Session – II

Strengthening and Restoration of Heritage Buildings

Thiru K.P.Mohandas

Asst.Superintending Archaeologist,Archaeological survey of India, Chennai Circle, Chennai

What is heritage?

Heritage is the resultant of activities of the past continued to be practiced

Broadly classifiable into two categories:

- Tangible heritage - Structures, sculptures, tools, etc.,
- Intangible heritage – folk traditions, performing arts, chanting of religious hymns, etc.,

Tangible heritage – Monuments in India

Protection and preservation of monuments is the duty of both the central and state governments as it is included in the concurrent list of the constitution.

The Parliament has enacted the Ancient Monuments and Archaeological Sites and Remains Act 1958 and subsequent rules

Ancient Monuments is defined in the 1958 Act. Ancient Monument means any structure, erection or monument, or any tumulus or place of interment, or any cave, rock-sculpture, inscription or monolith which is of historical, archaeological or artistic interest and which has been in existence for not less than 100 years and includes—

1) Remains of an ancient monument,
2) Site of an ancient monument,
3) Such portion of land adjoining the site of an ancient monument as may be required for fencing or covering in or otherwise preserving such monument, and
4) The means of access to, and convenient inspection of, an ancient monument;

Central Government has notified some of the important monuments as Protected Monuments under the above acts.

The responsibility of preserving such monuments becomes that of the government and the government is expected to take appropriate measures to preserve them without changing their ancient character.

Types of Heritage Structures in Tamil Nadu

Archaeological Survey of India, Chennai Circle

Total number of structures	*248*
Total number of prehistoric archaeological sites:	*163*

Types of structures:

- *Stone Temples (7th century AD onwards) – Structural and rock-cut*
- *Medieval and colonial forts, mosques, churches*

Verified © RealEstate ™

Group of monuments…… Mahabalipuram- World Heritage site



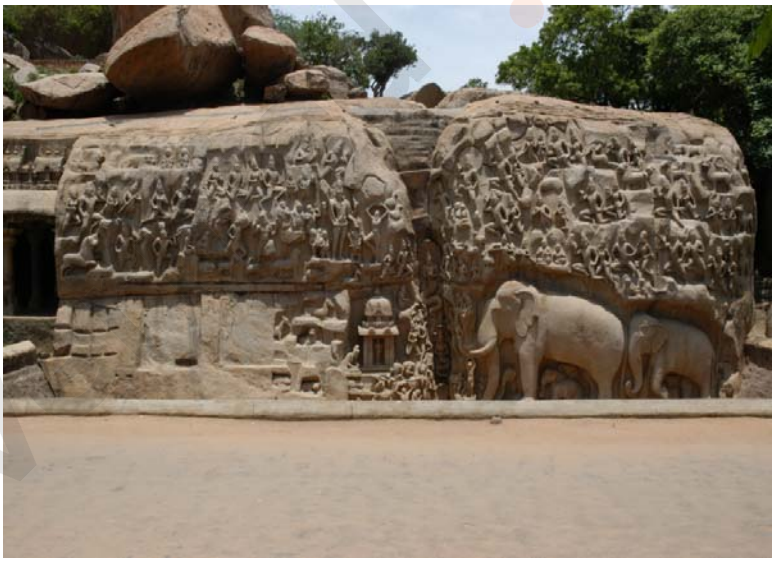
Monolithic temples



Cave temples

Created during the reign of Narasimhavarman, Pallava king and by successive kings in the late 7th –early 8th Century

Important monuments… Mahabalipuram

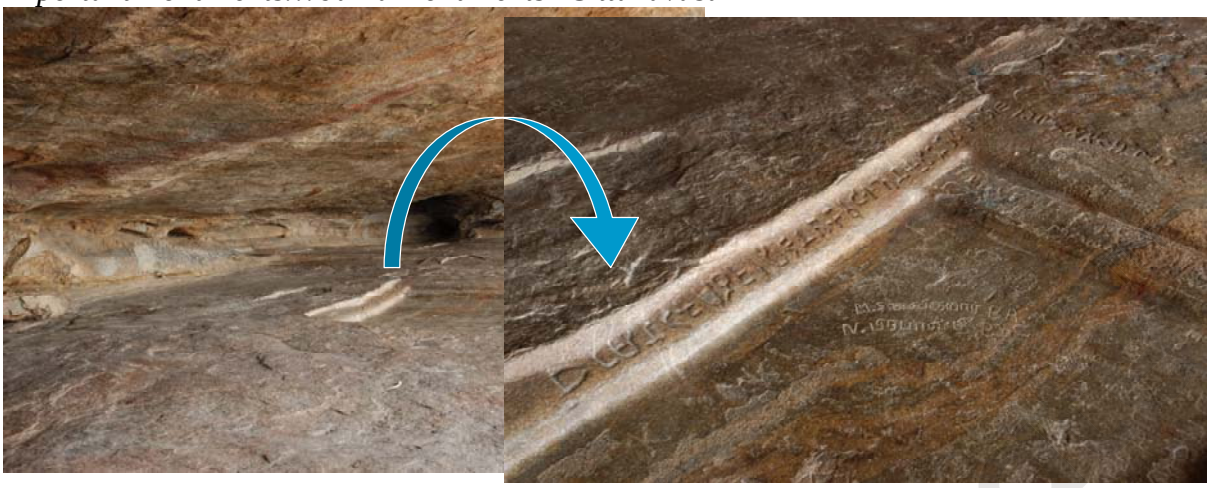


Bas relief



Structural temples

Important monuments… Jaina monuments - Sittanavasal



Rock shelters were habited by Jain ascetics right from 2nd century BC. The beds which they used contain the Brahmi inscriptions recoding the name of the person who donated the beds. The writings are the earliest forms of Indian Scripts

Important monuments… Jaina monuments – Sittanavasal



The rock cut Jaina temple has some of the exquisite murals.

Important monuments… Structural Temples – Pudukkottai Region – Kodumbalur



Kodumbalur was the capital of Irrukkuvels, who lent support to the Cholas. It was also a centre of intense Saiva cults. The Muvar Koil, built by Bhuti Vikramakesari and his two queens around AD 850,were gems. Elegant, proportionate and has many exquisite and expressive sculptures





The Great Living Chola Temples World Heritage Site - *The Brihadisvara, Tanjavur*




The temple par excellence. Built around 1010 AD, Vast in concept, perfect in execution, extraordinary in administration. Rajaraja, the great Chola monarch not only built a temple which is at least 40 times bigger than the earlier temple, he created an extraordinary institution to manage it.



The Brihadisvara, Gangaikondacholapuram

Rajendra (1014-1042) son of Rajraja had victorious campaigns upto the banks of Ganges. He also led an equally brilliant naval expeditions to the far east.

True to his grand achievements he created a new capital – Gangaikondacholapuram- with an another magnificent temple. It said the Chola architects corrected some of the flaws in the design of earlier Brihadisvara at Tanjavur



The Airavatesvara, Darasuram

Built by Rajadhiraja (1146-1173).Smaller but highly ornate. Contains friezes depicting events from the lives of Saiva nayanars

Conservation of Monuments - The Principles

Repairs to ancient monuments are an ancient practice

The Avantisundarikathasara by Dandin (8th century AD) acclaims the great restoration of the broken hand of the Anantasayi Vishnu image of Mahabalipuram. So much so, the poet who saw the work appreciates the almost invisible restoration by the mason.

The Vijayalacholisvaram at Narttamalai, an early Chola temple (9th century AD) was rebuilt after it was damaged in lightening immediately it was built.

Repairs and restoration is an age old practice. The Agamas, texts prescribing the rules of constructions, prescribes mending or replacement of broken architectural members

The fundamental statement of principles of conservation of ASI
The Conservation Manual

"…….. Officers charged with the execution of conservation work should never forget that the reparation of any remnant of ancient architecture, however, humble, is a work to be entered upon with totally different feelings from a new work or from the repairs of a modern building. Although there are a number of ancient buildings whose state of disrepair suggests at first sight a renewal, it should never be forgotten that their historical value is gone when their authenticity is destroyed, and that our first duty is not to renew them but to preserve them.

The fundamental statement of principles of conservation of ASI
The Conservation Manual

When, therefore, repairs are carried out, no effort should be spared to save, as many parts of the original as possible, since it is to the authenticity of the old parts that practically all the interest attaching to the new will owe itself. Broken or half-decayed original work is of infinitely more value than the smartest and most perfect new work (Conservation manual: pp. 9-10;). (sic) In other words, the hypothetical restoration should be avoided at any cost.

Types of Problems in Heritage Structures

HUMAN NEGLIGENCE - Unintentional



Patalesvara temple,
Brahmadesam, Villupuram District
c. 11th century AD

Once supported by extensive grants of the Cholas, formed a complex of a Vedic University with hostel and Medicare for inmates

Till ASI took over, negligence caused extensive vegetation growth

Vegetation caused dislodgement of architectural members from their original position

Siva Temple,
Suriyur
District Pudukkottai
c. 10th century AD

Once a temple of a prosperous settlement

Abandoning of the settlement, and the very location near a massive irrigation tank caused immense damage to the structure.



HUMAN Vandalism - Intentional



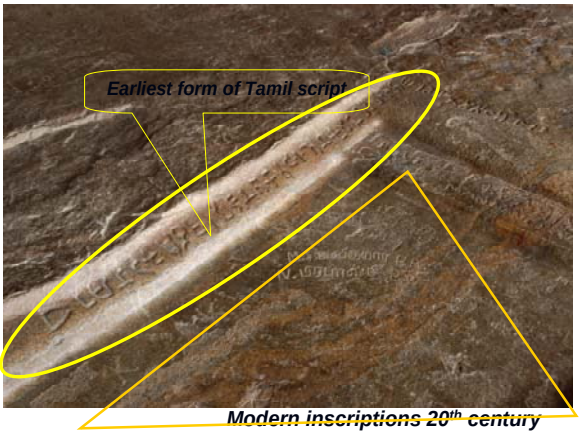
Brihadisvara temple
Gangaikondacholapuram
District Perambalur,
11th Century AD,

One of the three Great Living Chola Temples.
World Heritage Site

This gateway was standing in full until a British officer in 1836 ordered blasting of the gateway and the compound for fetching stone for the construction of a weir across Kollidam (Coleroon).

Public outcry stopped further blasting. But the damage was done.

Vetted RealEstate



HUMAN Vandalism

Rock-shelter,
Sitannavasal,
Pudukkottai District
c. 2nd Century BC

These natural rock-shelters were used by Jaina ascetics for recluse living. The donor of bed inscribed his pious act in 2nd century BC

But modern day visitors etched their names without care !!!!

Overloading of roof

Apatsaheysvara temple,

Sendamangalam

Distrcit Villupuram

13th Century AD,

Repeated laying of weathering course over the front mandapa

Many layers of bricks laid as weathering course to arrest leakage has resulted in the development of cracks in the load bearing walls / pillars.





Overloading of roof

Brahmapurisvara temple,

Brahmadesam

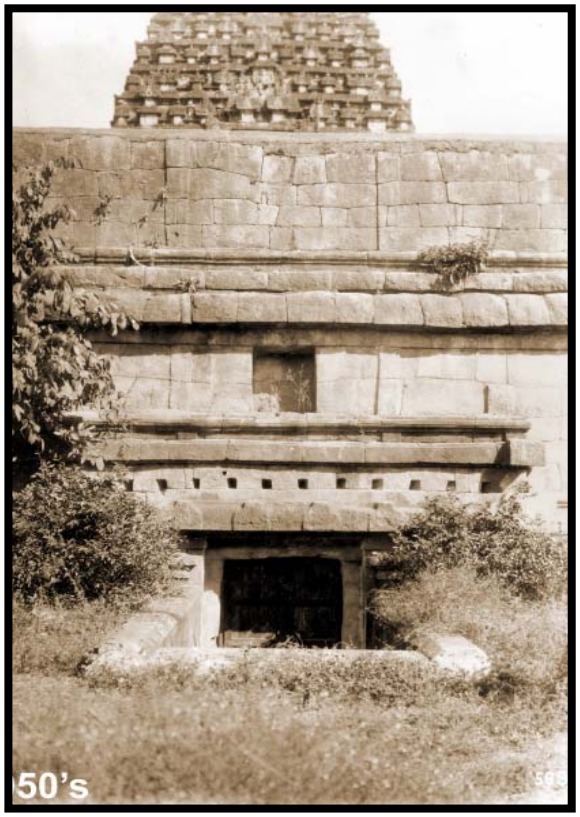
District Villupuram

11th Century AD,

Overloading of roof with layers of bricks
Overloading of the roof of the cloister caused the collapse one of the bays. The rank vegetation grown on the wall added to the problem.

Rising of ground level

Brihadisvara temple, Tanjavur



The Ground outside the complex was raised more than 15 ft covering almost one register of the compound wall

This had caused serious water seepage problems, blocking of three minor gateways, marred the grand elevation of the compound wall built in ensemble to the grand elevation of the main sanctum

Rising of ground level



Almost all the south Indian temples and temple complexes had massive temple tanks. These tanks served as a source of water and a tank to receive the run off water. This synergy solved the problems of drainage.

Of late, the original drainage of almost all temples are altered within the complex and due to raising levels of the roads outside due to layers of resurfacing. This kills the tanks.



Wrong Choice of stone

Kailasanatha temple,
Kanchipuram
8th century AD



Being the first major structural temple, the architects used a highly soft sandstone. The stone could not withstand the vagaries of nature in the past 1300 years resulting in weathering of features.







Structural Problems
Airavatesvara temple,
Darasuram, 12th Century AD
A long stretch of colonnade has sunken in the northern cloister due badly consolidated foundation. The whole cloister has raised platform (2m) core of which is filled with weakly consolidated earth. Load bearing beams are raised over this.
The monument was once affected by high water table due to proximity of trellis of irrigation channels of river Kaveri.



Climatic Problems

Shore temple, Mahabalipuram

8th century AD

World Heritage Site

- The proximity to sea has caused immense damage to the structure.
- The features are rounded
- The joints have widened
- But the selection of the site by constructing the temple on a bed jutting into the sea had saved the structure from collapsing even though the waves used to lash it until few decades ago



Climatic Problems

Shore temple, Mahabalipuram

8th century AD

World Heritage Site



The features are rounded
The joints have widened



Version 2.0 RealEstate ™

Conservation measures



Patalesvara temple. Brahmadesam
This temple was protected in 1995. There existed an Vedic institution.
The monument was fully covered with vegetation. Several architectural members were dislodged.

The monument was conserved after clearing the vegetation. Since the brickwork is supported by the inner veneer wall of stones, it was easy to conserve. The outer veneer was dismantled after documentation and reconstructed.





Siva temple,Suriyur,
Pudukkottai Dt

The temple is in a remote area
Difficult to reach after rains due to stagnating water
The whole temple was dismantled and reconstructed

This is common problem of this region – neglect for a long time. Majority of the temples in this region are located in close proximity to a tank. Therefore, when reconstructed, adequate strength to the foundation need to be provided.







Brihadisvara,
Gangaikondacholapuram

Most of the architectural members were available in the heap. Their original position in the structure was worked out. Those do not integrate was kept aside. The reconstruction was done to the height for which evidence was seen at that time



HUMAN Vandalism
Rock-shelter,
Sitannavasal, Pudukkottai District
c. 2nd Century BC

A massive grill was now put up to prevent entry of visitors. Still some enter through gaps



Apatshayesvara temple, Sendamangalam, V'Puram Dt

The monument was protected in 2000. Entire temple was in a dilapidated condition.

Sustained conservation measures since then has preserved the monument.

Watertightening of the roof of main temple was redone after removing the worn out layers.



Ven IC RedEstate



Brahmapurisvara temple, Brahmadesam, Villupuram Dt

One bay of the cloister mandapa had collapsed due to vegetation growth. The beams on the periphery wall, also collapsed

The architectural members, all of them featureless, were collected from the debris The whole cloister was reconstructed as per original



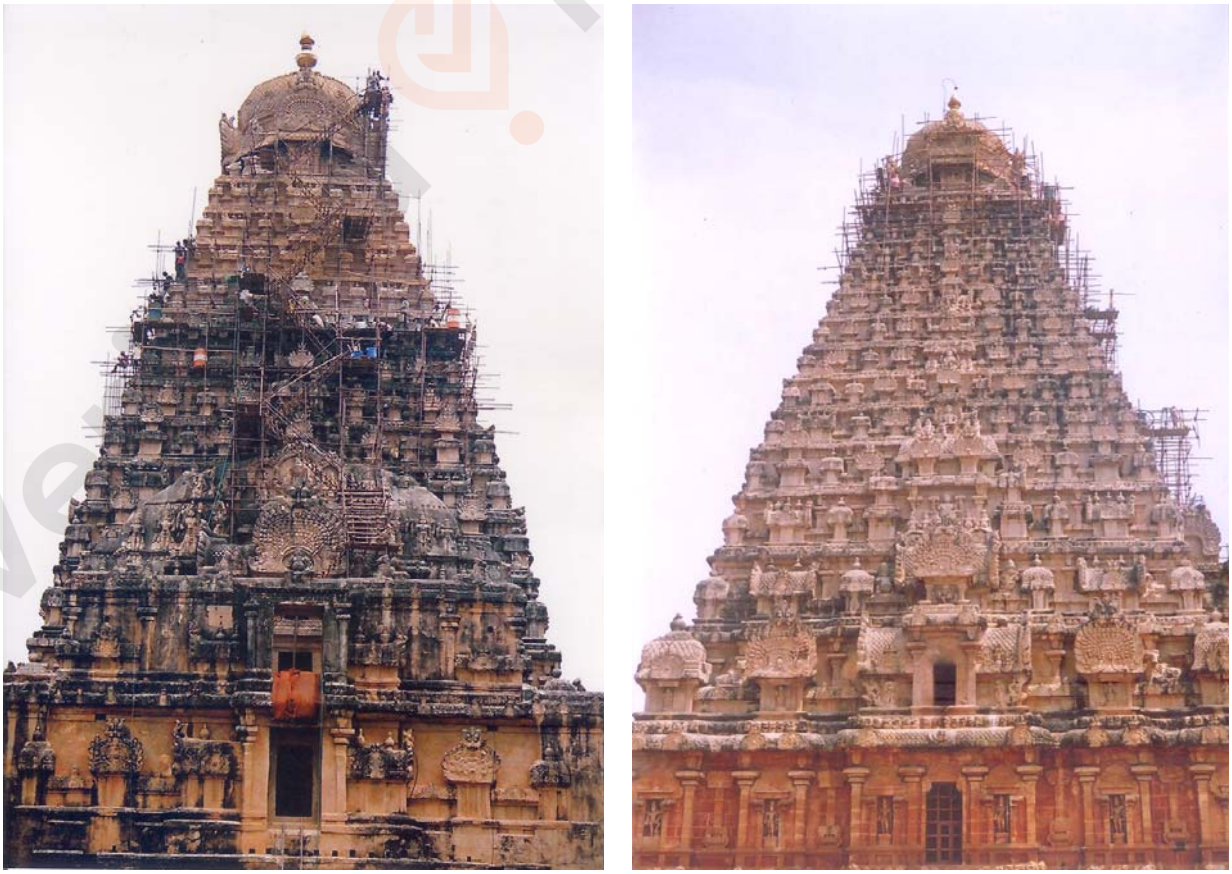




Brihadisvara, Tanjavur – removal of accumulated earth and bringing the original working level back into use



Brihadisvara temple, Tanjavur – Removal of accretional garden



Periodical chemical preservation of the vimana (58.96 m tall)



Shore temple, Mahabalipuram
8th century AD

- The problems of this site is being tackled continuously for over a century.
- The opened up joints are being pointed matching with the original
- A massive groyne wall of stone was constructed to push the sea away from the monument
- Periodical removal of salts by paper pulp method is being undertaken
- Plantation are grown to arrest the speed of the wind



Climatic Problems
Shore temple, Mahabalipuram
8th century AD
World Heritage Site

Application of paper pulp to remove salts
Construction of a groyne wall



VerifiedRealEstate™



- The groyne wall built around the temple played its role in saving the temple during the 2004 Tsunami.

What Public Can do?

- It is impossible for the Government to take all the Monuments under its control for obvious reasons of financial and manpower resources and the need for other developmental activities.
- But there are numerous structures of all types that require attention.
- Public should take interest and generate resources to preserve them for posterity.
- When a public initiative is launched, the principles should be simple:
- Maintain the original character of the heritage structures.
- Please respect the idea of the original builder.
- Please believe that the materials used in the ancient times and methods adopted were of superior quality.

*****

Verified © RedEstate™