

Assessment Of Old Frame Structure Building By Rebound Hammer

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Abstract- During the construction of concrete structures, it is often useful to know compressive strength at without changing its integrity. In this paper rebound hammer testing is done on old structure to determine its integrity and assess the compressive strength. The structure is assessed by rebound hammer non destructive testing and physical visual observations.

At each important structure as slab, beam, column, chhajja and masonry works rebound hammer compressive strength is determined and results are obtained it was found that building is having variable strength and not fit for further usage. This was conveniently done without further harming and disturbing the existing structure(non destructive testing, rebound hammer)

I. INTRODUCTION

Schmidt's Rebound hammer test is design to test structure without causing any physical damage. It gives reasonable fair idea about the existing structure. Hence this test was selected for old structure at Jalgaon region in Maharashtra. NDT refers to the assessment or evaluation and inspection process of materials or components for characterization or finding defects and flaws in comparison with some standards without altering the original attributes or harming the object being tested. was done at site and structures as Slab, Beam, Column etc.

II. BASIS DATA FOR STRUCTURAL ASSESSMENT OF BUILDING

- Name of the building: Laksha Semi Commercial Building Bhusawal.
- Address of the building: District Jalgaon, Maharashtra.
- Number of storeys: G+1 (Ground and First Floor).
- Description of main usage of the building: Semi commercial structure.
- Type of Structure: RCC Frame Structure.
- History: Building is used for shops and residence for one neutral family at some part of First floor.

- Dates of inspection: 06-06-2021
- Description of the structural forms: At present Footing, Column, Beam, Slab, walls and Staircase of Ground and First Floor has been constructed on Site
- Foundation system: RCC

III. OBSERVATIONS FOR STRUCTURAL ASSESSMENT OF BUILDING

Critical observations observed is as given below

A. TERRACE FLOOR

- Reinforcement is visible at some places of slab.
- Terrace slab IPS is eroded.
- Cracks are formed on beams (inverted) more than 5mm wide.
- Falling slab plaster at bottom also strength reduced.
- Structural cracks observed on walls and beams of staircase units.
- Staircase waist slabs is damaged at various sections.
- Slab is showing varying strength and at parapet level minors cracks are formed so strength are less as tested.
- Headroom is damaged with major cracks at various places.

B. FIRST FLOOR

- Strength of Beam is low, at various places.
- Average strength of slab is low.
- Strength of end columns is weakest.
- In walls minors cracks are formed

C. GROUND FLOOR

- Strength of intermediate columns is low, at various places.
- All lintel and chhajja reinforcement are exposed.
- Strength of end columns is weakest.
- In walls minors cracks are formed.

Table 1 Compressive Strength of parapet wall.

Parapet Wall (Terrace Floor)		
Structure notation	Compressive strength in N/ sq. mm	Remark
P1	10	
P2	12	
P3	14	
P4	14	
P5	0	Below Measurable
P6	18	
P7	18	
P8	0	Below Measurable
P9	0	Below Measurable
P10	0	Below Measurable

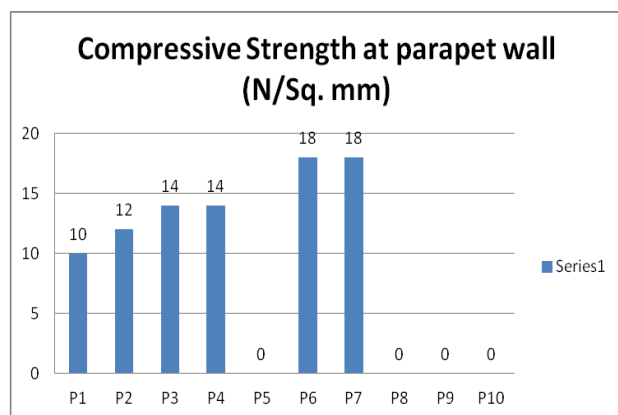


Chart 1 Compressive Strength of parapet wall.

Table 2 Compressive Strength of various sections

Structure notation	Compressive strength in N/ sq. mm	Remark
GF-C1	0	Below Measurable
GF-C2	0	Below Measurable
GF-C3	0	Below Measurable
GF-C4	20	
GF-C5	16	
FF C1	0	
FF C2	16	
FF C3	12	
FF C4	12	
FF C5	12	
GF B1	0	Below Measurable
GF B2	0	Below Measurable
GF B3	0	Below Measurable
GF B4	16	
FF B5	12	
FF B6	18	
FF B7	18	

IV. CONCLUSION

The existing RCC Building is assessed by NDT test for evaluation of strength from terrace floor to ground floor base, consist of all RCC and masonry elements RCC slabs. The strength in building element are varying at varous level. It is not measurable or zero at many places as marked and shown

in different color. In end columns and beams major structural cracks are observed with low strength overall stability is observed low and not recommended for future usage.

V. ACKNOWLEDGEMENT

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