



Maintenance And Repair of Historical Gates in Aurangabad

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Abstract: Aurangabad is a city in the Indian state of Maharashtra that has a rich cultural and historical heritage. The city has several historical gates that were built during the reign of the Mughal emperor Aurangzeb. These gates serve as important landmarks and are of great architectural and historical significance. However, over time, these gates have suffered from neglect and lack of maintenance, leading to deterioration and damage. In this research paper, we examine the current state of the historical gates in Aurangabad and propose strategies for their maintenance and repair.

INTRODUCTION

The city of Aurangabad is home to several historical gates that were built during the Mughal era. These gates were built to mark the entry and exit points of the city and to serve as a symbol of the Mughal empire's grandeur. However, over time, these gates have suffered from neglect and lack of maintenance, leading to deterioration and damage. The purpose of this research paper is to examine the current state of the historical gates in Aurangabad and propose strategies for their maintenance and repair.

Though the city of Aurangabad boasts the title of 'The City of Gates', the efforts to preserve and celebrate the rich heritage barely bolsters the significance that it holds. In the face of issues such as increased development pressure, inadequate development regulations, insufficient infrastructure, destruction and deterioration of the historic structures and incongruent redevelopments, the city's vibrant culture and heritage is being actively side lined. These precincts not only provide identity for the city at large, but they also help in organizing and uplifting the immediate associated communities, all while contributing to the historical importance of the city.

LITERATURE SURVEY

Prof. Kapil Gujarathi [1]:

In the context of a city that's rapidly expanding and growing under the influence of urbanization, it's important to heed attention towards conserving the unprotected and preserving the legacy before it's too late. Heritage gates of the city have always garnered interest and attention from the tourism point of view, but it's impossible to isolate the city's past legacy with just the gates. There are many more associations, many more grounds of possibilities wherein work towards establishing a balanced and sustainable city identity can be initiated. The full potential has never been sought to be exploited. This is majorly because the city is busy with the more apparent development goals. While there is nothing

Prof. Chimay J. Anumba [2]:

The conditions which affect the integrity and/or serviceability of these structures which could be in the form of defects, damage and deterioration would be fully elucidated within the system, and for which appropriate repair systems would be recommended. The system would also aim to provide a well collated and documented, comprehensive and vital knowledge-base, synthesized from the knowledge of available expert opinions from specialist contractors with proven track records, consultants, and researchers involved in concrete repairs and maintenance. The desired result of this work, would be the recommendation of economic, logical and efficient repair procedures and systems for any particular repair or maintenance condition in any of the above structures.

Need of the study.

The need for analyzing the conservation of the gates is I derived from the fact that even after Investing extensive amount of money into the project, the question still stands if there is proper vision for the conservation. The main aim of equipment maintenance is to maintain the functionality of the equipment and to minimize its breakdowns. For mechanical equipment, the maintenance management will involve repair, replacement, and serving of tools. It also ensures the proper working and to intercept fluctuations that occur in the duration of the production process. The fact remains that, any kind of change even a minor downtime could reduce the overall efficiency of machines which would lead to major production losses. Therefore, it is important for organizations today

to get and implement a good maintenance management strategy. Without or in the absence of equipment management, it might be possible to face some consequences in revert of careless decisions

3.1 Techniques used for Conservation

3.1.1 Core cutting

The core cutter method is a test used to determine the in-situ dry density of soil. It is only used in fine-grained cohesive soils without stones. The test requires cylindrical core cutters about 130 mm long and 100 mm in diameter. The bulk density of soil can be easily calculated using this method Core cutting in stone masonry for complete thickness of masonry using 4" concrete core cutter for isolation of masonry to be dismantled. Including all material, labor, safety arrangements, water, electricity, disposal of material, cleaning of edges/ masonry.



Fig. No. 1 Core cutting

3.1.2 Grouting

Grouting mortar of Lime: Surkhi : Water ratio varying from 1:0:3 to 1:2:20 as specified by the structural engineer using Air compressors with a capacity of 3 to 4 cum per minute and with a pressure of 2 to 4 kg/cm². Grouting should be done 1.5 m c/c or as may directed. Pressure for mortar filling should increase gradually. The grouting should be done in such a way that the voids are completely filled and the mortar should be falling out of the hole at the highest allowable pressure. The grouting should be done at least 3 times for ensuring good quality of grouting. Payment will be done based on quantity of lime plus surkhi used.



Fig No:-3.4 inserting grouting sully

3.1.3 Guniting

Guniting by dry mix process as per IS 9012 (1978) to ceiling, soffit etc. in CM 1:3, 50 mm thick under pressure of 2.1 kg to 2.8 kg per sq. cm. including forms, scaffolding, floating the surface, curing for 14 days etc. complete. Guniting is one of the commonly used techniques in the construction industry to apply mortar or concrete to a surface. It is called Guniting as the process involves using a spray gun.



Fig. No. 2 Appling gutting

3.1.4 Ashlar masonry

Ashlar masonry is a form of masonry that uses uniformly dressed stones, meaning they are all the same size, shape, and texture. Providing Ashlar masonry of trap/ granite/ quartzite/ gneiss stones having size 30x15x30 cm in hydraulic lime in 1:2:1 (Hydraulic lime: Surkhi : V.S.I Sand) in Arch including raking out joints when plastering is to be done and striking joints when no plastering is to be done on the inside, watering.



Fig. No. 3 Providing of Ashlar masonry

3.5 Design of element

3.5.1 Copper beam

Providing cutting, bending, hooking, tying, laying in position copper bars for reinforcement for all R.L.C. (Reinforced Lime Concrete) works as per detailed drawing etc.

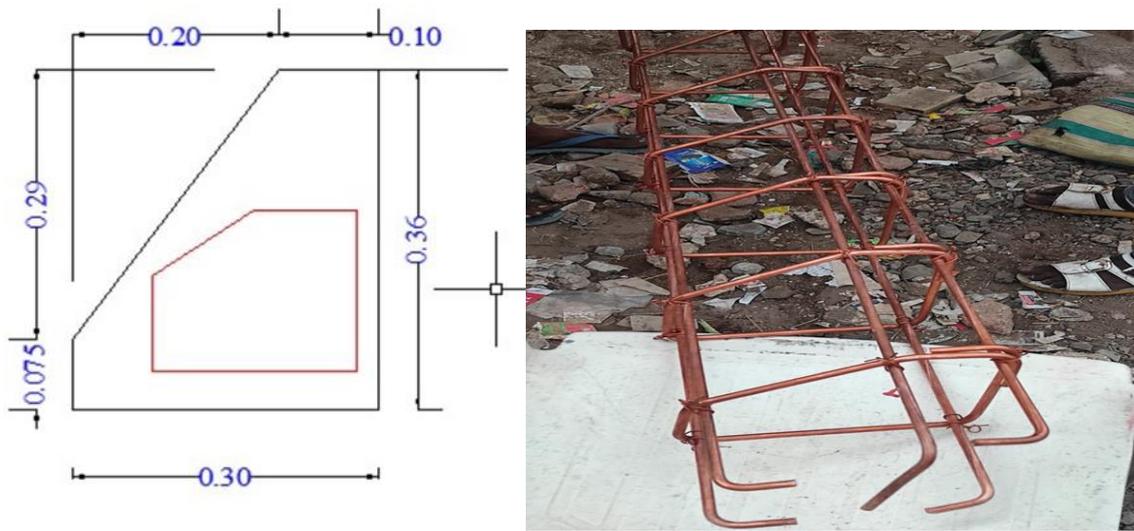


Fig No. 4 Design Copper beam.

Self-weight of structure

Self-weight is the load on a structure imposed by its own weight. Self-weight is directly influenced by the material density of the structure. By default, self-weight is turned off and needs to be enabled if it is to be modeled. The self-weight will depend on the material and the section of each member. the load on a structure imposed by its own weight. Self-weight is directly influenced by the material density of the structure. By default, self-weight is turned off and needs to be enabled if it is to be modelled. Typically, a heritage building means a structure that requires preservation because of its historical, architectural, cultural, aesthetic or ecological value.



Fig. no.5 Self weight of structure

Research Through Innovation

4 Mehmood gate plan

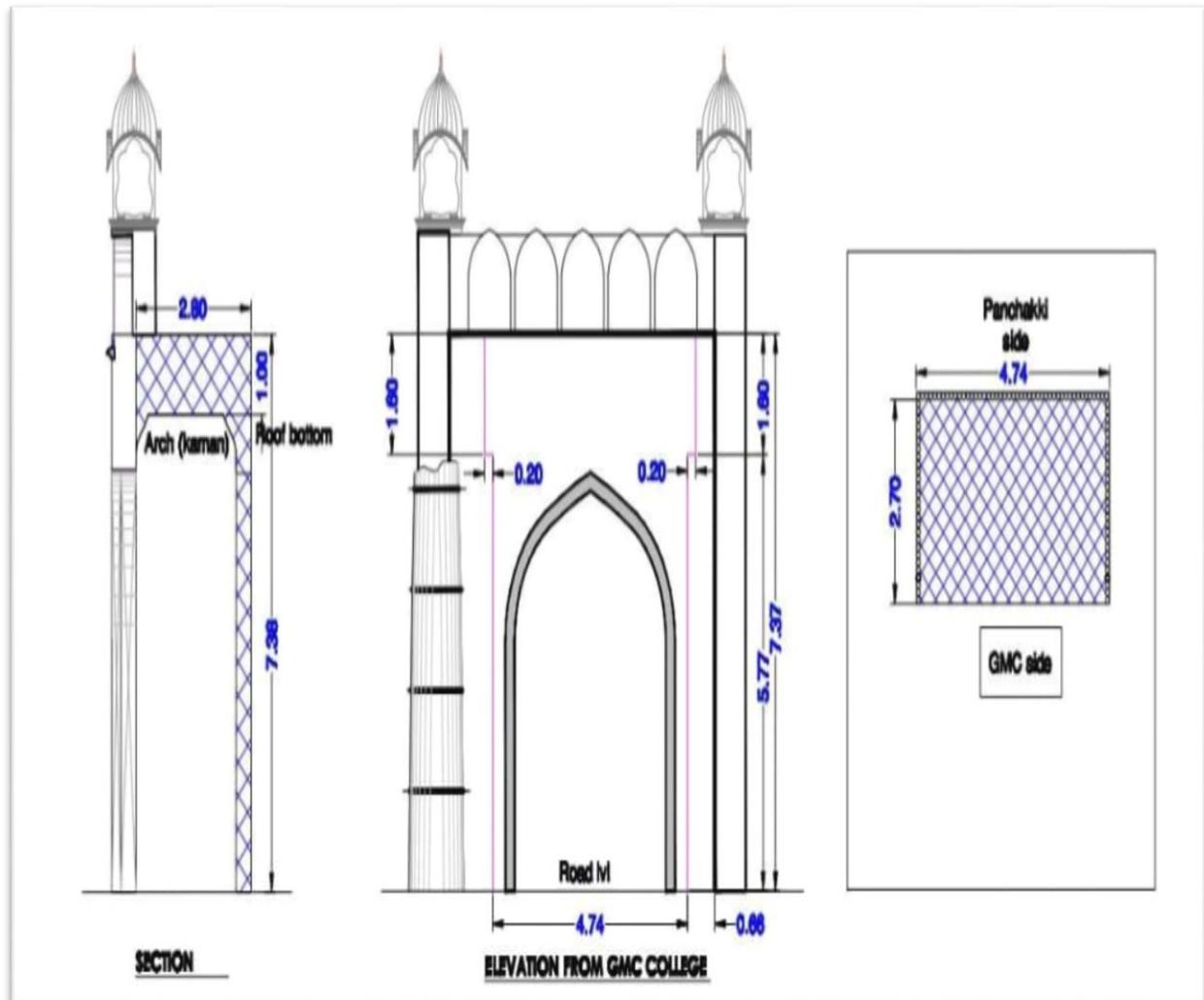


Fig no.6 Mehmood gate plan

4.1 Actions taken in conservation of Mehmood gate

Filled the damaged joints Taka work: White Plastering Patchwork: Connecting patches in fallen part Waterproofing: Preventing leakage through roof Plinth Protection: stopping water percolation Removing unnecessary plaster: Regenerating original look of historic stone masonry Insertion of M. S. Girders: for stability of horizontal arched roof Stone paving on ground below the gate: Making it pedestrian Boundary on the surroundings: Preventing damaged by restricting vehicular entry Lime plastering: covering haphazard masonry Metal Jails: Restricting peoples' access. Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 with simple interest of 9% per annum for a period of 10 years. Variables of the study contains dependent and independent variable. The study used pre-specified method for the selection of variables. The study used the Stock returns are as dependent variable. From the share price of the firm the Stock returns are calculated. Rate of a stock salable at stock market is known as stock price.

4.2 Research methodology

The Several studies have been conducted on the historical gates in Aurangabad. Some scholars have focused on the architectural features and construction techniques used in the gates, while others have examined their symbolic significance and historical context. For example, the study by Ghare and Devre (2016) examines the architectural features of the Delhi Gate in Aurangabad, while the study by Khan and Ahmed (2018) explores the cultural and historical significance of the Paithan Gate. These studies provide valuable insights into the gates' architecture and their role in the history of Aurangabad.

4.3 Rate analysis

Sr no	Item description	Quantity	Units	Estimate rates
1	Core cutter in stone masonry.	108.00	No	2580
2	providing ashlar masonry	1.68	cum	53350.25
3	Grouting mortar of line	8800.00	kg	24.33
4	Gutting of dry mix process	103.68	sq.m	982.44
5	Muller	1.00	No	115500.00
6	Copper	16.05	Kg	858.72
7	Cement slurry nozzles	120.00	NOS	210.60





Result

After the complete conservation of the Mehmood Gate, the gate appears to be restored. But gone into the details of it, one could actually question the way conservation has been planned. Was restoration necessary for the monument or it could have been preserved the way it was found? As the difference between preservation and restoration implies totally different things, the implications of certain actions also could have been analyzed which was hardly seen in the conservation of this Gate. Our assessment of the historical gates in Aurangabad revealed that they are in need of urgent maintenance and repair. Many of the gates have suffered from weathering, erosion, and structural damage. The gates also suffer from encroachment, with shops and buildings built in close proximity to them. The lack of regular maintenance has led to the accumulation of debris, which further accelerates the deterioration process.

Conclusion

The historical gates in Aurangabad are an important part of the city's heritage and require urgent attention to ensure their preservation for future generations. Through a combination of regular maintenance, structural repairs, and community engagement, we can ensure the long-term preservation of these valuable structures. The study provides a comprehensive understanding of the historical gates in Aurangabad, highlighting their architectural features, symbolic significance, and historical context. The gates serve as an essential component of the city's rich cultural heritage, attracting tourists and scholars interested in history and architecture. The study's findings contribute to the understanding of the Mughal period's architectural legacy in Aurangabad and its importance in the region's history. Further research is necessary to explore the gates' conservation and preservation to ensure their continued legacy for future generations.