

A Review on RCC Column with effect of Reinforcement

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Abstract – This paper represents the change of Reinforced concrete Structural additives which are discovered to exhibit misery, even before their carrier length is over due to several causes. Such unserviceable systems require immediately interest. And it became executed by changing bolstered concrete with the aid of Hybrid Reinforced Fiber Reinforced Concrete. It turned into decided that load wearing capacity for beam-column joint retrofitted with Hybrid Reinforced Fiber Reinforced Concrete turned into extended.

Key Words: Reinforced concrete, Hybrid Reinforced Fiber Reinforced Concrete, Distress, Retrofitted, and beam-column joint.

I. Introduction

Reinforced concrete is the commonly used material for the construction of structures which might be designed according to the specs given inside the fashionable codes to satisfy the service existence. Based upon those specifications, the masses are taken into consideration for the design of the diverse factors of the shape like beams, columns and slabs. During the carrier existence if the loading situations alternate due to purpose of use of the structure, this could result in non-overall performance of the structural elements for which it was designed in advance. The systems also are liable to deterioration because of earthquake, flood, cyclone, carbonation, chloride assault, environmental pollutants, deficiencies of the material used, insufficient layout and defective production. The environmental stresses/factors like high humidity, air and water pollutants additionally cause corrosion and broaden cracks main to the failure of structural elements. Replacement of the broken structural elements could be very difficult and value in depth technique and the replacement of a selected structural detail within the existing structure additionally creates hazard to the integrity of other connecting individuals. To repair the specified strength of the deteriorated structure, retrofitting is the answer. Retrofitting can be done in two ways:

1. Global Retrofitting
2. Local Retrofitting

In Global Retrofitting, the entire structure is retrofitted to fulfill the serviceability requirements. It involves the analysis and design of the entire shape as in keeping with the specifications given in trendy codes. Whereas, in Local

Retrofitting, best specific member of the shape is either bolstered or changed. Jacketing production is the most favored method of retrofitting that can be carried out by means of the subsequent strategies:

1. Confinement with fiber reinforced polymers which include aramid fibers, carbon fibers and glass fiber polymers.
2. Confinement with external metallic caging techniques.
3. Confinement with Hybrid Reinforced Fiber Reinforced Concrete.

In contrast to the above, retrofitting with Hybrid Reinforced Fiber Reinforced Concrete confinement is the oldest and fee powerful technique used to bolster the concrete systems. Hybrid Reinforced Fiber Reinforced Concrete consists of closely-spaced and uniformly-disbursed reinforcement which gives ductility to the otherwise brittle concrete. This inherent belongings makes the Hybrid Reinforced Fiber Reinforced Concrete a specific composite production fabric. The precise residences of Hybrid Reinforced Fiber Reinforced Concrete which includes water proof, fireplace resistant, durability, low self-weight and crack resistant makes it an excellent fabric for wider programs.

II. Literature Review

Kondraivendhan and Pradhan (2009) Studied effect of Hybrid Reinforced Fiber Reinforced Concrete confinement on conduct of concrete. The effect of different grades of concrete restricted with Hybrid Reinforced Fiber Reinforced Concrete become studied by preserving all other parameters consistent. It was observed that with the increase in compressive strength of the concrete notably improved in lower grades of concrete together with M25 which showed seventy 8% growth as compared to higher grade of concrete M55 which ended in an growth of 45.3%.

Turgay et. Al. (2010) studied the effect and failure mechanisms of massive- scale square/ rectangular columns wrapped with fiber reinforced polymer (FRP). The experimental studies application studied the performance of huge-scale square RC columns wrapped with carbon fiber reinforced polymer (CFRP) sheets. Moreover, the studies become particularly targeted at the research of the total effect of longitudinal and transverse reinforcement and FRP jackets on the behavior of concentrically loaded columns. A general of 20 huge-scale RC columns were fabricated and tested to failure below axial loading inside the structural laboratory.

Xiong et. Al. (2011) studied the weight wearing capability and ductility of round concrete columns constrained through Hybrid Reinforced Fiber Reinforced Concrete together with metal bars (FS) wherein they may be proposed to increase the compressive strength along with the ductility. Due to Hybrid Reinforced Fiber Reinforced Concrete caging in conjunction with steel bars specimens confirmed higher ductility, compressive power and energy absorbing capacity than BS or FRP strengthened round columns.

Kaish et. Al. (2012) studied the effect of Hybrid Reinforced Fiber Reinforced Concrete jacketing with a few modifications. Three kinds of Hybrid Reinforced Fiber Reinforced Concrete jacketing strategies had been used to restrict the column specimens that are; rectangular jacketing with single layer wire mesh and rounded column corners (RSL); rectangular jacketing the use of single layer twine mesh with shear keys at the centre of every face of column (SKSL) and rectangular jacketing with single layer twine mesh and two more layers mesh at each nook (SLTL) are considered for this cause. Have been evolved inside the current years, consisting of low fee dwelling buildings and strengthening of a huge variety of structural elements.

R. Hafiza, S. Sameen, T. Rahman (2015) studied the column specimens for the ultimate load capacity and stressed samples confined with Hybrid Reinforced Fiber Reinforced Concrete using welded wire mesh as the confining material.

Ornela Lalaj, Yavuz Yardım, Salih Yılmaz (2015) Stated that Hybrid Reinforced Fiber Reinforced Concrete is the oldest form of the bolstered concrete, courting back centuries. It is composed of mortar and galvanized metallic wire mesh. It is used for a extensive variety of software along with construction of boats, water tanks, slabs and roofs, and lining of tunnels. Nowadays, reinforced concrete is widely recognized and used material, whereas Hybrid Reinforced Fiber Reinforced Concrete has restrained programs. Properties inclusive of excessive power/weight ratio and right resistance to cracking and impact loadings are bringing Hybrid Reinforced Fiber Reinforced Concrete beneath the spotlight once more.

III. Conclusions

This experimental look at is done to analyze the conduct of RCC columns with distinctive of slenderness ratio and Hybrid Reinforced Fiber Reinforced Concrete confinement at the energy of the columns. Based on check outcomes, the following conclusions are acquired:

1. Hybrid Reinforced Fiber Reinforced Concrete confinement multiplied the ultimate load wearing potential of columns.
2. It is important to discover the unique regions wherein Hybrid Reinforced Fiber Reinforced Concrete confinement may be used.
3. Economically Hybrid Reinforced Fiber Reinforced Concrete approach is durable than other strategies.

Welded wire mesh.

In case of pre-stressed specimens, the outcomes showed that the confining improved the weight wearing capability to 33%. Ductility of the specimens additionally elevated. In case of careworn samples to a fee of 60% and 80% of the last load capacity, the confinement superior the remaining load capability to 28% and 15% respectively. With the confinement the column specimens failed in a ductile manner compared to brittle failure of the manage specimens.

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