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COMPARATIVE CASE STUDY ON ANCIENT CONSTRUCTION AND MODERN CONSTRUCTION OF GADMANDIR RAMTEK AND SWAMI NARAYAN MANDIR NAGPUR: A REVIEW

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Abstract: This research shows the comparative exploration on ancient construction technique in Ramtek and its durable characteristics which stronger existence. On the other hand, the modern technique which is used in the Swami Narayan mandir and its structural characteristics. This research paper discusses the environmental impact of construction and the preservation of vernacular techniques of construction as the heritage. So, it presents a proposed construction technique using a durable structure system with enhanced local materials to be able to survive a long period of time and conserve the unique character of structure. In addition, the proposed structural/architectural design of affordable structure is compared with the traditional and modern temple techniques through their strength, thermal insulation and cost. The comparison outcome shows the material properties, physical and chemical features, stability of structure and conservation maintenance.

Keywords - Ancient construction techniques; Ramtek Gadmandir, Modern techniques; Swami Narayan Mandir, Ram mandir Structural., etc.

I. INTRODUCTION

In the Indian history of building is marked by a various number of trends. On the increasing durability of the materials used. In the early building materials were perishable, such as leaves, branches, and animal hides. Later on, more durable natural materials such as clay, stone, and timber, and, finally, synthetic materials, such as brick, concrete, metals, and plastics were used. Another is a quest for buildings of ever greater height and span; this was made possible by the development of stronger materials and by knowledge of how materials behave and how to exploit them to greater advantage. A third major trend involves the degree of control exercised over the interior environment of buildings: increasingly precise regulation of air temperature, light and sound levels, humidity, odours, air speed, and other factors that affect human comfort has been possible. Yet another trend is the change in energy available to the construction process, starting with human muscle power and developing toward the powerful machinery used today.

Now the present state of building construction is very complex. There is a tremendous range of building products and systems which are aimed primarily at groups of building types or markets. The design and construction process for buildings is highly organized and draws upon research establishments that study material properties and performance, code officials who adopt and enforce safety standards, and design professionals who determine user needs and design a building to meet those needs. The equipment of construction process is also highly organized; it includes the manufacturers of building products and systems, the craftsmen who assemble them on the building site, the contractors who employ and coordinate the work of the craftsmen, and consultants who specialize in such aspects as construction management, quality.

II. LITERATURE SURVEY

In the paper [1], by Dr. Mir Mohammad Azad, Abhik Barua, (October 2017). there is a proposal to Ancient Egyptian architecture is the architecture of ancient Egypt, one of the most influential civilizations throughout history, which developed a vast array of diverse structures and great architectural monuments along the Nile, among the largest and most famous of which are the Great Pyramid of Giza and the Great Sphinx of Giza. In the paper [2], by Ar. Swapna Ashok Dhavale, Ar. Leena Prasad Aphale and Ar. Madhulika Bhumkar. (2017). In the understanding of this paper an ancient settlement from the urban regional sustainable development through study of the ancient silk weaving industry. The study of this ancient town and the hinterland clearly shows the spatial pattern and architecture that had evolved in response to the prevailing economic (weaving industry-flow of raw material, process involved) social (communities involved in the skilled processes) and political (rulers and their aspirations) conditions. In the paper [3], by Aradhna Shrivastava, Vijay Kumar Shukla, (February 2019). In this paper we are studied about the failure of traditional buildings structure like cracks in beam column slabs or failure of these component due to various reasons like permanent loading, creep, temperature stress,

shrinkage, settlement of foundation, moisture. In this study we will classify the type of failure in component and suggest the method to rehabilitate the component without changing its homogeneity. Study has been to implement the method for the restoration of building with original material keeping in mind that material deviation does not help in proper boning of component. In the paper [4], by Pravin S. Velapurkar, Pooja D. Taralgatti, Rahul D. Kapase (2020). From this research paper study ancient structure present in Maharashtra state likes caves forts wadas old temples etc play measure role to improve traditional and cultural value of the state. In the paper [5], by Er. Mohammed Sahil, Er. Prafull Kothari (May 2020). This Paper is the case study of the architecture of lotus temple. In this paper the details about the lotus temple (general detail) and the architectural and structural study of lotus temple how to construct lotus temple, which type of problem/challenges arises during construction and the study of structural drawings. In the paper [6], by Rohith Jain, Mohammed Junaid, Kishore N, Yashwanth Gowda (ICEI-2022). Masonry is one of the most important components of a structure which is under the action of compression and lateral loads. The results obtained, describe the suitability of different masonry combinations under different conditions. In the paper [7], by Liming Zhu, Baofeng Miao, Shiling Xing. (2018). This paper will respectively from natural vibration and the two aspects of urban development brought about by the vibration, analyzes its present form in order to prospect for its future, put forward the corresponding development strategy. In the paper [8], by Entidhar Al-Taie, Nadhir Al- Ansari, Sven Knutsson (2012). The materials used and the design of the buildings were very suitable from both environmental and engineering perspectives. This work is a critical review of the progress and development of engineering practices and construction materials used in ancient Mesopotamia.

III. OBJECTIVES

On the basis of Structural comparative exploration following objectives considered.

i. On the basis of comparison structural and architectural features will be studied.
ii. By evaluating between structure. the structural stability tested.
iii. In the basis of comparison bonding material and its compressive strength checking.
iv. What are the economic differences in between the ancient and modern structure?
v. How its construction process was worked.
vi. What are the physical and chemical properties?
vii. What techniques used in the repairs works.
viii. How its structural durability.
ix. Which one is best feasible and durable?
x. What technology used in the both structures.
xi. Do not use abbreviations in the title or heads unless they are unavoidable.

IV. CONCLUSION

On the basis of the above literature papers, we have studied the most influential civilizations throughout history, which developed a vast array of diverse structure. Studied about the sudden failure of traditional buildings structure like cracks in beam column slabs or failure of these component due to various reasons like permanent loading, creep, temperature stress, shrinkage, settlement of foundation, moisture. Also we conclude by undertaking a structural study of temples taking examples from north Indian and south Indian temples. In an attempt to graphically analyses the structure with respect to its structural stability. On the basis of the above studies the stability of the temple structure depends mainly on the load applied rather than material failure. The material concerning the main geomentrical property of the temples from the India.

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