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Modification of Wall in Mud Housing to Increase Durability and Service Life of the Mud Wall

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ABSTRACT

In building construction brick is one of the major ingredients in the material used for construction. In the process of brick making, it has to be burn in kiln which introduced to evolve the CO2 gas in major quantity. This CO2 gas pollutes the environment. So the solution on this disadvantage of the burnt clay bricks is replacing the bricks with another material i.e. bricks made from mud and straw. Today we need cost effective and environment friendly material which not pollute the environment. Therefore we can use the mud and straw for making an affordable house. This project report consist of use of tile faced mud block in construction as a brick which the mud block is made with mixing straw in it and its one side is faced with water proofing tile to resist the climate and use as a brick in construction.

Keywords: Mud Wall, Proofing Tile,Tile Faced Mud Block.

I. INTRODUCTION

The developing countries have critical shortages of housing, schools, hospitals, and other vital buildings and services. Furthermore, construction of new buildings is currently seriously inadequate; the present rate of construction in developing countries is generally sufficient to meet the needs of only 10% of the net increase in population per year. As the shortage of buildings becomes worse, more efforts are being made to develop cheap, serviceable, and easily assembled building materials.

A hundred years ago, there were a lot of forests, which were our main material resources for building constructions. However, nowadays, our forests are almost gone, and woods for constructions are rare. This is because of rapidly increasing population and their dwelling demand. Currently, the majority of developing countries are faced with a problem of providing adequate and affordable housing in sufficient numbers. In the last few decades, shelter conditions have been worsening: resources have remained scarce, housing demand has risen and the urgency to provide immediate practical solutions has become more sensitive. Adequate shelter is one of the most important basic human needs. However, 25% of the world's population does not have any fixed home, and 50% of the urban population lives in slums. Indeed, 80% of urban settlements in developing countries consist of slums and spontaneous settlements made of temporary materials.

Soil is widely used in the traditional construction of mud houses. soil is the most abundant building material. It has been used as a construction material since early times and it still remains the most extensively used material for construction of houses. We used the soil with mixing it with straw to make the mud block stronger. And straw works like a reinforcement agent in the mud block. To modify the outer face of mud wall we make the change in it, the outer face is faced with water resisting tile to increase

the durability of wall and reduce the maintenance cost of the mud wall.

II. PROBLEM STATEMENT

The depletion of building resources like timber, bamboo and thatch have progressively made the village house builder's jobs more and more difficult. Timber used to be the principal structural material while bamboo came in handy for almost everything. Shrinking forests have contributed to removing timber and bamboo from ther each of the poor. Local mud fortresses or garhis furnished excellent building mud. These garhis are getting extinct and the resource drying out. Black cotton soil is unfit for wall making, but it has good binding properties, with bhaswa and murrum soil. The need therefore is to have a roof timber or thatch along with mud walls using ordinarily available soil.

Figure 1. Wall succumb due to rain fall

III. LITERATURE REVIEW

Currently, the construction industry accounts for a large portion of total global consumption of material and energy. This consumption has been estimated to be 50% of global material use, and 40% of global energy use. Growth in this consumption is tied directly to global economic growth. Additionally, the current state of the world economy growth is in developing nations, especially in Asia and Africa. Economic growth provides the means to develop and implement cleaner, more efficient technologies. Unfortunately, economic growth in these developing countries is often begin at the expense of the environment, until a point is reached where the accumulated wealth of a nation makes the implementation of more environmentally caring technologies feasible. Since many of the countries driving global economic growth have not yet reached this point, it is clear that there is significant expense of nature for improvement of industrial practices in these countries.

Currently, there are extremely wide variety of alternative construction materials and techniques which are used around the world. Soil is one of the natural building materials, which is absolutely different from wood, rock, cement or metal. Mud can be formed for our shelters and it can be reformed or recycling ease back to nature, to be simple soil on earth. Moreover, mud can match with all environments and good for being a passive air-conditioning system. Reusability of mud creates tremendous reduction in environmental impact, energy use and capital expenditure. Mud house from earth or soil is one of the most widely used traditional building materials throughout the world. Currently, one-third of world population stills live in mud house. It can be found mostly in hot-dry and arid area such as some parts of India, Nepal, China, African continent and even in the West Side of North and South American continent.

IV. METHODOLOGY

We had study about the mud wall in mud house construction for the poor people, who does not afford normal house. So we decide to make tile faced mud block for the building construction as per the villagers economic purpose. For the making of tile faced mud block, we had done research on mud wall, various types of soil like murrum, black cotton soil, etc and wheat straw to collect all the information from net search.

After the collection of all the materials. We made various test with it, such as sieve analysis of the soil, moisture content test etc. the mixture of bhaswah,

black cotton soil, white soil and wheat straw with the ratio 4:1:1 of all soil and 5% of wheat straw. Once the tile faced mud block is made, the various tests are conducted on it. We made the model by using the tile faced mud block and various tests are done on it, such as indoor and outdoor temperature and humidity.

Figure 2. Tile faced mud block

V. RESULT AND CONCLUSION

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VI. REFERENCES

[1]. G. C. MATHUR: durability and service life of mud houses

[2]. Sruthi G S: mud architecture

[3]. H. MOLLA: study of stabilized mud block as an alternative building material and development of models

[4]. Dr. Soham Pandya: Center of Science for Villages, Dattapur, Wardha