

Methods of Retrofitting for RCC structure

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Abstract:- The Purpose Of This Research Paper Is To Explain And To Focus On The Structure That Lacks The Necessary Strength As Per The Provided Guide Line For Earthquake Building To Resist Seismic Force. The Preliminary Idea Thought For Enhancing The Strength Of The Structure Is Based On Concepts Points;

- Flexibility Improvement
- Stiffness Improvement
- Unity And Ductility Of The Structure

This Method Of Retrofitting Suggested, Improves The Seismic Force Resistance Capacity Of Different Components Of The Building.

Keywords:- Structure, Earthquake, Strength.

I. INTRODUCTION

About 50-60% parts of the India are considered under earthquake prone zones. Approximately 4 out of 5 building structures are non-engineered and constructed of load bearing structures. Even the minor earthquakes with very low intensity are difficult to be resisted by these building structures. This results in intense loss of life and property.

Recent Nepal earthquake occur on 3rd November 2023 and a magnitude of 5.7. This impact killed 153 people and 375 were injured. This impact was felt in Delhi and northern parts of India. This scenario became a lesson for the earthquake engineers. Now a days rulers for earthquake resistant structure are strictly followed while constructing a new building structure. Unfortunately around 85 % of the buildings are constructed without following the guidelines for earthquake resistant building code IS: 1893:2002.it is practically impossible to demolish and redevelop all deficient structures.

- Aim- to suggest methods and techniques to achieve the seismic.

II. METHODOLOGY

A. Visual inspection of structure

Firstly the structure is seen by eyes and cracks and other faults are observed. Critical sections are point out which can cause damage at the time of earth quake.

B. Rebound hammer test

It is a nondestructive test carried on existing parts of building which determines the compressive strength of the building.

C. Additional Testing of Structure Material

Spray test is the major perform on the materials which are obtained from the existing building.

Table 1:- retrofitting decision criteria

Remark	% of initial strength
Retrofitting	33-70%
Rebuilding	Less than 33%
No need of retrofitting	More than 70%

III. SUGGESTED RETROFITTING TECHNIQUES

- Crack stitching:- A v groove is cut on the surface to improve the quality of crack stitching the cracked portion of the wall should be repaired by using bolts and metal wire to stitch it.
- Use of steel plate:- To improve interlocking of brick work use steel plate or angle.
- Repair of cracks

Table 2 -: Recommended procedure for cracks

Beam	Column	Slab
Flexure cracks	Horizontal cracks	Flexure cracks
Shear cracks	Diagonal cracks	Shrinkage cracks
Torsional cracks	Corrosion cracks	Corrosion cracks
Corrosion cracks		

Table 3:- Types of cracks in different structure

Crack width	Recommended procedure
<1 mm	Injection of epoxy
0.3 to 3 mm	Cement grouting
>10 mm	Reconstruction of cracked portion with high mix cement motar

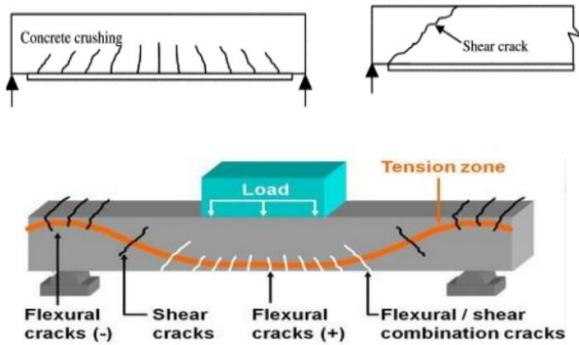


Fig 1:- Types of cracks in beam

- Reinforced concrete jacketing:- External reinforcement with concrete on both sides should be applied to increase lateral strength.

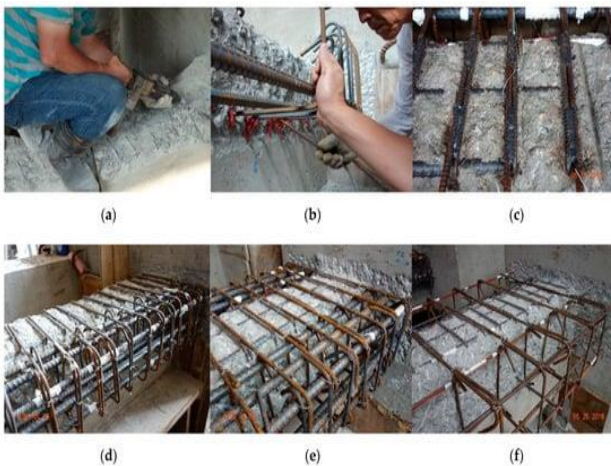


Fig 2:- Reinforced concrete jacketing

IV. CONCLUSION

The retrofitting techniques should be applied according to the required strength of the building which is stated by Indian standards to resist the seismic force.

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