Presentation on

Technology Sub-Mission

Under

Pradhan Mantri Awas Yojana

Housing for All (Urban)
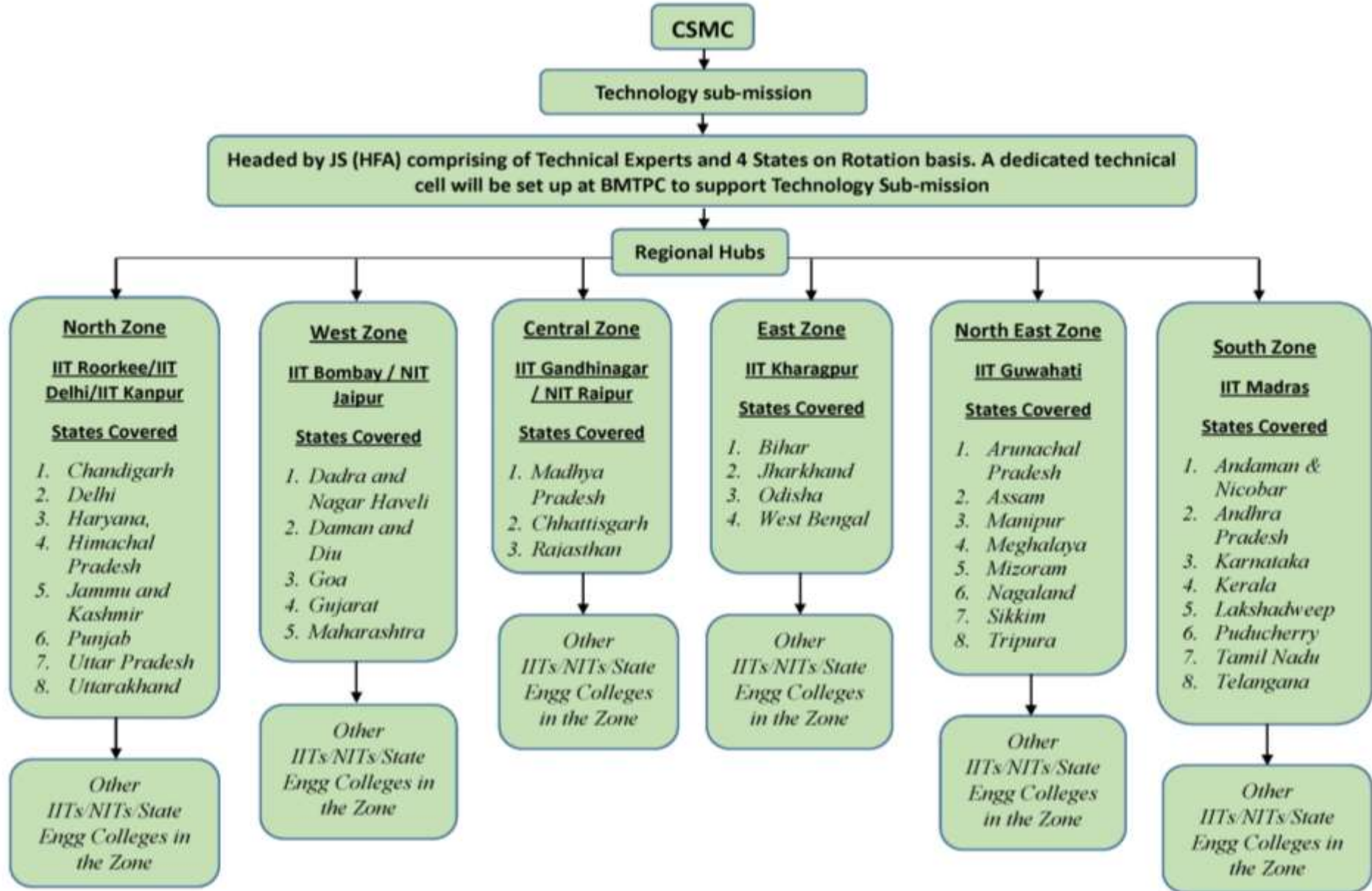
Monday, 21ˢᵗ December, 2015

Nirman Bhawan, New Delhi

- Under "Housing for All" Mission launched by Government of India, Ministry of Housing and Urban Poverty Alleviation has set up a Technology Sub-Mission to facilitate adoption of modern, innovative and green technologies and building materials for faster and quality construction of houses.

- Constitution of Technology Sub-Mission (circulated to all States, IITs, NITs on 21st July, 2015 along with MoU and envisaged activities.

- The first meeting of Technology Sub-Mission under Housing for All (HFA) Mission was held on 28th August 2015 to discuss the way forward for introducing appropriate technological interventions in various States under the ambit of HFA Mission so as to have sustainable, safe, quality housing in quick time keeping in view varying geo-climatic and hazard conditions of India.

- It is envisaged that Centre and State would also partner with willing IITs, NITs and Planning & Architecture institutes for developing technical solutions, capacity building and handholding of States and Cities.

Summary of the response received from various IITs and NITs:

Total institutes invited:	46 Nos. (16 IITs & 30 NITs)
Institutes which attended the meeting on 5th May 2015:	28 Nos. (9 IITs & 19 NITs)
Response Received:	38 Nos. (13 IITs & 25 NITs)
Response awaited from the institutes	8 Nos. (3 IITs & 5 NITs)

States participating in the CSMC meeting on 21.12.2015	IITs/NITs which have given consent to work in these States
Madhya Pradesh	NIT Bhopal, NIT Nagpur & NIT Raipur
Gujarat	IIT Bombay & IIT Gandhinagar
West Bengal	IIT Khargpur & NIT Durgapur
Mizoram	IIT Guwahati & NIT Aizwal
Odisha	IIT Bhubaneshwar & NIT Rourkela
Tamilnadu	IIT Hyderabad, IIT Madras & NIT Tiruchirappalli
Jharkhand	NIT Durgapur & NIT Patna

Proposed Operational Structure of Technology Sub Mission

CSMC

Technology sub-mission

Headed by JS (HFA) comprising of Technical Experts and 4 States on Rotation basis. A dedicated technical cell will be set up at BMTPC to support Technology Sub-mission

Regional Hubs

North Zone

IIT Roorkee/IIT Delhi/IIT Kanpur

States Covered
1. Chandigarh
2. Delhi
3. Haryana,
4. Himachal Pradesh
5. Jammu and Kashmir
6. Punjab
7. Uttar Pradesh
8. Uttarakhand

Other IITs/NITs/State Engg Colleges in the Zone

West Zone

IIT Bombay / NIT Jaipur

States Covered
1. Dadra and Nagar Haveli
2. Daman and Diu
3. Goa
4. Gujarat
5. Maharashtra

Other IITs/NITs/State Engg Colleges in the Zone

Central Zone

IIT Gandhinagar / NIT Raipur

States Covered
1. Madhya Pradesh
2. Chhattisgarh
3. Rajasthan

Other IITs/NITs/State Engg Colleges in the Zone

East Zone

IIT Kharagpur

States Covered
1. Bihar
2. Jharkhand
3. Odisha
4. West Bengal

Other IITs/NITs/State Engg Colleges in the Zone

North East Zone

IIT Guwahati

States Covered
1. Arunachal Pradesh
2. Assam
3. Manipur
4. Meghalaya
5. Mizoram
6. Nagaland
7. Sikkim
8. Tripura

Other IITs/NITs/State Engg Colleges in the Zone

South Zone

IIT Madras

States Covered
1. Andaman & Nicobar
2. Andhra Pradesh
3. Karnataka
4. Kerala
5. Lakshadweep
6. Puducherry
7. Tamil Nadu
8. Telangana

Other IITs/NITs/State Engg Colleges in the Zone

Various Activities for Regional Technical Institutes

- Identifying specific solutions and appropriate design considering local conditions and requirements

- Preparation of Manuals and Guidelines.

- Technical training of Planners, Architects and Engineers

- Identifying and transplanting global best practices with adaptation for local conditions

- Set up mechanisms for testing and accepting materials including new materials in construction

- Take up long term research projects in the field of slums, slum rehabilitation design technology.

# Activities of Technical Cells at Regional Hubs

The Regional Hubs (6 Nos.) being created under Technology Sub-Mission will act as Technical Resource Centre for Technology Sub-Mission. Therefore, it is proposed to establish Technical Cells at regional level with following scope of work:

- Resolving issues that may arise at the time of the preparation/ scrutiny of Project proposals.
- Random checks of the Proposals as per requirements of the States.
- Organizing Orientation/ Refresher Programmes for Preparation/ scrutiny of Project Proposals.
- Identify the type of strengthening required in terms of Machinery and Manpower for the testing facilities at other technical institutes.
- To advise on any region specific issues that will have a bearing on the Design, Execution and Performance of projects.
- To act as Resource Institutions to design and manage Regional Training Programmes for the City Planners, Structural Engineers, Consultants and Contractors by developing course material for different training modules.
- Preparation of Quality assurance Plan (QAP) and guidance on quality related issues.
- Evaluation, validation and certification of new/ Green technologies including code of practices, SOR and O/ M using locally available materials for cost effective projects.
- Testing and R & D
- DPR preparation and implementation, using new technologies
- State specific solutions using conventional and new technologies

Initiatives taken so far...

Documents published:

- Prospective Construction System for Mass Housing containing the Technology Profiles on Emerging Technologies

- Multi-Attribute Evaluation Methodology for Selection of Emerging Housing Technologies

- Model Expression of Interest for empanelment of agencies for construction of houses /buildings using alternate technologies on Design and Built basis

Compendium
of Prospective Emerging
Technologies for Mass Housing

Ministry of Housing & Urban Poverty Alleviation
Government of India

Multi-Attribute
Evaluation Methodology
for Selection of Emerging
Housing Technologies

Ministry of Housing & Urban Poverty Alleviation
Government of India

Model Expression of Interest
For Empanelment of Agencies for Construction of
Houses/Buildings using Alternate Technologies on
Design and Built Basis

Ministry of Housing & Urban Poverty Alleviation
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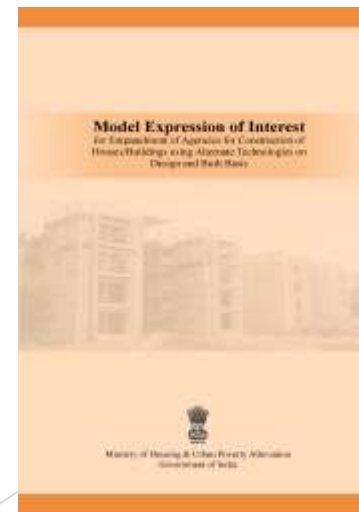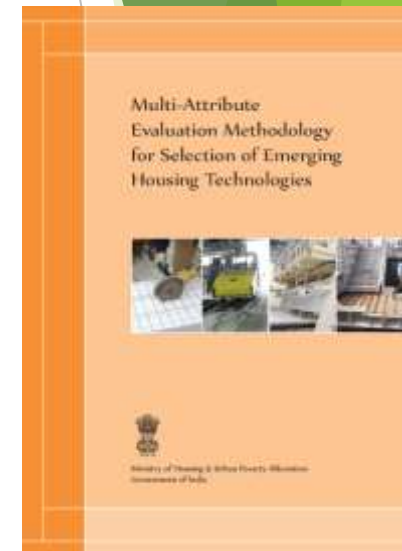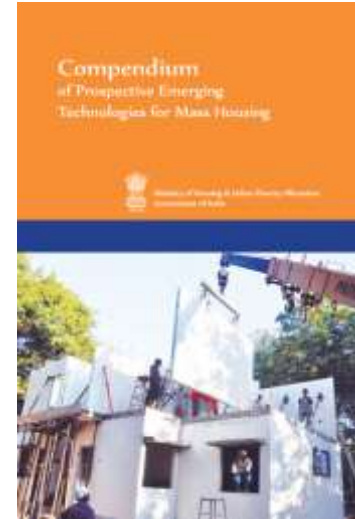
Emerging Technologies Identified, Evaluated and Promoted

- Monolithic Concrete Construction System using Plastic - Aluminium Formwork

- Monolithic Concrete Construction System using Aluminium Formwork

- Expanded Polystyrene Core Panel System

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

Emerging Technologies Identified, Evaluated and Promoted ...contd.

- Speed Floor System

- Glass Fibre Reinforced Gypsum (GFRG) Panel Building System

- Factory Made Fast Track Modular Building System

- Light Gauge Steel Framed Structures (LGSF)

Other Emerging Technologies Identified

- Wafflecrete Building System - M/s Shaival Reality Pvt. Ltd., Ahmedabad

- Modular Tunnel Form System - M/s Outinord Formwork Pvt. Ltd.,

- EPS Core Panel System - M/s Jindal Steel & Power Ltd. Angul, (Odisha)

- Large Prefabricated Panel System - M/s Larsen & Toubro Limited

- SISMO Building Technologies - M/s SISMO Building Technology Ltd., Manesar

- Precast Hollow Core Panel and Slab System

- Structural Stay-in-place – Formwork Coffer India Ltd. Gujarat

- Light Gauge Steel Structure System – Society for Development Composite, Bangalore

Multi-Attribute Evaluation Methodology for Selection of Emerging Housing Technologies
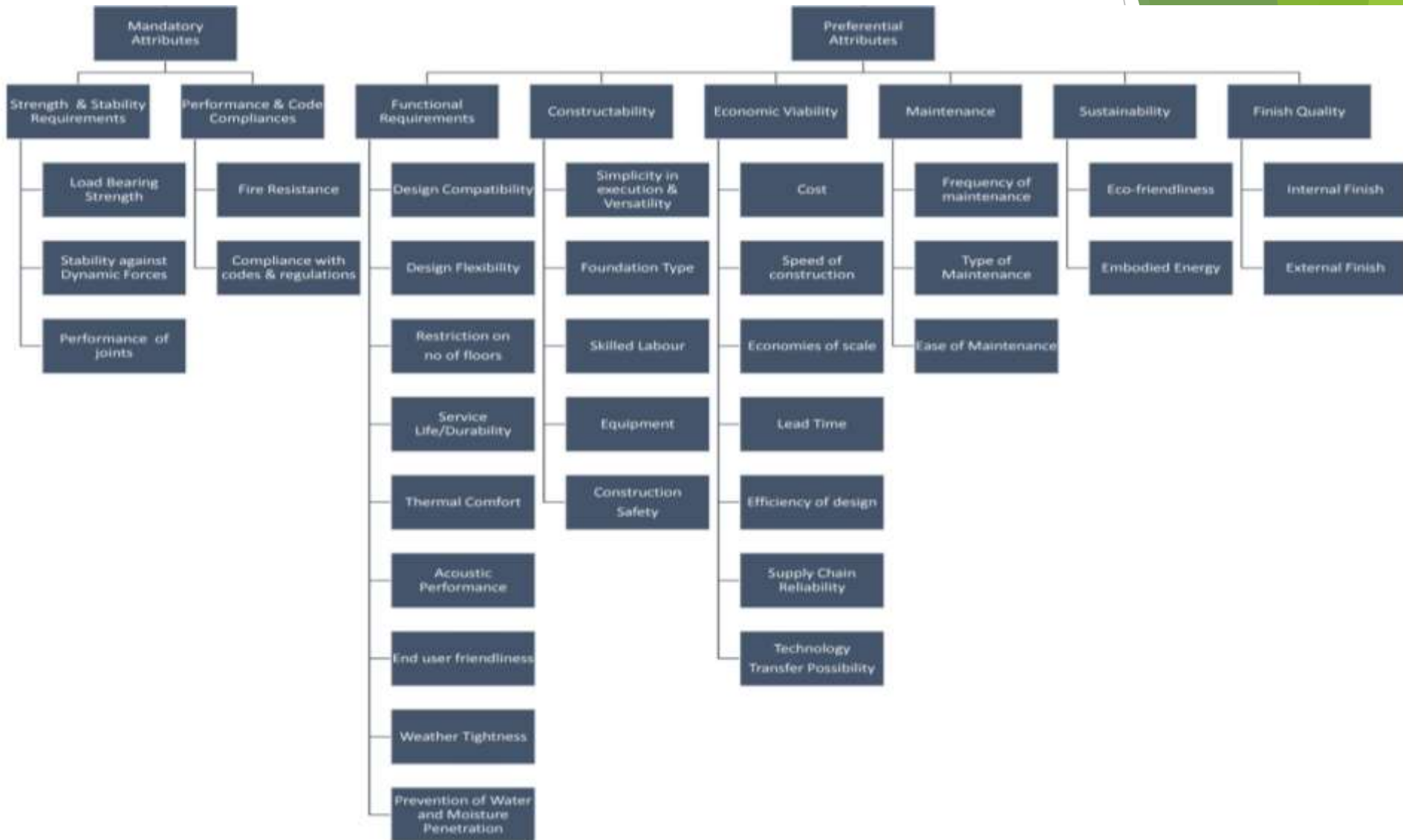
Demonstration Housing Project using Emerging Technologies

- The Ministry of Housing & Urban Poverty Alleviation, Govt. of India has requested the State Governments of **Maharashtra, Kerala, Andhra Pradesh, Telengana, Karnataka, Rajasthan, Haryana, West Bengal, Odisha, Sikkim, Gujarat, Uttar Pradesh, Uttarakhand, Tamil Nadu, Bihar and Chhattisgarh** for participation in the "Demonstration Housing Project" of BMTPC.

- Received requests from **Andhra Pradesh, Telengana, Odisha, Haryana, Maharashtra, Uttar Pradesh, Bihar and Karnataka**.

- The Government of Andhra Pradesh has already allotted the land for construction of 40 demonstration houses and a demonstration community building at Nellore District admeasuring 1.85 acres.

- The State Govts. of Odisha and Telengana have also identified the land for implementation of the projects.

- The layout, plans and tender for Odisha project has been finalised in consultation with Bhubaneswar Development Authority (BDA). A tender has been floated for construction of 32 houses including infrastructure development using EPS based panel System.

- For Telengana project, various modalities regarding selection of technologies, plans etc. are being worked out.

Demonstration Housing Project at Nellore, Andhra Pradesh

PROJECT PROFILE

- No. of houses : 36 (G+1)
- Built up area of each unit : 450 sq.ft.
- Each Unit consists of One living room, one bedroom, kitchen, one separate bath and WC.
- One Community Building in an area of 6500 sq.ft.
- Technologies being used: Glass Fibre Reinforced Gypsum (GFRG) Panel System; filler slab, flyash blocks

TYPE - A

TYPICAL FLOOR PLAN

Demonstration Housing Project at Bhubaneswar, Odisha

PROJECT PROFILE

- No. of houses : 32 (G+3)

- Built up area of each unit : 340 sq.ft.

- Each Unit consists of One living room, one bedroom, cooking space, one separate bath and WC.

- Technology to be used: Expanded Polystyrene Core Panel System.

GROUND FLOOR PLAN

PROPOSED DEMONSTRATION HOUSES USING EXPANDED POLYSTYRENE CORE PANEL SYSTEM AT BHUBANESWAR

FRONT ELEVATION

PROPOSED DEMONSTRATION HOUSES USING EXPANDED POLYSTYRENE CORE PANEL SYSTEM AT BHUBANESWAR

Following proposals have been approved by CSMC.

▶ Proposal from RICS, School of Built Environment, Amity University, Noida for preparation of Comprehensive Implementation Manual for the Factory Made Fast Track Modular Building System.

▶ Proposal from CBRI, Roorkee for Preparation of a Manual for Expanded Polystyrene (EPS) Core Panel System and its field Application.

▶ Proposal for "Development of draft protocol for testing of structural components and systems for use in schemes under Housing for All" submitted by IIT Kanpur

▶ Template for Hosting New Technology for Housing

Expectations from States

- Policy level intervention at state level so as to adopt new technologies identified by BMTPC or any other new technology suiting to state

- Creating enabling eco-system for mainstreaming these technologies e.g. inclusion of technologies in state specifications, creating capacities at state level which may include engineers, architects skilled workforce, contractors, training etc.

- Confidence building amongst beneficiaries, general public, professionals through demo construction

- Demonstration housing project in collaboration with BMTPC for which a land (~1 acre) may be provided by state free of cost

- Establishing linkages with IITs and NITs for DIME (Design, Implementation, Monitoring & Evaluation).

- Active Interaction with Technology providers for adoption of technologies in the states

- Study Visits in different states & abroad to share their knowledge & experience in using new technologies for mass housing

What we propose to do ???

- Handholding, sensitization and Capacity Building Programmes in different States for confidence building in the minds of stake holders on emerging and proven technologies

- Demonstration Housing Projects in willing States

- Creation of Knowledge Portal on Technologies

- Holding conferences in association with different Chambers like ASSOCHAM, FICCI, CII, CREDAI, NAREDCO, etc. in different States so as to involve private sector for mass scale adoption of new technologies

- Extending technical support to states in identification & selection of technologies for HFA, DPR preparation, tender preparation & evaluation, implementation, onsite training etc.

- Comprehensive manuals on identified technologies with IITs/NITs

- Conduction of monthly open house discussions for mainstreaming emerging technologies

- Organization of Exposure Visits of mass housing projects

Thank you