

Seismic Analysis of Reinforced Concrete Modified with fiber Reinforced Concrete At Low & High Rise Building

ATHIRA BOSELAL¹, ARUNIMA .V.R²

¹PG Scholar, Department of Civil engineering SBCE Elavumthitta, Pathanamthitta, Kerala, India

²Assistant Professor, Department of Civil engineering SBCE Elavumthitta, Pathanamthitta, Kerala, India

Abstract - Sustained concrete changed with made fibers for instance glass carbon offer the advantages of higher immovability and quality to weight extent when stood out from normal improvement materials The appealing components of trademark strands are their simplicity light weight high specific modulus manageability and biodegradability Among a substantial number of the trademark strands like jute sisal bamboo coir banana et cetera bamboo fibers is a champion among the most reassuring one in light of its straightforwardness light weight short improvement cycle and high openness The dynamic properties are furthermore penniless down using ETABS The invigorated structure of a G+3, G+10 with HFRC and RCC building and inspected under seismic weights It is contemplated that the general distortion of the structure is less when differentiated and standard strengthened structure using ETABS programming.

Keywords— *Glass, Bamboo, Response Spectrum, Rcc, ETABS*

I. INTRODUCTION

The compound resistance of Bamboo/Glass strengthened polyester mixture composites to acidic corrosive, Nitric corrosive, Hydrochloric corrosive, Sodium hydroxide, Sodium carbonate, Benzene, Toluene, carbon tetrachloride and water was considered. The flexural properties of these composites were likewise examined. The impact of salt treatment of bamboo strands on these properties was examined. It was watched that the flexural properties of the blend composites increase with glass fiber content. These properties observed to be higher when soluble base treated bamboo filaments were utilized as a part of mixture composites.. The cross breed fiber composites demonstrated better imperviousness to the chemicals specified previously. The transfer of indistinct hemi-cellulose with stomach settling agent treatment inciting higher crystalline of the bamboo fibers with salt treatment may be accountable for these perceptions Hybrid Fiber Reinforced Concrete(HFRC) is a mix of both Glass and Bamboo Fiber by a procedure of hybridization (Fig1.1) A composite can be named as half and half, if at least two sorts of strands' are reasonably joined in a typical framework to deliver a composite that gets profits by each of the individual strands and shows a synergetic reaction in a framework in which one sort of fiber, which is more grounded and stiffer, enhances the principal break push and a definitive quality, and the second kind of fiber, which is more adaptable, and pliable prompts enhanced durability and strain in the post-splitting zone. a half and half support in which one sort of fiber is littler, with the goal that it connects the smaller scale splits of which development can be controlled. This prompts a higher elasticity of the composite. The second sort of fiber is bigger, with the goal that it captures the spreading full scale splits and can significantly enhance the sturdiness of the composite To give a half breed support, in which the toughness of fiber sorts is distinctive. The nearness of the sturdy fiber can expand the quality as well as strength connection after age while the other sort is to ensure the fleeting execution amid transportation what's more, foundation of the composite parts. The blend of various sorts of strands to advance the execution in the solidified state, as for quality and sturdiness, has been considered by different specialists, utilizing asbestos, carbon, and steel to accomplish quality, and polypropylene and polyethylene to enhance durability. However, rare measure of work has been accounted for in the territory of bio-engineered half and half filaments

II OBJECTIVES

1. To study the effectiveness of HFRC (Hybrid fiber Reinforced concrete) over a RCC building
2. To determine the influence of height on a HFRC building comparing to a RCC building

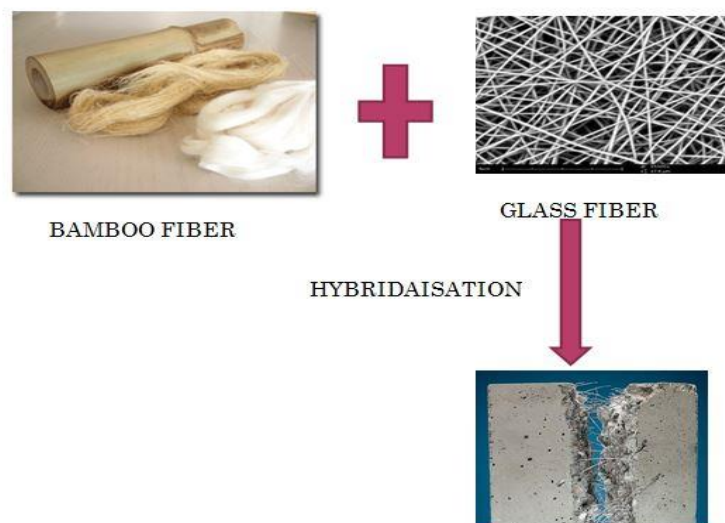


Figure.1 Hybridization

III SCOPE

- 1.Regular building plan area (350mm x450mm) of varying height such as G+3,G+10, are considered.
2. 6 models are developed in ETABS software (2 RCC ,2 HFRC)

The study is limited to

1. Regular Building & soil Type
2. Response Spectrum Analysis
3. Zone 3

The analysis is mainly carried out regular building at G+3,G+10, they are having same plan and same properties. they are differ from their material properties (HFRC &RCC). The analysis done in zone 3 using Response Spectrum Analysis

IV LITERATURE REVIEW

Adriana Ionescu, Madalina Calbureanu, Mihai Negruet (2007) Ngo et al (2007) Reproduced static and dynamic investigation on seismic conduct of the building structure utilizing ANSYS programming. They have done seismic incitement utilizing the static proportionate drive strategy and the modular ghashly investigation technique. The review was made keeping in mind the end goal to figure out which sort of investigation is more advantageous and less demanding to be connected in ANSYS program. They inferred that the modular ghashly examination is more helpful however the consequences of both strategies are fundamentally the same as.

Ojaswi Panda et al (2012) Manufactured another class of epoxy based half breed composites strengthened with arbitrarily arranged short glass filaments and bamboo strands. They completed assessment of mechanical properties, for example, elasticity, flexural quality and small scale hardness for these composites. Three diverse relative fiber extents were embraced, and in each the length of the fiber was shifted from 0.5cm to 1.5cm. They presumed that the mechanical properties of the composites somewhat increment in all the three distinctive relative fiber extents independent of fiber lengths. Be that as it may, the most extreme tractable and flexural quality among every one of the composites was 24.41MPa for 0.5cm fiber length with generally more glass fiber content.

Venkatasubramani et al (2013) Concentrated the execution of half breed fiber pillars under cyclic stacking. They had done perception on first split and extreme quality of ordinary solid shafts and crossover fiber pillars. They inferred that in mixture shafts a definitive load minding limit increments by 26% than ordinary solid pillar. They additionally found that splits are firmly separated and furthermore break width is less when contrasted with traditional cement.

V CONCLUSION FROM LITERATURE REVIEW

Mechanical properties of the HFRC composites like a definitive elastic and flexural quality increment and they demonstrate preferred execution over regular cement. For engineered HFRC pillars, section, extreme load minding limit increments by 26% than ordinary solid shaft. At the point when filaments are utilized, splits are firmly divided and furthermore break width is less when contrasted with regular cement. The strategy for modular unearthy examination is more advantageous to reproduce static and dynamic investigation on seismic conduct of the building structure utilizing ETABS programming. It is prescribe to utilize rules for strange load cases and better pliability levels appeared by HFRC help to enhance the building execution under unfriendly load conditions.

VI . MODELING AND DESIGN

The auxiliary programming ETABS has been utilized for the displaying. It is more easy to understand and adaptable program that offers a wide extent of components like static and dynamic examination, non-straight unique investigation. and non-direct static sucker investigation.

VII. LOADS CONSIDERED

Table. 1

Dead load	3 kN/m ²
Live load	4 kN/m ²
Roof live load	1.5 kN/m ²
Floor finish	1.5 kN/m ²

VII MODELLING



Figure 2 : HFRC & RCC G+3 BUILDING

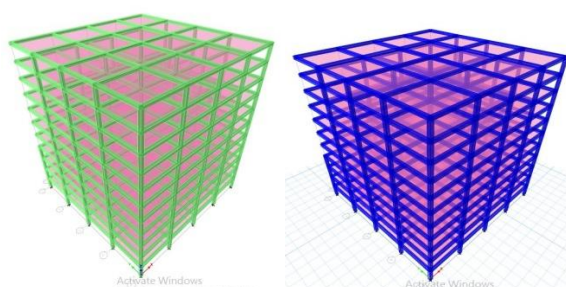


Figure 3 :HFRC & RCC G+10

IX ANALYSIS

The RCC and HFRC building is investigated by Responses range Analysis for different story tallness. The estimation of story shear ,story float, of each model of both RCC and HFRC are Analyzed and information is taken for correlation from the examination comes about.

X . RESPONSE SPECTRUM ANALYSIS

The reaction range speaks to an envelope of upper bound reactions, in light of a few diverse ground movement records. With the end goal of seismic examination, the outline range given in figure 1 of IS: 1893 (Part 1): 2002 is utilized. This range depends on solid movement records of eight Indian seismic tremors. This technique is a versatile dynamic investigation approach that depends on the supposition that dynamic reaction of the structure might be found by considering the autonomous reaction of every common method of vibration and after that joining the reaction of each in same way.

XI ANALYSIS RESULTS

1. Storey Drift

Table .2

Storey	RCC G+3	HFRC G+3	RCC G+10	HFRC G+10
Storey Drift	0.0043072	0.0043031	0.015968	0.004562

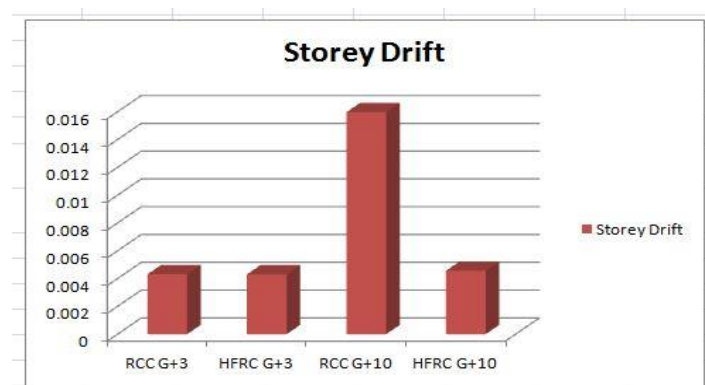


Figure .4 Storey Drift

2. Storey Shear

Table .3 Storey Shear.

Storey	RCC G+3	HFRCG+3	RCC G+10	HFRC G+10
Storey Shear	1945.170	1945.170	6097.60	2605.22



Figure 5 .Storey Shear

XII CONCLUSION

The models are analyzed using response spectrum method by taking into consideration that all the buildings are located in zone III .The storey shears, the storey drift are plotted and compared for each model. From Storey drift and Storey shear view, HFRC buildings found to be more effective in resisting lateral forces . ie, Value of base shear and storey drift are doesn't vary with height of building .in both RCC & HFRC at G+3 building, , In RCC building have Storey Shear & Storey drift value increases with increases height of building, in RCC G+10,building , compare with HFRC building. so we conclude that , In HFRC building give minimum storey drift & Storey Shear value in G+10,storey buildings so,

- 1.HFRC building more effective than RCC building
- 2.In terms of Storey shear and storey drift HFRC building give better performance than RCC building .
3. Compare with RCC , HFRC used in high rise building for better performance.

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