




Behaviour of retrofitting in reinforced concrete structures

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Abstract

Quality is the most important factor for the success of any construction project. Some of the major factors that affects the quality of the constructions are delign, labour, materials, machineries, environmental conditions, hydrology, topography, method of construction and management system. It will affects resident's aspect of life and give a bad image of the building's parties. Detailed investigation report has made for possibilities for failure of structure in the construction and some feasible retrofitting methods which are adopted for structural elements. Constructional strengthening is a process, to boost performance or build up structural system of an existing building, under existing loads or increasing the strength of structural elements to switch to auxiliary loads. It is the system of repairing or modifying something, after it is built in construction industry. This study includes different types of retrofitting for the structure and the suitable methods of retrofitting for the structure along with that cost effective for the structure. And the process of inserting of new features to the building. This also explains about two major methods of columns retrofitting methodologies in constructions, i.e. concrete jacketing and plate bonding along with its cost analysis.

Introduction

The high urbanization rate shows intensified, increasing demand by residential and commercial building space, which has the number of construction activities. Due to its relatively labour-intensive nature, building manufacturing works provide employment opportunities for many people; skilled, semi-skilled, and unskilled. And concrete is one of the widely used construction material. It is collection of cement, fine and coarse aggregate, water, and other mineral admixtures [1], [2], [3]. And the quality of concrete is mostly affected, by the quality of artisanship and the quality of components used.(See Fig 1.)

According to pre research conducted by the Building Research Establishment (BRE), 90% of buiding failures are due to problems, in the design and construction stages. These problems include poor communication, insufficient information, inability to check information, inadequate check sand controls, lack of technical expertise and skills, and deficient feedback, reading to recurring of errors. Most defects in construction projects are due to poor workmanship, it means we can say that human foul up took place due to disappointing performance in artisanship during the raising of the building. One of the issues of this condition, is due to dull quality of workmanship, during a construction project. It will affect resident's quality of life and give a bad image of the building parties.

Enhancing the structural system is the process of structural strengthening of an existing building or facility to better performance, below existence loads or to increase the power of structural elements sustaining additional loads, it is

the practice of alter or fixing up of something, followed up by its manufacture in construction industry[4], [5], [6]. Many factors that could be contributed to problems, with the installation of concrete. The table below outlines examples of such problems. Accidental loadings, Chemical response, Construction Errors or poor workmanship, Metals embedding with corrosion, Errors in design, Corrode, thawing and freezing, movement and settlement ,Depletion, Changes in temperature and fire.

After construction and occupation, the structure system involves changes or repairing of retrofitting work, such works results in expand protection and durability of the building. Retrofitting of the RCC structural association, is to achieve out, to strengthen the worsen structural tactile or solid concrete like component [7], [8], [9], [10]. The lacking power of tactile concrete structural association, may be poor due to poor artisanship, sketch mistake, and aggression of harmful agents leads to deterioration or worsen [11].

Section snippets

Scope of the project

- In the construction of building the probable reasons which may affect the stability of the structure due to which the retrofitting for the structure needs to be increased power, overall durability, and resistivity of the structure....
- How the retrofitting will be done for the structures, different types of retrofitting and there feasibility methodologies adopted at sites to strengthen the existing structure. And its cost analysis....
- What Preventive measures could be taken during the newly construction ...

...

Possibilities for failure of structures

With the passing of time, it is seen that the structures lose the strength because of numerous motives like failure of soil, seismic activity because of earth movement etc. Then arising of problems like roof damaging, substructure or base, pillars, walls columns and shine. The structure become, statically unsafe structures and then question arises of safety and here comes the solution of retrofitting....

Points to be considered in se1ection of the retrofitting of a building

The following are the consideration to be kept in mind while selecting the approach used for retrofitting of a building:

- The strength of the structure casted....
- Accessibility on where it has to be applied...
- The magnitude of strength to be enhanced...
- Financial aspects associated with working and also maintenance....
- Time constraints...
- Work front to carry out the task....
- Factors associated with seismic....
- Factors associated with nature...

The following are the most feasible& economical method of retrofitting of a structure ...

Checklists

Check lists in construction work play a very important role towards improvement of quality. The following will provide necessary check lists on material & activity inspection which will assist the engineers.

It is therefore a very good habit for an engineer to always list out the points which he has to check before he proceeds for inspection....

Use of the checklist

The best way to use a checklist is to mentally review the things required to be inspected & note down the points. The typical checklists given below can help ...

Conclusion

Newly discovered alternative methodologies for the well improved & maintainable retro-fitting methodologies are developed. As above referred techniques used regularly. This will help in assessing & scrutinize poor workmanship on the quality of projects that included concreting works to accessible in ongoing construction sites across the study field. And the predictable issues due to which it may affect the solidity of the building, along with that how to upgrade the poor workmanship in order to...

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper....

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