STABILISED COMPRESSED EARTH BLOCK TECHNOLOGY

Real estate development is at its peak in all major urban centers in India. The main reason for the same is increase in prosperity of people and change in mind set. Today integrated plotted development schemes are in demand. Buying an open plot is always a dream and on priority list for property buyers. Concept of having second home, farm house in sub urban area is gradually picking surrounding all major urban centers. In case of Ahmedabad there are many such plotting schemes are on offer. Specifically Sanand-Nalsarovar road has witnessed tremendous potential for plotted development and favorite destination for such property buyers. Majority of property buyers in sub urban locality prefer to build farm house in their plots. Cement-concrete construction is a traditional method but to make the dream come true of owning a farm house there is a cost effective alternative material which is **Cement Stabilized Compressed Earth Blocks.**

Earth is the oldest material used by man. People have used their native ingenuity to develop forms for the utilisation of earth ranging from the extremely simple to highly complex. Earth has always been the most widely used material for building in India and is a part of its culture. Earth has disadvantages such as high maintenance and low durability. Its major limitations are:- water penetration, erosion of walls at level by splashing of water from ground surfaces, attack by termites and pests, high maintenance requirements.

The compressed earth block overcomes these limitations by an increase in block density through compaction using a mechanic press. The water content in soil is low for compaction as compared to the puddle clay required for mud bricks and ensures much greater dimensional stability. The Stabilised Compressed Earth Block Technology offers a cost effective, environmentally sound masonry system. The stabilised compressed earth block has a wide application in construction for walling, roofing, arched openings etc. Stabilised earth blocks are manufactured by compacting raw material earth mixed with a stabilised such as cement or lime under a pressure of 20 – 40 kg/cm2. The basic principle of all the machines is the compaction of raw earth to attain dense, even sized masonry. Some of the hydraulic machine can even manufacture interlocking blocks. These interlocking blocks are highly suitable for speedy and mortar less construction. Compressed earth blocks are sundried and use cement as stabilisation for gaining the required strength. The optimum soil composition for compressed soil/mud block is 7% gravel, 53% sand, 20% silt and 20% clay. The primary raw material for the production of SCEB is raw earth or soil. OPC cement in small quantities and water are other constituents, coarse sand or stone dust may be added depending on soil quality. Soil is made up of grains of various sizes. SCEBs are cast in situ.

In India the technology for stabilised earth block is being promoted by HUDCO's network of Building Centres to build public sector housing and institutional projects. The use of cement stabilised mud block is gradually increasing in today's time. Those who are looking forward to construct weekend home or farm house prefer cement stabilised mud block because of its advantages. Many of the developers also now looking forward to provide such houses in their plotted development. The cost of construction is quite low compared to regular cement concrete construction practice and thusthose who look to invest in land also preferring to invest in plot with small cost effective housing unit.

Advantages

Soil is available in large quantities in most regions.

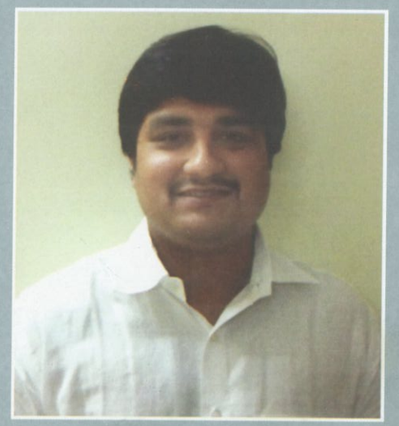
- Cheap and affordable - in most parts of the world soil is easily accessible to low-income groups. In some locations it is the only material available.
- Easy to use - usually no specialized equipment is required.
- Suitable as a construction material for most parts of the building.
- Fire resistant - non-combustible with excellent fire resistance properties.
- Beneficial climatic performance in most regions due to its high thermal capacity, low thermal conductivity and porosity, thus, it can moderate extreme outdoor temperatures and maintain a satisfactory internal temperature balance.
- Low energy input in processing and handling soil only about 1% of the energy required manufacturing.
- Environment appropriateness- the use of this, almost unlimited its natural state involves no pollution and negligible energy consumption, thus, there is further benefit of the environment by saving biomass fuel.

Technical Details

The performance specification of stabilised cement earth blocks (SCEB) are based on BIS code IS 1725, 1982 and tested in accordance with IS 3495 – 1992.

Dimensional Variations	:	+/- 2 mm
Wet compressive strength	:	20 – 30 kg/cm2
Water absorption	:	<15% by weight
Erosion	:	<5% by weight
Expansion on saturation	:	<0.15% in block thickness
Surface characteristics	:	No pitting on the surface
Manpower required	:	1 skilled, 6 – 8 unskilled

EXPERT REVIEW



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LIMITATIONS

- Proper soil identification is required or unavailability of soil.
- Unawareness of the need to manage resources.
- Ignorance of the basics for production & use.
- Wide spans, high & long building are difficult to do.
- Low technical performances compared to concrete.
- Under-stabilization resulting in low quality products.
- Bad quality or un-adapted production equipment.