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Structural Audit, Repair And Rehabilitation Of RCC Building .

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Abstract: In case of Construction Industry the life cycle of a structure can be divided by in to four important phases those are as Architectural planning ,Structural planning, Construction and Maintenance. Every structure has its own Service life itshould stand firmly on its position. But because of giving less importance to the maintenance collapsed mechanism hasincreased day by day and structure are getting collapsed before itsservice life is completed which leadsto the lose of properties and life of human beings. There for it is suggested that to overcome the failure of structure it is necessary to do the structural audit and find the lacunasin the structure also find out the root causes of faulty mechanismsto avoid future problems as well as helps to reducing the future cost of structure.

IndexTerms–Structural audit, Structural Engineering, NDT method, Structural Evaluation Program, Rehabilitation, Retrofitting, Sustainable Development, Polymers, Admixtures

INTRODUCTION

1. Structural health assessment (SHA) is defined as the process of a damage identification for aerospace, civil, and mechanical engineering infrastructure as well as non engineering structures.
2. Damage is defined as changes to the material, geometric properties, including changes to the boundary conditions and system.
3. Noting of all visible defects, deterioration and its quantification. These are marked on floor drawings from which estimate is worked out.
4. Diagnosis of damages and Suggest remedial measures.
5. Submission of the conditions survey and structural audit report, priority wise estimate for rehabilitation, condition survey drawings, photographs.
6. Necessity of nondestructive testing will be decided after inspection of structure.

LiteratureReview,

BY MOHAMMAD ISMAIL(2016)

- **Structural audit is the inspection of the building , to evaluate strength so as to improve its safety , efficiency . In this paper , audit fundamental principle of NDT method are consider in some detail with a view to establishing a define role of them in structural evaluation program.**
- **The building was investigated flat by flat for observation , external area of the building. All the defects were marked on the observation sheet with approximate repair area which formed the total data.**
- **Some of the column & beam inside the flat subjected to tapping by hammer. Looking into all aspects to the building maintenance & as per their detailed survey they suggested that the building need to be thoroughly repaired & painted in a planned manner.**

B.H. Chafekar , O.S. Kadam , K.B. Kale , S.R. Mohite , P.A. Shinde , V.P.Koyle (2014) :

- **Structural Audit**
- In this paper , they have calculated HRI & said overall structural condition of existing building under inspection is fair. In this structural audit is done on the basis of visual inspection method. This is the initial step to carry out the structural audit. By visual inspection only visual damages or defects in components of building should be observed. For detection of technical damage or defect for a particular component of building at particular place non destructive tests are necessary. By this results & compairing with standard results , get the condition of structural components. It is very useful to decide repair & maintaince method.
- Author gave suggestion that , by visual inspection HRI of structure is calculated. This is the initial stage of structural audit of buildings. To get more specific reasons for damage & defects , NDT is necessary. By these test results the strength of different components of existing old buildings can be work out.

Francesca Caronia (5) (2015)

- A synergic approach for the investigations of the historical building performances
- with reference to both the structural behavior and the energy performances for the space heating and cooling is presented. The historical masonry building “Palazzo Bosco Lucarelli ”, located in Benevento, has been chosen as case study. The structural and energy analyses are carried out in parallel, especially during the identification of the building characteristics through tests and surveys in-situ. For the structural analysis beyond examinations on materials some dynamic tests have been used for better assessing a numerical Finite Element model necessary for the verification of the structure safety. Moreover, being necessary a structural refurbishment, also an energy retrofit could be realized. A rigorous evaluation procedure - aimed to guarantee the necessary reliability of numerical predictions - is performed in order to verify the technical and economical convenience of various energy retrofit solutions.

J. Bhattacharjee (7) (2016) –

- The construction material mainly reinforced concrete is being used extensively for various types of construction projects. However, the deterioration of Reinforced Concrete structures is recognized as a major problem worldwide. Apart from requiring regular maintenance, many structures require extensive Repair, Rehabilitation &Retrofitting. Over a period of time, as these structures become older, we find in them certain degradation or deterioration with resultant distress manifested in the form of cracking, splitting, delaminating, corrosion etc. Such deteriorated structures can be rehabilitated and retrofitted by using various types of admixtures & modern repair materials. The paper brings out the present state of concrete structures & the major areas where improvement is needed during its service life stage for sustainable development & also the method of carrying out Repair, Rehabilitation &Retrofitting. This has been brought in details in the paper along with Case studies, where the Author of the paper was directly involved in planning and execution of the jobs.

A.B. Mahadik et.al.(4) (2014) –

- This paper deals to create awareness amongst the civil engineers, residents and owners of building towards the health examination of existing concrete buildings called as Structural Audit. The need of structural audit is for maintenance and repairs of existing structures whose life has exceeded the age of 30 years to avoid any mishaps and save valuable human life. The concrete is widely used as construction material being inexpensive, easy for construction, applications and because of it high strength-cost ratio. More than ever, the construction industry is concerned with improving the social, economic and environmental parameters of sustainability. In India, from 1980 onwards the infrastructure industry witnessed stepping up of public investment and growth in infrastructure industry which results in construction of new multistories concrete apartments which are now in the age of thirty plus years. There are many buildings during this period and earlier have reduced strength in due course of time because of structural deficiency, material deterioration, unexpected over loadings or physical damage. If, further use of such deteriorated structure is continued it may endanger the lives of occupants and surrounding habitation.

Conclusion,

From the consideration of all the above points we conclude that the defects of structural members are due to combined effects of carbonation, corrosion & effect of continuous drying and wetting. The result of visual survey prompt us to conclude the distress is wide spread and is an ongoing process and so needs to be stopped at this stage so as to avoid complete collapse of the structure. There for Rehabilitation of the RCC members and will constitute the following steps.

1. Periodic maintenance of structures isessential.
2. Each and every problem should be properly analyzed and then the appropriate repair methodsundertaken.
3. Primary design of the building reflects its performance in longrun.
4. Each repair technique is suitable only for the particular application for which it is meantfor.
5. Cost should not be significant planning factor in rehabilitation though it is a deciding factor.
6. Due to moisture, walls get patch off and brick walls losses its strength, so the mentioned repair works for bricks and plaster of walls is well recommended..

REFERANCE

1. https://www.irjet.net/archives/V7/i5/IRJET-V7I5391.pdf
2. https://www.ijirset.com/upload/2020/july/114_Review_IP_NC_NEW.PDF
3. https://www.researchpublish.com/papers/structural
4. https://www.ripublication.com/ijcer_spl/ijcerv5n4spl_17.pdf