STRUCTURAL STABILITY REPORT
AS PER LATEST BIS SIESMIC CODES

OF

JAIN BHARTI MODEL SCHOOL
E - BLOCK, SECTOR - 16, ROHINI
NEW DELHI - 110085

BY

USING NON-DESTRUCTIVE
TESTING AND MANUAL TECHNIQUE

H.O.S.
JAIN BHARTI MODEL SCHOOL
(Recognised)
E-Block, Sector-16, Rohini, Delhi-85

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PERIOD OF INSPECTION: May-June 2024

REPORT FOR: Jain Bharti Model School, E – Block, Sector 16, Rohini, Delhi 110085

PURPOSE: Structural Condition Assessment of the building

NAME OF TESTING LAB :

ENKAY TEST HOUSE (NABL Approved)

Mangol Puri, Delhi

NAME of Structural / Chartered Engineers :

1. Er. S.C. Gupta (MCD Structural Engineer- SE/0624)
2. Er. Ramashray Yadav (Civil Engineer)
3. Er. Anil Kumar (Chartered Engineer)

Tests Performed:

1. Rebound Hammer
2. USPV Machine
3. Ferro Scan
4. Mortar Analysis
5. Carbonation test
6. pH Meter
7. Chloride
8. Half Cell Potential

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FINAL IMPRESSION			
S. No	Name of The Test / Scope	Limitation	Observation
1.	Rebound Hammer Test	Rebound Hammer (IS 13311 (Part-2)-1992.): - Surface Hardness indices should be evaluated as per given: Concrete Quality: Average rebound number above 40 — Very good layer, Between 30 to 40 — Good layer, Between 20 to 30 — Fair, less than 20 — Poor, Less than 10— Delaminated	Estimated strength is based on correlation graph between Core strength v/s corresponding rebound hammers values. Statistical data shows that dominating percentage of strength of concrete is > 20N/ mm2 for all types of RCC sections. Concrete surfaces are not suffering from surface hardness problem and there are no indications of blistering of concrete surface as per IS 13311(Part-2)-1992.
2.	USPV Test	Above 4.5 Excellent; 3.5-4.5 Good; 3.0-3.5 Medium; Below 3.0 Doubtful concrete quality grading IS 13311 (Part-1)-1992.	Overall concrete (used in construction) was sound and well compacted. There is no indication of air-pockets and voids as significant from USPV test results as per IS: 13311 part 1. Statistical data says that concrete is close to each other in its quality; and there is homogeneity in its density i.e. overall concrete has non variable density pattern. There is no need of injection grouting or density improvement techniques to strengthen the existing structure, except at some columns which are shown in NDT test result section.
3.	Core Cutting Test	IS 516-1959	Eq. cube strength of concrete: 18.03 N/mm2

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General Features of the Building

2. The Management Committee made available all relevant records including approved layout / maps / Drawings of the Jain Bharti Model School. The Jain Bharti Model School consists of 3 blocks and are of uniform size and design, as per the detailed given below:

Block – A:
This is the main building block of the school, named as Block-A, made by RCC framed structure. The building is having Ground floor, first floor, second and third floor.

Block – B :
This is the primary section building of the school, made by RCC framed structure, having basement, ground floor and first floor and second floor.

Block – C :
In this building area, it is having Stage and Library, Computer lab. This building block is having Ground floor only.

The regular maintenance is going on in the school, i.e. plastering of walls, flooring, and toilet are found under renovations.

3. Approach to structural audit of the buildings is of two parts:
(A) Associated Non RCC structure of buildings and
(B) RCC structure of buildings.

(A) Associated Non RCC Structure of Buildings

4. In the exercise of structural audit of buildings, non-RCC structures such as Fire System, Sewage Discharge System, Water Supply Pipeline System, etc. do have important role for living condition of occupants. For example, if the sewage discharge system is frequently blocked, it will lead to seepage and will affect adversely the structural strength of the building. Similarly, over flowing of drinking water from the tank do adversely affect the roof slab and subsequently the beam, column and walls affecting the structural strength. In view of this, we have also devoted sometime to see through the policy and approach adopted by the Management to attend to these non RCC structural system of management.

Concrete strength and quality was determined with the help of NDT test like Rebound hammer and Ultrasound pulse velocity test.

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1. INTRODUCTION

The **Jain Bharti Model School**, at E – Block, Sec - 16, Rohini Delhi under **Sky Land Educational Society**, Delhi. is a School / Educational category building. They have received a public notice from MCD which pertains to conducting a comprehensive Structural Safety Audit of this structure in terms of Structural health and safety with respect to age and also from Earth quakes. We were appointed to conduct this Audit by the Society and the report is detailing our findings. The current document concentrates upon the stability of the structure,the deteriorations and distress signals observed and the technical data from analysis and testing of the structure over the period of 30 days. This document does not go into the detailsfor the rectification of such defects but concentrates on the observations alone.

Location of Project:
Rohini, Delhi

1.2. Brief Description:

In accordance with the provisions of notification dated 24.04.2019 & 10.02.2020 of GNCTD issued in compliance of the directions of Hon'able High Court of Delhi, the MCD had issued a Notice to Jain Bharti Model School; requiring that the owners of all buildings having height 15 meters or above for which the sanction of building was accorded prior to 20.03.2001, will have to get the Structural Safety Audit done within a period of six months. The Management Committee of The Jain Bharti Model School had awarded the job of conducting the structural audit of Society's building to us. Accordingly, an inspection was carried out to check the structural stability of complex of The Jain Bharti Model School, a Inspection was carried out to ascertain the structural strength/stability of the buildings based on visual examination and carrying out suitable Non Destructive Tests (NDT). The inspection of the buildings as specified in their RFP letter was carried out during the period 31st May2024 to 4th June, 2024.

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condition, its robustness, the structural integrity and finally the strength of the columns, beams and slabs and taking all into account, come to conclusion as to whether the strength of the buildings fall into category of Fair, Good and Excellent. It may be pertinent to mention here that while I have kept in view the IS15983 (2013) entitled Seismic Evaluation and Strengthening of Existing Reinforced Concrete Building – Guidelines, while evaluating the buildings under consideration.
The following observations are specific:-

Block No. A,B,C

- RCC columns, beams, slabs in stilt have adequate strength as per the design criteria prevalent at the time of construction.
- Supporting brickwork is in satisfactory condition.
- All floors have been thoroughly inspected and there is no sign of distress in any floor.
- Building structure is in plumb and there is no observable distortion of any kind.
- RCC columns, beams, slabs and supporting brickwork is in satisfactory condition except as indicated in conclusion.
- Most of the columns in stilt area have adequate column width as from current seismic safety consideration.

Overall conclusion -

(i) The overall condition of building seems satisfactory, as per the age and prevalent construction codes followed of that time of construction, however, the required improvements & deficiency management have been explained at length to the Management Committee of the School and they have assured to do the needful improvements /deficiency removals / Maintenance and repairs.

(ii) The Management Committee of the school is henceforth responsible for further necessary action and proper maintenance of the school, as explained / required for further necessary actions. Structural Audit should be done at-least once in three years.

I, undersigned is a Senior Structural Engineer and empanelled with MCD. I have the requisite experience spanning over 30 years and worked as Project consultant in esteemed organizations.

The report is submitted.

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