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PROJECT : ICICI BANK ICMC, JODHPUR

CLIENT : ICICI BANK LTD.

AUDIT REPORT

PART 1

REF. RCCPL - ICICI BANK ICMC, JODHPUR / ICMC JODHPUR, 7th PAL ROAD, SARDAR PURA, JODHPUR - 342003 / AR - 038

DATE - 2024-08-20

PROJECT: ICICI BANK ICMC, JODHPUR

CLIENT: ICICI BANK LTD.

While visiting the site 'ICMC JODHPUR' we observed a lot of points on various aspects as listed in the attached observation sheet in detail and submitted herewith our views/opinion in brief & in elaborated form with visual aids (wherever, necessary) to M/S ICICI Bank Ltd, for their needful. We feel that this report will help ICICI BANK to take necessary Corrective/Preventive measures in time & wherever required to take appropriate decisions on the relocation / remodeling, or necessary rectification works, etc.

Most of the observation points are on seepages, cracks, bad workmanship & ignorance in construction sequences & processes. Basic construction norms are not followed.

This is an old building RCC frame structure with configuration with ground floor + basement situated in the city heart & occupied by the ICICI Bank around 18 years back as per bank records (details given by ICMC).

BUILDING TITLE: **RENTED***

MAJOR OBSERVATIONS & ANALYSIS:

1. It is observed that most of the problems are quality related issues, construction work was not done correctly, there was no proper technical supervision, so the quality, construction sequences and the basic construction norms are not followed. And this is causing the bank recurring exepenses on maintenance in spite of spending the money as per vendor rates. It seems the work is executed at the mercy of the unskilled labours of bank vendors.
2. As built drawings are not available for the buildings at almost all the locations of audit conducted & because of this bank is spending lot of money on the different tests & analysis work.
3. The building functional floor level inside the premises is on higher side by almost a difference of approximately 5'-6' from level of road out side. So seems to be in safer side from flooding conditions point of view. But since the vault room is in basement, so there are likely hood of water entry from weaker points, if water logging is caused on the road for a longer period.
4. Tests on floor were conducted/done as desired by ICICI Bank. But the test results are not encouraging nor the concrete quality is consistent.
5. Leakage/seepage incidences are observed at few places due to the poor construction/installation quality. Technically correct supervision perhaps not done at the time of construction/installation. The regular cleaning and house keeping is not done at few points. Trees were observed growing near the building wall/chamber on plinth protection and that is causing seepages inside.
6. The entire outer wall & inner wall surface of the vault room in basement was observed OK on physical/visual inspection. But on the inspection of prepared surface (exposed surface for conducting tests after removal of plaster) exposed steel rods & porosity in concrete was observed in the vault room concrete wall. This is most likely due to poor or no technical supervision at the time of construction and caused the voids, cracks, seggregation & other problems like inproper compaction etc. at the time of construction & offcourse affecting the strength of the concrete wall. And test results are also not satisfactory.
7. Tile flooring was observed in the vault room & other heavy duty areas. Perhaps the type of flooring adopted for these areas was not as correct as needed. For heavy duty normally the industrial flooring (Ironite Flooring/Trimix Flooring/Kota Stone/Heavy duty Tile flooring) is considered. So that damages are minimised.
8. In the walls & ceilings at some placaes huge seepages were observed due to water leakages/seepages from other side water sources. And in result the cement plaster is getting spoiled/damaged. Some part of interior work was also observed getting affected.

9. At ground floor office, processing & staff area & corridor the grid ceiling was observed badly affected due to seepages. These seepages were observed leakages from AC drainage pipes & condensed water from copper piping's inadequate/poor thhermal insulation.

10. **'NDT Hammer'** Tests & **'USPV'** Tests were conducted on the vault room walls, column & beam for in total 5 locations & on flooring for total 2 locations. Normally these tests are conducted to know the quality of concrete and on new/base/fresh concrete surfaces. But here the vault room concrete walls are cement plastered from both side and the concrete surface had to be prepared removing the cement plaster. However, in this way prepared surface does not come as smoothly as desired for the tests some times, so results are likely to be affected.

11. Test Results of **'NDT Hammer'** test are not uniform. The variation is observed from **'2.623 N/sq mm to 26.407 N/sq mm'**.This indicates the **'QUALITY OF CONCRETE IS NOT CONSISTENT'**. At some places it is **'OK'** while at other places it is **'DOUBTFUL/BELOW AVERAGE'** also. This may be due to presence of **'CRACKS, VOIDS & IMPERFECTIONS'** in the concrete and this is most likely due to poor workmenship at the time of casting this concrete. It may be due to improper & inadequate compaction of concrete, improper/inadequate proportion of constituents of concrete. All these **flaws or lackings** are normally observed caused due to **inadequate technical supervision** and when construction sequences are not followed.

12. Test results of **'Ultrasonic Pulse Velocity Test'** are also not uniform & variation is observed from **'0.556 KM/S to 4.765 KM/S'**. This indicates concrete is **'GOOD'** at some places, while **'DOUBTFULL'** at other/maximum places as per the results & may be haveing few **internal flaws** or **segregation** at the location caused by poor workmenship at the time of casting of this concrete or there could be micro cracks as well. All these flaws or lackings are normally observed caused due to **inadequate technical supervision** and construction sequences & processes are not followed.

13. In all the toilet areas the tile flooring is not provided with **'EPOXY GROUTING'** with the spacer joints so the water seepages through the tiling joints are suspected travelling below the floor & likely to cause seepages at above skirting areas in other areas in coming time.

14. In the pantry areas tiling work was observed of inferior quality. Tiling Dado was giving hollow sound that means the bonding with masonry could not be maintained at the time of installation.

15. It was observed that above the grid ceiling the AC drainage pipes & thermal insulations on copper piping was not planned/done correctly/properly. Which is causing water leakages from drain pipes & condensed water from poor quality thermal insulation of copper piping and spoiling the grid ceiling badly.

16. At some locations as per the observation point the cabling work was observed done poorly, this may cause some time interruption in business working.

LIMITATIONS OF THE TESTS (NDT REBOUND HAMMER & USPV):

1. Observations & analysis on ICICI Bank desired NDT Hammer & USPV tests are liImited to the test locations ONLY. Because the consistency of the quality of concreting may vary from location to location in the entire pour of concrete due to various reasons (like inadequate compaction, inadequate proportion, bad quality of construction material (raw material), bad workmenship etc.). But here it is assumed that the test results will hold good for other areas also and interpretations & recommendations are made based on the test result's assumed applicability on entire surface areas.

2. The suggested test results (NDT Rebound Hammer & USPV) normally are advised to be conducted on new concrete surface/mother concrete surface for better results. When the cement plastered concrete surface is exposed as a part of surface preparation using the mechanical means (grinder/cutter, hammer, chiseling etc.) then the original concrete surface is likely to damage and hence some times the surface is not achieved as good & smooth as it is desired for the test. And in this way the conducted tests may give unrealistic results/vaules also some times.

RECOMMENDATION:

1. *IT IS ADVISED FOR ALL ICMCs, WHERE THE VAULT ROOM IS LOCATED IN THE BASEMENT OR AT GROUND FLOOR, A 2-2.5' HIEGHT LONGITUDINAL RCC PEDESTALS CAN BE COSTRUCTED FOR UP LIFTING THE ENTIRE ROW OF LOCKERS, AS PER NEED OF THE BANK.*
2. *MOST OF THE PROBLEMS ARE OBSERVED DUE TO THE LACKING IN TECHNICAL SUPERVISION WHILE EXECUTION WAS DONE. ATLEAST NOW FOR RECTIFICATION WORK THE PROPER TECHNICAL SUPERVISION IS ADVISED TO BE ENSURED & IN FUTURE WHILE CONSTRUCTION ITSELF THE TECHNICAL SUPREVISION NEEDS TO BE ENSURED FOR CORRECT EXECUTION. THE EXECUTION OF WORK DURING THE NEW CONSTRUCTION & IN RECTIFICATION WORK AS WELL SHOULD NOT BE LEFT ON THE DISCRETION OF VENDORS OR LABOURS OF VENDORS. IF THE QUALITY IS MAINTAINED THEN IT WILL HELP REDUCING THE MAINTENANCE COST DRASTICALLY.*
3. IT IS ADVISED TO GENERATE/CREAT A RECORD OF AS BUILT DRAWINGS FOR ALL BRANCHES/ROs/ICMCs etc. FOR FUTURE REFERENCE.
4. POOR TEST RESULTS INDICATES THAT BUILDING IS NOT IN POSITION TO TAKE FURTHER LOAD, SO IT IS ADVISED NOT TO CONSTRUCT UPPER FLOORS BEFORE NECESSARY STRENGTHENING IS DONE & STRESS ANALYSIS IS ADVISED FOR ENTIRE BUILDING.
5. IT IS ADVISED TO CONSULT THE INDUSTRY EXPERTS BEFORE CONCLUDING UPON THE TYPE OF TESTS REQUIRED FOR A BUILDING EVALUATION. EXACTLY FOR WHAT PURPOSE/OUTCOME (AS RESULTS) THE TESTS ARE BEING PROPOSED. THIS WILL HELP MORE IN APPROPRIATION OF APPLICABLE TESTS OR DECIDING THE APROPRIATE TESTS.
6. INJECTION GROUTING IS ADVISED IN THE VAULT ROOM CONCRETE WALLS TO OVERCOME THE EFFECT OF POOR TEST RESULTS.
7. IT IS ADVISED TO GO FOR HEAVY DUTY FLOORING IN OTHER THAN OFFICE AREAS. THESE FLOORING CAN BE KOTA STONE SLABS/TRIMIX FLOORING/IRONITE FLOORING/ANY OTHER HARD MATERIAL AVAILABLE FOR THIS PURPOSE.
8. IT IS ADVISED TO SCRAPOUT THE ENTIRE AFFECTED PLASTER AND REDONE WITH THE RMP (READY MIX PLASTER) MATERIAL, WHEREVER NEEDED.
9. AC VENDORS ARE ADVISED TO BE TIGHTENED UP FOR LACKING IN THEIR WORK OR IMPROVING THEIR WORK QUALITY & IF POSSIBLE A DOCUMENTED GUARANTEE BOND CAN BE TAKEN FROM THEM FOR NO LEAKAGES FROM DRAIN PIPES & CONDENSATION ON COPPER PIPING FOR A DESIGNATED PERIOD.
10. SOME RECTIFICATION WORK IS NEEDED IN THE BUILDING AS MENTIONED IN THE OBSERVATION SHEET POINTS. SO THE BANK IS ADVISED TO TAKE THE RECTIFICATION WORK AS EARLY AS POSSIBLE.
11. REFURBISHMENT IS ADVISED AS PER THE METHODOLOGY SUGGESTED WHEREVER STEEL IS EXPOSED & STARTED RUSTING.
12. IN THE TOILET AREAS TILING JOINTS IN THE FLOORS AND IN WALLS SHALL BE PROVIDED WITH 3 MM SPACER WITH EPOXY GROUTING.
13. PANTRY AREA LOOSENED TILING WORK SHALL BE REPLACED WITH A PROPER TILING INSTALLATION.
14. A PROTECTIVE LAYER (MAY BE CEMENT SHEET OR SOME OTHER SUITABLE ACID FUMES RESISTIVE MATERIAL) IS ADVISED TO PUT AS A BARRIER BETWEEN BATTERIES & PLASTERED WALL SURFACE.

PREVENTIVE MEASURES:

Following preventive measures are recommended generally to reduce the threat to structural stability and save the cost of maintenance & improve the quality of work in any proposed new or old building, where relocation is not planned.

1. A proper building audit shall be conducted by the industry expert before buying or taking any premises on lease. The building shall be evaluated on all necessary parameters related to structural stability, plumbing work, seepages, water leakages, cracks,

settlement etc. & shall be ensured of required safety from the end use/business point of view.
2. Standardizing the Type of Maintenance Related Problems & Solutions for a better & quick understanding of IFMs & Vendors.
3. Making an Operation Manual with the help of Industry Expert Designed Methodologies, Guide Lines & Check Lists, etc. so that IFMs will get ready solutions & procedures for different type of problems.
4. A strict quality control in technical supervision while construction/rectification work to ensure the correct construction & construction sequence to minimise the recurring maintanance cost.
5. Clear Guide Lines on UGWT & OHWT Connections & Other Plumbing Works including Rain Water Down Take Piping System.
6. Maintenance Check List & Monitoring of House Keeping Staff's Work more attentively & on a daily basis.
7. Annually one Lecture on Maintenance Related Problems & Solutions by Industry Experts for IFMs & Vendors.
8. Inclusion of some important clauses in the agreement document between land lord & ICICI Bank to ensure the scope of work of landlord in terms of maintanance.
9. Generating a Record of "As Built Building & Services Drawings" for all Branches, ICMCs, ROs, etc. for future reference.
10. Once in a 3 years building audit is advised to reassure the building condition is good & safe to work there.

A set of "AS BUILT DRAWINGS" of the building premise shall be maintained/asked in easy traceability mode for the following streams.

- Architectural Drgs.
- Structural Drgs.
- MEP Services Drgs.
- Networking related Drgs.

***CORRECTIVE MEASURES*:**

Following corrective measures are recommended to reduce the risk & in the view of safety of staffs working there along with customers, if this premises are opted to take on/continue on lease.

1. ALL mentioned checkpoints (in the checklist) and observation points (in the observation sheets) need to be read & well understood for taking the rectification execution work. The execution shall be carried out as per the methodologies suggested & under strict technical supervision. In civil work most of the issues occur at later stages because of lacking of technical supervision at the time of construction, therefore at least the rectification work should be carried out under strict technical supervision ONLY.
2. Scrapping out of the entire internal plaster of affected wall/ceiling areas for redone using the RMP material after the water source is closed.
3. Other rectifications as advised in respective areas of the building and shown with photographs in the observation sheets pointwise, shall be taken up.

4. Plumbing/Piping System - vertical pipes to be kept away from wall surface by 2". And leakage points of plumbing work + chambers immediate rectification.
5. Water accumulation & continious moist enviornment at plinth protection needs to be totally stopped.
6. As per recommendation longitudinal RCC pedestals may be cast to up lift the lockers by 2-2.5' & accordingly the functional floor level between the two rows of lockers can also be planned accordingly keeping in to the emergency situation in mind.
7. All toilet tile flooring & wall is to be done with epoxy grouting using 3 mm spacer.
8. All AC drains shall be planned properly deciding the designed route & destination + copper piping thermal insulation material quality improvement & frequent checking for thermal insulation thickness.
9. All points as mentioned in the recommendations, shall be attended as per need of the bank.
10. Refurbishment on vault wall where steel rods are exposed due to zero cover.
11. Injection grouting shall be done in the vault concrete wall as per need of the bank seeing the poor results of rebound hammer & USPV tests conducted.

***SPECIALIZED MATERIALS SUGGESTED*:**

1. RMP (Ready Mix Plaster) Materials.
2. Epoxy Grouting Material.
3. Non shrink grouting material.
4. Cement
5. Sand
6. Tiles
7. Sika Rustoff - 100 (Rust Remover)
8. Sikatop Armatec - 108 Plus (Anti Corrosive Coating)
9. Sikadur - 32 LP (Structural Bonding)
10. Sika - Monotop 122 F (PMM - Polymer Modified Mortar
11. Injection grouting system & material.
12. Trimix & Ironite Flooring Materials, Kota Stone slabs
13. Anti acid fumes or acid fumes resistant barrier for battery room (Cement Sheet or some thing like this).

NOTE:- If any help is needed in getting these materials, we may be contacted. The above materials are prescribed for reference only, however, other companies' similar results-giving materials can also be used.

***METHODOLOGY*:**

RMP PLASTER THERAPY | RCC MEMBERS STRUCTURAL REPAIR (REFURBISHMENT) | RAIN WATER DOWN TAKE PIPING SYSTEM IMROVEMENT + PLINTH PROTECTION | EPOXY GROUTING | RAINWATER DOWN TAKE PIPES PLANNING | INJECTION GROUTING | RCC PEDESTAL | PROPER THERMAL INSULATION ON COPPER PIPING

Note:-

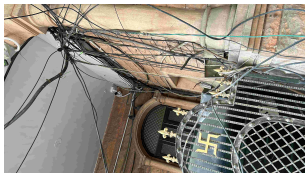
1. The test report for different tests conducted at the site can be submitted as and when needed with in one month of the report submission.

2. If ICICI Bank needs any help in interpretation of recommendations, observation, analysis, corrective - preventive actions, may kindly contact us and we will be happy to help.

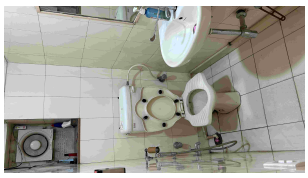
PART 2

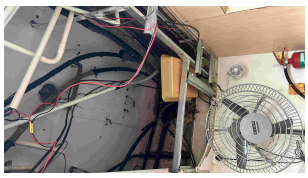
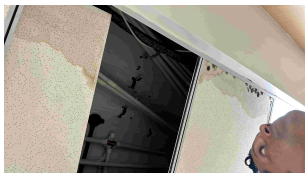
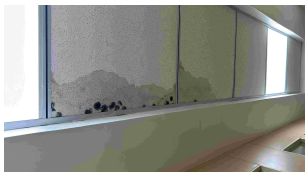
PROJECT OBSERVATION SHEETS

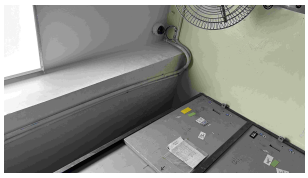
PROJECT: ICICI BANK ICMC, JODHPUR CLIENT: ICICI BANK LTD.

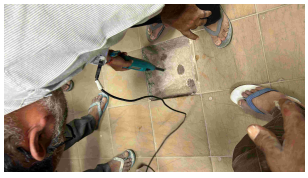
AUDIT OBSERVATION SHEET					
Reference / Rev. No			OBS / 77 (ICICI BANK ICMC, JODHPUR) / August 20, 2024	DATED	2024-08-20
S.No.	OBSERVATION POINTS	DATE	CORRECTIVE / PREVENTIVE MEASURES SUGGESTED	PHOTOGRAPHS	STATUS (For Client Only)
1	This is inside the vault room surface preparation is in process for test on floor. point No. 1.	2024-08-20	Tests will be conducted after surface preparation.		
2	This is outside balcony visible from ground. The seepages are causing due to leakages from balcony.	2024-08-20	It is advised to check & treat the balcony drainage point properly & technically correct.		
3	This is outside in RHS of main entry to ICMC Jodhpur. The cables were observed loosened hanging just like that. It may cause some time the business hindrance.	2024-08-20	It is advised to be systematized properly looped.		

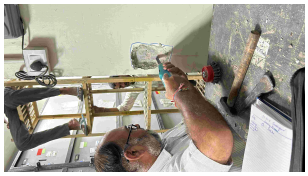
4	This is right side of the main entry to ICMC, that is road side, where tree growing was observed due to continious leakages from piping joints & stagnation of water. This is also causing moisture inside the basement in recors/store room.	2024-08-20	It is advised to rectify the leakages & stop the water stagnation on plinth protection with immediate effect.		
5	This is the same point as above with close up. Plinth protection is damaged secondly, the tree is grwing and both causing seepages inside the basement store/record room.	2024-08-20	Trees growth is not desirable & should avoided as far as possible. The damaged plinth protection needs to be repaired properly.		
6	The AC drain observed not planned properly causing flow of AC drain water directly on the wall & plinth protection causing seepages inside the building in vicinity areas of the locations out side.	2024-08-20	AC drains are advised to be planned properly every where including inside office areas also, where leakages from AC drain is causing lot of seepages and spoiling of grid ceiling.		
7	This is out side the building and RHS of main entry to ICMC the top portion in right corner near CCTV camera is showing the seepages. Which is most likely due to improper AC drain.	2024-08-20	The water/seepage source needs to be stopped immediately.		

8	The toilet areas in both male & female toilet blocks were observed with flooring & wall tiling done without spacers & epoxy grouting done. This in long run causes the water entered through the non epoxy joints to bedding area below flooring and starts travelling underneathly to rise up in above skirting areas by capillary action in walls.	2024-08-20	Epoxy grouting is advised for all tiling joints.		
9	Same as above.	2024-08-20	Same as above.		
10	This is ground floor office area corridor, where lot of water seepages are observed damaging/spoiling the grid ceiling badly.	2024-08-20	First thing being advised is to get set right the AC drain with proper gravity flow. Secondly, condensation of water in droplets was also observed from copper piping due to damaged/improper/inadequate thermal insulation on copper piping.		

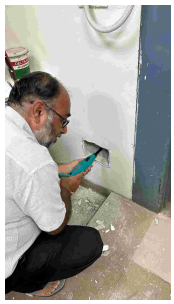
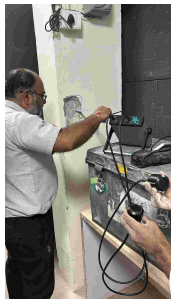
11	This is the inside grid ceiling portion of office area corridor, where these copper piping & AC drain pipes are visible with poor quality of execution and inadequate thermal insulation on AC copper piping. It is observed a plastic tray some how kept collect the condensed & AC drain water.	2024-08-20	Same as above.		
12	Same as above.	2024-08-20	Same as above.		
13	Same as above.	2024-08-20	Same as above.		
14	Same as point number 10.	2024-08-20	Same as point number 10.		
15	This is situation of toilet block inside portion. Epoxy grouting was not observed and in addition alge formation was observed on the flooring due to poor house keeping.	2024-08-20	1. Epoxy grouting of tiling joints is advised. 2. Proper & timely house keeping is advised.		

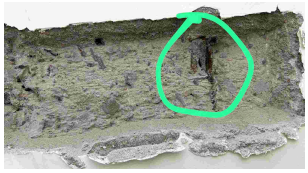
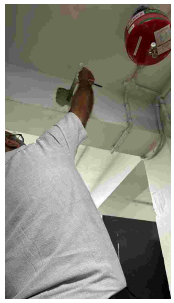
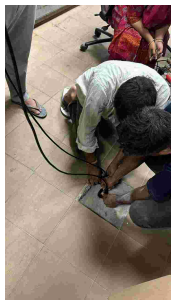
16	This is the same toilet area upper portion where huge seepages are observed near geyser & exhaust fan. This might be due to - 1. The fire pipe taken outside puncturing the wall allows outer rainwater inside to result in seepages. 2. This might be the outer road side area so the seepage may be from road side water stagnation on the plinth protection & plumbing piping leakage.	2024-08-20	1. The puncture hole shall be properly water proofed using the core cut water proofing technique. 2. Outer side plinth protection needs to be repaired properly.		
17	This is inside the vault room in basement the upper portion of main entry gate of vault room. Cables observed improperly arranged along with the seepages on the surrounding areas.	2024-08-20	It is advised to set right the cable in a proper way. If seepages are increasing then water proofing treatment can be thought off after identifying & closing of the source of water.		
18	This is ceiling portion inside the vault room in RHS upper area where sunken slab is there. This is showing the seepages from upper slab sunken areas. Normally sunken areas are provied for plumbing line in a toilet/balcony/kitchen sink areas.	2024-08-20	First thing is identifying the source of water in the sunken portion & then repairing the same is advised. in case it is not possible then application of crystallization process of water proofing can be done.		

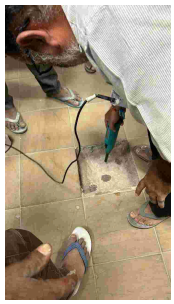
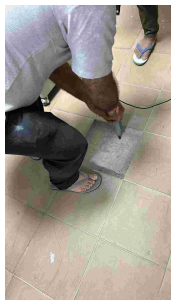
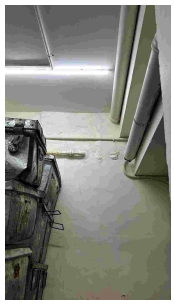
19	Rebound hammer testing is in process.	2024-08-20	Test reports will be submitted.		
20	The ultra sonic pulse velocity test is in process on floor point after surface preparation was completed. This is second point on the floor.	2024-08-20	Test reports will be submitted.		
21	Same as above.	2024-08-20	Same as above.		
22	Same as above.	2024-08-20	Same as above.		
23	This is also inside the vault room, where surface preparation is in process for testing point number two on the floor.	2024-08-20	Test reports will be submitted.		
24	This is on the corridor wall of vault room. Surface preparation is done. Test will be conducted shortly.	2024-08-20	Test reports will be submitted.		

25	This is the vault room wall point for conducting the tests in RHS from inside vault room.	2024-08-20	Tests will be conducted & reports will be submitted.		
26	This is inside the vault room, where point surface preparation is in process on the roof beam portion.	2024-08-20	Tests will be conducted & reports will be submitted.		
27	This is vault room LHS of vault room main gate entry point on the wall from inside. Surafce preparation will be done.	2024-08-20	Tests will be conducted & reports will be submitted.		
28	Surface preparation on the wall of vault room in outer corridor area left side in process.	2024-08-20	Tests will be conducted.		
29	Rebound hammer testing is in process on the column surface inside the vault room.	2024-08-20	Test reports will be submitted.		
30	The rebound hammer testing is in process on the wall of vault room on LHS outside of the vault room in corridor.	2024-08-20	Test report will be submitted.		

31	The rebound hammer testing is in process on the wall of vault room on RHS outside of the vault room in corridor.	2024-08-20	Test reports will be submitted.		
32	This is ultrasonic pulse velocity testing is in process on the column surface inside the vault room.	2024-08-20	Test reports will be submitted.		
33	This is ultrasonic pulse velocity test reading for record for the column location inside the vault room.	2024-08-20	Test reports will be submitted.		
34	This is process of wall thickness measurement for vault room for ultrasonic pulse velocity test is in process for vault room wall from outside to inside.	2024-08-20	Test reports will be submitted.		
35	This is the second floor point for testing inside the vault room, where surface preparation is in process.	2024-08-20	Tests will be conducted.		
36	This is inside the vault room right side of the main entry gate surface preparation is in process for rebound hammer and ultrasonic pulse velocity test.	2024-08-20	Test reports will be submitted.		

37	Rebound hammer testing is in process on the column surface inside vault room.	2024-08-20	Test reports will be submitted.		
38	Outside the vault room on LHS of main entry, where rebound hammer testing is in process.	2024-08-20	Test reports will be submitted.		
39	This is LHS corridor of vault room & the wall seems to be in good condition.	2024-08-20	As such no rectification is required.		
40	Inside the vault room the ultrasonic pulse velocity test is in process on column surface.	2024-08-20	Test reports will be submitted.		
41	This is ultra sonic pulse velocity test result for record. Test is being conducted on RHS of the vault room main entry.	2024-08-20	Test reports will be submitted.		

42	This is worrying situation. When the cement plaster was removed for conducting the rebound & ultra sonic pulse velocity tests we observed the wall reinforcement steel is almost at zero cover. Means there is no cover was provided in the wall concrete. Location is RHS of the corridor of vault room wall point. And as per the photograph the steel has already started rusting, which will now continue rusting, ultimately reducing the strength of the vault room wall. Secondly, also this pic shows porosity in the concrete wall. This means quality of concrete is not good & test results may come poor.	2024-08-20	1. Injection grouting for porosity is advised. 2. For stopping the steel rusting a antirusting coating is advised on the exposed steel rods after rust remover is applied & left for 24 hours.		
43	Distance measurement for ultrasonic pulse velocity test on beam inside the vault room.	2024-08-20	Test reports will be submitted.		
44	This is first point for flooring in the vault room where, ultrasonic pulse velocity testing is in process.	2024-08-20	Test reports will be submitted.		

45	Ultrasonic pulse velocity test result on the floor inside the vault room for first point.	2024-08-20	Test reports will be submitted.		
46	Rebound our testing on the floor inside the vault room at first point.	2024-08-20	Test reports will be submitted.		
47	NDT REBOUND HAMMER Test on the floor at second point inside the vault room.	2024-08-20	Test reports will be submitted.		
48	Ultrasonic pulse velocity test reading for record for second point on the floor inside the vault room.	2024-08-20	Test reports will be submitted.		
49	This Store/Record room inside in the basement. This portion showing the seepage at the location, where outside tree was observed grwing.	2024-08-20	It is advice to avoid such trees growth so that it's roots will not cause this type of seepages.		

50	This is pantry area above the kitchen counter upto 2' dado, where tiling is giving hollow sound. That means tiling is not installed properly. This sound giving tiles may come out any time.	2024-08-20	It is advised to remove the hollow sound giving tiles and redo with proper skill and no hollow sound or gap between the tile and the masonry wall surface should come.		
51	This is also outside left side road side building portion where due to continuous stagnation of water plants growth also taking place. A chamber is also visible here.	2024-08-20	This plumbing chamber needs to be treated properly from inside. This will help avoiding seepages in the basement and inside the building. At the same time water stagnation place also to be treated for no water stagnation takes place.		

PART 3

CHECK LIST

VISIT DATE: 2024-08-20

PROJECT: ICICI BANK ICMC, JODHPUR

CLIENT: ICICI BANK LTD.

S.NO	OBSERVATION POINTS FOR SITE INSPECTION	RATING SCALE	RATING	DETAILED DESCRIPTION	LOCATION	REMARK
1	Site History	5	2.5	It is RCC frame structure occupied by ICICI Bank around 18 years back. Located in city heart well populated area on 7th Pal Road, Sardar Pura.	Sardarpura	

2	Visual Inspection of Over all Building from Structure Stability Point of View.	5	12	In general, it seems OK. There is no major instability factor directly visible. But after analysis of test results it indicates that some part of the vault room walls near entry gate quality is doubtful.	Vault Room Area	
3	External Side Observation, if any.	5	1.5	OK, Only thing one side a tree growing was observed.	Near Plumbing Point in Out Side Road Side Wall.	
4	Frequency of Building Inspection - Check for Regular Visual Inspections (Annually or Biannually).	5	2	In structure audit was conducted earlier in December, 22. But Tests are conducted only this time as desired by the ICICI Bank.	7th Pal Road, Sardar Pura	
5	Frequency of Building Inspection - Check for Structural Assessment - Once in 3 to 5 Years depending upon the age of the building.			NA	7th Pal Road, Sardar Pura	
6	Check for Building Plans/Drawings availbility.	5	0.5	Drawings not available.	7th Pal Road, Sardar Pura	
7	Check for necessary Permits with latest renewal done (FIRE NOC etc.)			NA		
8	Check for regular maintanance records.			NA	7th Pal Road, Sardar Pura	
9	Building Functional Level	5	3	Observed approximately 5' above the road level.	7th Pal Road, Sardar Pura	

10	Check for Plaster Strength (Intact or not) - Lighting Hammering Action.	5	3	OK, there is no cracks, settlements or foundation deterioration was observed.	7th Pal Road, Sardar Pura	
11	Floor - Visible Up Rooting, If Any	5	3	Not Observed.		
12	Plaster - Visible Up Rooting in Ceiling Areas, If Any	5	3	Not Observed.		
13	Plaster - Visible Up Rooting in Walls Areas, If Any	5	3	Not Observed.		
14	Any Vegetation Causing Moisture/Cracks.	3	1	Yes, the basement store/record room moisture development observed due to plat growing at ground floor road side near plumbing point.	Near Plumbing Point in Out Side Road Side Wall.	
15	Terrace Area Checking in General			NA		
16	Observation on Cold Joints in concrete structure, if Any.			NA		
17	Observation on concrete honey combing, if Any.	5	1.5	Concrete porosity suspected in vault room walls & floor.	Vault Room Walls.	
18	Basement Observation from inside.	5	2	Seems OK visibly, but few locations of seepages & poor test results.		
19	Basement Observation from outside.	5	2	Seems OK, except the road side seepages due to growing plants & water stagnation.		
20	Check for easy Access to all Areas.	3	2	OK		
21	Check for Clear Pathways for Inspection.	2	1	OK		

22	Check for Utilities (Electricity Functionality).	3	1.5	Seems OK.		
23	Check for Electrical DB/MCB & cabling wiring.	2	1	Seems OK Inside the building but out side as shown in the pic in observation sheet cabling needs to be systematized.	Outside on RHS.	
24	Check for Utilities (Water Supply Functionality).	3	1.5	Seems OK.		
25	Check for Utilities (Cooking Gas Supply & Functionality).			NA		
26	Check for Safety Concerns - Loose Handrails, Broken Steps, Other Hazards, if any.	5	2.5	Seems OK.		
27	Check for Healthy Business Enviornment.	5	3	OK, Except the AC drain related problem.	Corridor in office & processing room areas.	
28	Observation of Foundation	5	3	Seems OK, since there is no cracks, settlements or foundation deterioration was observed.		
29	Settlement Cracks in Walls	10	5	Not Observed.		
30	Settlement Cracks Floors	10	5	Not Observed.		
31	Visible Concrete Deterioration in Slabs, If Any	5	3	Not Observed.		
32	Visible Concrete Deterioration in Beams, If Any	5	3	Not Observed.		
33	Visible Concrete Deterioration in Columns	5	3	Not Observed.		

34	Any Refurbishment is needed in Columns/Beams/Slabs/Other RCC elements.	10	5	Yes, it will be required on the vault room RCC wall, where steel rods observed exposed after removal of cement plaster for testing.	Vault Room Wall.	
35	Visible Cracks / Deterioration in Stone Patti Roofs, If Any			NA		
36	Visual Stability Check for Parapet Walls, if any.			NA		
37	Visual Stability Check for Projections / Partitions if any (Horizontal)			NA		
38	Observation on sagging check for RCC beams, if any.	10	4	Not Observed.		
39	Observation on sagging check for RCC slabs, if any.	10	4	Not Observed.		
40	Observation on RCC columns buckling or crack, if any.	10	4	Not Observed.		
41	Observation on Hairline Cracks in Slabs and slab soffits, if Any.	5	1.5	Directly not observed, but after removal flooring & plaster from walls and floor some cracks were observed.	Vault Room Inside	
42	Observation on exposed steel reinforcement due to insufficient concrete cover.	10		Yes, it was observed after removal of plaster from concrete surface. The exposed steel due to insufficient cover, was hidden by plaster.	Vault Room Walls.	
43	Observation on column misalignment due to bad formworks during casting.	5	3	Not Observed.		
44	Check for Unauthorised Modifications, if any done.			NA		

45	Moisture / Dampness Visibility in Ceiling Areas	5	1.5	Yes, In vault room ceiling sunken areas.	Vault Room Ceiling	
46	Moisture / Dampness Visibility in Walls Areas	5	1.5	Yes, In basement record/store room areas.	Record/Store Room	
47	Moisture / Dampness Visibility above Skirting Areas	5	3	Not Observed.		
48	Water Leakage through RCC Column / Beam / Slab, if any	10	5	Not Observed.		
49	Water leakage through Masonry Structure	7	2.5	Yes, In basement record/store room.		
50	Over head Water Storage Tanks & Plumbing Connection Status			NA		
51	Plumbing Connection Status in Toilets/Pantry Area.	5	2	OK.		
52	Rainwater Downtake Piping System Status.	5	1.5	Observed not OK, needs to be improved from outside.		
53	Position of under ground water tank & observation on this.			NA		
54	Position of over head water tank & observation on this.			NA		
55	Observation on NDT Rebound Hammer Test.	10	3	As per test report.		
56	Observation on NDT USPV Test.	10	3	As per test report.		
57	Observation on NDT Concrete Half Cell Potential & Resistivity Test.			NA		
58	Observation on Concrete Scanning Test.			NA		
59	Building Functional Level	10	6	Observed approximately 5'-6' higher than out side road level.		

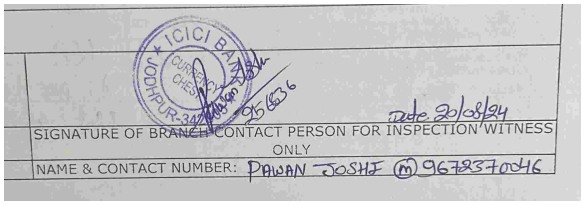
TOTAL RATING SCALE : 263

TOTAL RATING : 125

RATING INDEX: 0.48

RECOMMENDATION :

SIGNATURE OF AUDITOR



SIGNATURE OF BRANCH CONTACT PERSON FOR INSPECTION WITNESS ONLY

PAWAN JOSHI

9672370046

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Shri Mahesh Vaishnav.
Kota, Rajasthan

August 30 2024

Your Ref. & Date:- Your Verbal Order For NDT Of RCC Members Of Strong Room Vault At Jodhpur Rajasthan

Our Ref: (GAPL/LAB/ABH023 /23-24) / Jodhpur

Sub: Non Destructive Testing Of Strong Room Vault Structural Members Using SonReb Techniques.

Dear Sir,

As desired by you, we have carried out non destructive testing of Proposed Strong Room structural members comprising of four walls and one reinforced cement concrete column for holding the strong room gate. The following techniques were used for assessing the structural health of the tested members:-

1. *Proceq make Silver Schmidt Rebound Hammer*
2. *Proceq make Pundit Lab Plus Automatic Ultrasonic Pulse Velocity Apparatus.*
3. *Freshly Prepared Phenolphthalein Spray Bottle For Carbonation Assessment.*

1. Analysis & Assessment Of "RCC Column With Fan Mounting Within Strong Room Vault"

RCC Column With Fan Mounting Within Strong Room Vault				
Avg Corrected Q Value	Avg. Corrected Sonic Velocity	**Interpretation** 28 Days Estimated Compressive Strength	Carbonation Test Through Phenolphthalein Indicator Solution	**Interpretation**
(Mean)	(m/sec)			
Q	SV	(N/mm^2)		
38.90	**3832.00**	**25.527**	Very Light Pink Colour Observed In RCC. No Colour Observed In Mortar	Hence Moderate Carbonation In RCC But Concrete Cover Is Completely Carbonated.

2. Analysis & Assessment Of "Center Roof Beam Within Strong Room Vault"

Center Roof Beam Within Strong Room Vault				
Avg Corrected Q Value	Avg. Corrected Sonic Velocity	**Interpretation** 28 Days Estimated Compressive Strength	Carbonation Test Through Phenolphthalein Indicator Solution	**Interpretation**
(Mean)	(m/sec)			
Q	SV	(N/mm^2)		
39.82	**3858.00**	**26.407**	Very Light Pink Colour Observed In RCC. No Colour Observed In Concrete Cover	Hence Moderate Carbonation In RCC But Concrete Cover Is Completely Carbonated.

3. **Analysis & Assessment Of "Floor RCC Slab Test Near Center Column Of Strong Room Vault"**

Floor RCC Slab Test Near Center Column Of Strong Room Vault"				
Avg Corrected Q Value (Mean) Q	Avg. Corrected Sonic Velocity (m/sec) SV	**Interpretation** 28 Days Estimated Compressive Strength (N/mm^2)	Carbonation Test Through Phenolphthalein Indicator Solution	**Interpretation**
28.50	**2280.20**	**11.765**	No Colour Observed In RCC & Concrete Cover	Concrete Is Carbonated

4. **Analysis & Assessment Of "Floor RCC Slab Test Near Peripheral Corridor Wall- Inside Of Strong Room Vault"**

Floor RCC Slab Test Near Peripheral Corridor Wall- Inside Of Strong Room Vault				
Avg Corrected Q Value (Mean) Q	Avg. Corrected Sonic Velocity (m/sec) SV	**Interpretation** 28 Days Estimated Compressive Strength (N/mm^2)	Carbonation Test Through Phenolphthalein Indicator Solution	**Interpretation**
31.70	**4765.20**	**23.391**	Very Light Pink Colour Observed In RCC. No Colour Observed In Mortar	Hence Moderate Carbonation In RCC But Concrete Cover Is Completely Carbonated.

5. **Analysis & Assessment Of "Strong Room Gate Wall L.H.S From Outside"**

Strong Room Gate Wall L.H.S From Outside				
Avg Corrected Q Value (Mean) Q	Avg. Corrected Sonic Velocity (m/sec) SV	**Interpretation** 28 Days Estimated Compressive Strength (N/mm^2)	Carbonation Test Through Phenolphthalein Indicator Solution	**Interpretation**
23.50	**809.00**	**4.245**	No Colour Observed In RCC & Concrete Cover	Carbonation Exists In RCC & Concrete Cover

6. **Analysis & Assessment Of "Strong Room Gate Wall R.H.S From Outside"**

Strong Room Gate Wall R.H.S From Outside				
Avg Corrected Q Value (Mean) Q	Avg. Corrected Sonic Velocity (m/sec) SV	**Interpretation** 28 Days Estimated Compressive Strength (N/mm^2)	Carbonation Test Through Phenolphthalein Indicator Solution	**Interpretation**
20.00	**556.00**	**2.623**	No Colour Observed In RCC & Concrete Cover	Carbonation Exists In RCC & Concrete Cover

7. Analysis & Assessment Of "Strong Room Gate Wall R.H.S Extreme End From Outside"

Strong Room Gate Wall R.H.S Extreme End From Outside				
Avg Corrected Q Value	Avg. Corrected Sonic Velocity	**Interpretation** 28 Days Estimated Compressive Strength	Carbonation Test Through Phenolphthalein Indicator Solution	**Interpretation**
(Mean)	(m/sec)			
Q	SV	(N/mm^2)		
20.00	**1440.00**	**5.379**	No Colour Observed In RCC & Concrete Cover	Carbonation Exists In RCC & Concrete Cover

8. Analysis & Assessment Of "Strong Room Peripheral Corridor Wall LHS - Outside"

Strong Room Peripheral Corridor Wall LHS - Outside				
Avg Corrected Q Value	Avg. Corrected Sonic Velocity	**Interpretation** 28 Days Estimated Compressive Strength	Carbonation Test Through Phenolphthalein Indicator Solution	**Interpretation**
(Mean)	(m/sec)			
Q	SV	(N/mm^2)		
27.50	**1280.50**	**7.284**	No Colour Observed In RCC & Concrete Cover	Carbonation Exists In RCC & Concrete Cover

Findings & Recommendations

1. *Roof RCC Beam and RCC Columns Inside of strong room appear to have adequate strengths though slightly carbonated that primarily effects long term durability.*
2. *Floor slabs when tested at two locations indicate heterogeneity in RCC. The strength by and large appears to be lower than the required minimum strength of 25MPa. The reason for lower strengths appears to be internal hairline cracking and low impact resistance in concrete resulting in lower UPV and inadequate quality control while casting.*
3. *The peripheral RCC corridor wall and RCC gate walls have very poor and cracked concrete resulting in very low UPV's and corresponding compressive strengths. The concrete can be clearly classified as "Doubtful" as per Indian Standard Classification.*

Thanking you and assuring you of our best services.

For Geo-Appraisal Pvt. Ltd.

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abhi@geoappraisal.com