



INTACH

INDIAN NATIONAL TRUST FOR ART AND CULTURAL HERITAGE

Osmania General Hospital,

Hyderabad, Telangana, India.

INSPECTION REPORT (*Structural Stability/Safety*) August 2015



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1. ABSTRACT

Based on disquieting news regarding Telangana's Govt. intention to demolish the historic Osmania General Hospital (OGH) building at Hyderabad, a technical inspection was made of this landmark *GRADE II HERITAGE STRUCTURE* on 2nd and 3rd August 2015.

Inspection TEAM:

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Er. Ar. S. P. Anchuri,
Mrs. Anuradha Reddy, Convener – INTACH Hyderabad Chapter,
Er. Sajjad Shahid, Co Convener-INTACH Hyderabad Chapter,
along with Ar. G.Srinivas Murthy, Ar. Sanjay Torvi, Er. V. V. Ranga Rao, Ar. Shankar Narayan, Ar. Venu Gopal, Er. Mukund Rao , Ar. P. Naga Praveen, Ar. T. L. Trivikram, Ar. Arunima, Ar. Ashok Bhairi,
and Architecture Students of Hyderabad.

Based on visual inspection, by the INTACH expert committee, the following observations are recorded.

- The existing Heritage Building Block of Osmania General Hospital is in a very good, structurally stable condition, without any threat to its own life or to that of its occupants, provided immediate steps are initiated to repair and restore the structure, and ensure regular and proper maintenance .
- All the damages observed are mostly on the surface of the building and are within the purview of reparability and are caused mainly due to poor maintenance and leaking pipes.
- The proposal to expand the existing hospital building and infrastructure can be easily accommodated by Re-Planning and Re-Organizing many other smaller and temporary structures and without having to demolish the Heritage Blocks of the Osmania General Hospital.
- The proposal for additional space and infrastructure can incorporate all ultra-modern technical and medical features on par with any modern corporate hospital in such a manner as to abide by the existing bye laws and rules concerning a notified Heritage Building.

PURPOSE OF THE REPORT

This report on OGH is intended to enable initiation of appropriate repairs and maintenance activity at the Heritage Block of the hospital. The report identifies recommendations on the priorities for repair and maintenance.

The recommendations are focused on the repairs, restoration and rehabilitation of the OGH in order to save this important heritage building from being demolished.

SCOPE AND LIMITATION

The report notes the findings of our TEAM of Structural Engineers, Conservation Architects and other experts resulting from a thorough visual inspection of the structural elements and building itself. The report is based on the parameters listed below:

- General Information
- Physical Information
- Dimensions of the Structural Elements
- Examination of critical elements of the external envelope of the building and the interiors of the building including partitions, false ceilings, floorings, tiles dado, railings, arches, windows, doors and openings in addition to alterations carried out periodically with special focus on building services.
- Examination of elements that protect the building from Water and Damp Penetration:
 - Roof coverings (including flashings to abutments such as parapet walls and chimneys);
 - Roof structure and its decay/damage
 - Gutters, down-pipes and associated rainwater disposal systems;
 - External wall surfaces and joinery;
 - Drains
 - Toilets, Plumbing and Sanitary Systems.

Inspection of decay and damages of the structural elements was done from interior and exterior of the building for each structural element visually.

Our concern was to illustrate symptoms and causes of decay in the building by identifying existing defects where they are visible by means of simple non-destructive

and non-disturbing observation. No destructive testing or ‘opening-up’ of any internal or external elements was involved to investigate causes of defects.

This report is not prearranged for any commercial or financial purpose and should not be treated as such. We can only accept liability that is placed on us by law and all other liability is excluded being in particular any consequential losses.

Finally for the sake of clarity we can only accept responsibility for our written report and not for any comments made during the inspection. Detailed investigation and interdisciplinary consultation is a requirement for any repair or restoration work of any Heritage Structure and such an exercise will have to be carried out prior to commencement of restoration. It is also an established practice to prepare a Conservation Management plan (CMP) for heritage structures which provides instructions on maintenance and upkeep.

2. INTRODUCTION TO SITE

Osmania General Hospital is one of the oldest hospitals in India located at Afzal Gunj, Hyderabad. It was built during the time of the Last Nizam, Osman Ali Khan, and is named after him. The Hospital is a 150 year old institution with the existing building itself being 87 years old. It is located on 26.5 acres of land on the banks of river Musi. It is administered by the Government of Telangana, and is one of the largest hospitals in the state.

The hospital building was completed in 1925 and was designed by British architect Vincent Jerome Esch, C.V.O. Esch also designed The High Court, City High School, Kachiguda Railway Station and Hyderabad Public School for His Exalted Highness(H.E.H) Osman Ali Khan, the Nizam of Hyderabad. It is a fine example of Osmanian style of architecture and is considered to be a landmark iconic building. Apart from being an architectural marvel of Hyderabad, Osmania General Hospital is renowned for its immense contributions to society as a premier medical facility of the city.

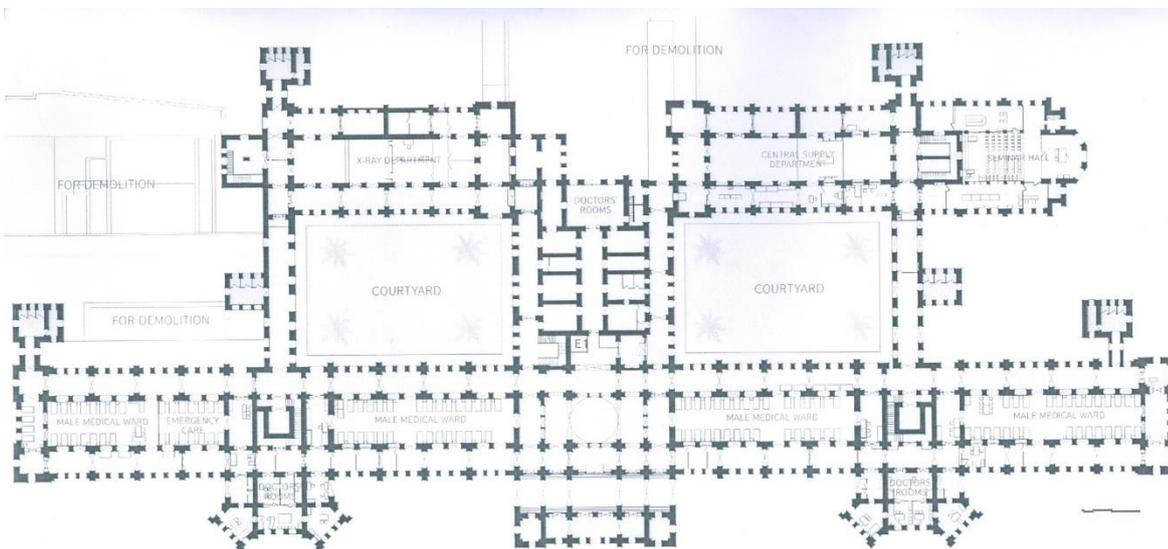
The hospital has bed strength of 1400, catering to over 8 lakhs out-patients and 52000 in-patients annually. It is also a premier educational institution with about 2000 students of medical and paramedical courses receiving instruction at the hospital.

The structure is graded as a II-B Heritage Building in HMDA Listing and is protected under the Heritage Regulations of HMDA.

3. ARCHITECTURE AND PLANNING

The heritage structure of the Osmania General Hospital is a three storied building. The superstructure is stone and brick masonry in lime mortar. The third floor is covered with a Jack Arch Roof resting steel girders while pioneering examples of RCC construction are evident in the slabs of smaller spans on the ground and first floors which are supported structural steel girders.

The stone used in construction of the building is granite laid in lime mortar with joints pointed in Lime/Cement Mortar. The fenestrations are in the form of arches which are at places decorated with masonry jalis which add to the ornamentation of the building. The main embellishing features of the building are the domes accentuating its elevation. The building is topped by a grand dome on its central tower with smaller cupolas and domed pavilions on its corners and stair wells. As building is located on the banks of river Musi, it has been provided with a robust foundation well-designed against problems associated with river front development.



Ground Floor Plan

4. PRESENT CONDITION

The building is in state of neglect and poor condition of maintenance causing inconvenience to the patients, and doctors. However the building is structurally sound and can be repaired easily through sensitive conservation methods.

- There is no visible problem with the foundation and walls, the outer surface plaster and ceiling plaster is affected due to various reasons. Primarily, the deterioration is due to water seepage and can be repaired easily. The walls are thick and have been designed with adequate structural margins and are therefore not endangered due to flaking of surface plaster or loss of pointing etc.



Leaking pipes and debris on terrace.



Plaster peeling and corrosion of slab due to washing facility located above it.



Leaking or broken down pipes causing dampness and peeling of plaster

Following are the identified defects and issues in the building:

- **Ceiling Plaster peeling off and falling:**

This is caused mainly due to the effect of dampness arising out of water seepage from leaking pipes and drains, and faulty water proofing on the terrace. The ingress of water has resulted in rusting and spalling of structural steel in a few places leading to the plaster peeling off and falling down.



- **Cracks:** No major structural cracks were found in the building. A few minor and non-structural cracks were observed which include roof cracks, plaster cracks, arch crown cracks etc.
- **Dampness:** Severe dampness can be observed in the building due to percolation of water from the roof and through distressed patches in the wall plaster.
- **Vegetation Growth:** Growth of vegetation was observed at many places leading to cracks. This is a major factor for water ingress into the roof and walls.



Vegetation Growth on terrace



Terrace

- **Corrosion of Steel Members:** The bottom reinforcement of the roof slab in the building is corroded at places especially in the first floor. This is a localized distress caused primarily due to seepage of water from washing areas and from leaking pipes and drains of water coolers and toilets located on the floor above. The spans of such distressed areas are small, the panels at the most being 2mts x 3mts. These areas can be isolated and repaired easily without in any way impacting the overall stability of the structure.



Corrosion in RCC slabs due to seepage

- **Use of incompatible materials and additions:** Various incompatible materials have been used in past years for repair work like cement plaster, etc. moreover many new incongruous additions and alterations have been made to the buildings leading to various problems which are detrimental to proper ventilation and drainage.



Interventions in cement



Later additions

5. COMMENTS ON JNTU STRUCTURAL REPORT on OGH

- The report itself recognizes the Heritage Value of the structure and has advised repairs. The report also provides details on repair methodology for corroded RCC members. The report does identify any major structural damage nor does it propose demolition.

- The report records **Timber deterioration and Low Tensile strength of wood.** **This according to the report** may lead to a sudden collapse of parts of the building. However. This detailed visual inspection did not find any evidence of timber being used as a structural member anywhere in the building and thus there is no possibility of its collapse due to such failure. Timber is only used in the building for non structural purpose like doors, windows, partitions, railings, etc. Thus this fear of impending failure of a non-existing problem is absolutely unfound and misleading.
- Another issue of concern in the report is that it suggest an extended life of 5 yrs post repairs. It is not made clear as to what evidences or presumptions led to this conclusion as the report categorically mentions its being based on visual inspection. Allocating a definite time frame regarding its age without adequate monitoring, documentation, analysis and testing of materials and their strength is arbitrary and presumptuous.



Main Central Domed Lobby

6. PROPOSAL

Following recommendations are proposed for the conservation of the heritage building of Osmania General Hospital:

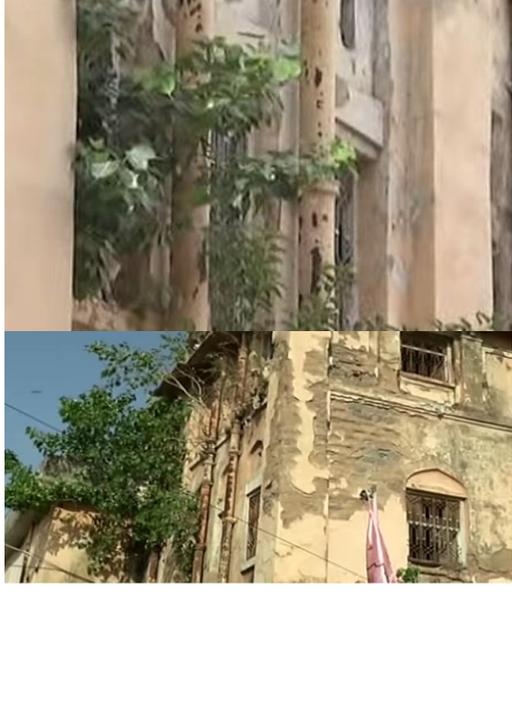
- I. Conservation of IP block (Heritage Building):** The building should be restored based on Heritage Conservation principles. To relieve the load on the structure it can be used for running OP, Administrative and support services when fully restored.
- a. **Crack Repairs:** Appropriate method of crack repair to be adopted based of the typology and crack width. Non-structural cracks or surface cracks with width less

than 0.3 mm are to be repaired by re-plastering. Repair to structural cracks with width more than 0.3mm can be done by injection grouting or stitching.

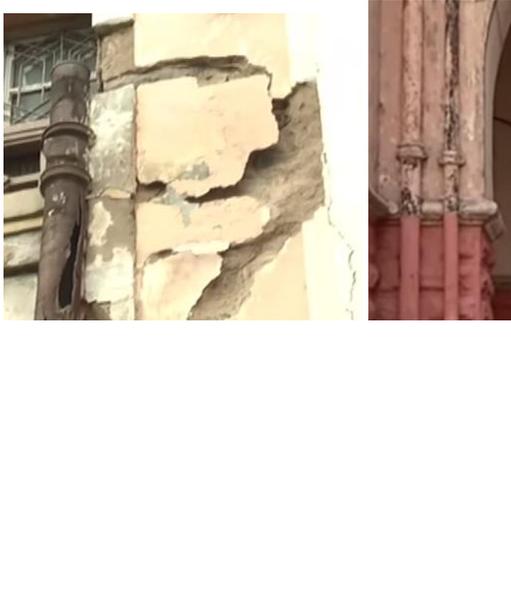
- b. **Removing deteriorated plaster and re-plastering:** The plaster deteriorated on both internal and external surfaces are to be removed and re-plastering done in compatible material.
- c. **Timber repairs:** Deteriorated timber members are to be consolidated for reuse if still serviceable. Those beyond salvage need to be replaced.
- d. **Restoration of steel:** Rust to be removed from all exposed iron work through sandblasting technique under supervision of experienced conservator; thereafter treated with epoxy paint.
- e. **Water Proofing:** New water proofing to be done on all the terrace using materials compatible with historic fabric.
- f. **Structural Members:** Detailed investigation to be carried out with regards to distress in RCC slab and its support systems. The option of treating, restoring, strengthening or replacing damaged portions will be subject to location specific findings subsequent to which the degree of intervention required shall be ascertained.

Summary of Recommendations

Photographs	Description	Condition /Cause	Recommendation
	<p>False ceilings, Damaged Ceiling Plaster, Slab reinforcement damage.</p>	<p>Continued humidity and water seepage from leaking pipes.</p>	<p>Treatment to rusted reinforcement, removing the damp portions of the ceiling plaster and re- plastering using appropriate mortar mix. Repairs of leakages in pipes and terrace.</p>
	<p>Wall Plaster</p>	<p>Repaired plastering with non- porous cement over masonry in lime mortar causing cracks and humidity and damaging finishes.</p>	<p>Waterproofing using formulated plasters with air-entraining admixture or use traditional ingredients and techniques, particularly those employing a lime and sand mix.</p>

	<p>Seepage of water & Dampness, Water Logging</p>	<p>Water logging on terrace. Failure of water proofing layer on the terrace or improper technique/ material employed for water proofing.</p>	<p>Roofs can be re water proofed by using polymer-based flexible waterproofing systems by removing the existing top repaired layer without disturbing the structural stability and maintaining required slopes. For waterproofing and sealing purposes - injection grouting by using suitable and compatible grouting systems, regular maintenance, repairs to water outlets and spouts joints as well as removal of vegetation and debris from the terraces.</p>
	<p>Vegetative/ Moss , biological Growth</p>	<p>Growth due to continued dampness of surface because of water logging and lack of attention and periodical cleaning and removal.</p>	<p>Cleaning and removal of existing biological growth at bottom portions and coating the same with fungicides or weedicide to avoid the recurrence and also providing proper slopes while laying the new terrace to allow water run-off easily.</p>

	<p>Flaking of Plaster in wet areas.</p>	<p>Flaking due to continued dampness in wall because of water seepage from roof or because of raising dampness from below.</p>	<p>Repairs to leaking pipes - thereafter Water proofing of plasters can be done. Rising dampness to be treated by creating damp proofing course by using appropriate / proper compounds and admixtures.</p>
	<p>Cement and other material additions</p>	<p>Cement addition is unfavorable to a lime construction structurally.</p>	<p>Removing earlier repaired portions using high strength cement without causing any sort of damage to the structure and strengthen it by re-doing those portions using harmonizing lime mortar mixes. In areas where major repairs are to be done opt for use of polymer mortars by incorporating acrylic or latex based admixture.</p>

	<p>Floorings and surface bases. Treads for steps.</p>	<p>Unmatched and incompatible building materials compared to those originally used. Damages and wear and tear.</p>	<p>Localised repairs to highly damaged floors in original materials. For rest - work can be taken up in phases as per overall restoration strategy.</p>
	<p>Doors ,Windows & Ventilators; Openings.</p>	<p>Additional openings executed for modifications and partitions - especially doors. Windows on exteriors</p>	<p>As the joineries are made of natural wood, these can be treated and part replaced and provided with protective coating replacing standard hardware. Opening of closed ventilators and windows for better ventilation</p>
	<p>Plumbing Services & Installations,</p>	<p>The main cause for water, especially drainage water creating dampness and damage to surface finishes and slab. Lacks maintenance.</p>	<p>As immediate measure leaking and broken pipes to be replaced, thereafter installation of building services, mainly sanitary and plumbing system with integrated design approach ensuring proper collaboration to avoid damage to structure.</p>

	<p>Minars, parapets and architectural elements</p>	<p>Lack of maintenance and weathering.</p>	<p>As these elements are in brick they can be repaired, re-constructed with compatible bricks and binding/plastering as per overall conservation strategy</p>
	<p>Alterations and additions with no relevance.</p>	<p>Extra unprotected brick walls, rooms, OHT, etc., found in some places.</p>	<p>Removal of all walls and other constructions without relevance to heritage structure. Removal of unwanted equipment and debris. Finish the surfaces and base with compatible materials</p>
	<p>Stair Cases and lifts, machine rooms.</p>	<p>Improper maintenance of elevators and some damage to stair case due to dampness</p>	<p>Strengthening is required to make it structurally safe by reconstruction of some parts. The lift which is abandoned can also be restored.</p>

II. Construction of new structure as expansion of the existing facility in the campus is suggested so that it can accommodate modern services and support systems following all regulations and norms. The design of new expansion to be prepared with utmost care. It should also consider the heritage building and should not undermine the character of that building. It should incorporate the latest principles in the design of hospital buildings to take care of requirements of bio medical infrastructure, electrical, sanitation, environment, security, access control, IT, sterilization, patient’s safety, fire safety and all other aspects. The said new construction should not in any way distract from the grace and beauty of the heritage structure nor compromise its spatial arrangement with reference to the river Musi and the intervening landscape.

7. CONCLUSION

- Historic structures and monuments are the most immediately apparent manifestation of our past. Being mere custodians, it is imperative that we protect and preserve these important facets of cultural heritage and human civilization so that they are passed on to future generations.

- Rehabilitation of old buildings with historic significance is very different when compared to normal repair of modern day structures. The materials used in the construction of heritage buildings are those that were available locally and the planning relies extensively on natural light and ventilation which makes automatically makes them intrinsically qualified for the ‘Green Building’ tag. Rehabilitation or restoration therefore needs to be done in consonance with the architectural aesthetics and ambience of the original design.
- It should be borne in mind that primary responsibility is not only to regain the architectural aesthetics but also to make old buildings perform their new roles with total safety. In case of OGH the lack of maintenance is the main cause for the present condition of the building. No settlement or distress was found in foundations of external or internal walls. The vertical supporting structures and arches which are pointed in nature are intact except few in the top story which require stitching and strengthening using suitable retrofitting techniques.
- After the Visual observation and investigation by INTACH team of conservation architects, and structural engineers along with experts from other related multi-disciplinary fields, it is confirmed that there is no serious structural damage in the heritage block /building of OGH, Hyderabad.
- Not only is the demolition of such a landmark building not desirable and advisable, it is also going to be a technically complicated task to demolish such a sturdy and massive construction with thick walls and foundations. The cost of such an effort is likely to be more than that of the immediate repairs that the building requires to make it fully sound structurally, render it more user friendly and arrest further damage subject to effectively tackling the issues of neglect and lack of maintenance. Thus the option of its demolition is **NOT** worth considering or feasible either on technical, financial or practical grounds. The damages observed are mostly on the surfaces of the building and found to be within the purview of reparability if these are carried out under expert direction and supervision.
- The OGH Heritage Building is structurally safe and can be made safe for another century, barring any natural and human interventions, if properly maintained after repairs, restoration and retrofitting. The final restoration proposal will entail a detailed condition assessment based on qualitative and quantitative data based generated through techniques such as in-situ tests, laboratory tests, empirical models, etc. Such an exercise, executed under strict supervision of conservation experts in collaboration with those familiar with modern hospital design will ensure that OGH regains its status as the premier health institution of Telangana State.

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