

IMPROVEMENT AND USE OF EARTH CONSTRUCTION PRODUCTS FOR LOW-COST HOUSING

- ABSTRACT

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This paper touches briefly on the current negative attitude towards the use of earth products in house construction in favour of the conventional building materials. Such attitudes are mainly held within the official circles of many developing countries. The paper outlines the poor qualities of earth as the main reason for this negative attitude, a reflection of the fears and doubts of those involved in formulating and implementing low cost housing programmes of the material's suitability and performance in such programmes.

The paper also outlines some of the good qualities of earth as a building material, indicating its advantages such as its low cost, labour intensive, availability, etc. which could contribute positively to the provision of affordable shelter for the poor. Three possible methods of improving earth qualities and performance are given with soil stabilisation standing out as the most effective and efficient of all when supplemented with the application of high compaction pressure.

Results of HRDU and Building Research Establishment (BRE) joint experiments covering a number of different soil types with different stabilisers in Kenya are given, indicating the type of products obtainable, their qualities, use in house construction and the cost effectiveness as compared to the conventional alternatives. An attempt has been made to identify some of the more suitable common soils for improvement with the correspondent stabilisers, especially for the production of stabilised soil building blocks using two of the simple manually operated block making machines, the "Brepak" and the "Cinva-ram" block presses.

The paper concludes by emphasising the need for joint efforts from all the groups concerned with low cost housing programmes to press for an increase in practical research and demonstration projects which would assist in disseminating research findings on the improvement and use of earth in house construction at a practical and applicable level. This would increase understanding/awareness and acceptance of the concept by the decision-making groups, etc.

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1. Introduction:

The utilisation of earth in house construction is one of the oldest and most common methods used by a bigger percentage of the developing countries' populations today. This is because earth has several advantages to offer as a building construction material, especially for the poor and the rural communities.

It is the cheapest and most readily available material to be found everywhere. It is easy to work with, requires less skills and as such, it encourages and facilitates the participation of unskilled individuals and groups of people in house construction on a self-help basis. It offers a very high resistance to fire and provides a comfortable built living environment due to its good thermal and heat insulation. It also offers other important factors all of which attribute to the achievement of a good house planning/design and construction solution.

However, despite all these positive characteristics which earth offers in house construction, the material has remained unpopular and in many countries officially unacceptable as a building material. This is due to its weaknesses as a building material. This paper attempts to discuss some of these poor qualities and to outline methods of making earth a most suitable material for house construction, especially for low-cost housing projects.

2. Negative Qualities of Earth Products:

If a developer wanted to put up a housing scheme and during the design stage he is advised to use soil blocks for wall construction of the houses, he would definitely raise several questions. These questions would reflect the inner fears, hesitation and doubts many people have in using soil blocks as a building material for permanent houses and other buildings. This also indicates that most people are vaguely aware of the poor qualities of soil as a building material.