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ARE MUD HOUSES A BOON?

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ABSTRACT

From the time when industrial revolution has taken its action, Architecture has become globalised and modernization has taken its pace. The materials used for the construction purposes have become very constant and mainstream. Because of this the culture and the local materials of the area are disregarded. The self recognition of the building is lost. In spite of going for the materials those are way too common and require lots of energy for its production and are needed to be imported for the construction purposes, the local materials could be used so as it remains economical and feasible. Even for the lower middle class and the unprivileged people of the slum areas, it would be economical. This research paper will focus on mud as the main material, its limitations and eminences for the housing sector.

KEYWORDS: *Mud Architecture, low-cost, Feasible, Locally available.*

INTRODUCTION

Earth architecture tends to make use of the materials available locally, Originated from the earth and that can be used naturally or after addition of a few types of stabilizers or adhesives. The major aspect of Earth Architecture is the use of mud or soil. Mud was used for the construction during the ancient era of India, after this the materials ejected from modernization in Architecture like R.C.C, Steel, Cement, Glass etc. came into significant use and now the major part of the construction is involved using these materials. But even now a few villages follow their tradition of using local materials for the construction and this has its own benefits.

MUD ARCHITECTURE AS A MODERN BUILDING TECHNIQUE

The main objective of this paper is to focus on the major outcome that can be acquired from the use of mud in the construction purposes majorly in the Housing Projects. The limitations and eminences of using it as a main material will be studied and the ways to overcome it will be withdrawn. The use of mud for the housing construction will in a way lead to low cost housing and that can be an asset to the urban development and will change the overview of slum areas.

LEARNINGS FROM LAURIE BAKER WHY MUD AS A BUILDING MATERIAL

The problem that has to be considered in today's world is the limited source of energy, fuel, and power. So the major task that we have to look upon is to avoid the unnecessary use of Non-renewable resources and search the best alternates for them instead. Apart from this the major concern that we have as for our country being the developing country is the issue of Poverty and we are at a loss in providing houses to everyone. Keeping an eye on all the issues that we are facing, we need to make use of the material that is feasible and low cost. So Mud came out as the best alternate. Mud will be acting as a replacement material along with many supplements that act as stabilizers and will provide more potential to mud in the construction technology.

THE BEST STANDARD OF MUD

In the varied types of mud available from the mother earth, we need to choose the best kind of mud that would serve the purpose and will provide more capacitance to the structure.

Types of soil:

Gravel: This type considers the size of a stone that usually varies from the size of a chick pea to big tomatoes. If we soak it in water for 24 hours, and it disintegrates that would be the best check for gravel soil.

Sand: Similar smaller pieces of stones that is usually quartz which are smaller than a chick pea but each of its grain is visible to the eye.

Silt: The same as sand except that it has been grounded in such a way that each of its grain is not visible to the eye.

Clay: Soil of this types are sticky when wet but tend to become harder when it gets dry. Some of these clays also shrink when they are dry and expand when wet. But there are also types in clay which do not perform in the similar manner and do not shrink at all.

Organic soil: Soil of this type is mainly composed of rotting decomposing organic matters such as leaves, plants and vegetable matter and also wastes. It is spongy when wet usually smells of decaying matter, the color of it is usually dark and is usually damp.

Mixtures: They are usually found in mixtures rather than in isolation. We describe the mixtures as "sandy clayey", "clayey gravel"

USABILITY OF DIFFERENT SOILS:

Gravel: Alone is of no use for mud wall building if the tiny lumps of stone have nothing to bind them together.

Sand: similar to gravel, It has no use for wall making by itself but if mixed with clay, i.e. sandy clays, It is ideal mud wall building soil.

The usability of soil can be increased by mixing it with different soils and stabilizers can be made best of there use.

RURAL STABILIZERS:

To increase the capacitance of mud several stabilizers can be added. Here are a few of them

STRAW: This is of no chemical value, but it seems to help in minimizing cracking. When it comes to the use in blocks it helps in handling the damp blocks. In spite of using straws, busa is also an alternative that can be used as a stabilizer.

COW DUNG: It contains lots of fibrous materials and historically this material is of both medicinal and chemical use.

SUGAR OR MOLASSES: It adds to fibrous strength to the reinforcement.

GUM ARABIC: This and other gum and also resins are used. This serves the purpose of binding material and also as a waterproofing agent.

There can also be certain other stabilizers used, the use and need of a stabilizer is only determined on the strength of the mud and how to increase its workability.

MORTARS: The same soil that was used in building the mud blocks are to be used in the mortar. It has to be taken care that the soil is free from gravels. Use of too much clay is to be avoided as it produces shrinkages. The mixture of stabilizers is required to be same as in the blocks in the ratio of 1:10.

HOW CAN CLIMATE CAUSE NO HARM:

For the protection from rainfall:

As we have always known that water can do the most of the harm to mud houses, the moisture penetrates through the joints and dampness can also lead to fall of the structure.

To avoid this, the modern cube buildings won't help so there has to be a different method in the construction so as it leads to protection from rain water dampness.

For the protection from earth quakes:

As during the occurrence of an earth quake, the base of any structure is affected and the vibrations lead to destruction and the structure collapses.

So for this the measures are to be taken to check the foundation techniques.

Base isolation technique: in this technique between the superstructure and foundation a rigid body is provided that minimizes the destructive forces through the earthquake.

Even bamboo or wood can be used in this technique.

ARE MULTI-STOREY MUD HOUSES A MYTH

We often consider mud as an old fashioned building material, because we believe that it cannot resist the forces applied by a multi-storey building. This statement can be true if the foundation that is used, is incapable of regulating all the forces acted by the weight of the building. Hence the key role played here to supervise all the forces of a building is by the foundation methods used.

Stepped foundation:

Generally most of the multi-storey houses use the stepped foundation technique, which explains there is always a 9inches wall above the 18inches wall but this method tends to have its own flaw as the water can seep through the area where difference in layers occur. So this can be recalibrated if the flush is provided in the inner wall as there are zero chances for water to seep from inside.

Wide spread foundation:

For single storey or double houses wide foundation having an base of 18inches can also be used ,because the main purpose of foundation here is only to carry out the weight of the house.

Alternate materials for foundation

Apart from using brick masonry for the foundation stones can also be used but it has to be taken care that they fix well among themselves and provide a better basement.

Even bamboos can be used, where bricks and stones are not available. In this method layers of bamboos are to be provided for reinforcement.

CONCLUSION

Mud houses can of course serve as a boon to architecture, as from the conclusion withdrawn from of the points discussed in this Paper. Every material that is used in construction has several limitations, but the main game lies in how we derive the best usability from it. If mud is used in construction, first of all it will save a lot of energy, money and it will be feasible .Along with using mud there can be several local materials that can be used, and this will add strength to mud, and regard recognition to them and the building as well. If it comes to the strength then the foundation of the building plays an extraordinary role. Hence hereby with this paper I can conclude that mud and its practice will serve as a boon to Modern day Architecture.

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