

STRUCTURE AUDIT REPORT

Of

BUILDING

**Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara**

DATE: 06/04/2023



INTRODUCTION/BASIC DATA

CLIENT: - Karmaveer Bhaurao Patil College of Engineering, Satara

1. TYPE OF STRUCTURE : R.C.C.FRAMED STRUCTURE
2. CONSTRUCTION HISTORY ARCHITECT/DEVELOPER : Gr Floor around as informed
First & Second floor around 1989
3. YEAR OF CONSTRUCTION : 1989
4. MODE OF USE ORIGINAL USE : Educational
5. MAJOR REPAIR WORKS CARRIED OUT TILL TODAY : ---
6. MAJOR DISTRESS SIGNS OR Complaints : Not seen
7. AVAILABILITY OF DRAWINGS : Architectural plan of Building
8. REPAIR HISTORY : Not Known

9. As per MCGM guideline structural audit is mandatory at every three year for a Structure which is more than 30 years old.



CONDITION SURVEY REPORT ON THE INSPECTION OF BUILDING

INTRODUCTION :

Under the instructions from the one of the Pricncipal, Karmaveer Bhaurao Patil College of Engineering Satara, M/s. were invited to submit their proposal to survey the said building under reference to understand the scope of our work, principles and procedures of investigation during Structural survey. Subsequently the tenant appointed us as consulting engineers for survey for the above said building under reference. A visual survey of the flat which were open for inspection inside of premises and outside was conducted by Mrs. Aparna V. Phalake & Mr. Abhay B. Shelar.

PURPOSE :

The purpose of the inspection was to examine the external and internal condition of the building, assess the condition of RCC member's viz. columns, beams, and slabs and submit a civil & structural survey report for assessment of the same.

METHODOLOGY :-

Following methodology has been adopted during the health study of Building.

- To carry out visual inspection of whole structure and collect details of each structural member in terms of dimensions, type, distress observed.

VISUAL SURVEY :-

The entire building from outside and flats whichever were open and allowed for inspection from inside was inspected. The visual inspection was carried out followed by light tapping wherever required in wall members. Further Non Destructive Tests were carried out on RCC members and details are mentioned in this report.

Further Non Destructive Tests like Rebound Hammer, Ultrasonic Pulse Velocity Test, Carbonation Test, Half Cell potential tests, Cover meter test, Core test, Aggregate cement ratio test, Chemical analysis test Chloride and Sulphide were carried out at certain locations on RCC members



OBSERVATIONS :

The said building under reference is a R.C.C framed structure Ground +2 upper about 34 years old as informed by

Our observations after visual inspection are as under:-

1. External plaster has developed cracks at some places. The plaster appears to have debonded at places because of ageing and temperature stresses. Through this cracks the rain water seeps the internal face of walls imparting dampness to the walls inside of the rooms and giving water marks on painted surfaces. Because of the dampness the paint also becomes loose.
2. In Chemistry Lab faculty room where reinforcement is exposed in slab/ceiling. There are cracks in ceiling and loose plaster shows signs of deterioration and debonding from parent concrete.
3. Water Leakages & dampness in walls observed in many classroom and laboratory due to seepage from outside during monsoon.
4. The some of chajjas have cracked and likely to fall any moment because the reinforcement inside is corroded and concrete has spalled off at places.
5. The slab below water tank in front library which is not mentioned in architectural plan but in exist has severe damage such as spalling of concrete and steel getting corroded which is in very bad condition and has to be repaired immediately.
6. At some places vegetation is occurred need to be removed to avoid future distress in the concrete.





Vegetation Observed to parapet wall at open space in front of Library



Major Repairs work required for cantilever slab below water tank in front of Library





Major leakages has been observed on second floor at Chemistry lab where contact between slab and beam has been lost



Leakages observed in many classroom at second floor



REMEDIAL MEASURES FOR REPAIRS :-

1. For repairs to RCC members under distress like beams, slabs, columns, chajjas from inside and outside, we recommend the following :
 - a. Remove all the loose rust of reinforcement by hammering and cleaning the rusted surface by stiff wire brush.
 - b. Remove the residual rust by applying rust remover with cotton waste swab. Allow the solution to remain for at least 24 hrs. and then brush off the loose particles of any by means of the brush .
 - c. Apply rust passivator in two coats to reinforcement which acts as rust preventor in intervals of 4 hrs. Between 2 coats.
 - d. Apply Polymer Modified mortar in 1:5:15 and make up the cover concrete to RCC member and cured for min. 3 days.
 - e. If after the corrosion the existing reinforcement is in adequate then the new reinforcement by the side of old reinforcement be provided and the jacketing of the column has to be done as per the advice of the R.C.C. consultant. The wall beside some of the columns may be required to be broken for working space depending on site condition
2. In case if there is more honey combing or voids in concrete after the removal of plaster then injection grouting by plain cement slurry with polymer if required will have to be done at places.
3. After the repairs to the R.C.C. members, the surface be internally and externally replastered and painted as per the requirement.



CONCLUSION :-

PRESENTLY THE CONDITION OF RCC MEMBERS FROM OUTSIDE AND THE INSIDE OF THE CLASSROOM AND LABORATORY WHICH ARE SURVEYED WHICH IN OUR OPINION CAN PRESENTLY BE CONSIDERED AS GOOD. CERTAIN PORTION OF THE BUILDING NEEDS TO BE REPAIRED. ALL RCC MEMBERS MARKED IN OUR REPORT TO BE REPAIRED ON TOP PRIORITY ON WAR FOOTING WITHIN 30 DAYS OF SUBMISSION OF REPORT. LIST OF TOP PRIORITY MEMBERS ARE MARKED SEPERATELY IN THIS REPORT.

IN OUR OPINION THE BUILDING UNDER REFERENCE CAN BE REPAIRED WITH PROPER METHODS AS SUGGESTED UNDER THE GUIDANCE OF AN EXPERT STRUCTURAL ENGINEER WITH PROPER PERMISSION FROM ALL CONCERED STATUTORY AUTHORITIES.

MAJORITY OF THE BUILDING IS SUPPORTED ON BEAM AND COLUMN WHICH IN OUR OPINION SHOW NO SIGNS OF DISTRESS IN RCC MEMERS, EXTERNAL PLASTER AS ON THE DATE OF SURVEY.

The above suggested repairs are ulmost necessary to enhance the life span of the existing building.

Also the leakages through the walls have to be stopped to prevent further deterioration.

The estimated cost of strengthening and repairs to the building as per the detail description in Annexure – A is about Rs. plus GST which is based on prevailing market rate of labour and material in that area.



PROFORMA 'B'

Subject : Structural assessment report of BUILDING

Date :24/03/2023

	Subject	STRUCTURAL AUDIT Report
	Name of Consultant	
1	Name of Bldg.	K. B. P. College of Engineering Satara
2	CTS No./Ward	
3	No of storeys	2
4	Year of construction	1989
5	Mode of Use	EDUCATIONAL
6	Mode of construction of existing building	
	i) Foundation	RCC
	ii) Floors	RCC
	iii) Walls	BRICK WALLS
	iv) Beams	RCC
	v) Columns	RCC
	vi) Roof	RCC
7	History of repairs done year wise (a) Slab recasting (b) Column Jacketing (c) Structural Repairs (d) Tenantable repairs (e) Roof /Waterproofing (f) Plumbing (g) Addition/Alterations if any	Not Known
8	Date of Inspection by Consultant	21/03/2023
9	Condition of	
	i. Internal Plaster	Good
	ii. External Plaster	Good
	iii. Plumbing	Good
	iv. Drainage Lines/Chambers	Good



10	Observations	
	a) Doors and windows don't close	Yes doesn't close at places
	b) Columns and beams steel exposed	No
	c) Settlement uneven flooring gaps between skirting and floor	No
	d) Foundation settlement	No
	e) Deflections/sagging	No
	f) Major cracks in columns/beams	No
	g) Seepages/Leakages	Yes from balcony tops and parapet junction,
	h) Staircase areas	No
	i) Lift walls	-
	j) U.G. Tank	-
	k) OHT/Column condition	-
	l) Parapet walls at terrace	No Reapirs required
	m) Chajjas	Needs repairs urgently
	n) Common areas	No Reapirs required
	o) Toilet blocks	No Reapirs required
	p) Terrace waterproofing	Needs repairs
12	Test carried out on structure	
	NDT Ultrasonic Pulse Velocity	Ave. 3.8Km/s
	Rebound Hammer test	Ave. 12.5 MPa
	Core test	Ave. 14 M Pa.
13	Distress mapping plan and photographs	Attached with this report
14	Description of repairs to be done	
	i) Column Jacketing	Not required



	iii) Structural repairs	Repairs required at faculty room of Chemistry Lab
	v) Chajja/ Drop pardi recasting	No
15	Conclusions of Consultant	
A	Whether structure is livable/or whether it is to be evacuated/pulled down	YES, STRUCTURE IS LIVABLE
B	Whether structure requires tenantable repairs/Major Structural repairs & its time frame	NO
C	Whether structure can be allowed to occupy during course of repairs	YES
D	Nature/Methodology of repairs	RCC MEMBERS TO BE REPAIRED BY HIGH STRENGTH POLYMER MODIFIED MORTAR WHEREVER REQUIRED ON TOP PRIORITY
E	Whether structure requires immediate propping. If so, its propping plan/methodology given?	NO
F	Whether other immediate safety measures required-What is specific recommendation?	REPAIRS TO BE CARRIED OUT TO RCC MEMBERS IDENTIFIED IN THIS REPORT FOR TOP PRORITY
G	Enhancement in life of structure after repairs/frequency of repairs required in extended life period	10 TO 15 YEARS SUBJECT TO PROPER MAINTENANCE



H	Projected repair cost/sq.ft	RCC repair cost approx. per sq.ft
I	Projected reconstruction cost /sq.ft	per sq.ft
J	Specific remarks, whether building needs to be vacated/demolished/repairable	No
K	Whether structure in extremely critical condition	No
16	Critical Observation	NIL
17	Classification of Building	Old Building - No eviction needs minor repaironly

Old Building	No eviction, only structural repairs only
New Building	No eviction needs no repairs

A. V. Phalake

Mrs. A. V. Phalake
M.E. Structure



Shelar

Mr. A. B. Shelar
M.E. Structure
Head of the Department of
Civil Engineering

[Signature]

PRINCIPAL
K. B. P. COLLEGE OF ENGINEERING
SATARA.