Renovation and Rehabilitation of A Building: A Review

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Abstract- *Renovation has a broad meaning, one of it is making a new one out from the old. Hence following this in construction industry also the old building is reconstructed by making some changes in it. There are certain needs which leads to the destruction of old structure, and therefore in place of old structure, the new structure has been constructed by taking some of the structural changes in the old one. Hence it is known as renovation. In this structure the same method is applied, the old constructed building has been destructed to construct a new building with the help of some old structural details and construction for making it more spacious and therefore proving more comfortability. This report will mean the long-felt lead of comprehensive manual for the practitioner in the building trade specially related to renovation and rehabilitation.*

Keywords- Renovation, Structure, Rehabilitation, Construction, Reconstruction.

I. INTRODUCTION

A structure that has a roof, wall and stands more or less permanently in one place. A building is a combinatorial and geometric structure simultaneously generalizes certain aspect of flag manifolds, finite projective plans. Rehabilitation is need for today's developed society, and have a great importance in today's world. To use a old building with new features it is needed to be improved to a new condition and that result of turning old condition to new one is rehabilitation. with time, weather in terms of stability or structural indeterminacy, hence it will not be able to fulfil the purpose for which it is built. As technology is changing everyday the need of any project is to fulfill the purpose and meeting the acceptation is becoming difficult. That is why Rehabilitation is required. Renovation a process of improving a broken, damaged or outdated structure.

Renovations are typically either residential or commercial. Additionally, renovation can refer to making something new or brightening something track to life and can apply in social context.

Renovation process involves several processes: -

1. Planning
2. Designing
3. Structural Repair
4. Rebuilding
5. Finishes

1.1 NECESSITY FOR RENOVATION**: -**

The pre- existed school building which was having only ground floor and had a dome shaped roof structure, has been destructed and hence new building in same place is under construction by keeping certain things in mind. The new and renovated building now has G+3 floors i.e. Ground floor plus three more floors. The old building has been destructed due to different reasons and causes. Some of the causes of renovation of building are: -

- The need for more space to have more classrooms was the basic need for the renovation of the building.
- The pre-existed building only had one room and hence making G+3 i.e. ground floor plus three more floors will give more rooms and spaces.
- The reconstruction was also necessary because there were some kind of structural instability occurring at the site due to black cotton soil.
- For more structural stability the extra pile caps has been provided to the recent structure.
- According to the new planning, there will be ground floor in which there will be office room, stationary room, sports room, parents and teachers meeting room, etc.

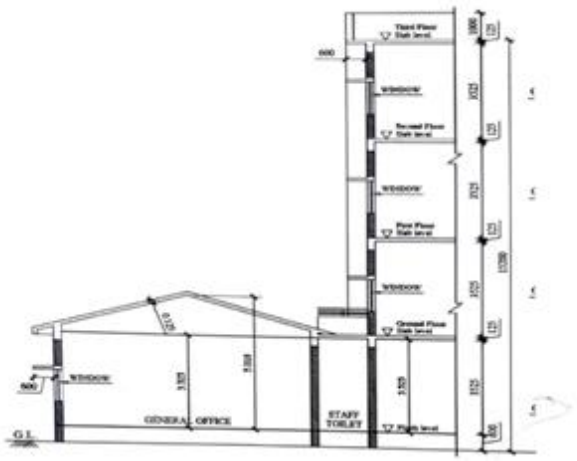


Fig-1: Sectional view of preexisted building

Fig-2: Elevational view of preexisted building

II. LITERATURE REVIEW

Earthman (2009): - Earthman outlined the entire process of school construction from its inception of need to its conclusion in orienting staff to the facilities, helped establish the framework for why and when renovation is completed.

Bhavan Avani (2013): - Structural repair and rehabilitation of 3 No (G+8) multistoried residential building at ONGC colony at chandkehda Ahmedabad Gujarat) it states that the structure start showing the signs of distress sometimes less than 10 years of service requiring early repair and rehabilitation of work.

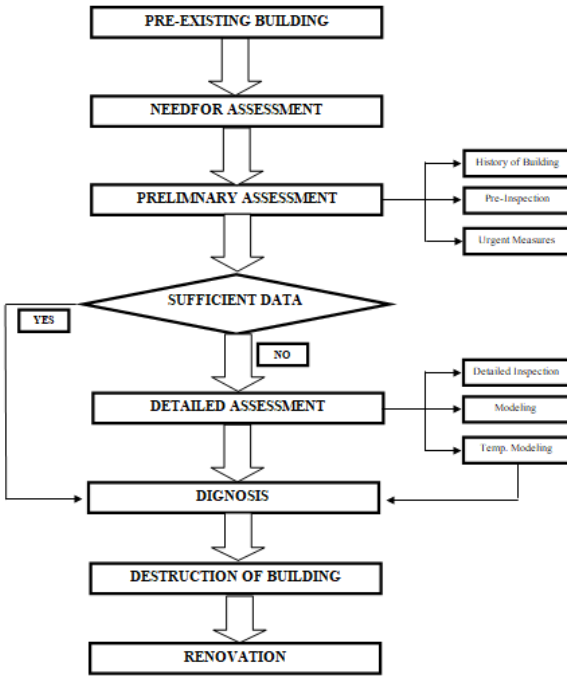
Chajlanijeetendra, Kushvaha Suresh, Hussain Aslam (2015): - Analysis of repairs and rehabilitation of RCC structures states that the Technique Develop for rehabilitation may also be used for modifying a structure to meet new functional and or other requirements.

Chan and Petrie (1998): - The Brain Learns Better in Well-Designed School Environments". The revealing points of the article were that "brain-based research is not a separate movement in education, but an approach from which all education will 12 ultimately benefit" (Chan & Petrie, 1998, p.1). The article provided analyses in the areas of school facilities specific to light, room temperature, activity areas, and classroom esthetics which provide a more conducive learning environment for students (Chan & Petrie, 1998).

Maxwell (1999): - A case study on the perspective of the facilities planners of the renovation process and how it impacts student learning, performance, attitude, and behavior. The goal of Maxwell (1999) was to research the effects of the facility before and after renovation. Maxwell confirmed in a review of literature that earlier research had only compared student performance in different settings, but not before and after improvement of a facility. Focusing on how the renovation impacted student outcomes, Maxwell (1999) was able to control for the differences in student demographics, as well as teaching styles, which created a new avenue of study for educators and the building industry.

III. METHODOLOGY

FLOW CHART:



NEED OF ASSESSMENT: - School buildings are considered to be existing buildings with significant cultural value. The need for structural rehabilitation of school buildings is, usually, motivated one or more of the following circumstances:

- The existence of visible defects in the building;

- Damage after a particular event that affects its stability (earthquake, etc.);
- The change of the use of the building for most severe conditions; and
- Requirement of the competent authority, for instance, when there is an increase in theactions (earthquake action, traffic action, etc) imposed by new codes.

PRELIMNARY ASSESSMENT: -After the preliminary inspection, and taking into account the documented information, a preliminary assessment of the situation in the building will be carried out. This preliminary assessment aims to decide about the need to continue (or not) the investigations and about the eventual need for urgent measures to be undertaken, related, namely, to the continuation of the use of the building, or to the installation of temporary supports

DETAILED ASSESSMENT: -When the available information is not sufficient to elaborate the diagnosis of the situation in the building, the preliminary assessment will be complemented by a detailed assessment of the building. This detailed assessment will include a detailed inspection, which can comprise in-situ tests, laboratory tests, field tests, assessment of the foundations and also field measurements.

PRELIMNARY ASSESSMENT: - The diagnosis of the situation in the building is the process of identifying or determining the nature and the cause of the defects in the building. The diagnosis is a very delicate task, because the available data refers to the effects (symptoms), while the causes that are their origin (or, as it usually happens, the several concomitant causes) are what need to be identified. Intuition and experience are essential components of the diagnosis.

DESTRUCTION: -After taking all the steps and knowing that the need for building destruction is must, then demolition of building is started with most of the measures. The destruction of most of the parts will take time.

RENOVATION: -Renovation contains the meaning of new in something. New building is hence started to construct in place of the existed building. As per the rule first the foundation is laid after the soil test. The construction of building will be on the basis of the design prepared and details will be done.

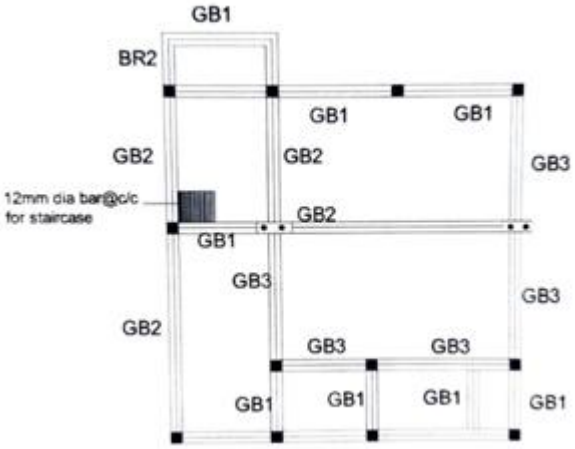


Fig-3: A plan section of beam design

Fig-4: A plan of renovated building

IV. FUTURE SCOPE

The Rehabilitation is truly challenging as it is very difficult to repair or to rehabilitate the old structure as it has been gone through sever structural damage. It really has very challenging phases such as identifying the purpose and the instability model. As there is requirement of maintenance after a certain period of time.

The structure which we are considering is also have some structural instability which leads us to take certain actions. Firstly, we had prepared a detailed assessment plan which leads us to know about the portions of the structures which can be rehabilitated by taking certain measures and some of the portions are needed to be destructed and renovation becomes a necessary part of the assessment result

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