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Experimental analysis on strengthening of RC member before and after rehabilitation

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ABSTRACT

In today's world affordable and mass housing plays a vital role in human development. Due to population growth, economic conditions development in building construction, a deficit in raw material leads to an increase in raw material cost. Concrete structural material that in modern times is made by post-tensioned and prestressed concrete is introduced in modern technology nowadays, In the modern world, we have constructed the R.C.C Framed structures only, for that structure can retain as Strengthening technique used as rehabilitation for the traditional building as it is as per actual strength before and after. This project we carried out for the experimental study on the strengthening of RC member before and after rehabilitation, for what extend level it can be capable to stability on maximum load and crack pattern developing in these sectional properties of structures we have to investigate and carried out the critical load and find analytically and experimentally. In this study, we can analysis of structure theoretical and practically proved by experimental study. The objective of this study is to produce concrete column and beams casting as per the high-performance concrete grade M25 to M40 as per the bonding strength by using raping material with construction chemicals. For this, cast by mould and also done Laboratory tests are conducted to study the behaviour of the column and beam subjected to critical loading. The load test results showed that the load carrying capacity for this crack paternity stability to carry the critical load for beam and column, we proved as theoretical and practically by using experimental study on the strengthening of beam and column.

Keywords— *RCC framed, RRC member, Crack paternity, Rehabilitation*

1. INTRODUCTION

The scope of this project is to analyze the structure theoretical and practically proved by experimental study. In this study, we can analysis of structure theoretical and practically proved by experimental study. The objective of this study is to produce concrete column and beams casting as per the high-performance concrete grade M25 to M40 as per the bonding strength by using raping material with construction chemicals. For this, cast by mould and also done Laboratory tests are conducted to study the behaviour of the column and beam subjected to critical loading [1-3]. The load test results showed that the load carrying capacity for this track paternity stability to carry the critical load for beam and column, we proved as theoretical and practically by using experimental study on the strengthening of RC member [6].

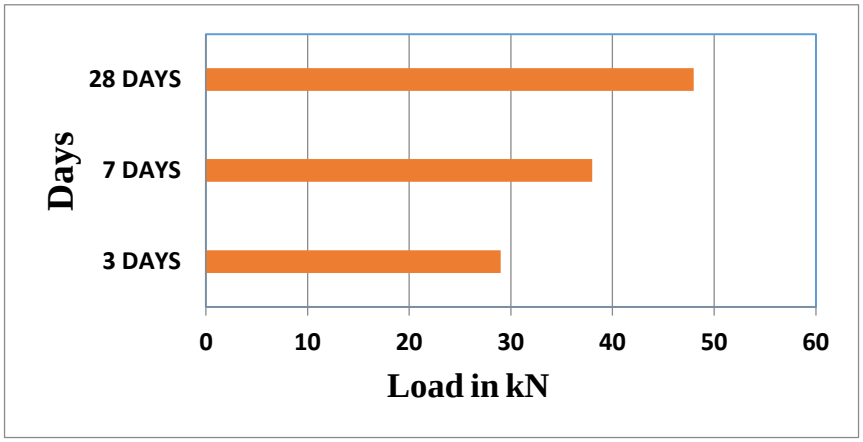

Fig. 1: load test results

In this situation when the production of traditional materials cannot be increased to match the demand for holding the price level it becomes necessary to search for substitutes without compromise on performance and durability of the material. Substitutes also help in reducing the cost thus bringing the materials at affordable rates for all sections of the society

2. EXISTING WORK

Construction activities have increased manifold, after the independence of the country in all sectors. In the housing sector alone, the activities have increased substantially but still, are not able to meet the demand of the day. Demands have increased due to the following reasons:

- RC beam (Before & After)
- RC column (Before & After)
- Loading frame setup
- Result and conclusion

Satish Nagarajaiaha, B* and Yongchao Yanga (2014), this study shows that properly exploiting the sparse essences of modal expansion and damage information could efficiently and effectively address some challenging problems in output-only modal identification and damage detection via the unsupervised blind source separation (BSS) method. Sparse ICA is first introduced to simultaneously identify both damage time instants and damage locations and then further employed to exploit the sparse nature of modal expansion to handle the problem of identification of highly damped structures. What is more, two new output-only modal identification methods are presented: the time-domain CP method and the SCA method which can handle the underdetermined problems with limited sensors. The interpretations of CP and SCA in output-only modal identification are presented, and the successful implementations are also demonstrated using both experimental and real-world structure examples. The established data-driven output-only modal identification and damage identification framework is nonparametric and enjoys efficient computation and little user involvement, which is expected to have the potential for real-time structural identification and health monitoring

Rishi Gupta (2014), this article presents the findings of a study initiated in Canada to determine the mechanical properties of rammed earth including compressive strength, bond strength, and flexural strength. The compressive strength test results indicate that strengths in excess of 15 MPa can be easily achieved at 28 days. Cored specimens indicated a much lower standard variability. Cast specimens, on the other hand, can be used to measure the compressive strength, but the high variability in test results needs to be accounted for. This study also presents some interesting findings on the pull out strength of rebar embedded vertically or horizontally in RE. Rebar with 20 mm diameter embedded vertically had the highest pull-out strength when compared to other specimens tested in this program. The other specimens that pulled out highlight the need for longer embedment length for rebar embedded in RE. Further research is needed in this area to confirm these findings including those of the flexural test results and develop models that can be used to design various

3. PROPOSED WORK

3.1 Steel Reinforcement

This involves suitable Steel reinforcement for making the beam and column, section of beam and column [5].

3.2 Moulding of Cube Concrete

International Journal of Pure and Applied Mathematics Special Issue Concrete may be moulded in any one of the following processes [11]:

(i) Hand MIX Moulding
(ii) Machine MIX Moulding

In this study, hand moulding process as adopted. Machine Mix moulding will be more suited for mass production on a large scale and also will ensure good control over the quality of Concrete[7].

3.3 Curing

After 24:

- RC Column
- RC Beam
- Loading frame setup

Fig. 2: Cube testing work progress

4. RESULT AND CONCLUSION

Fig. 3: Loading frame experimental analysis

Fig. 4: Crack investigation

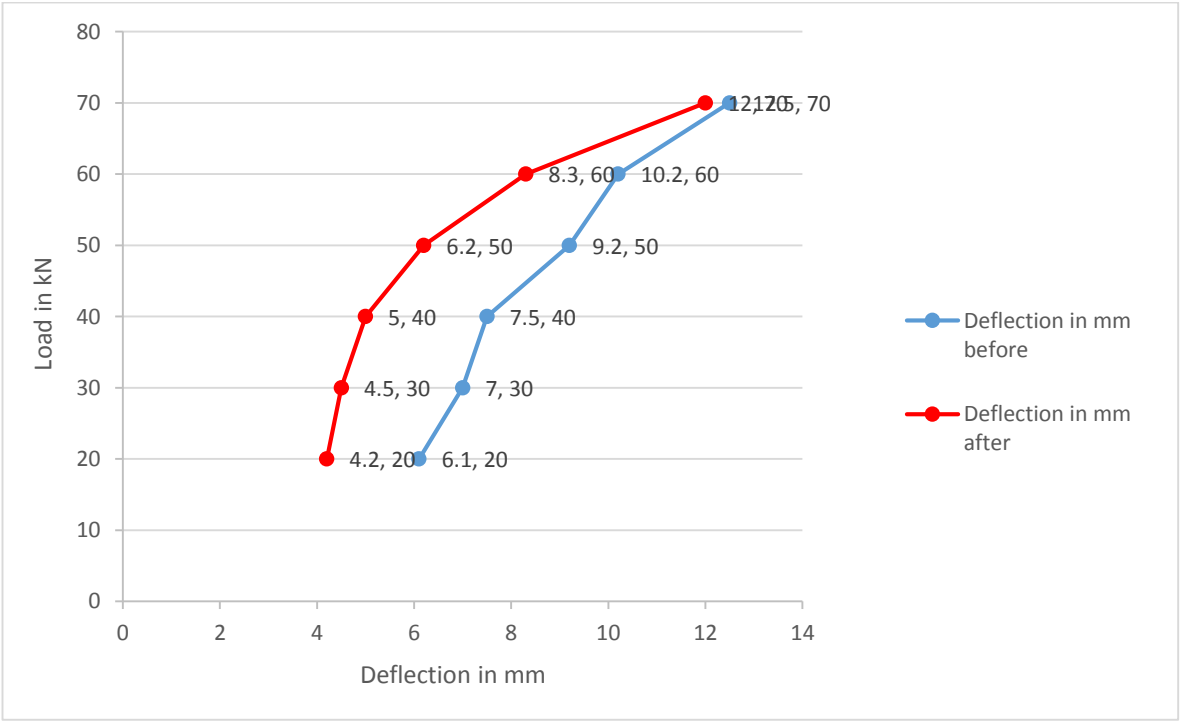

Fig. 5: Results

5. CONCLUSION

This project we carried out for the experimental study on the RC beam and column strengthening before and after, for what extend level it can by capable to stability on maximum load and crack pattern developing in these sectional properties of structures we have to investigate and carried out the critical load and find analytically and experimentally proved. In this study, we can analysis of structure theoretical and practically proved by experimental study. The objective of this study is to produce concrete column and beams casting as per the high-performance concrete grade M25 to M40 as per the bonding strength by using raping material with construction chemicals. For this, cast by mould and also done Laboratory tests are conducted to study the behaviour of the column and beam subjected to critical loading. The load test results showed that the load carrying capacity for this crack paternity stability to carry the critical load for beam and column, we proved as theoretical and practically by using experimental study on the strengthening of beam and column.

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