



ISSN: 2395-7852



International Journal of Advanced Research in Arts, Science, Engineering & Management (IJARASEM)

Volume 11, Issue 2, March 2024



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

IMPACT FACTOR: 7.583

www.ijarasem.com | ijarasem@gmail.com | +91-9940572462 |



Study on Different Techniques of Retrofitting

Om Kamble¹, Tanvir Jamadar¹, Vedant Palsande¹, Yash Dhumal¹, Prathamesh Autade¹,
Prof. M.D Thorat², Prof. A.B Phule²

Department of Civil Engineering, Jayawantrao sawant Polytechnic College, Hadapsar, Maharashtra, India¹

Associate Professor, Department of Civil Engineering, Jayawantrao Sawant Polytechnic College, Hadapsar,
Maharashtra, India²

ABSTRACT: Now-a-days retrofitting is becoming popular around the world, as most of the important structures like historical building or some other old structures which becomes weak over the time. Retrofitting is the best method to make safe the existing structures from the future earthquake and other environmental factors. Retrofitting diminishes the helplessness of harm to a current structure amid future seismic movement. It plans to reinforce a structure to fulfill the necessities of the present codes for seismic outline. With respect to conventional repair and rehabilitation, retrofit is much better and convenient. Retrofitting helps to enhance the strength, resistivity and overall lifespan of the structure.

KEYWORDS: Retrofitting, Pushover Analysis, Concrete Jacketing, Steel Jacketing, FRP Jacketing.

I. INTRODUCTION

This project gives a glance to retrofit the structures which are in deteriorated & liable to retrofit. This project includes different techniques of retrofitting. On the behalf of these retrofitting techniques, we studied the approximate techniques which are used to retrofit the different structures. Using this study, the measures to retrofit the mosque & ESR are suggested which are the part and parcel of our case study. Along with these buildings, ESR, bridges, dams and retrofitted.

Buildings and other structures have a certain useful life, which depends on the specifications adopted. The large number of monuments, which are cherished heritage structures have stood well over a period of time. But some of these have shown signs of distress due to age aggressive natural environment/ industrial pollution etc. Further distress gets aggravated due to overloading misuse of buildings. A few buildings have also failed due to faulty design/construction. Thus, repairs and rehabilitation of buildings are of vital importance.

II. LITERATURE REVIEW

No.	Paper Title	Author Name	Key Points	Remark
1	In this paper, different jacketing methods are mentioned. Jacketing methods described for strengthening of column to improve the performance of R.C.C building.	PravinS Waghmare,	Jacketing is the most popularly used method for strengthening of building columns.	The main purpose of jacketing is to increase concrete confinement by transverse fibre reinforcement, especially for square cross-sectional column.
2	This paper has focused on strengthening the existing R.C.C building. In this paper, an old R.C.C building is strengthened to	Bhavar Dadasaheb O Dhake Pravinchandra D,OgalerameshA	A health building in the heart of Nasik city is strengthened to overcome the future disorders from the physical and experimental investigation	Address the issues concerned with evidence collection by using the techniques of virtual machine introspection.



	overcome the future disorders or inconvenience.			
3	“StructuralRetrofitting – a case study”, Municipal Corporation, Mumbai-2009.This paper describes the intensive retrofitting of an existing RCC framed structure.	A.K.singh, Dr. R.S jangid,Dr. gopal l. rai	The building is a RCC framed structure owned by a nationalized bank and is more than 30 years old. The building was examined for its current structural condition and to suggest the remedial measures.	Used to protect data confidentiality by assisting deletion of related content, where the user is presented with files that should be securely deleted together.
4	In this paper, different strengthening techniques for R.C columns are studied. Methods studied are concrete jacketing, steel jacketing, precast concrete jacketing, external pressurising and FRP wrapping.	Dr.Gopal L. Rai	Concrete jacketing involves addition of thick layer of reinforced concrete in the form of a jacket, using longitudinal reinforcement and transverse ties. Additional concrete and reinforcement contributes to strength increase.	Virtual machines that are present on a physical system or running on a portable storage device can be detected or analyzed. Use less computational power and processing time.

III.METHODOLOGY

Retrofitting means providing something with a component or feature not fitted during manufacture or adding something that it did not have when first constructed. It is often used in relation to the installation of new building systems, such as heating systems, but it might also refer to the fabric of a building, for example, retrofitting insulation or double glazing.

The process of retrofitting involves the careful balancing of different elements and their effects on the overall performance of a building. A change in one part of a building can affect another, and sometimes this is only apparent after irreversible defects have occurred. For example, Retrofitting is described as procedure of change of existing structure such as, Residential buildings, bridges, and historical buildings to make them impervious against Seismic actions like Earthquakes, volcano eruptions, and other Natural disasters.



Fig.1 Column for Curing



Fig.2 Mixing of Materials



Fig.3 Reading of Column



Fig.4 Column testing by using Rebound hammer

IV.CONCLUSION

1. In general concrete jacketing method is adopted for retrofitting of structures.
2. Retrofitting using jacketing improves the ultimate load carrying capacity of R.C.C columns.
3. Poor quality of concrete creates problems like porosity cracking and degradation; to overcome such problems retrofitting is the one of the best solution by using cement slurry with admixtures.

REFERENCES

- [1] Anshumn. S, Dipendu Bhunia, Bhavin Rmjiyani “Solution of shear wall location in Multi-storey building.” International Journal of Civil Engineering Vol. 9, No.2, 2011, Pages 493-506.
- [2] M. Asharaf, Z. A. Siddiqi, M. A. Javed, “Configuration of Multi-storey building subjected to lateral forces”. Asian Journal of Civil Engineering (Building & Housing), Vol. 9, No.5 Pages525-537.
- [3] Masonry: IS 1905: 1987, “Code of Practice for Structural Use of Unreinforced Masonry” Concrete: IS 456: 2000, “Plain and Reinforced Concrete – Code of Practice”.
- [4] Steel: IS 800 (Draft), “Indian Standard Code of Practice for General Construction in Steel”IS 1893-2002, “Criteria For Earthquake Resistant Design Of Structure”, Part- 1:general provision and buildings, Bureau Of Indian Standards, New Delhi.
- [5] CPWD HANDBOOK, 2005 6) Aggrawal P., Shrikhande M.,“ Earthquake Resistant Design Of Structure”, PHI, New Delhi, 2006.
- [6] Retrofitting: Urban Design Solutions for Redesigning Suburbs, by Richard Florida.
- [7] Seismic Retrofitting Project: Assessment of Prototype Buildings, published by TGCI.CPWD Research Paper on Retrofitting (2003).
- [8] Abdullah, A; and Takiguchi, K, “Experimental Investigation on Ferro-cement as an Alternative Material to Strengthen Reinforced Concrete” Column,” Journal of Ferro-cement, V. 30, No. 2, pp. 177-190.
- [9] Amlan, Sengupta K, Badari VT Narayanan, Asokan A, (2003), “Seismic retrofit of existing multistoried buildings in India-An overview of the method and strategies”, Workshop on retrofitting ofstructures, IIT Roorkee,pp 17-28.



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



International Journal of Advanced Research in Arts, Science, Engineering & Management (IJARASEM)

| Mobile No: +91-9940572462 | Whatsapp: +91-9940572462 | ijarasem@gmail.com |

www.ijarasem.com