

Evaluation and Planning of Rehabilitation of Residential Building – A Case Study

Madhuri. B. Bhosale

Student

Department of Civil Engineering

MGM's College of Engineering Kamothe, Navi Mumbai

Krupa. B. Patil

Student

Department of Civil Engineering

MGM's College of Engineering Kamothe, Navi Mumbai

Amolika. H. Gurav

Student

Department of Civil Engineering

MGM's College of Engineering Kamothe, Navi Mumbai

Siddhi. P. Deshmukh

Student

Department of Civil Engineering

MGM's College of Engineering Kamothe, Navi Mumbai

Dr. V. G. Sayagavi

Senior Professor

Department of Civil Engineering

MGM's College of Engineering Kamothe, Navi Mumbai

Abstract

Rehabilitation of any structure is essential when strength of structural element found less than the design. The aging of material of building components, environmental effects on material repeated excessive changes in pattern of stresses, bad workmanship, poor quality of material, etc. reduce the strength of the structure. If building will not gain sufficient strength and life with repair work then rehabilitation is necessary. In this project report we evaluate different structural defects in building and their causes. Then it is found that through evaluation, the building is unsafe. This is due to deterioration of structural members in building because of long age and weathering effect. So the rehabilitation of building is necessary. In this old building was demolished and planning of new residential building with G+11 have 2 PODIUM at BANDRA (WEST). In this we study the different stages in rehabilitation as well as guidelines of it. We have studied valuation and its different methods. We also studied rate analysis, quantity survey and estimation and their types. We will do valuation to see whether the rehabilitation is feasible or not. We will also work out for estimation with the help of "ESTIMATOR 2.0".

Keywords: Evaluation, Rehabilitation, Valuation, Rate Analysis

I. INTRODUCTION

A building is a structure with a roof and walls standing more or less permanently in one place, such as house or factory. Building comes in variety of sizes and shapes and functions and has been adopted throughout history for a wide number of factors, from building material available, to weather conditions, to land price, ground conditions, specific uses and aesthetic reasons. As the age of the building increases various defects causes deterioration of it. When building crosses its life span rehabilitation of it becomes necessary. Rehabilitation is the process of demolishing old structure and replaces it with new structure which gives safety and long life span to the building.

This project is concerned with the study of the concept of building rehabilitation including the schemes and the methods or techniques involved in it. Also practically, the evaluation and planning i.e. quantity survey for a building rehabilitation project is scheduled to be done. The evaluation of building is very important that can be indicated what is the worth, merit of the present structure and what will be the worth gets to the structure after rehabilitation. This evaluation is carried out according to the certain laws of valuation.

Whenever a building has been damaged to such an extent that is not possible to use visual inspection techniques alone to assess its safety an evaluation is required. This would normally be done by structural Engineering Consultant who may need to remove person of the building to the examination. Such a study would typically include detailed reconnaissance and mapping of the damage, new structural calculations and quantitative assessment of the strength of the damaged structure. It may take 1 to 7 days or more for building. It is important to reiterate that the Rapid evaluation should not be considered as part of the emergency relief activities, though it will be the main tool in making decisions for repair in the rehabilitation period. Once the attachment is made, a decision has to be taken whether to repair or whether to demolish and replace the structure. This decision is mainly based on compromise between technical possibilities and economical cost, taking into consideration future development.

The quantity survey usually carried out by the manual methods, the Long wall and Short wall method and the Center Line method, is now replaced with the technical method i.e. with software. The software helps to carry out the quantity survey in a very

less time without any tedious calculations. The private companies develop their own software to carry out the quantity survey. This project would also include the process of quantity survey with any one of variable software.

II. METHODOLOGY

A. Objectives of Rehabilitation

- 1) To preserve in good condition building and services.
- 2) When deterioration occurs due to any reason it is inevitable to restore it to its original standards.
- 3) To make improvements whenever is required.

B. Needs of Rehabilitation

The need of structural repair can arise from any of the following:

- Faulty design of structure
- Improper execution and bad workmanship
- Extreme weathering and environmental conditions.
- High degree of chemical attack
- Ageing of structure

C. Old Building Rehabilitation Procedure

1) Procedure of Rehabilitation:

- 1) Offer letter to the society
- 2) Terms and conditions with society
- 3) Agreement to society
- 4) Sanction from MCGM in favor of society.
- 5) Loading of TDR in society's name
- 6) Obtaining the IOD
- 7) Shifting of members
- 8) Demolition of building
- 9) Obtaining of CC
- 10) Construction of new building
- 11) Obtaining the OC
- 12) Shifting of old members

D. Methods of Evaluation

1) Rapid Evaluation:

This is normally the first level of evaluation and its aim is to make quick safety and usability evaluation. It is designed too quickly and with minimum of Manpower designate the apparently safe and Ansell structures. This uses less qualified and experienced inspectors and volunteers.

2) Detail Evaluation:

The second level of evaluation is used to evaluate the safety of building after the Rapid evaluation. It is designed to result in the rating of all structures as either safe for use, potentially dangerous or unsafe. It consists of throughout visual examination of the entire building inside and out particularly its structural system. Ideally detail evaluation is performed by at least two structural engineers.

3) Engineering Evaluation:

Whenever a building has been damaged to such an extent it is not possible to use visual inspection an engineering evaluation is required. This would normally be done by structural engineering consultant. The decision to conduct an engineering evaluation is the responsibility of the building owner. This the third and most thorough evaluation level. Such a study would typically include detail reconnaissance and mapping of the damage new structural calculation and quantitative assessment the damage structure. It may take 1 to 7 days for building. Once Assessment is made, decision has to be taken whether to repair or demolish and replace the structure.

E. Valuation

Valuation is the technique of estimating and determining the fair price or value of a property such as a building, a factory or other engineering structures of various types, land etc. Valuation of a building depends on the type of the building, its structure and durability, on the situation, size, shape, frontage, width of roadways, the quality of materials used in the construction and present day prices of materials. Valuation also depends on the height of the building, height of the plinth, thickness of the wall, nature of

the floor, roof, doors, windows etc. The valuation of a building is determined on working out its cost of construction at present day rate and allowing a suitable depreciation.

We are studying about rental method of valuation.

1) Rental Method of Valuation:

In this method, the net income by way of rent is found out by deducting all outgoing from the gross rent. A suitable rate of interest as prevailing in the market is assumed and Year's purchase is calculated. This net income multiplied by Year's Purchase gives the capitalized value or valuation of the property. This method is applicable only when the rent is known or probable rent is determined by enquiries.

F. Rate Analysis

The basis of arriving at a correct and reasonable rate per unit work or supply, for a particular item following its specifications and detailed survey of materials, labor, equipment etc., as required for the unit work and their prevailing rates may be called as an analysis of rate.

1) Purposes of Rate Analysis:

Main purposes of the rate analysis are the following-

- 1) To determine the current rate per unit of an item at the locality.
- 2) To examine the viability of rates offered by contractors.
- 3) To calculate the quantity of materials and labor strength required for project planning.

III. SCOPE OF WORK

Rehabilitation of building is term in which repair and alteration of any building is can be done. If the building is not given sufficient safety after repair and alteration, demolition of building have to be done. Rehabilitation is started from shifting people to another shelter to return them to their new home which is safe more than older one.

Following is the scope of work expected:

- 1) Studying about evaluation of residential building before demolition for take overview of defects in structures.
- 2) Planning for reconstruction of new residential building.
- 3) After planning of new building, estimation and valuation will be prepare.

IV. PURPOSE OF WORK

- To identify the building, study the present building condition and establish the need for rehabilitation carry out evaluation of repaired building and find out most economical, fast and feasible repair techniques for rehabilitation of residential building to carry out quantity survey for the prepared plan using the available software.
- Use ESTIMATOR 2.0 for the detailed estimation to avoid the tedious manual calculations

REFERENCES

- [1] <https://en.m.wikipedia.org/wiki/Evaluation>
- [2] <http://www.grantmackaydemolition.com/demolition-necessary/>
- [3] <https://books.google.co.in/books?id=1gvUdY1QXQoC&pg=PA41&lpg=PA41&dq=evaluation+of+building+before+demolition+and+reconstruction&source=bl&ots=Xo9c7wlprA&sig=KzA47Eom34Juwbh61KyRUXMTik0&hl=en&sa=X&ved=0ahUKEwim6bHZxZjXAhVIro8KHZl8AEEQ6AEILzAD#v=onepage&q=evaluation%20of%20building%20before%20demolition%20and%20reconstruction&f=false>
- [4] "Estimation, Costing, Specification and Valuation in Civil Engineering" by M. CHAKRABORTHY
- [5] www.redevelpmumbai.com
- [6] <https://www.scribd.com>
- [7] Re- development of co-op housing societies- guidelines maharashtrahousingandbuildinglaws.com
- [8] www.firstpost.com
- [9] www.civilprojectsonline.com