

 \square

BUILDING STRUCTURAL CONDITION ASSESSMENT REPORT



RITZ HOTEL HERITAGE BUILDING, ADARSH NAGAR, HYDERABAD

By

Mrs.Anuradha Reddy,

Convener, INTACH, Telangana& Hyderabad,

&

Er.ar.s.p.anchuri BE(Civil),MTech(Structures),MBA(M&P),AIIA(Arch.), MIE(Arch.Engg.),(PhD-Structures) PE(struct.engr-ECI),RACA(Arch),FACCE(I),MICI,MIFRC, MISTE, FIAStructE,C.Engr(I). Master's Certificate in Concrete Construction management & Repairs and Rehabil itation, WOC,USA Structural Consul tantintach,Technical Adviser, RMCMA/QCI, ECBC Expert (ASCE) Chief Consul tant,ANCHURI & ANCHURI, Begumpet,Hyderabad-Tel angana & Madhurawada,Vizag,A.P. Ph.040-27767197,27230997,40201446,0924652319,spanchuri@gmail.com

BUILDING **"Structural condition "**ASSESSMENT REPORT Ritz Hotel Heritage Buil ding, Adarsh Nagar, Hyderabad

Table of Contents:		
1.0	Executive Summary	3
2.0	Introduction 2.1 Purpose of Report 2.2 Consul tant Team 2.3 List of Resources 2.4 Definitions	5 5 5 6
3.0	Existing Buil ding Drawings	7
4.0	Observations of Existing Buil ding Envel ope 4.1 Current Function / Use & Buil ding Data 4.2 Exterior Masonry Walls 4.3 Windows + Doors 4.4Roofing	9 9 10 10
5.0	Structural Assessment	10
6.0	Architectural Assessment, Hazardous Materials Assessment, Mechanical / Electrical Systems Assessment &Cost Area Analysis	11
7.0	Conclusions	12
8.0	PHOTOGRAPHS	13
9.0	references	19

7/28/2017

S.P.Anchuri,Structural Consultant-INTACH

BUILDING "Structural condition "ASSESSMENT REPORT Ritz Hotel Heritage Building, Adarsh Nagar, Hyderabad

1.Executive Summary :

The existing building Ritz Hotel heritage building is concrete and masonry building is structurally sound in substructure and rehabilitation, repairs and partial reconstruction is required for super structure. It should also be noted that the exterior and interior masonry is considered an important heritage character defining element. We found that the building does have substantial architectural and historical value being heritage building constructed with load bearing walls in stone for foundation and in red burnt bricks for walls on ground and first floor level using lime mortar as jointing material.

After structural condition assessment study of building its found that the foundation and other substructure level elements are sound and requires minor attention where as the superstructure consisting of wall,beams,pillars ,roof etc requires special attention. The negligence by immediate past lessee since more than a decade in terms of maintenance, incompletion of civil works taken up has lead to further deterioration of the structural and non structural elements .

The unplanned removal of sheeting on first floor ,rafters at door entry level on first floor used as deck allowed rain water to accumulate on floor of F.F. which is exposed since years to rain water ,sun and external weathering .The percolated water causing dampness in wall and slabs damaged paints,putti,plastering ,flooring .It damaged the jack arch roof rafters due to corrosion.

The front portion of building where major changes were planned were damaging act to the heritage building as the jack arch roof system cannot be supported by the system of RCC columns seen at site. These recently casted columns with shallow foundation not only damaged flooring but also disturbed the stability of structure. The intention of removal of jack arch roof and planning of RCC new roof is evident as the mention of "walls /pillars to be removed" write up on many walls found.

The removal of doors and window in many walls has disturbed the soundness of wall panel .In load bearing walls the joineries play key role in making overall structure sound. The punctured walls in many places without proper plans and methodology further damaged the building by creating distress. The stagnation of rain water, damaged water proofing membranes, heavily grown vegetation ,with no maintenance allowed water to percolate through various elements causing excessive dampness in walls ,spalling of plasters, leading to corrosion of steel in beams and jack arch roof rafters damaging the structure losing its strength and decreasing its durability.

The present condition of the heritage building is the mere result of negligence, modifications which were under taken up before repairs and strengthening of building with improper sequence of execution using incompatible construction method and materials.

We feel that the interior and exterior heritage features observed at site are worthy of retention in any adaptive reuse proposal. Based on the observations of the existing structure by the me and my team, and the review of the supporting reports and documentation, we are of the opinion that the building is an important heritage asset, can be structurally sound after proper rehabilitation, repairs, and partial reconstruction of under design and supervision of heritage / conservation structural engineer , a viable building for a number of probable adaptive reuses .

Respectfully submitted,

Er.Ar.S.P.Anchuri,

BE(Civil), MTech(Structures), MBA(M&P),AIIA(Arch.), MIE(Arch.Engg.), (PhD-Struct.) PE(struct.engr.ECI),RACA(Arch),FACCE(I),MICI,MIFRC, MISTE, FIAStructE,C.Engr(I). Master's Certificate in Concrete Construction management & Repairs and Rehabil Itation, WOC,USA Structural Consultantintach,Technical Adviser, RMCMA/QCI, ECBC Expert (ASCE) Chief Consultant,ANCHURI & ANCHURI, Begumpet, Hyderabad-Tel angana & Madhurawada,Vizag,A.P. Ph.040-27767197,27230997,40201446,0924652319,spanchuri@gmail.com

RITZ HOTEL HERITAGE BUILDING STRUCTURAL CONSDITION ASSESSMENT REPORT BY.Er.Ar.S.P.ANCHURI | INTACH

S,

2. Introduction

2.1 Purpose of Report

Ritz Hotel Heritage building was undertaken for the study for assessing current conditions in terms of the structural stability and safety. The report was to review the exterior and interior building envelope, damage causes due to various modifications undertaken.

The current condition of the interior and exterior elements of building were inspected and reviewed .A summary of the report is given after careful study based on the visit by Team lead by experienced structural engineer involved in repairs ,rehabilitation, reconstruction of structures including heritage buildings.

Elements of the building reviewed include exterior and interior masonry, windows, roofing, and beams staircases, pillars, etc. Exterior and interior heritage features worthy of conservation/restoration are identified in the heritage report attaching photographs .Mechanical & electrical systems and other building services are excluded in study as the study is focused on structural condition assessment.

The detailed cost analysis for adaptive reuse can be undertaken by conservation architects once stability of structure is undertaken with proper rehabilitation process begins.

2.2 TEAM members :

- Er.Ar.S.P.Anchuri, Structural Consultant,
- Mrs.Anuradha Reddy,Convener,INTACH,Telangana& Hyderabad
- Ar.Praveen P.N. ,Conservation Architect
- Mr. Bharath, B. Arch student, Photographer.

2.3 Definitions

- **Character-defining elements**: The materials, forms, location, spatial configurations, uses and cultural associations or meanings that contribute to the heritage value of an historic place, which must be retained in order to preserve its heritage value.
- Conservation: All actions or processes that are aimed at safeguarding the character defining elements of a cultural resource so as to retain its heritage value and extend its physical life. This may involve Preservation, Rehabilitation, Restoration, or a combination of these actions or processes.

- Dry Rot: A decay of seasoned timber, resulting in its becoming brittle and crumbling to a dry powder, caused by various fungi. In building construction it usually occurs when wood members are subjected to repeated wetting and drying cycles.
- Efflorescence: A whitish, powdery deposit on the surface of masonry or stone. It is formed as mineral rich water rises to the surface through capillary action and then evaporates. Efflorescence usually consists of gypsum, salt, or calcite.
- **Galvanic Corrosion**: is a form of electrochemical corrosion that occurs when two dissimilar metals come together in the presence of an electrolyte to form an electrical couple, known as a galvanic couple. In building systems, the electrolyte is usually ordinary moisture, whether rainwater or high atmospheric humidity.
- **Mortar Fines**: The fine granular particles of masonry mortar which are leached out of the mortar joints with moisture migration through the wall.
- **Preservation:** The action or process of protecting, maintaining, and/or stabilizing the existing materials, form, and integrity of a historic place or of an individual component, while protecting its heritage value.
- **Preservation** "places a high premium on the retention of all historic fabric through conservation, maintenance and repair." All materials added to a building over its life are retained and only work which is necessary to protect it from deterioration is carried out.
- **Rehabilitation** is a standard for preservation but is more lenient because it presumes the building is so deteriorated that it needs some repairs to prevent further deterioration.
- **Restoration** includes preservation, leaving as much material untouched as possible, reconstruction to replace missing elements, and repair work to bring the building to a historically accurate condition in one particular time period. This may include removing some historic building elements (after documenting them) to make the building historically accurate for a specific date in history.
- **Reconstruction** allows the re-creation of a missing building or element in all new, appropriate materials.
- **Spalled**: Breaking up of a masonry surface into chips or fragments.
- **Vernacular:** Indigenous, made locally by inhabitants; made using local materials and traditional methods of construction and ornament; specific to a region or location.

3. Existing Building Drawings:

The following drawings are SKETCHES drawn after site visit which are approximate in size and shape. Few drawings collected from TSTDC.



BASEMENT FLOOR PLAN-NORTH SIDE (LEFT WING)

CELLAR PLAN (RIGHT WING)



 \square





GROUND FLOOR PLAN

 \bigcirc

4. Observations:

4.1 Current Function / Use and building data:

The Ritz Hotel heritage building is at Adarsh nagar, Hyderabad and is an heritage structure constructed about 90 years back. the building was used as hotel and was leased out to new agency in 2001 to run again as a hotel. Since more than 15 years the building is not in use as the modifications and renovation undertaken was not finished leading to deterioration of the structure.

The building is a two storey high structure, with cellar ,ground plus one upper floor with partial open terraces. The substructure consisting of stone masonry for supporting load bearing walls in superstructure made of red burnt thick brick wall in lime mortar. The ground floor roof is made in jack arch roof in lime mortar and first floor with asbestos sheets but removed in almost all rooms exposing the first floor open to sky. RC slab was seen in dining hall with RC beams.

4.2 Exterior and Interior Masonry Walls

Interior and exterior walls are in red burnt bricks with lime mortar well built load bearing walls are damaged due to excessive dampness in some of walls because of removal of first floor roof sheets causing accumulation of water in rainy season leading to dampness, spalling of plaster ,growth of algae in several places.

The unplanned ,un acceptable modifications damaging architectural heritage features with incompatible construction material disturbed the stability of load bearing capacity of walls. The exterior masonry is in reasonably good condition for its age. There are evidences of previous, poorly executed, repairs and minor modifications. The most concerning elements showing signs of deterioration are the upper roof parapets. The parapets will need to be dismantled and rebuilt.

The exterior masonry is considered a heritage character defining element and should be conserved, where it is existing, and restored, where missing, to its original design. However the re strengthening of walls with proper technical method will make the walls stable and capable of

ON

carrying load safely executed under proper supervision under structural engineer in coordination heritage / conservation architect.

4.3 Windows + Doors

The existing windows appear to be original to the building and are typically wood framed. Some window sash units have been removed.. This is not a recommended practice and we recommend the window unit be reinstated. The unplanned removal of door and window frames without proper support system to roof with intention of removal of complete walls to make spaces bigger is totally unsafe for the structure.

The puncturing of walls in various places has caused damage to support mechanism and panel effect of structural system. Wood windows throughout have failing paint finish, however, wood components in general appear in good/sound condition, with replacement/repairs of some of the lowest components (sills, bottom rails of lower sash, and lower portion of frames) required. Restoration of wood sash and frames, with introduction of new exterior storm sash is recommended.

4.6 Roofing

The existing roofs were reviewed and found to be in poor condition and need to be repaired .

All roof areas at these facilities are in poor condition and have damaged due to corrosion of reinforcement of rafters with I section as the roof covered with waterproofing membrane are totally damaged and not attended to it in several years..

First floor rear and side wings ,roof over stair case etc.in asbestos and jack arch found to be removed exposing the terrace to weathering leading to extreme deterioration.

5. Structural Assessments

This heritage building was built approximately 90 years ago. The building until used by earlier lessee for Hotel the maintenance and housekeeping seems to be good. The new lessee has put



more stress on modifications and no importance for repairs or rehabilitation of structures ,negligent of maintenance lead to distress in structural elements. Incompatible construction martial suggested for heritage buildings , unsuitable methodology of execution , improper sequential construction and repairs caused the further damage to stability of building.

The erection of RCC columns shows the intention of not to repair but remove the heritage interior walls .The roof strengthening would have stopped further damage. The walls which are planned to be removed must not be removed and shall be strengthened with proper methodology. The roof must be waterproofed immediately to avoid damage due to rain water to stop deterioration. The inverted beams above dining hall must be strengthened and covered it to avoid stagnation of water

The dismantling of wall in few places near dining hall is dangerous as no bracing or tie beams , lintels are provided. The wooden flooring on the first floor designed for approaching rooms on either side were removed which created mini water tanks damaging lower floor walls and roof. The first floor level must be removed totally and reconstructed the walls to utilize safely.

The building is designed with load bearing walls hence the role of wall is main to support roofing system. the removal of existing walls must not be allowed and the repairs shall be taken up for peeling of plaster, erosion of bricks, etc.

The punctured walls, removed doors and windows shall be reinstalled with proper care to restore its strength.

6. Architectural Assessment, Hazardous Materials Assessment, Mechanical / Electrical Systems Assessment and Cost Analysis.

The building is functional if all the structural , non structural elements are safe ,stable and durable.

In addition to structural assessment architectural, hazardous material, mechanical, electrical and building services assessment shall be undertaken before considering execution of work for occupation. The Cost analysis by Conservation architect with the integrated approach.

7. Conclusions

After structural condition assessment study of building its found that the foundation and other substructure level elements are sound and requires minor attention where as the superstructure consisting of wall,beams,pillars ,roof etc requires special attention. The negligence by immediate past lessee since more than a decade in terms of maintenance, incompletion of civil works taken up has lead to further deterioration of the structural and non structural elements .

The front portion of building where major changes were planned were damaging act to the heritage building as the jack arch roof system cannot be supported by the system of RCC columns seen at site. These recently casted columns with shallow foundation not only damaged flooring but also disturbed the stability of structure. The intention of removal of jack arch roof and planning of RCC new roof is evident as the mention of "walls /pillars to be removed" write up on many walls found.

Due to mere negligence in undertaking repairs and restoration of this Ritz Hotel heritage building and incompatible method of handling heritage conservation lead to present condition of deterioration by lessee.

The economic viability of each of these adaptive reuse opportunities needs to be tested with the preparation of a detailed study by heritage /conservation architect. The sustainability of the use may be reinforced by the expansion of the gross area to provide additional complimentary uses to the design model. These additional areas could also be phased with the help of field experts following heritage codes.

Based on the observations of the existing structure by the consulting team, and the review of the supporting reports and documentation, we are of the opinion that the building is an important heritage asset, can be made structurally sound with proper repairs ,rehabilitation and partial reconstruction, being a viable building for adaptive reuse. We suggest the authority to take up the work with integrated design approach along with heritage conservation experts at earliest to make this Ritz Hotel building a safe ,durable and iconic Heritage structure once again.





RITZ HOTEL HERITAGE BUILDING STRUCTURAL CONSDITION ASSESSMENT REPORT By Er. Ar. S.P. ANCHURI | INTACH

Figure 16:Small and big trees growth on first floor	
	- M
	Ţ





RITZ HOTEL HERITAGE BUILDING STRUCTURAL CONSDIION ASSESSMENT REPORT By.Er.Ar.S.P.ANCHURI | INTACH















9. References :

- Architectural Graphic Standards, Third Edition, 1941.
- Architectural Graphic Standards, Eleventh Edition, 2007.
- Standards and Guidelines for Conservation of Historic Buildings.
- IS:13311(Part -1 and 2)1992
- IS:456-2000, IS-875(part 2)-1987, AND OTHER RELATED CODES
- J.H. Bungey, 1989, The Testing of Concrete in Structures, Surrey University Press.
- ACI Committee 437, 1991, Strength Evaluation of Existing Concrete Buildings, ACI. Institute.
- IS 13311 (Part 1): 1992, Non-Destructive Testing of Concrete Methods of Test, Part 1, Ultra Sound Pulse Velocity, Bureau of India Standards.
- IS 13311 (Part 2): 1992, Non-Destructive Testing of Concrete Methods of Test, Part 2, Rebound Hammer, Bureau of India Standards.
- Hand Book on Non-Destructive Testing of Concrete, Second Edition, Edited by V.M. Malhotra and N.J.Carino, CRC Press LLC, 2004.
- Non-Destructive Testing of Concrete Structures, Proceedings of the INDO-US Workshop on Non-Destructive Testing, Indian Concrete Institute, Roorkee, 17-18 December, 1996
- Non-Destructive Testing in Civil Engineering Special Issue, Materials and Structures 38, November 2005.
- 10. CPWD Handbook on Repair and Rehabilitation of RCC Structures, Central Public Works Department (CPWD), Government of India, New Delhi, 2002.

---End of the report--