

Assessment of RCC Slab in Quarters type single floor residential building

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Abstract- This paper deals with assessment of NDT Test for assessment of slab in Quarters using rebound method. Rebound hammer give hardness of slab. Rebound number results will be correlated with the Schmidt hammer charts and corresponding strength in Newton per sq. mm will be obtained. Slab hardness will be determined and results based on rebound number and its corresponding compressive strength will be published in results and recommendations.

Keywords: Rebound hammer and non destructive testing.

I. INTRODUCTION

Non Destructive Techniques to access strength of concrete have gain more importance. There are various non destructive testing having their own advantages as well as limitations, while compared to conventional testing it is sure that damage is to be done on structure no matter how least it may be also more un economical. Non destructive testing when used by more than one methods on same structure gives combined results and more detailed of the present strength of structure can be presented. The testing is carried on RCC slab to determine its hardness.

II. GENERAL DETAILS OF STRUCTURE

General Information of the Building

Name of the building: 04 RB II Qtrs.

Address of the building: Burhanpur MP, India.

Number of storeys: Ground Floor Only

Description of main usage of the building: For Residential Purpose.

Type of Structure: Load Bearing Structure.

History: Building for Staff residential stay of Railway.

III. VISUAL OBSERVATION

Visual inspection was conducted on

- 1) No Cracks observed at any section of building.
- 2) Outer portion was intact with no cracks seen in any outliers.
- 3) Slab on top had waterproofing and drain provided with proper slope.
- 4) Rusting of steel reinforcement not seen in any section.

IV. TESTING BY REBOUND HAMMER

Slab tested by rebound hammer, and results are represented in table I as below. At each point testing was done six times as prescribed in IS 516 (Part 5/Sec 4):2020. Average of each reading is represented as below. Outliers in each reading were neglected if they are not more than one outlier reading at one point of testing.

Slab of each room was tested by rebound hammer and results are reported as in given table below.

Table 1 shows the rebound hammer results and average strength of each slab in each qtr. is shown as below:

| Location | | Notation | Compressive Strength N/ Sq. mm | Average Strength of Slab in N/sq.mm |
|----------|--------|----------|--------------------------------|-------------------------------------|
| Qtr. A | Room 1 | S1 | 28 | 31 |
| | | S2 | 35 | |
| | | S3 | 30 | |
| | | S4 | 32 | |
| | | S5 | 30 | |

| Location | | Notation | Compressive Strength N/ Sq. mm | Average Strength of Slab in N/sq.mm |
|----------|--------|----------|--------------------------------|-------------------------------------|
| | Room 2 | S6 | 28 | 28.8 |
| | | S7 | 26 | |
| | | S8 | 32 | |
| | | S9 | 30 | |
| | | S10 | 28 | |
| Qtr. B | Room 3 | S11 | 28 | 28 |
| | | S12 | 32 | |
| | | S13 | 24 | |
| | | S14 | 30 | |
| | | S15 | 26 | |
| | Room 4 | S16 | 30 | 27.6 |
| | | S17 | 26 | |
| | | S18 | 28 | |
| | | S19 | 28 | |
| | | S20 | 26 | |
| Qtr. C | Room 5 | S21 | 26 | 26.8 |
| | | S22 | 26 | |
| | | S23 | 28 | |
| | | S24 | 28 | |
| | | S25 | 26 | |
| | Room 6 | S26 | 28 | 27.6 |
| | | S27 | 30 | |
| | | S28 | 28 | |
| | | S29 | 26 | |
| | | S30 | 26 | |
| Qtr. D | Room 7 | S31 | 30 | 28.8 |
| | | S32 | 26 | |
| | | S33 | 28 | |
| | | S34 | 32 | |
| | | S35 | 28 | |
| | Room 8 | S36 | 30 | 28.4 |
| | | S37 | 28 | |
| | | S38 | 26 | |
| | | S39 | 28 | |
| | | S40 | 30 | |

- Note:
1. In above table as highlighted and underlined are very low strength measured.
 2. Reading is Below 12 N/mm² in above table are even below measurable limits of rebound hammer.
 3. Most of the readings are too low and much variance in strength which is not acceptable.
no visible damages seen.

V. CONCLUSION

The above data shows that as per rebound hammer test at about four locations in each room that construction recently constructed was having good strength. Quality of construction work seems appropriate with

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