

CATEGORY

PROVEN TECHNOLOGY CATEGORY : GHTC-INDIA



PRODUCT / TECHNOLOGY



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Technology Detail

STAY-IN-PLACE INSULATED CONCRETE FORM WORK

Alternative to conventional bricks/blocks masonry wall



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Video

CONTACT DETAILS

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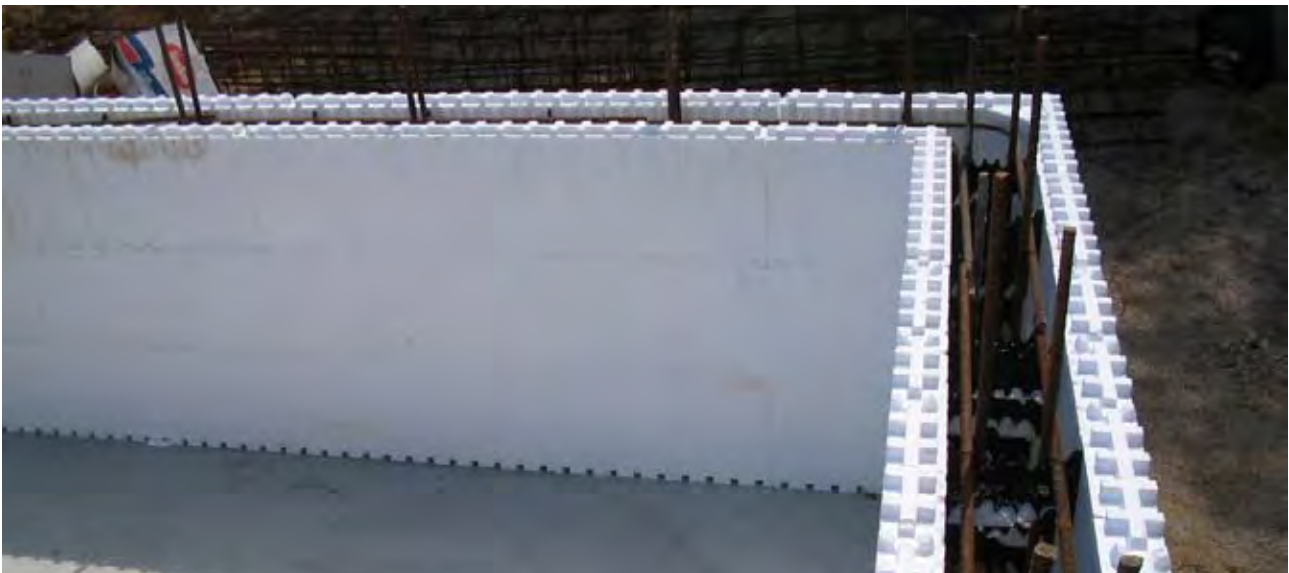
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BRIEF

Insulating concrete Forms (ICF) System comprises of a panel of two walls of Expandable Polystyrene (EPS) separated by a nominal distance of 150mm by hard plastic ties. These are assembled on site to hold reinforced concrete. The forms are open ended hollow polystyrene blocks which fit tightly together to form a shuttering system. Concrete poured into the hollow space to form a continuous wall. When cured, this wall supports the structural loads from floors and roofs, and the shuttering provides thermal insulation. Reinforcing steel shall be as required from design.

Upper and lower surfaces of the polystyrene panels are castellated and the vertical mating surfaces are tongue-and-groove to form a tight fit when joined together. The rigid formwork does not require supporting formwork. The inner surfaces have tapered grooves running vertically and have offset on opposite faces to ensure uniform concrete thickness. They also form locks for end stops. The outer surfaces are grooved vertically at 50mm centres to aid cutting and trimming.



SALIENT FEATURES

- The construction cost is similar to conventional buildings with framed structure of negligible thermal insulation.
- No water is used at site as concrete curing is due to adiabatic process (both side covered).
- Disaster proof structures due to monolithic concrete with joint free 3-D Box construction.
- Green concrete with higher recycled content & fly ash can be used as walls have zero thermal stress.
- High energy efficiency due to insulation layers saves up to 80% of HVAC costs, low maintenance & operational costs. Good acoustics insulation.
- Light weight, interlocking and hollow panels make the forms easy to transport, handle & assemble.

ECONOMIC ASPECTS

- Saves up to 80% of HVAC costs, low maintenance & operational costs.
- Per sq.ft civil construction rate is similar to conventional buildings with framed structure of negligible thermal insulation
- Light weight, interlocking and hollow panels make the forms easy to transport, handle & assemble.
- Least wastage & debris generated due to modular formwork which is easy to cut to match any wall dimensions.
- Smooth straight surface is easy to render and clad.
- No heavy or expensive machines required for installation.
- Significantly faster construction with lesser manpower.
- Needs no columns or beams for spam <20m
- Sound insulation at no extra cost.



SUSTAINABILITY ASPECT

- No water used at site as RMC curing is due to adiabatic process.
- Green concrete with higher recycled content & fly ash can be used.
- Thermal Values R-19(SI 3.35) thermal resistivity for high Energy efficiency, air-tightness and acoustic insulation.

SUITABILITY AND AVAILABILITY:

- Ideally suited for all weather conditions.
- Both EPS and concrete are manufactured all over the country.
- Will require >300mm width for formwork with 200mm concrete wall thickness for high rise buildings > 12 floors.
- ideal for all types of low rise houses, due to ease of availability, low transport costs, easy to assemble with semi-skilled manpower
- All weather conditions, particularly remote locations or with harsh climate, natural hazards prone areas.

LIMITATIONS, IF ANY

- Door and windows position cannot be changed after pouring of concrete.
- Forms are not reusable as compared to conventional materials.
- Will require >300mm width for formwork with 200mm concrete wall thickness for high rise buildings > 12 floors.





MARKET LINKAGES

- As both EPS and concrete are manufactured all over the country as part of the MSME industry

MAJOR PROJECTS

- Commercial Building- 4 storeys, Indore (MP)
- Multifamily housing – basement, stilt +3 floors, New Delhi
- Industrial Warehouse -Basement + Ground Floor, Gr. Noida (UP)
- Office Building -G+1, Gr. Noida (UP)
- Villa - 2 floors, 60 km above Shimla (HP)
- Farmhouse – 2 floors, Khammam, Telangana
- Sports Hostel – 4 floors, Bhopal (MP)

CERTIFICATION/INDIAN STANDARD/ENDORSEMENT

- Certified by BMTPC under PACS

