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Feasibility Study of Construction of Building Using Reusable Material

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Abstract
Civil structures made of steel reinforced concrete normally suffer from corrosion of the steel by the salt, which results in the failure of those structures. Constant maintenance and repairing is needed to enhance the life cycle of those civil structures. There are many ways to minimize the failure of the concrete structures made of steel reinforce concrete. The Project aims to optimize the construction resources with applications to reduce, reuse and recycle to achieve the motive of saving planet, public and then profit. There is an unavoidable growth in the population for this, there is demand of urbanization. This consumes high amount of non-renewable resources and hence resources are getting exhausted creating a scarcity, which a major issue for present generation.
Keywords*:* reusable materials,construction resources.

I. INTRODUCTION

To optimize construction the construction resources with application of Reduce, Reuse and Recycle to achieve the motive of saving planet, public and then profit. There is an unavoidable growth in the population for this, there is demand of urbanization. This consumes high amount of non-renewable resources and hence resources are getting exhausted creating a scarcity, which a major issue for present generation. This some alternative should be thought considering renewable energy sources.

The recycling of different waste into fired clay bricks or blocks. A wide range of successfully recycled materials and their effects on the physical and mechanical properties of blocks have been noticed. Concrete consumes major amount of construction nonrenewable resources. There is acute need to make sustainable concrete i.e. concrete with some alternative material. This can be achieved by replacement any one the ingredient of concrete with any of the waste material present in surrounding with analysis of present condition we found waste materials such as agricultural waste , iron filings, rubber spirals, etc.

Methodology

The methodology will be adopted such as collecting the data from literature reviews, case studies, questionnaires, interviews and site visits. The methodology also includes following point.

- By using the internet net, books and interaction with respective builders/developers.
- By understanding the technique of construction of building using reusable materials.

II. OBJECTIVES

- To improve the mechanical properties of concrete.
- To fix the exact percentage of reusable material to be used in concrete.
- To choose the proper type at proper place.

III. RESULT AND DISCUSSION:

Standard Cube

Concrete of grade M-20 will require a proportion of 1:1.5:3

Material used:

- Cement :Ambujacement with 53 grade
- Sand : local available sand passing through 75 micron sieve
- Aggregate: Basalt rock, triangular in shape with size in between 12-20mm
- Quantity for 3 cubes of dimension standard dimension 150 X150X150mm
- Cement :9.81 kg
- Sand : 14.72 kg
- Aggregate :29.43kg
- W/C ratio : 0.4 (4lit)
- Room temperature : 27º
- Observation Table:

specimen No.	Area of C/S mm	Wt. of cubes	Mean Wt. Kg	Density KN/m3	Compressive Strength all in N/mm2			
					7 days	Mean	28 days	Mean
1	22.25	8.4	8.4	24.6	13.52	13.39		
2		8.4			13.25			
3		8.4					18.5	18.5

Calculation: Compressive Strength = load applied / cross sectional area
First specimen: compressive strength = 301/ 22.25 = 13.52 N/mm2
Second specimen: compressive strength = 295/22.25 = 13.52 N/mm2
Third Specimen: compressive strength = 405/22.25= 18.20 N/mm2

Saw dust cube:
The saw dust used for replacement is very fine in nature and is replaced with cement. Replacing 10% of cement with saw dust by weight concrete of grade M-20 will require a proportion of 1:1.5:3

- Cement :Ambuja cement with grade 53
- Sand : local available sand passing through 75 micron sieve
- Aggregate : Basalt rock, triangular in shape with size in between 12-20mm
- Quantity for 3 cubes of dimension standard dimension 150 X150X150mm
- Cement :8.82 kg
- Sand : 14.72 kg
- Aggregate :29.43kg
- Saw dust : 1.00kg
- W/C ratio : 0.4 (4lit)
- Room temperature : 27º
- Observation Table:

specimen No.	Area of C/S mm	Wt. of cubes	Mean Wt. Kg	Density KN/m3	Load KN	Compressive Strength			
						7 days	mean	28days	mean
1	22.25	8.4	8.4	24.6	244	10.96	10.29		
2		8.4			244	9.97			
3		8.4			315			14.02	14.02

IV. CONCLUSION

It is very clear from the previous study that, even though it is topic of urge and importance, there is no government rules and regulations regarding sustainable construction.

Demand supply gap, different sectors for managing resources were considered, in which the reuse, reduce or recycling of materials, are studied.

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