Maintenance and Repair of Existing Building

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Abstract - The review of Repair and Maintenance of Residential buildings. In the current situation of Residential buildings research, repair, and maintenance play an important role as they serve important in Residential buildings. Residential buildings and other structures have a useful life. In Residential buildings various defects are happened due to different causes e.g. in some cases defects are caused after the structure has been completed for a few years which results in a shortening of the life and strength of the structure. We have visited and studied the various defects that occurred in the "Sai Nivas" Residential building at Kharadi which is located in the district of Pune, state Maharashtra.

*Key Words***:** Repair and Maintenance, Residential building, Rebound Hammer.

1. INTRODUCTION

We have to discuss repair and maintenance problems that occur in Residential buildings and their remedial masseurs. The maintenance objective is to preserve in good condition building and services, when deterioration occurs due to any reason it is inevitable to restore it to its original standards and to make improvements whenever required. A good maintenance team has to ensure safety, efficiency, and reliability. Repair is the process of restoration of broken damages, failed devices, equipment, and repairs. Some types of repairs such as patching up defects such as cracks and falls of plaster, repairing doors, and windows, replacement of glass panes. Checking and repairing electric wire. Nowadays

Residential building has many problems with repairs and maintenance. Many different techniques for investigation and repair of the various defects are available in the market. So, we will be providing a technical system that is efficient as well as reducing the time for repair and maintenance. In Residential buildings, many problems occurred related to repair and maintenance work. If any defect suddenly occurs in the Residential building at that time requirement of labor is not fulfilled within sufficient time. To avoid this problem we have developed a new system or technology which is the "Repair and Maintenance Application." Timely maintenance and proper repair of any type of Residential building keep them safe and provide them with a pleasant and comfortable environment for work. This application is easy to use for construction site engineers or any other person for the working of repair and maintenance.

2. Aim:-

Fixing any damages or issues to prevent accidents. Ensuring the building remains in good condition for longer. Addressing small problems early can prevent costly repairs later.

3. OBJECTIVE

This Project carries objectives as follows:-
   a) To find out various defects in the structure.
   b) To identify the problem.
   c) To find out the causes of distress.
   d) To suggest some remedies for repair work.

PROBLEM STATEMENT

To identify and fix issues like structural damage, wear and tear, or functional problems to ensure the building remains safe, functional, and valuable over time.

4. METHODOLOGY
NON-DESTRUCTIVE TEST

1. Rebound Hammer Test

These tests are primarily done to assess:
1. The likely compressive strength of concrete
2. The uniformity of concrete

The harder the surface of the material tested, the greater the rebound. In new concrete, as it gains strength, hardness increases, and as a result, the readings increase. The hammer can be used in 3 orientations, Vertical up or down (typically used for slab), and horizontal (for columns). Depending on the orientation used and the age of the concrete, the results are interpreted for strength.

Procedure:

(1) Check the rebound hammer against the test anvil before the commencement of the actual test to ensure the reliability of results.

(2) Identify the testing location on the damaged or without damaged structure or parts of the structure.

(3) Identify the point of impact at least 20 mm away from the edge and mark the same with a marker.

(4) Remove the plaster and clean the target surface of concrete or masonry using a suitable technique.

(5) Keep the plunger of the rebound concrete hammer firmly and pressed against the concrete surface in the horizontal, vertical, or inclined position based on the availability of site conditions.

(6) Press the casing of the hammer so that the spring around the hammer will wind up around the plunger.

(7) Release the dashpot button or release pin so that the hammer mass attached to the guide rod will impact on the target surface.

(8) Based on the resistance offered by the surface in terms of hardness, this mass will rebound back then due to the backward movement of the attached mass, the pointer on the graduated scale will move accordingly.

(9) Measure the reading on a graduated scale by which the mass is rebound back which is referred to as Rebound Number (RN).

(10) Repeat the above steps at least five more times at the same point on the same surface with the same position to get more accurate observations by taking an average of all observations.

(11) By considering the influencing factors such as surface moisture condition, test location, test direction, etc.

(12) Find out the compressive strength of concrete against each rebound number

(13) The relation between compressive strength and rebound number was shown directly proportional

5. RESULT

Estimate of 12 mm Cement Plastering for Wall (Proportion 1:6)

78.03 M² = 0.936 M³

Add 15% For Uneven surface filling

V= 1.076M³

Add 30% for Dry Volume

V = 1.40 M³

Volume of Cement

V = 0.20 M³

1M³= 28.82 = 29 Bags

So, 0.20 M³ = 5.76 = 06 Bags

330/- Per Bag of Cement

0.20 M³

= 06 x 330 = 1980.00/-

Volume of Sand   ---V = 0.81 M³

2.83 M³ = 1 Brass

So 0.91 M³= 0.43 Brass

4500/- Per Brass of Sand

0.430 Brass = 0.430 x8500 = 3655/-

LABOUR	QUANTITY	RATE PER LABOUR	RATE
Head Mason	01	800/-	800/-
Mason	07	600/-	420/-
Mazdoor	05	400/-	2000/-
Bhisti	01	300/-	300/-
Tools & Plants	Lump Sum		500/-
Total			7800/-

Labor charges calculation for   mm Cement Plastering for   Parapet wall

Material cost = 1980 + 3655= 5635/-

Labour cost   = 7800/-

Total cost   = 13435/-

Add 1.5% Water Charges = 205/-

10% Contract Profit   = 1345/-

Total Cost of 12 MM Th. Wall Plaster = 15000/-

6. FUTURE SCOPE

So all the above work tells us that most of the old structures/buildings are repairable and we can increase lifespan by providing strength to that structure.

7. CONCLUSIONS

Rehabilitation and repair play a prime role in civil engineering structures. If proper techniques and good quality materials are used in appropriate quantity then there is minimum requirement for repairing works. It is very important to aware people aware that they should avoid adulteration in civil engineering structures, as it affects the bearing capacity of the structure. Recommendations of repair works and rehabilitation are a must for old age civil engineering structures.

8. REFERENCES

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