materials & components. Therefore, it is proposed to identify new machines for manufacturing of precast building components for improved productivity. Further it is also proposed to indigenize the foreign machines/technologies like interlocking mud blocks, artificial stone tiles to suit the Indian conditions

4. Development of prefabricated Coir/Bamboo Composites as Building Components

It is proposed to develop prefabricated Coir/Bamboo Composite as building components in collaboration with Coir Board and other related organizations which will add to development of various wood substitutes and faster construction practices. It will help utilization of agricultural wastes and promotion of environment friendly and energy efficient materials in addition to employment generation.

5. Upscaling and Commercialisation of Technologies for manufacturing building components using industrial wastes and mine tailings, such as red mud, marble slurry, copper tailings, etc.

C. TECHNOLOGY DEMONSTRATION, CONSTRUCTION AND DISSEMINATION

1. *Establishment of Bamboo Technology Incubator at Guwahati*

It is proposed to establish a bamboo technology Incubator with the following objectives:

- a. To facilitate both primary and secondary processing of bamboo under one roof
- b. To develop human resources in the field of processing of bamboo to add more value to the products
- c. To standardize the process parameters for manufacture of value added products like bamboo mat boards, curtain boards, flooring boards, construction & furniture lumber, bamboo panels etc.
- d. To facilitate transfer of technology to entrepreneurs for making these products.
- e. To identify the suitability of different species for production of products.
- f. To document region specific applications of bamboo technologies and to develop technical manuals for wider field application.
- g. To identify newer application of bamboo for building construction

BMTPC has identified a regional agency namely the Cane & Bamboo Technology Centre (supported by UNIDO & NEC), Guwahati for setting up the bamboo technology incubator at Guwahati, Assam.

2. *Construction of Demonstration structures using Bamboo Based Technologies*

In order to demonstrate the use of bamboo based technologies in more bamboo growing states, it is proposed to take up construction of demonstration structures like house, picnic hut, OPD building and a school building in Uttranchal & Meghalaya. In each state 10 demonstration structures will be taken up. The main objective of the project is to create and enhance social and professional acceptance and to upgrade skills of local artisans in improvised house construction using bamboo & bamboo based products.

3. *Setting up of Bamboo Mat Production and training units in Bamboo growing areas*

Bamboo Mat Production and training units are proposed to be established in Nagaland & Arunachal Pradesh. The setting up of Bamboo Mat Production and Training units will

facilitate availability of bamboo mats for production of Bamboo Mat Board, Bamboo Mat Corrugated Roofing Sheets and other structural and non-structural applications in the house construction and provide training to local men and women in Bamboo Mat weaving operations. The training manuals in local language will also be prepared for this purpose.

4. Construction of demonstration buildings using solar passive architecture

It is proposed to construct few demonstration building using solar passive architecture based on geo-climatic conditions using locally available building materials.

5. Capacity Building Prorammes for Artisans in Rural Areas

To achieve a comprehensive approach for adopting new and innovative technologies alongwith disaster resistant technologies there is a need to train the masons and local artisans for adoption of these technologies in the field atleast at block/taluka level. The masons in the field may not be able to use new technologies in construction due to lack of knowledge. It is therefore proposed to organize training programmes in rural areas on cost-effective & disaster resistant construction. It is also proposed to develop training manuals in local languages.

6. Dissemination of Information through Seminars/Workshops/ Exhibitions

For large scale dissemination of cost effective, environment friendly building materials & technologies, it is proposed to organize seminars/workshops and exhibitions in different parts of the country.

7. Establishment of Technology Demonstration-cum-Extension centre in NCR Region

It is imminent to establish a mechanism and a platform that will provide a holistic exposure of the conventional, developing, developed and futuristic building material options available nationally and globally. Therefore, it is proposed to establish a national level Technology Demonstration cum Extension Centre at NCR region with the following objectives:

- To initiate, stimulate and present information, documentation, display and demonstration of whole range of building materials;

- To create awareness amongst the policy makers, development planners, decision makers, architects, engineers, builders, promoters, material scientists, product manufacturers, marketing & distributing agencies, and general public about the variety of building material options;
- To render advice about the performance, durability, suitability and affordability of building materials for varying demand situations;
- To promote investment, technology sharing, joint ventures and entrepreneurial activity in the area of building materials.
- To create a National Nodal Exposition-cum-Information Centre on Construction Materials for tourists, professionals and students to Delhi from within and outside the country.
- To develop and promote methodologies and technologies for natural disaster mitigation, vulnerability & risk reduction and retrofitting/reconstruction of buildings and disaster resistant planning of human settlements.

8. *Updating of Display Panels and Publications of the Council*

In order to increase awareness on latest cost effective building materials and technologies, it is proposed to develop various information in print and electronic forms.

9. *Organisation of Series of Training Programmes on various subjects relating to promotion of environment friendly, using efficient building materials, green technologies and disaster resistant technologies*

It is proposed to organise a series of training programmes at different places on various topics during the year for development authorities, architects, engineers, planners, developers, etc.. The themes of the training programmes will be selected to cover the wide spectrum of environment-friendly, energy efficient building materials, green technologies, and disaster resistant technologies.

10 *Performance Appraisal Certification Scheme (PACS)*

BMTPC is operating Performance Appraisal Certification Scheme as a continuous activity to evaluate the performance of the new, innovative building materials and systems on which Indian Standards are not available. In order to create wider awareness about the scheme it is also proposed to organise two regional workshops on the subject.

11 *Setting up of Technology Demonstration cum-production units.*

The BMTPC will be establishing Technology Demonstration-cum-Production Centres on cost and profit sharing basis with construction agencies in public and private sector to reach large construction organisations on demand basis for promoting innovative and cost effective building materials and technologies.

12 *Organisation of International Workshop on Emerging Building Technologies at New Delhi*

It is proposed to organize a International Workshop on Emerging Building Technologies at New Delhi for identification, selection and information collation of new emerging technologies amongst various countries.

13 *E-Commerce Development through Vertical Web Portal*

It is proposed to develop Vertical Web Portal of the Council with the following objectives:

- Creating a knowledge hub on internet.
- Forum for interacting communities related to construction, building materials, new technologies and disaster mitigation
- Dissemination of information on innovative, low cost building materials and construction equipment & machineries manufacturers
- Transactions for publications and videos
- Events information and searching
- Tender and news information
- Registration facilities for future events of the Council.