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IDENTIFICATION OF WATER ABSORPTION PROBLEM IN AAC BLOCK DURING PLASTERING AS COMPARE TO RED CLAY BRICK

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ABSTRACT

Now a days clay bricks that is traditional bricks are mostly used building work as a masonry. AAC block are recently one of the newly adopted building materials a product of fly ash which is mixed with lime, cement, and water and an aerating agent. The AAC is mainly produced as cuboid blocks and prefabricated panels. The Autoclaved aerated concrete is a type of concrete that is manufactured to contain lots of closed air voids. The AAC blocks are energy efficient, durable, less dense, and lightweight. It is manufactured by adding a foaming additive to concrete in different sizes of molds as per requirement, then wire-cutting these blocks or panels from the resulting 'cake lump' and 'heating them with steam. This process is called as Autoclaving. It has been observed that this material is an eco-friendly building material that is being manufactured from industrial waste and is composed of non-toxic ingredients. In this paper, an overview of AAC blocks with reference to its potential and sustainability as a novel building material has been presented. The paper also presents a comparative cost analysis of AAC Blocks with the Red clay bricks and its suitability and potential use in the construction in the building industry.

Keywords: AAC Blocks, Sustainability, Plastering.

I. INTRODUCTION

Now a days clay bricks that is traditional bricks are mostly used building work as a masonry. Due to the rapid urbanization and expanding interest for development materials, block furnaces have quickly developed which have legitimately or in a roundabout way caused a progression of ecological and medical issues. At a worldwide level, ecological contamination from block making activities adds to the wonders of an Earth-wide temperature boost and environmental change. The different kinds of blocks can be utilized as an option in contrast to the red blocks, to diminish natural contamination and Global warming. AAC blocks might be one of the answers for block substitution. Like froth concrete, Autoclaved Aerated Concrete (AAC) is one of the confirmed green structure materials, which can be utilized for business, modern and private development. It has the basic properties required for use as a structured segment. Because of the lightweight and high solidarity to-weight proportion of circulated air through solid items, their utilization brings about an obvious economy in the auxiliary individuals, and along these lines spare concrete and steel support The Autoclaved aerated concrete (AAC) was created and developed in 1924 by the Swedish architect Dr. Johan Axel Eriksson, along working with Professor Henrik Krueger at the Royal Institute of Technology (Rajan, 2013). It is an eco-accommodating structural material that originates from modern waste and is produced by using non-poisonous and non-toxic ingredients. With AAC, the development procedure can be around 20 percent quicker. It weighs just around 50 percent of a standard solid square and has high warm protection and is acoustics-accommodating. It additionally has preferable imperviousness to fire over fly debris and is non-burnable. It's non-hypersensitive and henceforth keeps up the nature of air inside a structure without changing its properties after some time. With AAC, the development procedure can be around 20 percent quicker. It weighs just around 50 percent of a standard solid block and has high thermal insulation and acoustical properties. It's non-unfavorably susceptible and consequently keeps up the nature of air inside a structure without changing its properties after some time. The utilization of AAC block can lessen development costs by about 2.5 percent for structures, for example, schools and medical clinics, and diminish the running expenses of lodging and places of business by to 30 to 40 percent after some time

II. METHODOLOGY

Following method is adopted for research work

- Study of AAC Block and Red clay brick
- Test on AAC block and Red Clay brick
- Live example of plastering work of AAC And red clay

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- Water absorption during plastering
- Problem identification

III. MODELING AND ANALYSIS

Brick wall plastering

AAC Block wall plastering

Cracks Forming Due to more absorption of water from concrete

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IV. RESULTS AND DISCUSSION

Comparative Analysis of AAC Block, Clay Brick

Table 1. Comparison of AAC block and Clay red brick

SN.	parameter	AAC block	Clay red bricks
1	size	400-600mm X 200mm X 150mm – 300mm	225mm X 75mm X 100/150mm
2	Raw Materials	Cement, fly ash, water, and Air entraining agents	Locally available clay
3	Sound Insulation	Better Sound absorption /insulation as compared to bricks	Normal
4	Water Absorption	Absorb 12- 15% by the total volume of AAC blocks	Absorb 17 -20% by the total volume of red clay brick
5	The volume of mortar for plastering	1.8 m3	1.0 m3
6	Plastering water absorption	About 45% total water	About 20% of total water

V. CONCLUSION

In this research it is concluded that The Autoclaved Aerated Concrete (AAC) is a novel and one of the most suitable and sustainable building materials in the present building construction industry productive use of recycled industrial waste i.e. fly ash, hence this material can be classified as a sustainable building material AAC blocks use readily available raw materials in the manufacturing process, have excellent durability, are energy efficient, are cost-effective, and also can be recycled, therefore Autoclaved Aerated Concrete (AAC) can be said to be a green and sustainable building material. The building required plastering for good appearance, But during plastering work it absorbed more water than red clay brick because it absorb more than 45% water which is more. After absorption this much % water the heat of hydration that exothermic reaction getting slow and cracks forms.

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