REPORT ON
CONSERVATION OF MONUMENTS
2002-2005

Editor
T.S. Sridhar *I.A.S.*
Special Commissioner

DEPARTMENT OF ARCHAEOLOGY
GOVERNMENT OF TAMIL NADU, CHENNAI - 600 008

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PREFACE

The principles of monument conservation casts a heavy responsibility on the part of Engineers and Archaeologists to take care of monuments, to preserve and maintain them without falsifying, damaging, impairing or destroying them. These are outlined in an international paper on principles called the Venice Charter. The prime concern is the preservation of the original fabric and patterns of monuments. Wherever a traditional setting exists, it must be retained. No new construction, demolition or modification which would alter the relations of mass and colour must be allowed.

Tamil Nadu is famous for a number of cultural properties. We have abundant evidence in literature as well as in inscriptions about the construction of Palaces, forts, tanks, temples, choultries and Mandapams. They are both secular as well as religious in nature. Laterite boulders were used for constructing compound wall, foundation and sometimes superstructure of the

walls. The main structure of the secular buildings were built in bricks and timber; similarly binding material to build these structures seems to be either clay or lime mortar and some secular buildings had ornamental figures which were called stucco.

These monuments, which are having historical, archaeological or artistic interest, are in existence for more than one hundred years. They have been declared as protected monuments by the State Department of Archaeology under the "*Tamil Nadu Ancient and Historical Monuments and Archaeological Sites and Remains Act 1966*".

For protecting the monuments, apart from the regular budget allotment, the Central Government have allotted Rs.428.31 lakhs for 26 monuments for 34 works under the XI Finance Commission Grants (2002-05) as recommended by the State Level Empowered Committee (SLEC) to preserve for posterity and to conserve mural paintings. The Government of Tamil Nadu have issued various orders for executing the conservation works through the Public Works Department.

- G.O.Ms. No 42 T.D.C.& Religious Endowment Department dated 14.3.02
- G.O.Ms.No 232 T.D.C.& Religious Endowment Department dated 25.9.02
- G.O.Ms.No 73 T.D.C.& Religious Endowment Department dated 16.5.02
- G.O.Ms.No 143 T.D.C.& Religious Endowment Department dated 8.8.03
- G.O.Ms.No 283 T.D.C.& Religious Endowment Department dated 27.11.03
- G.O.Ms.No 44 T.D.C.& Religious Endowment Department dated 16.2.04.

The Government of Tamil Nadu exempted centage charges payable to PWD for all the XI Finance Commision Grant works in G.O. Ms. No.194 TDC&RE Department (MA2) dated 11.9.04 due to which more works could be carried out in the interest of conservation and preservation of monuments of State importance.

In order to follow the archaeological norms and principles and to preserve the cultural

edifices, an experienced Archaeological Technical Consultant, Thiru.M.G.Chellapillai, a retired Assistant Superintending Archaeological Engineer, ASI was appointed as a Technical Consultant.

The Archaeological conservation/ preservation works are not a normal PWD work but is of a specialised nature. Hence necessary instruction and appropriate method of conservation as per archaeological norms should be followed for all conservation/ preservation of ancient structures without changing their aesthetic value. Based on the nature of work necessary standardised specifications as given under have been issued to the PWD as and when required by the Department of Archaeo-logy.

- The tenderer should have past experience in the conservation of ancient monuments.
- The work should be carried out as per archaeological principles. Highly skilled labour, sthapathies/sudai masons and special materials should be employed.
- The aesthetic and archaeological value of the monument should not be affected.

- Re-plastering may be made with combination mortar with a proportion 1:1:5 using lime, free from salt, which is available only at Pollachi, as observed by Archaeological Survey of India. While using combination mortar, no.12 sieve mesh may be used for screening sand and extract of gallnut and jaggery in 12 kg per cu.m in equal proposition is also to be added at the time of execution of work. Simultaneously juice of cactus is also to be added for its required consistency as medicine of anti saline action. Lime mortar to be used should be well ground. To prevent blistering, the slaked lime should be left for 2 to 3 weeks in a heap to slake, reground and used.
- All original bricks of various sizes should be measured and similar type of bricks only should be procured and used.
- All wooden members like joists/ beams/ windows, doors etc. should be made in Burma teak wood and should be certified by PWD Engineers before use on work.
- For all construction activities on monuments only combination mortar should be used.

Using of pure cement mortar is strictly banned.

- During the execution of works, the work will be inspected by the Archaeological Department authorities and instructions issued from time to time have to be followed strictly.
- At the time of de-plastering, if any new findings are noticed they should be left as it is till the clearance of the Archaeology Department is obtained.
- De-plastering/removing worn out bricks should be done carefully, using proper power tools without giving shock to the structures stage by stage.
- While dismantling, proper care should be taken to retrieve old materials in good condition as far as possible.
- Whenever strengthening / removing / chiping / dismantling works are under- taken, necessary props / strutting should be given wherever required to act as centering. This will free the load on the roof.

This publication consists of the various conservation works carried out with photographic documentation before, during and after Conservation works undertaken with XI Finance Commission grant funds.

Government have also permitted for the first time partnership with the private entrepreneurs for conservation of monument at Vittalar temple in Vittalapuram in Kancheepuram district. The Trust entered into a "Memorandum Of Understanding" with State Department of Archaeology for utilizing the funds from the donors by following the guidelines and advice of the Department according to the archaeological principles.

I wish to acknowledge the efforts taken by the Director of Archaeology Thiru A. Abdul Majeed, M.A., who initiated the proposal; and Dr. R. Kannan IAS., Thiru K. Ashok Vardhan Shetty IAS., who obtained Government approval for the works and Dr. Sitharam Gurumurthi IAS, who took keen interest in the execution of works.

I wish to appreciate and thank Thiru S. Jayachandra Mohan, BE, Chief Engineer, PWD

Buildings and his team of Engineers Thiru. G. Anbumani, Special Chief Engineer, PWD Buildings Tanjore, Thiru. R. Mamundy, Executive Engineer, Thiru. S. Chandrasekaran, Assistant Executive Engineer, Thiru. M. Thalapathi Assistant Engineer PWD Tanjore and their subordinates, who were engaged in the execution of XI Finance Commission Grant works and for the prompt completion of the works allocated by the Government of Tamil Nadu, Department of Archaeology. I also wish to acknowledge the assistance rendered by Thiru V. Ramamurthy, Pre-historic Archaeologist, Thiru. K. Venkata Subramanian and Tmt. B. Valarmathi Personal Assistants of the Spl. Commissioner, Thiru M.T. Sridharan, Photo-grapher, Thiru V. Kumararaja, Superintendent of Conservation Section, R. Narayanan, Archaeological Conservation Junior Engineer, Thiru G.Gunasekaran, Archaeological Conservation Assistant Engineer, Thiru R. Swaminathan, Archaeological Conservation Junior Engineer, Thiru T.Thangavel, Archaeological Conservation Assistant Engineer of this department in the preparation of this document.

The conservation of monuments is facilitated by making use of them for some socially useful purpose. In all works of restoration or preservation, there are always to be precise documentation, illustrated with drawings and photographs. The above objectives are sought to be achieved through this publication. It is hoped that this will serve as a source book on ***Conservation of Monuments*** for those who are interested in the field.

T.S. Sridhar

10.03.2005 (T.S. Sridhar)

Chennai – 600 113 **Special Commissioner**

Conservation of Monuments

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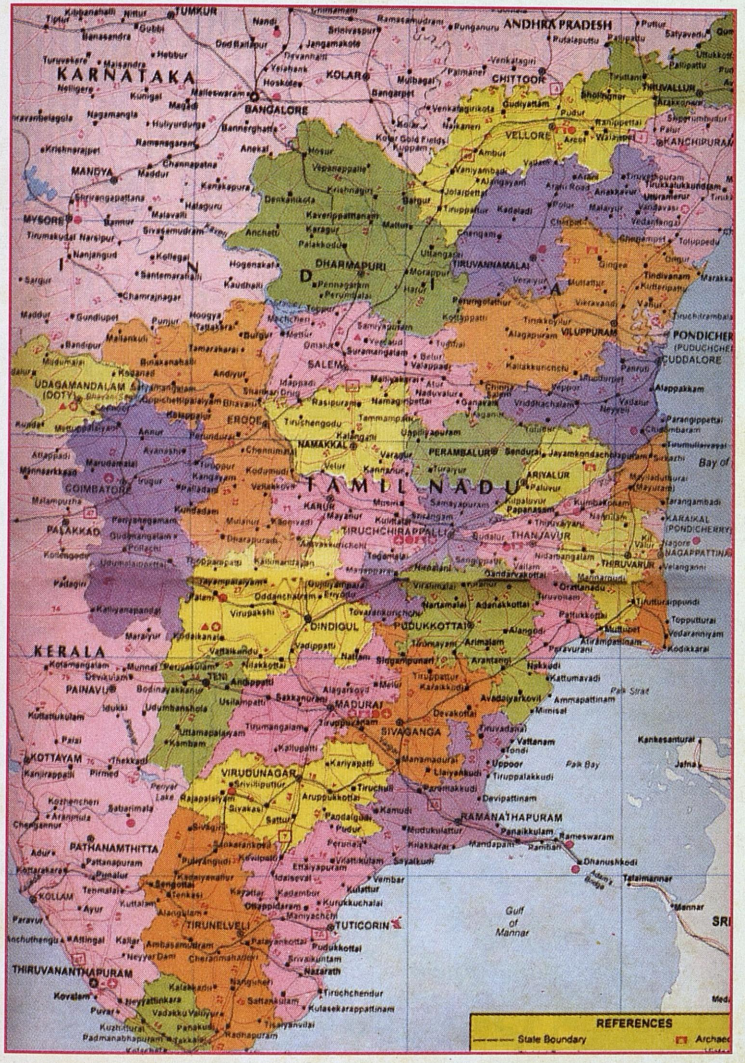


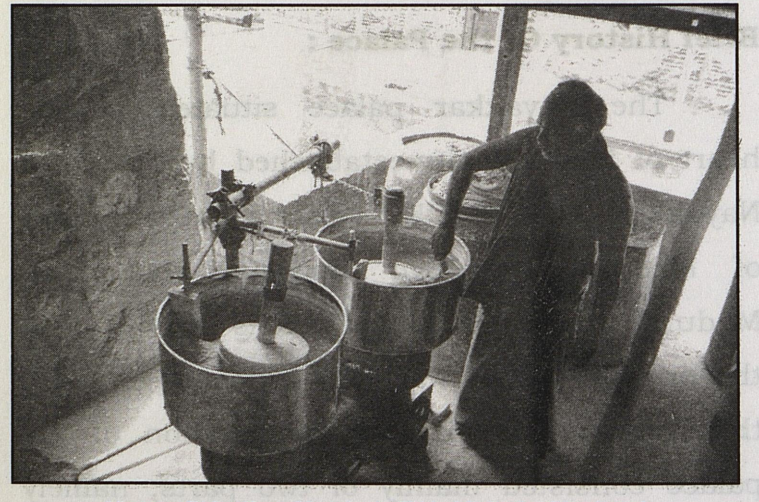
CONSERVATION WORKS TO TIRUMALAI NAYAKKAR MAHAL, MADURAI

Tirumalai Nayakkar Mahal, a secular heritage building in Madurai has been declared as a protected monument vide G.O. Ms.No.1845 Education Department dated 21.11.1972 under "The Tamilnadu Ancient and Historical Monuments and Archaelogical Sites and Remains Act 25/1966'.

Brief History Of the Palace :

The Nayakkar palace situated in the heart of Madurai city-established by Tirumalai Nayakkar in 1636 CE -was the seventh ruler of Madurai . Nayakkar dynasty who ruled Madurai from 1627 to 1659. It is believed that the original palace was four times bigger than the present one. The ground portion of the palace consisted mainly of two parts, namely Swarga vilasam and Ranga vilasam.

T.N. Mahal, Madurai



Motor Grinding Yard at T.N. Mahal, Madurai

Nayak Paintings found in Pillars at T.N. Mahal, Madurai

Special Commissioner's Inspection

Condition of the Structure:

Tirumalai Nayakkar Mahal reveals that the structure stood originally on sandy silt soil to a considerable depth. The chief materials of construction used are bricks, lime mortar, stone slabs, segment and timber logs. The structural elements of roof are mostly vaults, arches and domes of bricks in lime mortar. They are largely compression elements in their structural forms. The rafters have been used in tension zones of cantilevers and corbels. The rafters / wooden members have been wound with coconut fibre ropes for their entire length to improve the bonding of lime mortar which has been used to cover the beams to form cornices and ornamental projections. The columns are shaped with the burnt bricks in lime mortar over the semi circular granite stone. They are resting on the stone pedestals and have cut stone capitals at top. Similarly all the walls have been plastered with ground lime mortar.

The present entrance is on the eastern side through a granite portico built in honour of Lord Napier and Ettrick, who first ordered the restoration. The courtyard measures 130.00 m east-west by 71.80 m north-south. The whole ornamentation is worked out with a fine stucco (Chunnam or shell lime).

The portion that remains on the west side of the courtyard is Swarga vilasam. It measures 75.00 m from north-south by 52.00 m across. The huge central dome is supported by 12 columns enclosing a square 21.00 m across. The columns are first linked together by saracenic arches. Four similar arches are then thrown across the corner and an octagonal drum rises. Above this at the cornice 15 m up, the octagon is changed to a circle and dome rises in the center at 23.62 m from the floor.

A splendid hall situated at north-west corner of the building is called Nadaka salai.

The hall itself is 40.50 m x 20.50m and height of the center roof is 21.20 m with pointed arch made up of bricks. Behind the upper series of the arches runs a gallery. The pillars of the halls are beautifully decorated. Totally 248 pillars are available with various heights of 4.15m; 8.30m; 12.50m with an average dia of 1.56 m and circumference of 4.90m.

Tradition says that Tirumalai Nayakkar took the help of Italian Architects in designing the building. Due to the weathering action certain defects have been noticed. Immediately, the Government have formed an expert committee to study the causes for deterioration of the structures. A team of professors of Madurai Thiyagaraja Engineering College conducted various structural stability tests like plate load test, compressive strength of bricks, testing the lime mortar & teak wood etc. and submitted their detailed report.

The Essence Of the Expert Committee Report :

- The Madras terrace roof building in first floor of Mahal near Swarga vilasam added during British period to be removed so that the ground floor roof and pillars are relieved from the dead load.
- The wood used are found to be teak wood and was affected by white ants due to seepage of water. Most of the cracks are due to loss of its strength in mortar and decay of timbers. The damaged portions are to be repaired and the decayed timbers are to be replaced.
- Cracks in roofs to be sealed by grouting.
- The bearing capacity of the soil is on safer side against the structural load.

Works Already Carried Out:

As suggested by the Expert Committee certain works were carried out by the Department of Archaeology in the years

1995-96 and 1996-97. Based on this report a comprehensive estimate was prepared and certain works as under were carried out.

- To avoid the dampness, dumped earth from the surrounding were removed.
- By providing damp proof course, dampness arrested inside the palace.
- RCC pavement provided around the outer wall.
- Gutters provided for the easy flow of storm water drain.
- Flooring provided at the inner courtyard.
- Certain decayed wooden rafters replaced.
- Cleaned and mended the part of stucco figures and minute ornaments.
- Zinc water pipes provided to drain the rain water from the terrace.

Under XI Finance Commission grants, Government have allotted a sum of Rs.1.00

Crore and ordered in G.O.MS.NO.73 T.D.C. & R.E. Department dated 16.5.03 to execute the work through PWD. The monument was inspected by the then Commissioner of Archaeology with a view to finalize the list of works to be takn up based on the report of the Experts Committee consituted by the Government of Tamil Nadu by giving top priority to improve the structural stability of the monument. Thiru M.G.Chella Pillai, who is a retired Assistant Superintending Engineer from the ASI, was also appointed as Archaeological Technical Consultant.

- The Executive Engineer, PWD, Madurai was instructed to adhere to the advice of the Experts Committee while preparing the detailed estimate.
- The Executive Engineer, PWD, felt that the dismantling of the madras terrace structureon the roof (which is a subsequent addition to the building) may not be

necessary, although this was suggested as one of the works to be taken up by the Experts Committee. After clarifying this point with Thiru. K.T. Narasimhan, Superintending Archaeologist, Archaeological Survey of India (member of the Experts Committee) it was decided that dismantling of the madras terrace structure is necessary and instructed the Executive Engineer, PWD was given instructions to execute the dismantling work with a great deal of caution so as not to cause shocks to the structure. He must take steps to remove the wall half a meter at a time, and gunny bags filled with hay should be placed below to cushion the impact of the falling materials. The debirs should be removed at least twice a day to avoid the accumulation of dead load on the roof. For breaking down the last 1.5 meters of the wall, use of crow bars should be avoided and chippers should be used to minimize shocks.

- The Assistant Engineer, Archaeology Department stationed in Madurai and the Assistant Executive Engineer, PWD (Buildings) were requested to identify and measure the dimensions of the cracks in the roofs and on the walls thoroughly. The cracks in roofs and walls should be grouted with combination mortar in the ratio of 1:1:3. The mortar should be well ground as slurry to be injected by using grouting machines after mixing the extract of gallnut and jaggery.

- Damaged wooden beams that need to be replaced should be measured exactly after identifying the same with the help of Thiru M.G. Chellapillai, Archaeological Technical Consultant and Thiru K. Gunasekaran, Archaeological Conservation Assistant Engineer of this department and restricted to the required and urgent replacements.

- The worn - out pillars in Swarga vilasam and Nadaka Salai portions should be chipped off to a height of 1.0 m to the core from the ground level and re-plastered with necessary brick stitching. The top layer of pillar surface containing egg (white particles) mixed with fat lime plastering for the full height of the pillars to be removed very carefully after softening the existing fine layers by using necessary chemicals and re-plastered in the traditional manner.

- The Dharbar hall side walls should be re-plastered after clearly removing the existing plastering and raking out the joints. To avoid cracks the de-plastered area should be rinsed with extract of gallnut and jaggery before doing plastering; then the finishing coat to be made by adding necessary colour.

- Nadaka salai portion side walls should be de-plastered from floor level to cornice

levels and to be re-plastered with above said mortar and color wash to be made as already directed. Similarly the pillars in Nadaka salai should also be de-plastered thoroughly and re-plastered with combination mortar 1:1:3. The surface above cornice level should be dusted with soap stone powder and rubbed with mull cloth. The ornamental works are to be cleaned using vacuum cleaners and thoroughly washed with soap water.

- The outer surface vaults over domes should be de-plastered and re-plastered with combination mortar 1:1:5 by adding extract of gallnut and jaggery; the entire surface should be thoroughly cleaned with coir brush.

- The entrance portion of the inner corridor gap should be finished with Grano finish to match with the existing floor finish.

- The outer wall surface on three sides except front side to be replastered with single layer of combination mortar 1:1:5 after chipping the existing plaster.
- Cracked beam at the main entrance should be rectified suitably as per the advice of technical consultant.
- Special condition for utilizing skilled labour having archaeological works experience should be incorporated in the tender schedule and a declaration form for the same to be attached with schedule and the format will be intimated to the Commissioner of Archaeology.
- A separate electricity service connection should be obtained for Archaeology department. At present there is a common service connection in the name of the Tourism department which is running the Sound & Light show and the two departments are sharing the current consumption

charges - an arrangement which is unsatisfactory as Archaeology department is paying out more than its proper share of the costs.

- This is a special nature of work. As far as possible, original materials should be used. Before using any new materials the Commissioner of Archaeology should be consulted.
- Archaeological conservation works should be carried out by using combination mortar 1:1:3 using lime free from salt which is available at Pollachi (ASI source to be adopted). While using combination mortar an extract of gallnut and jaggery in 12 kg to 15 kg / cubic meter in equal proportion should be added at the time of execution of works.
- Provision should be made in the estimate for archaeological consultancy charge services. A retired expert from ASI may have to be engaged.

- Provision should be made for photographic documentation of the work before, during and after the conservation works.

Works Carried Out :

The works were executed by PWD with the assistance of technical staff, whenever required.

- As per ASI source slacked lime collected from Pollachi, which is free from salt and contains 95% calcium.
- Lime grinding mill and mortar grinding yard were set at Mahal back yard side opening place.
- Gallnut, which was specially purchased through forest department and an extract of gallnut and jaggery prepared by constructing tub and purified with double filter were used for the works.
- As instructed and with the technical guidance, additional structure of madras terrace building was removed.

- Cracks in roof and walls were injected through hand / machine grouting after mixing the extract of gallnut and jaggery with combination mortar.
- Pillars at courtyard were de-plastered with five layers. while execution it was re-observed that the central core of the pillar was constructed with granite stone of semi circular in circular shape.
- Apart from this 32 mural paintings of Tirumalai Nayakkar period were also identified while de-plastering. These paintings shows that the ladies with Kalasam, Mulaippari and other auspicious things, welcoming the inmates with Kulavai sound which are the traditional welcome of the Pandya dynasty. As per the advise of Special Commissioner Thiru T.S.Sridhar, IAS, the paintings have been preserved by enclosing them in PVC sheet so that the paintings are visible, while the rest of the column have been plastered to its original condition.

- After de-plastering the walls at inner and outer walls, mortar joints were racked out for increasing its binding strength.

- Cracked portions were strengthened by mending with pre-cast R.C.C lintels and grouted using the fine ground lime mortar 1:2 mixed with an extract of gallnut and jaggery.

- Dampness by percolation through a pillar was analyzed in various aspects. A big hole at the outer wall of the Swarga vilasam was identified and it was arrested through machine grouting.

- The flaked base Chettinad plastering in corridor and Swarga vilasam were completely removed upto its stone base. After grouting the segmental stone joints, the surface was stitched with bricks mixing with combination mortar. The coarse stone, quartz stone ground mortar was applied over the base plaster of 1:2 ratio. Over this the second coat

i.e. final coat which was prepared using the fat lime i.e. the mixture of slaked lime, little quantity of blue pigment and white part of egg has been applied and polished using polishing stone. While polishing water came out, it was rubbed with soap stone dust, which was tied using the mull cloth in order to make a fine surface.

- For replacing the dacayed beams, the well seasoned teak wood was cut into a size of 1'-6" x 1'-0" were twisted with coir rope and sprayed with anti-termite treatment. Then beams were inserted properly and finished with coping as existed.

- The entrance ashlar masonry stone beam crack was supported with props and the load diverted to the floor using wooden rafters and tubular scaffolding. A groove of size having 0'-9" x 0'-8" was chiseled to a depth of 1 inch by using marble cutting machine to a length of 1.00 m on either sides of the center of the cracks. R.S. Joist

of 0'-6" (height) x 0' -4" (width) x 6' - 0" (length) were inserted in a groove and the fap has been filled with concrete stone chips by using trowel with handling rods. Then it was plastered and sprayed with the pigment of light pink and black colour to bring back its originality.

- Outer and inner walls were plastered using the combination mortar. An extract of gallnut and jaggery was sprayed over the wall surface to avoid the quick drying of plastered layers.

- Face lifted by color washing the outer palace using four square brand of acrylic emulsion in biscuit color to bring its aesthetic effects.

- The office of the Regional Assistant Director, Tirumalai Nayakkar Mahal which was originally functioning in the additional building at the entrance of the Mahal has been shifted to Corporation Old School

Building, which was repaired as per the estimate. The sale of entrance ticket if being carried out at the entrance gate of Mahal. The sale of publication counter had been located near the entrance Nadaka Salai. This has facilitated the public not only to buy the tickets and also to buy the publication nearby as per their needs.

Thiru T.S.Sridhar, IAS, Special Commissioner of Archaeology inspected the Thirumalai Nayakkar Palace conservation works on 28.08.2004 and 26.10.2004. The following instructions were issued after inspecting the conservation works.

1. The Nayak paintings found in pillars and those which are intact needs to be chemically cleaned and preserved carefully with plastic sheets visible for public.
2. The Darbar hall plastering should be chemically cleaned, fat lime polished coat should not be applied and cleaning should be made in accordance with the model pillar.

3. In open court, the pillars may be finished with white chettinad plastering as suggested by the Commissioner of Tourism.

4. The brick pillar in Darbar hall may be strengthened and existing brick pillar support removed.

5. The existing rain water harvesting arrangements may be slightly modified by changing zinc pipes to PVC pipes and in one horizontal line without affecting the palace view.

6. The drainage may be cleaned and maintained properly.

7. The top circular cornices of Nadaka salai pillars may be coated with red oxide finish for good appearance.

8. The school building of T.N. Mahal should also be repaired within the grant.

9. Eastern outer side wall needs deplastering and replastering with combination mortar and color washing.

10. The kalasam over the domes and vaults may be colored with golden brown shade and the lotus be kept as white.

11. All the doors, windows may be painted with off white synthetic enamel paint while the grills with deep green paint.

12. Instructed that the building by northern side of Mahal where the officers were functioning may be converted as "Epigraphical Museum' housing various epigraphical materials and sculptures for the benefit of the visitors and scholars, on completion of necessary repair works.

13. The palm leaf manuscripts are to be kept under safe custody and replaced in the Museum soon after civil works are completed.

14. The dismantled teakwood stored in first floor may be brought to ground floor under safe custody.

15. All the dismantled wooden items kept in various places may be listed and action taken to dispose off in auction expeditiously.

Though considerable repairs and major conservation works have been carried out with the available funds, for fulfilling the entire repairs it is ascertained that the following works are to be carried out:

- Balance of stucco and ornamental works to be mended.
- De-Plastering and re-plastering the inner vault dome, segmental roof and arches of Dharbar Hall, Pooja room, Palliyarai, Harem portion, Nadaka salai and inner walls above the level of pillar cornices etc. are to be carried out.
- Re-placing the worn out beams wherever required in ground and first floor.
- Providing expanded metal frame for opening as a protective measure.

- Providing barricades wherever required.
- Replacing the decayed / worn out doors and window.
- Improving and expanding the existing museum.
- Repairing the additional building.
- Providing lightning conductor.
- Repairing the tower watch.

The execution of major preservation and restoration works carried in the Mahal has given a good experience and ample satisfaction to the people of the temple city of Madurai. Now the monument stands in majestic splendor both by day and during nights when the sound and light show goes on! The conservation works were carried out in a record period of 13 months, and the monument is open to public viewing from 01.01.2005.

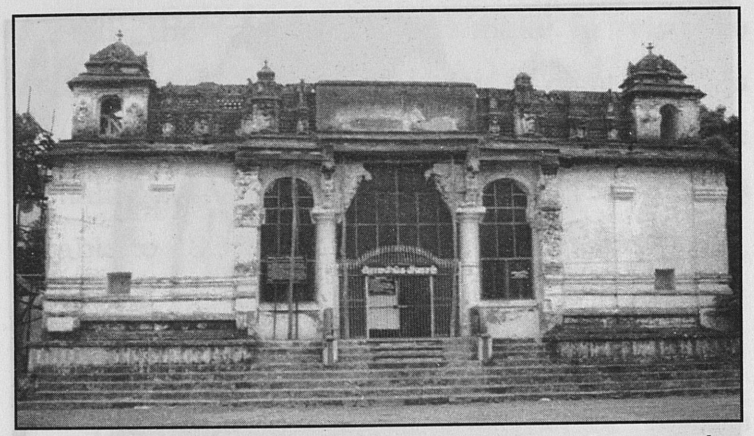
* * *

CONSERVATION WORKS OF RAMALINGAVILASAM PALACE AT RAMANATHAPURAM IN RAMANATHAPURAM DISTRICT

The Sethupathi kings of Ramnad who are direct descendants of Marava chieftains constructed this beautiful Palace during the 18th century. It has been declared as a protected monument by the state Archaeology Department vide G.O.Ms.No 928 Education Department dated 20.5.1978 under the Tamil Nadu Ancient & Historical Monuments and Archaeological Sites and Remains Act 1966 (25 of 1966); it took over the treasure house from the Late Ramanatha Sethupathi of Ramanad Devasthanam and Samasthanam on 17.9.78 to preserve it for posterity.

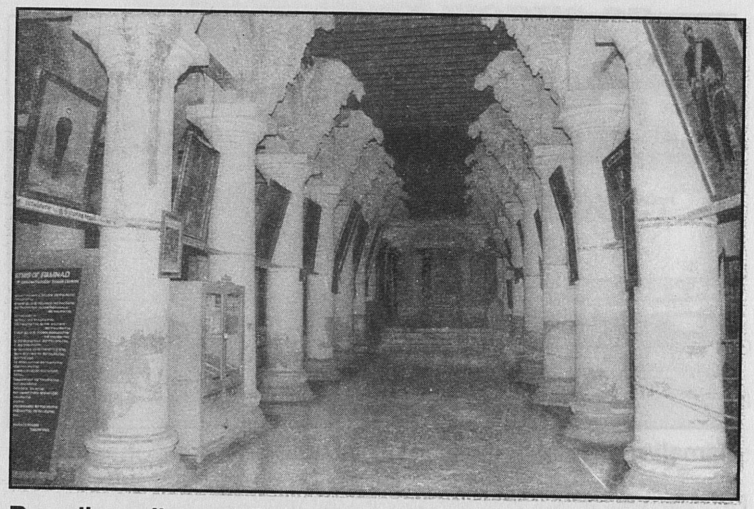
Historical Background:

Ramalingavilasam is an important land-mark in reflecting South Indian Culture. Tradition has

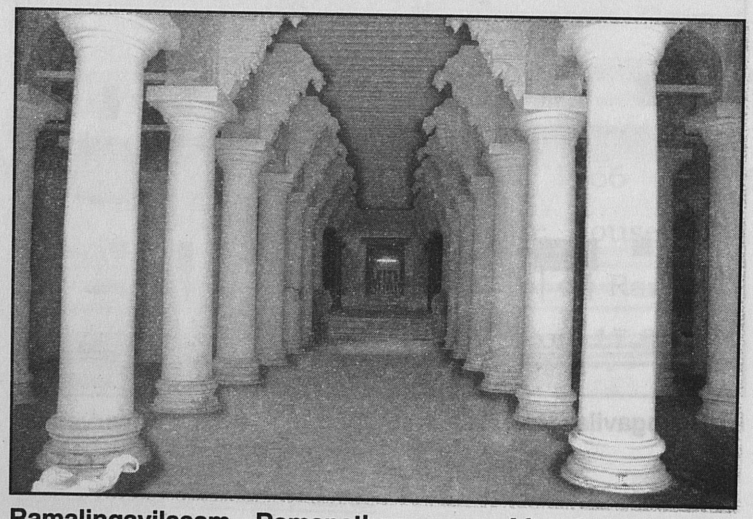


Ramalingavilasam, Ramanathapuram - Before Conservation

Ramalingavilasam, Ramanathapuram - After Conservation



Ramalingavilasam, Ramanathapuram - Before Conservation



Ramalingavilasam, Ramanathapuram - After Conservation

it that the pilgrims who make a visit to Rameswaram, necessarily pay a visit to this place to complete their religious vows. Ramalingavilasam displays on its wall murals datable to 18th century, which are still extant.

Present Condition:

The front portion of the palace houses a mahamandapam and an inter-connecting mukhamandapa beyond which lies the palace portions of royal personages. All are situated in ground floor. The Mahamandapam adorns 50 tall granite pillars covered with traditional plastering and other portions with black granite pillars.

The segmental arches and vaults rest over the capital of the pillar. The chief materials used for the construction works are brick, lime mortar and various varieties of timber logs (i.e.; Iluppai, poongali, Teak etc.)

The structural elements of the roofs are mostly arches and vaults of brickwork in lime

mortar. The wooden scantling is used as compression and tension members. Some of the members are found to be missing and rotten. These are mostly affected by insects and weathering action. Due to the above facts, holes left over the pillar are used as a shelter by birds.

The ground and carrier of the mural base are found to be eroded / flaking out in some places. Most of the walls and stucco works are blistered due to saline and capillary action. Dampness is also found on the flooring portion of mahamandapam during rainy days. The pillars are of cut stone segments set in lime mortar with facing of burnt bricks in lime mortar. They are resting on the stone pedestals and have cut stone capital at its top. It is observed that the pillar have been finished with seashell lime Chettinad plaster. Traditional plastered pillars at mahamandapam are found to be covered due to the subsequent white washed layers; pot holes are also found elsewhere.

The painting over the black granite pillars are found to be against archaeological principle. Some of the openings in the sidewalls are closed with brick in mud mortar. The parapet wall and honey comb works are found to be worn out due to the weathering and age of the mortar. The existing tiles paved in ground floor terrace had been dislodged in many places. The stucco figures likes Divine, Human, Animals, Mythical figures and Ornaments like Thoranas, Flora and Fauna are in mutilated condition. The Salai, Karnakoodu, Panchara and Kodungai are also partly damaged and fragile.

A flight of steps leads to the first floor. The first floor houses a larger room; another flight of steps leads to second floor and to the terrace. On the walls and ceilings of ground floor arches, one can see many panels of colorful murals. They represent various facets of historical details in color.

The murals of Ramalingavilasam represents faithfully the life style of Sethupathi kings, the

wars they participated, their queens and some representation of their private lives too. The artist who painted murals gave priority to first creating the scenes and the explanatory labels were written only later. The scripts were written either on top or bottom of the concerned panels, first in black and then in white.

In certain panels, the labels were in red oxide in running fashion. In places where Sanskrit words were used, the corresponding Tamil, phonetics were written in conversational style. Due to ravages of time and ignorance of visiting public the painting has received drubbing and disfigurement.

The state Government have allotted a sum of Rs. 10.00 lakhs in G.O.Ms.No.232 TDC & R.E (MA2) Department dated 23.9.02 for phase I work and Rs. 11.08 lakhs in G.O.Ms.No 283 T.D.C. & R.E. (MA2) Department dated 27.11.03 for phase II work under XI Finance Commission grants for Heritage protection as approved by S.L.E.C.

Essence of Work Prescription:

A team consisting of officers of the Department of Archaeology and PWD inspected the Palace under the head of the Commissioner of Archaeology, Chennai accompanied by the then District collector of Ramnad with a view to identifying the work which are to be taken up for phase I and phase II works on priority basis and also assessing the area of the mural paintings on the walls and ceilings of the Palace for taking up painting conservation works. Restoration of a part of paintings on the southern wall on the ground floor had been done through INTACH in 1998-1999.

Accordingly the Executive Engineer, PWD Ramnad was instructed to prepare the estimate by concentrating the structural stability and face lifting for first phase and second phase work.

- Providing damp-proof course and anti-termite treatment below ground level all around the outer wall.
- Eradicating vegetation that has grown over the wall.
- Grouting the cracks in the wall, ceiling arches, vaults etc. using the combination mortar 1:1:3.
- De-plastering and re-plastering with combination mortar 1:1:3 for the entire outer walls of the palace.
- Removing the wooden props supporting the "chajaa" (extention of the madras – terrace roof in the front) and giving appropriate face lift to the frontage of the palace.
- Colour washing the entire outer walls.
- Obtaining the separate electricity service connection to the palace with lighting arrangements.
- Replacing the broken honey comb works in first floor parapet.
- Replacing / re fixing wooden rafters (Illuppai and Poongali) for the koduvalai portion in the ground floor.

- Replacing the disturbed pressed tiles in the first floor and ensuring that the terrace is water proof.
- Removing the mud wall and filling them with brick in combination mortar should be carried out on southern side wall of the mahamandapam at ground floor.
- The small office of the Ramalingavilasam palace is presently housed in an enclosure in the mahamandapam near the entrance. Not only does it spoil the appearance of the hall, but several square meters of the valuable wall murals cannot be conserved as long as the office is here. The partition for the office should be dismantled and relocated in the first floor. Dwarf partitions together with almirahs, can serve as the enclosure for the new office.
- Removal with a paint remover of black enamel paint from the granite pillars from the ground and first floor and hand polishing the same.

- Scraping of white washed layers, through rinsing with water and application of finishing coat of traditional plastering by using shell lime with white of egg.
- Cuddappah flooring for the ground floor .
- Provision of frames for display of photographs etc.

The above works are not on par with P.W.D. regular work. Hence for adhering to the Archaeological principles certain norms and conditions were clearly specified while preparing the estimate and during the execution of works. Archaeological Technical consultant Thiru M.G.Chellapillai, who is a retired Archaeological Assistant Superintending Engineer of ASI was also appointed for clarifying the doubts. He also periodically inspected the work spot of the ancient monuments and issued necessary instructions by inspection notes were given by him. Similarly the then Commissioner Thiru K.Ashok Vardhan Shetty, IAS, and the present Special Commissioner

Thiru T.S.Sridhar, IAS, inspected the monument, clarified the various doubts and instructed to carryout the left over items. Similarly, he reviewed the progress by conducting monthly meeting with Chief Engineer, PWD (Buildings) and officers concerned.

While inspecting the monument the Special Commissioner Of Archaeology gave instruction to utilize funds from the savings and expedite the un finished works

- Main grill door removed from the entrance to be re-used at the existing opening near by the main entrance.
- Painting of the portraits should be displayed on wooden frames in between the pillars of the southern portion of the ground floor main hall
- Necessary barricade provisions should be done, so that no visitor should touch the painting and do harm to the paintings.

- The information boards should be installed on both sides of the main entrance gate.
- Savings amount from the two estimates should also be utilized for the electrification work including new service connection.

Works Carried Out:

- De–plastering and re-plastering work completed at the north and south outer wall.
- Vimanam model bastion at the frontage of the first floor with fine ornamental works completed.
- For stopping the percolation of water through the wall, north and south side outer bottom wall was plastered with damp weathering proof course.
- Front face of the main building was cleared from several layers of white wash carefully and patch work done @ the weaker portion. Color washed with acrylic cement water bound paint in biscuit color.

- Honey comb work using country flat tiles were carried out as per existing wherever found missing.
- The dislodged pressed tiles over the weathering course replaced in first floor area.
- Mending & repairing the stuccos, yazhi and masonry carvings over the pillars @ mahamandapam completed.
- Accumulated several layers of white wash from the pillars @ mahamandapam have been completely scrapped and after rectifying the damaged portion by a thin coat of hand grinded lime mortar 1:1 applied with an extract of gallnut & jaggery. Finally finished with smooth surface.

Mural Paintings - Before Conservation

Mural Paintings - After Conservation

Mural Paintings - Before Conservation

Mural Paintings - After Conservation

- The existing black painted stone pillars are cleared from the paint and smooth polish was done. Finally wax polish applied as a fine coat.
- The country wood supporting lintels in between arches over brick pillars and top portion (domes) rafters replaced in the missing / worn out portion and painted
- Existing cement flooring was removed and provided with polishing Cuddappah stone flooring.

Similarly, Government has also additionally allotted a sum of Rs. 15.92 lakhs for mural painting conservation under XI Finance Commission Grants as approved by the S.L.E.C under heritage protection in G.O.Ms.No. 44/ TDC & R.E (MA2) Department dated 10.2.2004. Painting conservation work was to be taken up on completion of structural conservation like water tightening, plastering on other side of the walls etc. Estimates were prepared by P.W.D. based on the Technical experts

recommendation and countersigned by Thiru. T.S. Sridhar, I.A.S., Special Commissioner of Archaeology.

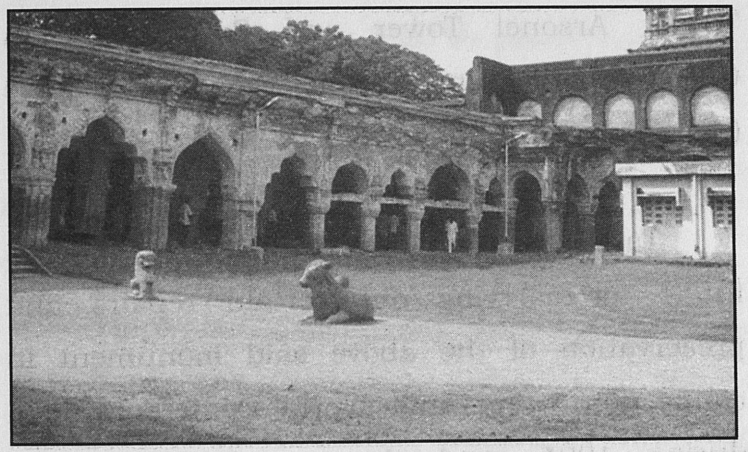
Restoration of painting works have been taken up and completed by restricting the painting area within the sanctioned amount after engaging an experienced contractor/ artist. The left over structural and painting conservation works can be taken up in future. After conservation the palace has been restored to its majestic glory, and is now attracting a lot of tourists.

* * *

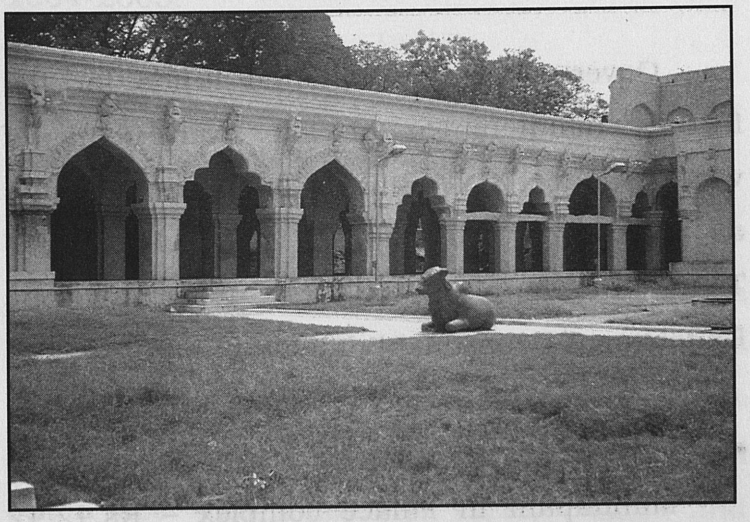
CONSERVATION WORKS TO HERITAGE BUILDINGS AT THANJAVUR PALACE COMPLEX , THANJAVUR

Thanjavur palace complex has been declared as a protected monument vide G.O.Ms.No 367 Tamil Development - culture Department dated 15/12/1988 under the Tamilnadu Ancient and Historical Monuments and Archaeological Sites and Remains Act 1966. (25/1966).

Thanjavur palace complex is situated within the bounds of periakottai. The Palace complex was occupied by various Government offices, schools, Tamil University (part), Art Gallery, Saraswathi Mahal, Sangeetha Mahal, Heritage buildings and Princes quarters etc. As proposed by the then Director of Archaeology, Government issued orders to protect the heritage structures of historical significance and



Maratha Palace, Thanjavur - Before Conservation



Maratha Palace, Thanjavur - After Conservation

artistic value i.e. Maratha Dharbar Hall, Bell Tower, Arsonel Tower and Sarja Madi in G.O.Ms.No 68 Tamil Development and culture (S2) Department dated 31.3.1994.

Tamil Nadu Government have allotted funds for carrying out certain repairs and preservation of the above said monument in connection with Tamil World Conference held during 1995, and the conservation works were carried out through the Archaeological Survey of India.

Government have allotted funds for the further maintenance of left over items of works, under XI Finance Commission Grants as approved by the S.L.E.C in G.O.Ms.No.143 Tamil Development cultural and Religious Endowment Department dated 8.8.2003.

- Conservation works to Nayakkar Mandapam in Palace complex – Rs.42.42 lakhs

- Restoration works to Northern corridor of Maratha Dharbar Hall in palace complex – Rs.43.00 lakhs
- Special repairs to Sarja madi in palace complex – Rs.12.20 lakhs

Thiru M.G.Chellapillai was appointed as the Technical Consultant who is a retired Assistant Superintending Engineer from the Archaeological Survey of India. Following conservation works were carried out during 2004-2005.

DETAILS OF WORKS CARRIEDOUT

A. NAYAKKAR MANDAPAM:

Condition of the structure:

This Mandapam is situated to the south west of the Maratha Dharbar hall which consists of octagonal and circular columns. This Mandapam possesses marvelous arches and outer face with images of yazhi, chaajja and

ornamental works. Almost all the pillars are interned in the massive earth and affected by the dampness. Due to this, existing plastering were blistered out. Due to the weathering action, entire terrace was affected resulting in, leakage. Yazhi and other ornamental works were also blistered here and there .

Works Identified:

Necessary instructions were given to the PWD to restore the structure to its original condition. Accordingly an estimate was prepared by the PWD and the then Commissioner of Archaeology has approved the estimate for the special works. The works were carried out by the PWD as directed.

- Earth to be removed around the Mandapam to its floor level and anti-termite treatment should be given for the entire area.

- Brick jelly lime concrete 30 cm. depth over the bed of 20 cm (average) sand bed has to be provided
- Dumped earth and debris to be removed.
- The ruined columns (pillars) to be strengthened by means of bricks/tiles to restore its size and shape.
- Damaged arches and inner ceiling to be mended and plastered with combination mortar 1:1:3
- Retaining wall to be provided for safeguarding the flooring at its outer ends, which exists without any support.
- Existing flooring to be removed and replaced by cut stone flooring over a base layer of brick jelly concrete.
- Leakage should be arrested by means of laying pressed tiles with proper gradient.
- Ornamental works, like Yazhi, floural design and other works to be restored.

Works Carried Out:

- Earth removed around the Mandapam to 1.20 m depth and anti-termite treatment was done to the entire area.
- Brick jelly lime concrete 30-cm. depth over the bed of 20 cm (average) sand bed has been provided.
- Dumped earth and debris removed.
- Strengthened the ruined columns (pillars) by means of bricks /tiles to restore its size and shape.
- Damaged arches and inner ceiling were mended and plastered with combination mortar 1:1:3
- Retaining wall provided for safeguarding the flooring at its outer ends.
- Existing flooring removed and replaced with Cuddappah flooring over a base layer of brick jelly concrete.

- Leakage arrested by means of laying pressed tiles with proper gradient.
- Ornamental works, like Yazhi, floural design and other works were restored.

B. MARATHA DHARBAR HALL:

Condition of the Structure :

This famous hall contains exquisite paintings and stucco images belonging to Maratha period. A Corridor is situated to the north of the Maratha Dharbar hall. Plastering in the inner and outer walls are scattered. Ornamental works were blistered and worn out here and there. Flooring was completely disturbed. Debris and dumped earth found at inner yard.

Works Identified:

- Dumped earth to be removed upto its floor level.

- Damaged arches to be rectified by mending and strengthening with brick work with combination mortar.
- Unnecessary walls from the first floor to be removed.
- Entire walls, corridors, arches and ceilings to be deplastered and re-plastered with combination mortar 1:1:5
- Dumped debris from the floor level to be removed and provided with brick jelly concrete to a depth of 15 cm. over a layer of 30 cm sand bed to be provided.
- Fallen portions of madras terrace to be reconstructed in all respects.
- Cut stone flooring to be provided.

Works Carried Out :

- Earth removed upto its floor level as directed.

- Similarly earth has been removed from the inner corridor and provided with base concrete using lime with brick jelly over the sand bed and Cuddappah stone flooring paved instead of cut stone flooring.
- De-plastering & re-plastering the entire portion of walls, arches corridors, and ceilings with combination mortar 1:1:5 were completed.
- Top ceiling and entire area over the pillar capital has been plastered with smooth plastering
- A fallen portion of Madras terrace has been reconstructed including changing the wooden joists and weathering course.
- Bore well provided.

C. SARJA MADI:

This Madi is part of the palace of the Maratha period. This impressive structure

attracts the attention of any one passing through the road. During the World Tamil Conference entire structure has been brought to the original complexion.

Works Identified:

- Provision to safe guard the Pedestals/ showcases for displaying sculptures and Antiquities
- Provision of Grills to window guards to be provided and painted
- Electrification arrangements to be made without changing its aesthetic value in consultation with the technical consultant.

Works Carried Out:

- Safe guard has been provided for the showcases for display sculptures and Antiquities.
- Grills to window guards has been provided and painted

- Electrification arrangements made without changing its aesthetic value in consultation with the technical consultant.

During the execution of the works Thiru T.S.Sridhar, IAS, Special Commissioner of Archaeology visited Thanjavur on 27.8.04 and 24.9.04 and issued instructions to the PWD authorities and also to the Technical consultant. Special instructions were issued for the savings available in this major works as given under:

- Scattered sculptures are to be erected at the Naicker Mandapam by constructing pedestals according to its height variations.
- Water supply arrangements to be made to the Sarja madi.
- Heritage buildings are to be face lifted by color washing.
- Vitreous enamel board to be provided.

- Dharbar hall entrance gate opening to be closed with grill as a permanent measure.

Periodical meetings were also convened by the Special Commissioner at Commissionerate with Chief Engineer, Buildings to review the progress of works.

The Thanjavur Palace Complex now looks like a beautiful monument attracting tourists and local people from near and far. The construction has ensured prevention of further deterioration to the structure while preserving the rare paintings and sculptures for the benefit of posterity.

* * *

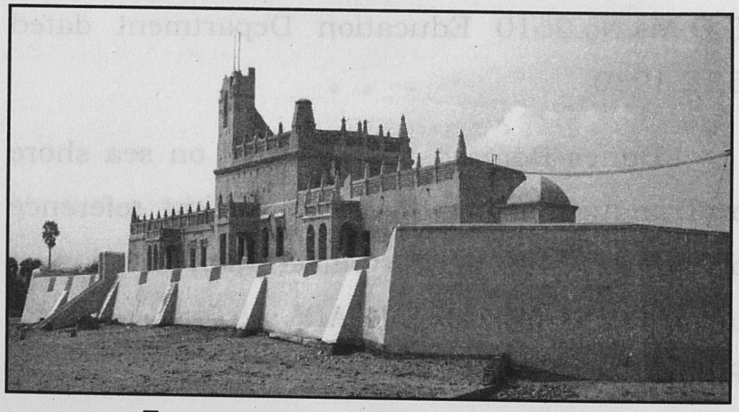
CONSERVATION WORKS TO DANES BORG CASTLE AT TRANQUEBAR IN NAGAPATTINAM DISTRICT

Tamil Nadu is the most potential place having considerable number of forts, temples, palaces, mantapas and memorial buildings. Danes Borg castle at Tranquebar belongs to 17th CE, constructed by the Danish Admiral Ove Gedde. It has been declared as a protected monument under Tamilnadu Ancient Historical Monuments and Archaeological Sites and Remains Act 1966 (TN Act 25 of 1966) vide G.O.Ms.No.2610 Education Department dated 6.12.1980.

Danes Borg castle is located on sea shore of Tranquebar for which the earliest reference occurs in a 14th century inscription mentioning the place as SADANGANPADI, 15 kms. south of Pumpuhar (Kaveri-poompattinam) Karaikkal is located 7 kms south of Tranquebar.

Tarangampadi fort consists of two large structures. They are the rampart wall and the

Tarangampadi - Before Conservation



Tarangampadi - After Conservation

main building. The rampart wall is a fairly large four-sided structure with bastions at each cardinal point. Along the three inner sides of the fort wall, a single storey building was constructed. These rooms were used for barracks, warehouse, kitchen and jail. The rooms on the southern side are in good condition but the rooms on the western and northern sides are completely damaged. On the eastern side of the fort, there was a two – storeyed building facing the sea, which was the main building of the Fort.

The fort is running north - south orientation having vaulted roof. In this fort, the central portion has got a high roof in the form of four dooms with a pillar at the center. On physical examination, it was found that since domes are rectangular in shape, mere brick pinning will not serve the purpose; that is why the tie-rod was used on four sides up to the wall as well as center masonry pillar. The idea is to transfer the load over the central pillar. The

fort was surrounded by a moat and access to the fort was over a drawbridge. This moat has completely disappeared. The sea on the eastern side and the river on the southern side protects it.

A flag staff is built on a higher platform. A dome like structure found in the terrace on the center part of the main building is built like an elephant back. It is divided into four compartments. These four domes are tied with iron rods. The outer fortification wall has been built by providing a moat in between the inner and outer fortification wall. To bring the water from the adjoining Uppanar river to the moat, a water – inlet in the south west corner of the outer fortification wall, was provided.

Rampart wall consists of two walls each having a thickness of 75 cm. The gap between the two walls having 9.25 m is filled with brick bats, soil and sand. Total height of the wall is 4.0 m .The binding material used in the wall is lime mortar. The size of the brick is

20 x 13 x 4 cm. Upper surface of the wall slopes inward in conical shape and is covered with brick paving. This will help to drain off the rainwater without passing through the walls. Both inner and outer surface of the wall is plastered with lime mortar.

Before it was taken over by this department, the fort was utilized as a traveller's bungalow by the PWD. Hence a septic tank was constructed adjacent to the main structure. Due to the percolation of water dampness had formed over the structure.

After taking over, certain maintenance works were carried out by this Department. Due to marine environment and sea breeze, the materials used for the construction were affected and lost their strength. Originally it was constructed by using brickwork in lime mortar and wood. The base of rampart wall at eastern side was dilapidated due to sea erosion and grillwork of windows and doors were also rusted due to saline action.

The main door of the fort was not available at the time when it was taken over by this Department. Hence temporary arrangements were made for preventing the unauthorized entry.

The State Government have allocated funds under XI Finance Commission grants to the tune of Rs.2.95 lakhs for first phase of work in G.O.M.s. No. 42 T.D.C. & R.E Dept. dated 14.3.02. Archaeological Officer, Thanjavur conducted an excavation to find out the existence of any fallen down foundation portion of the rampart wall and the strength and depth photo documentation was also made. The result of work has been documented in a report and published in the year 2003. The result is as follows:

The exposure of constructional material that was found at different levels clearly suggested the method of construction. A single layer paved brick was laid right on the natural soil i.e., sea sand at this place. Above this brick

paved floor, 30 cm thick compact clay mixed with brickbats and lime was laid. Above this compact earth fillings, again 30cm thick yellowish soil, locally called tavittuman, was used. Over this yellowish soil, another brick floor was paved. The total breadth of this floor comes to 12.25 m. By leaving a metre on the interior, the rampart wall is build upon this floor covering breadth of 11.25 m. The rampart wall consists of two walls each having a thickness of 75 cm. The gap between the two walls (9.25 m) is filled with brickbats, soil and sand. The total height of the wall comes to 4m. The binding material used in the wall is lime mortar. The size of the brick is 20 x 13 x 4cm. The upper surface of the wall slopes inward in conical shape. It is completely covered with a brick paving. The conical shape and the brick paving helps to drain the rain water as well as prevent any seepage of water into the wall surface. The outer and inner surface of the wall is plastered with lime mortar. Two layers of lime mortar were exposed. The lime mortar

is again washed with red ochre. Another buttress wall having a thickness of 65 cm was added, attached on the outside of the wall. It seems, this was added in later days as the size of the brick varies from that of the rampart wall. The size of the bricks used in the buttress wall is 21x12x6 cm. The bricks used in the rampart wall is made of fine clay and well burnt. All the bricks are equal in size, whereas the brick used in the buttress wall are mixed with more sand and are irregular in shape. The buttress wall could be a late 19th century or early 20th century construction.

The Government have sanctioned additional funds to the tune of Rs.35.00 lakhs for the restoration of Danes Borg castle in G.O.Ms. No. 232 T.D.C & R.E. Department dated 25.9.02. Thiru K.T. Narasimhan, Superintending Archaeologist of ASI after careful study of the structure gave his inspection notes. According to him, the fort structurally seems to be in

good condition but heavily damaged due to age and weathering. Though originally lime was used for plastering, subsequently cement was used. Core was affected wherever the plaster has gone. Actual extent of damage of the wall could not be visualized. Hence, the following works were recommended as a conservation measure.

- De-plastering the exterior as well as the interior walls and vaulted roofs.
- Pinning / grouting / filleting wherever necessary to get even surface of the wall.
- Thorough washing of the de-plastered surface with sweet water for de-saline the entire wall surface.
- Plastering with combination mortar.
- Providing cross bars to the windows with stainless steel rods.
- Replacement of wooden windows .

The then Commissioner of Archaeology has also additionally identified the following works apart from the suggestion of the Superintending Archaeologist, ASI.

- Water tank and the lavatory to be dismantled for reducing the dead load and water seepage. No structure was contemplated in the original structure as can been seen in the drawings of the period. A sintex tank can be provided at an appropriate place where the load is completely transferred bearing the main wall. This will avoid the strain on the structure.
- Three numbers of septic tank found in the open yard to be removed with the drainage line. They may be the cause for the dampness in the basement.
- Outlet drain from the rampart passage platform may be provided by linking to the drain contemplated above without changing its appearance.

- The small gateway in the eastern side may also be provided with stainless steel as suggested by ASI.
- Documentation at each stage as per the Archaeological principles should be done to avoid counter criticism.

While conducting excavation, it was observed that the exposure of constructional material was found at different levels, and clearly suggested the method of construction. A single layer paved brick was laid on the natural soil i.e., sea sand at this place. Above this brick paved floor with 30 cm thick yellowish soil (locally called "Thavittuman") i.e. clay with sand are available. Over this, another brick floor was paved. Due to this wet sand clay mixed contents, the percolation of wetness to the top floor through the massive pillars and walls are rooted.

On verifying the above facts the Archaeological Technical Consultant has suggested that the sand clay mix between top

and bottom brick floor should be removed completely by removing the top layer of brick floors. After filling the gaps with dry river sand again the layer of bricks already removed should be spread over the sand bed and cut stone flooring to be laid over the brick jelly concrete in lime mortar.

Similarly he instructed the method of grouting wall cracks, stitching wall cracks with copper strips having 50mm flat 6mm thick and 300 mm long to be bended on both ends as and inserted along the cracks in zigzag pattern at an interval of 60 to 90 cm. The above work was carried out and completed as suggested by the Archaeological Technical Consultant.

To prevent quick rusting up of the iron round bars fixed to windows were replaced with stainless steel round and flats. Special grinded mortar was used to have smooth surface on walls and ceiling.

During the execution of the work it was inspected frequently and guided by the Technical Consultant Thiru M.G. Chellapillai, who is a retired Assistant Superintending Archaeological Engineer from the ASI. Inspection notes were also given by the present Special Commissioner of Archaeology Thiru. T.S. Sridhar, I.A.S., after inspection on 24.9.2004. The contents are as follows:

1) The well situated on the parapet wall should be cleaned.

2) In the upper south parapet wall, the surface is uneven and possibilities of accumulation of water and subsequent damage to the wall is there. Hence it should be rectified by filling up stone slabs etc..

3) Action to be taken for the provision of two dustbins.

4) The materials dumped in old Governor's bungalow may be segregated and the

useful materials may be displayed in Museum; the remaining items may be auctioned.

5) The unused showcases should be used for exhibiting artefacts.

6) Considering the area of the Fort an additional watchman may be posted drafting him from Thanjavur Office.

7) Two street light lamps may be provided on the frontage of the Fort.

8) The artefacts now available in excess at Poompuhar Museum may be brought to Tranquebar Museum and exhibited.

Due to the constant efforts of the Special Commissioner of Archaeology the Danes Borg Castle was face lifted, after strengthening the structure, according to the Archaeological Principle. The Tsunami havoc which occurred on 26.12.2004 affected most coastal parts of

Tamil Nadu including the villages of Nagapattinam district; but it caused no damage to this castle. This is an eloquent testinary to goes to prove the stability and fine workmanship of this Monument which has received a boost with the conservation works undertaken by the Department.

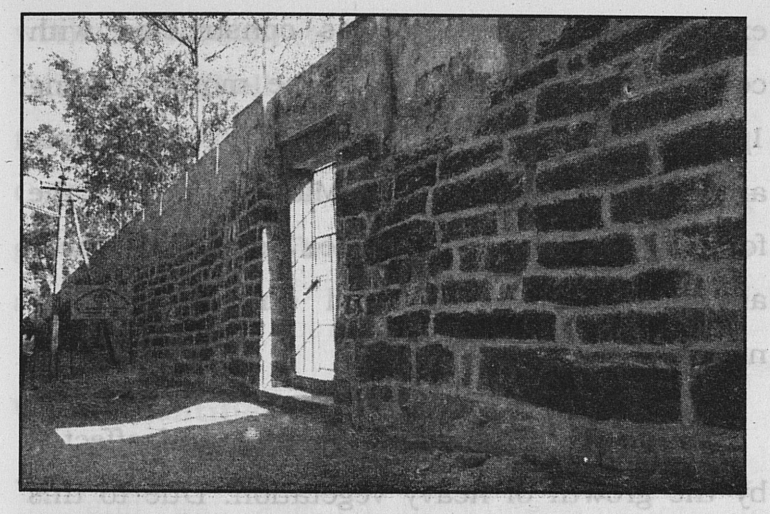
* * *

CONSERVATION WORKS TO UDAYAGIRI FORT WALL AT PULIYURKURUCHI IN KANYAKUMARI DISTRICT

Udayagiri Fort at Puliyurkurichi village near Padmanabhapuram town in Kanyakumari District has been declared as a protected monument by this department under Tamil Nadu Ancient Historical Monuments and Archaeological Sites and Remains Act 1966 (TN Act 25/1966) in G.O.Ms. No. 226 / TDC (MA2) Department, dated 4.9.97.

Historical Background :

Originally the fort was constructed with mud during the reign of Venadu King Sri Vira Ravivarma (1595-1607 CE) and later it was reconstructed with stone in the reign of Marathandavarma (1729-1758) The nattars of Nanjilnadu made donations for the construction of this fort. This fort served as a contonment,



Udayagiri Fort Wall – After Conservation

manufacturing yard of Cannon and military equipments and jail during various periods.

Thiru T.S. Sridhar, IAS, Special Commissioner of Archaeology, while he was Sub-Collector of Kanyakumari district during 1980-82 visited this fort several times and insisted to undertake repair works.

Present condition :

This fort is situated over the hill about 2800m length and 260' - 00" height having an

extent of 85 acres. It was constructed with course rubble stone using lime mortar having 18' - 0" height with 3' - 0" breadth. Ten bastions are located around the fort. Main entrance of the fort is located in western side, 3 small entrances are in southern side and one entrance at northern side is available.

The fort was almost covered and affected by the growth of heavy vegetation. Due to this effect fort wall damaged by dislodging, and developed cracks etc.

Government have allotted an amount to the tune of Rs. 9.70 lakhs under XI Finance Commission Grants as recommended by the SLEC vide G.O.Ms. No. 143 TDC & RE (MA2) Department dt. 8.8.03 for protecting this gigantic fort from further deterioration. For utilising the fund in proper manner, necessary inspections were made by the then Commissioner of Archaeology on various stages of progress and instructed PWD to carryout the

works according to archaeological principles. Thiru M.G. Chellapillai who is a retired Engineer from the ASI was appointed as a Technical Consultant to look after the works by giving guide lines wherever required to the PWD authorities.

Works Identified :

- Jungles to be cleared very carefully without damaging the structure.
- Damaged top portion of the fort wall to be reconstructed using laterite cut stone. Stone with combination mortar 1 : 5
- Cracks found in the parapet wall to be plugged with brick bats and combination mortar.
- Dislodged stones to be set right to its original status after strengthening the rooted portion.
- Deplastering of the laterite stone with combination mortar 1 : 1 : 5.

Works carried out :

- Out of 2800 m length of the fort only 1426 metres jungle cleared allover the rampart wall.
- Damaged and dislodged portion of fort wall, bastions and rampart wall was removed and reconstructed with new laterite stones with combination mortar 1:1:5 and pointed with combination mortar 1 : 1 : 3.
- During the clearance of the jungle a tunnel having a size of 45cm and 85 cm was found by the PWD.
- Grills have been fixed in the opening of rampart wall.
- Vitreous Enamel protection notice board and information board has been fixed.

On completion of the above work, for utilizing the available savings in the same monument, the Special Commissioner

instructed to carry the left over item of pointing and complete it. Accordingly the works were carried out by the PWD.

For carrying out left over 485 metres length of fortress, Government have been addressed for sanction of Rs. 8.55 lakhs under Part II scheme for 2005 – 2006. For completing the remaining works such as :

- Cleaning of jungles all over the rampart wall at a stretch of 1374 m.
- For carrying out further rectification works like set-righting the out of plumb dislodged walls from the bastions and rampart wall wherever found to a length of 1765 m.

In the year 1981, when the Speical Commissioner of Archaeology, Thiru. T.S. Sridhar, I.A.S., was the sub-collector of Padmanabhapuram, a horde of cannon balls were recovered from the grounds of Udayagiri Fort. This is clear evidence that the place was used as soldiers' training ground. A Furnace

for manufacturing cannon balls used in warfare was also found here.

The most important military station of the Travancore rulers to the extent of 550 m has been protected for posterity.

The Fort, after conservation, looks impressive and attracts large number of tourists from all over the country everyday.

* * *

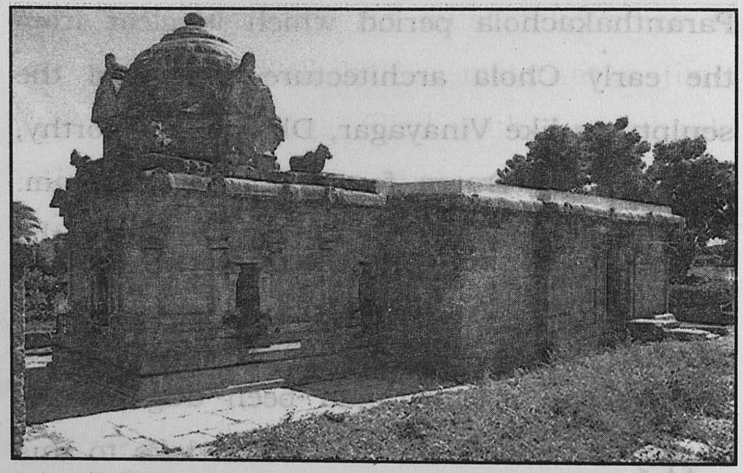
PRESERVATION WORKS TO SIVANKOIL AT SIVAPURAM

Sivankoil at Sivapuram in Kancheepuram District was declared as a protected monument under Tamil Nadu Ancient Historical Monuments and Archaeological sites and Remains Act 1966 (TN Act 25 of 1966) in G.O.Ms.No.2832 / Education Department dated 31.12.76.

Brief History :

This Stone temple belongs to 10th CE, Paranthakachola period which is clear from the early Chola architecture style and the sculptures like Vinayagar, Dhakshinamoorthy, Brahma and Durga found on Devakoshtam. Inscriptions in this temple record the donations made for maintenance of the temple by the Chola rulers. According to the inscriptions, a canal had been dug for the supply of water from the Cooum lake to this temple.

Sivan Koil Sivapuram, Kancheepuram - Before Conservation



Sivan Koil Sivapuram, Kancheepuram - After Conservation

Structural conditions:

Some rows of stones on the Padmam frieze are found damaged and they are missing in one or two places. In various places Bhuta Gana and Uthiram frieze are found partly damaged. Settlement of the temple are seen on its two sides. It indicates the problem of water stagnation and it may be rectified by proper excavation of the existing drainage. Vegetation growth is found on ekathala vimanam and parivara temples. Sanctum sanctorum ceiling rafters with wooden planks are found missing. The temple is not in imminent danger of collapse.

Tamil Nadu Government have allotted a sum of Rs.2.00 lakhs under XI Finance Commission grants in G.O.Ms.No.42/ TDC & RE (MA2) Department, dated 14.3.2002. Necessary guidelines were issued to the PWD for carrying out the works by appointing Thiru M.G. Chellapillai as a technical

consultant who is a retired Assistant Superintending Archaeological Engineer from Archaeological Survey of India.

Works identified and instructed:

- Proper drainage to be provided around the monument
- Vegetation to be removed by treating with tree killer or Tuffalo
- Iluppai or Poongali rafters with wooden planks to be placed after pointing the inner vimanam portion. Recessed pointing to be made with a proportion of 1:1:3 using combination mortar.
- Excess weathering course (dead load) may be removed and it should be renewed with proper gradient. Before removing proper props should be given so that ceiling slabs do not crack. Removal should be done with proper power tool without vibration.

- While dismantling proper care should be taken to retrieve the old materials in good condition.
- A teak door to be provided at the main entrance.
- Fencing to be provided around the monument.

Works Carried out:

- Jungle clearance around the monument
- Eradication of rank vegetation growth over the monument
- Filleting the inside vimanam with combination mortar
- Painting the sanctum sanctorum and Ardha mandhapam, Mukha mandapam, Maha mandapam, Walls and ceiling
- Teak wood door at the inside mandapam fixed.
- Weld mesh door provided at the opening way

- Country wood false ceiling inside sanctum sanctorum fixed.
- As directed with support dead load of the terrace reduced and re-aligned with proper gradient.
- Pot holes found at Vimanam grouted with combination mortar
- Vitreous enamel protection notice board and information board erected.

Remaining Works in Future:

- Outer veneer can be removed and replaced with plumb.
- Foundation should be excavated on the outer side and footings should be given so that new settlement can be avoided in future.
- Parivara temples are to be replaced.

Though the monument has been partly conserved, the works carried out gives immense satisfaction to the devotees.

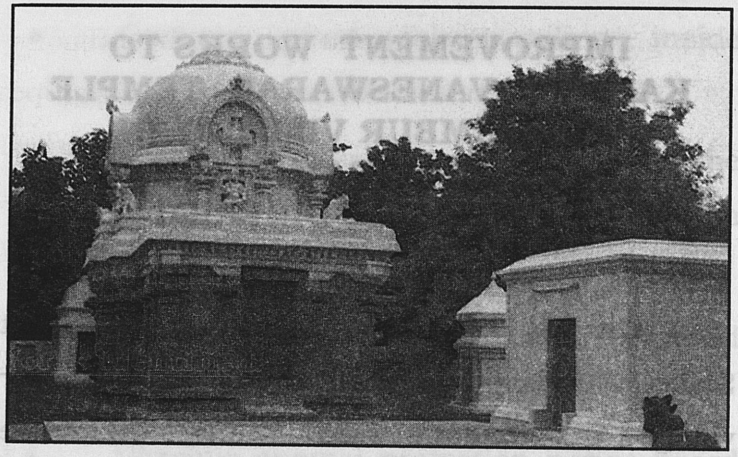
* * *

IMPROVEMENT WORKS TO KADAMBAVANESWARAR TEMPLE AT ERUMBUR VILLAGE IN CHIDAMBARAM TALUK CUDDALORE DISTRICT

On the basis of a proposal to protect Sri Kadambavaneswarar temple at Erumbur village in Chidambaram Taluk, Cuddalore District the Government of Tamil Nadu issued G.O.Ms.No.80/ TDC/ dt. 29.3.96 and declared it as a protected monument under Tamil Nadu Ancient Historical Monuments and Archaeological Sites and Remains Act 1966 (TN act 25 of 1966).

Brief History :

This 13th CE stone temple was constructed during the Pandya period. The deity of Kadambavaneswarar is being worshipped by the local people. For their convenience they have constructed thatched roof in front of the Mahamandapam. Eastern side of the



Kadambavaneswarar Temple

compound wall is found collapsed. A big bell tower with RCC pillar was constructed about 20'-0" height and the old giant bell is hanging. Inside sanctum sanctorum false ceiling was found missing but the evidence of its existence is available. Inner Karuvarai was plastered with cement mortar. Bricks are exposed due to blistering of plaster over the vimanam. Vegetation growth was found here and there. Cement flooring was made at the frontage of Mukhamandapam by over lapping the temple

Upapeedam. Entire outer veneer portions covered by inscription are almost affected by application of oil by the devotees. Loose sculptures like Mahavishnu, Surya, Bairavar & Arumugar (slightly damaged) were kept ideally at the north eastern corner of the prakaram. Similarly stone members (i.e., beams, pillars, ashlar stone) are found scattered around prakaram.

Modern stucco figures like Nandhi, Vinayaga, Murugan, Ramar, Seetha & Lakshmanan etc were installed inside the temple premises. M.S. angle post laid over the compound wall at western side is found missing. Moss and Lichens are found over the vimanam.

Government have sanctioned an amount of Rs.4.00 lakhs under XI Finance Commission grants as recommended by the SLEC in G.O.Ms.No.283/ TDC/ dt. 27.11.2003.

Based on the allotment for carrying out required conservation works through PWD, a Technical Consultant Thiru M.G.Chellapillai, who is a retired Engineer from the ASI, was appointed.

Works identified:

- Recommended to provide inner false ceiling at sanctum sanctorum with wooden rafters and planks using illuppai (or) Poongali.
- Cement plastering made at inner walls to be removed slowly step by step using wooden chisel and hammer without vibration and damaging the adjacent structure carefully and re-plastered with combination mortar 1:1:5.
- Flush pointing with cement mortar from the outer veneer to be removed and repointed using combination mortar 1:1:3 as a recessed pointing.

- Thatched roof at the frontage to be removed.
- Overlapping flooring at the frontage Mukhamandapam to be examined to assess whether any inscriptions are available and it should be separated from the temple without changing its aesthetic value.
- Present cement flooring to be replaced with cut stone flooring.
- Existing W.C to be chipped off and re-laid with proper gradient. Two courses of country flat tiles having 6" x 6" x ½" may be provided over the weathering course in zig-zag formation.
- Scattered sculptures should be kept over a pedestal evenly at the southern side prakaram facing north.
- Modern stucco figures to be removed from the temple premises.

- Fallen compound wall at the frontage to be reconstructed with brick works in C.M. 1:5 and plastered with combination mortar 1:1:5. Similarly by providing MS angle post at the missing place and the existing pattern of 3 ply 12 G barbed wire fencing to be provided.
- Modern bell tower constructed with RCC pillar to be removed. In its place suitable stone pillars may be built using available stones to a height of 8'-0" with cross beams so that the bell may be fixed on it.
- Moss and lichens found over the vimanam should be cleaned using chemicals and washed thoroughly with fresh colour washing using acrylic paint of ICCI company in biscuit / sandal wood colour.
- Documentation by Photograph on various stages of works to be recorded.

Works carried out:

- Deplastering the vimanam over the main shrine is complete after removing the stems and roots of trees.
- Amman shrine cement plaster has been chipped off and re-plastered with combination mortar.
- Main shrine entrance connected to the frontage; cement basement was opened. No inscription - was found. However this opening was covered with stone slabs between main shrine and basement flooring.
- Erected bell tower and dismantled pillar mandapa erected with cut stone.
- Nandi and Dhvajastambham basement were rectified.
- Broken stucco Kalasam rectified and fixed at the top of the vimanam.
- Shabby painting removed and repainted using combination mortar.

- Plastered surfaces face lifted by colour washing with acrylic paint of ICCI brand in biscuit colour.

The temple has been renovated according to archaeological principles.

* * *

PROTECTION ARRANGEMENTS TO KALINGA SCULPTURES IN SENGAMEDU, UDAYARPALAYAM TALUK, PERAMBALUR DISTRICT

The Government in G.O.Ms.No. 1109/ TDC/ dated 17.6.78 have declared Kalinga Sculptures in Sengamedu, Udayarpalayam Taluk of Perambalur District as a protected Monument under Tamil Nadu Ancient Historical Monument and Archaeological Sites & Remains Act 1966. (TN act 25 of 1966).

Brief History:

10th CE Kalinga sculptures were covered by A.C. sheet roof divided by two parts i.e. 5 sculptures in one room without applying oil and one sculpture of Kali in another room by applying oil and is under worship by the local people. This Gigantic Kali sculpture is leaning towards front from its original position and supported by counterweight with brick work on rear side; temporary electrical lighting arranged by the local people.

Kalinga Sculpture, Sengamedu

The Government have allocated funds of Rs. 2.00 lakhs under XI Finance Commission grants as recommended by the SLEC in G.O.Ms.No. 283 / TDC & RE (MA2) Department dated. 27.11.2003. Necessary works were identified by Thiru M.G.Chellapillai, a retired Archaeological Engineer of ASI who has been appointed as a Technical Consultant, after inspecting the site. Estimates were prepared by PWD authorities.

Works identified:

- Front wall covered in first part of the room should be dismantled and grill work fabrication with gate to be provided.
- Dislodged Kali sculpture to be set right to its original position by removing the brick work counterweight and replaced with stone masonry.
- Removing the existing flooring new granite stone flooring with 75mm slabs over a bed of 100mm thick 40mm brick jelly concrete in lime mortar to be provided.

- Necessary boundary line to be surveyed through revenue officials and boundary stone to be laid.

Works carried out:

- 5 sculptures shed in front wall was raised to basement level and grills fixed.
- Kali sculpture straightened to its plumb.
- 5 sculptures were installed by constructing the pedestals with brick work
- Chain link fencing provided by fixing RCC posts alround the protected area.
- Stone flooring laid in both the sheds
- Colour washing given both inner & outer.

Apart from the above works as instructed by Special Commissioner guide boards have been provided departmentally. Vitreous enamel information and protection boards have also been provided additionally.

Due to the protection, the Kalinga sculptures were saved from ruin due to rain and sun.

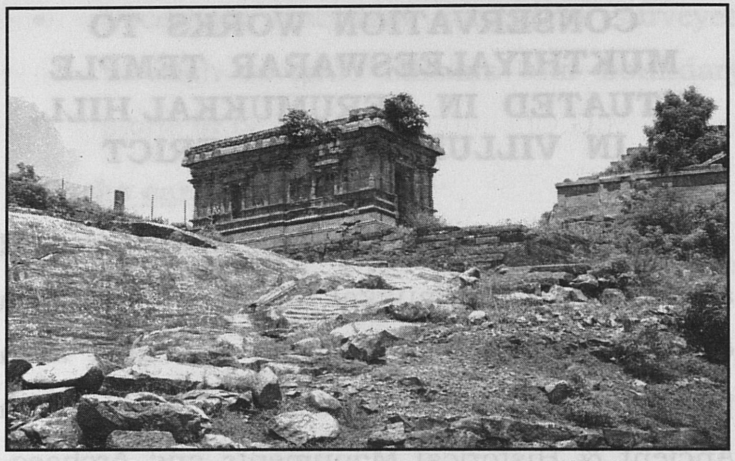
* * *

CONSERVATION WORKS TO MUKTHIYALEESWARAR TEMPLE SITUATED IN PERUMUKKAL HILL, IN VILLUPURAM DISTRICT

The 10th CE Chola heritage temple situated at the top of Perumukkal hill with a vast area covered by Fortress has been declared as a protected monument under the Tamil Nadu Ancient & Historical Monuments and Archaeological Sites and Remains Act 1966 (TN Act 25/ 1966) in G.O.Ms. No.263/TDC &RE/ Dept. (MA2) dt. 8.11.2001.

Present conditions of the Temple

This temple is a treasure house of inscriptions. Considering the importance of this hill temple, the Department of Archaeology brought out a publication during the year 1998, where in the texts of more than 50 inscriptions found on the sidewalls of the shrine have been published. The weathering course of the temple was found damaged. Two entries are available to this hill at the southwest and north east of the hillock from the Perumukkal village.



Mukthiyaleeswarar Temple, Perumukkal

The boundary line of the eastern and western sides of the protected area is steeply falling to the down stream of the hillock. The approach way from the northeastern side is critical. One has to crawl and climb up.

The Government have allotted funds to the tune of Rs.5.00 lakhs under XI Finance Commission Grant as recommended by the SLEC in G.O.Ms.No.73/ TDC&RE Dept., (MA2) dt. 16.5.2003.

As ordered in G.O.the repair works was carried out through PWD as a deposit work. Thiru M.G.Chellapillai who is retired Engineer from ASI was appointed as a Technical Consultant for giving technical guidance.

Important works identified for execution

- Fencing to be erected with grilled gate at the western entry.
- Weathering course should be done for this terrace with proper gradients.
- Bats nuisance heavy inside the sanctum sanctorum to be stopped by providing suitable weld mesh gate at the existing door way.

Works carried out

- About 450 steps were cut and constructed on the slope of the hill by using cement mortar.
- Similarly 400 steps insitu was rectified and some of them constructed and the opposite direction.

- Barbed wire and chain link fencings provided as directed.
- An Iron ladder was provided for easy access to the Seetha cave.
- Vitreous enamel boards were also fixed.
- Weathering course was provided over the temple terrace with proper gradient.

The stains and scribbling over the walls have been clearly removed by Archaeological Department chemist using suitable chemicals.

The red ochre is now bright. The paintings are very clear and viewable.

Works to be done:

- Barricade arrangements have to be provided with M.S Pipe supporting by M.S.Angle for safety measures.
- Approach way to Sita Cave has to be provided with a ladder about 7.0 m height and also a wicket gate.

- Enamel protection notice board and Information Board in English and Tamil Version to be provided.
- Stepped approach way should be provided by cutting the hill - slope with available scattered R.R. stones, with cement mortar for easy access to study the inscriptions by the visitors.
- Vegetation growth found within the protected area to be eradicated.
- The vandalism made on the walls of the temple structure to be removed by using chemicals, by utilizing the services of the departmental chemists.

Special Commissioner of Archaeology Thiru T.S.Sridhar, IAS, inspected the monument on 30.9.2004 and instructed to carryout the following works from the available savings.

- Steps to be numbered

- If the water drains through the steps it may spoil by means of moss and lichens. Hence necessary drain arrangements to be made at the side of the steps.
- Hand railing to be provided at the steep steps portion, wherever required.
- Weathering course in the pressed tiles to be laid at the left over portion of the temple roof (i.e. in the proposed vimanam constructions portion.)
- Grill gate to be provided at the approach entrance of Seetha cave.
- Door side steps at northern side are found to be steep and it should be sized to a convenient height.

All the above works have been carried out, and the monument now stands atop the hill in splendid glory.

* * *

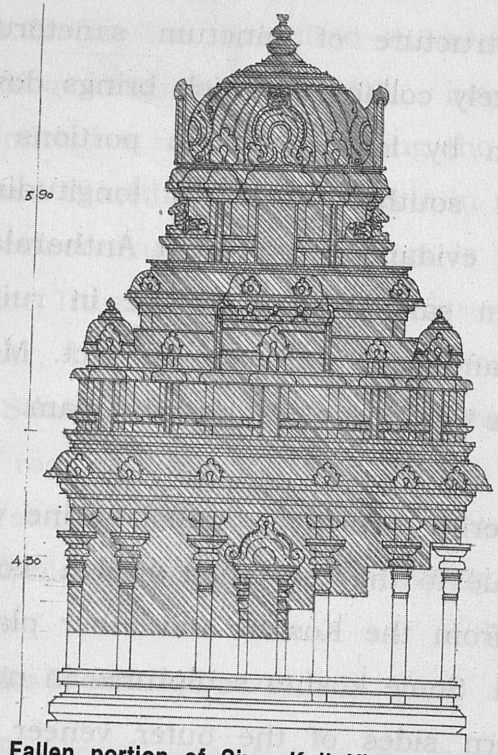
PRESERVATION WORKS TO SIVANKOIL AT ULAGAPURAM IN VANUR TALUK OF VILLUPURAM DISTRICT

Sivankoil at Ulagapuram village lies about 16 Kms southeast of Tindivanam -Marakkanam road and is connected to a village track taking off in a southern direction about 3 Kms. An ancient temple of Siva now called Kasinathar temple, which is located in the extreme eastern part of the village, has been declared as a protected monument in G.O.Ms.No 81 Tamil Development & Culture dated 23.3.87.

Brief History :

The later Chola inscription reveals the deity's name as "Arikula Kesan Eswaramudayar' Inscriptions of Rajarajan I, Rajendra Chola I, Udaya Sri Mahendra Chola, Vikrama Chola Jada Varman, Sundara Pandia, and Vijayanagar King Veera Prathapa Devaraya Maharaja are also found in this temple.

Sivan Koil, Ulagapuram



Fallen portion of Sivan Koil Vimanam at Ulagapuram

Present Condition:

This Eka - tala temple faces east and the main temple consists of Karuvarai, Antharalam and Mahamandapam with the main entrance facing southern side. Vimanam is built with brickwork over the karuvarai and all other main shrines are constructed with coursed

rubble stone. Western and northern wall of the stone structure of sanctum sanctorum have completely collapsed, which brings down the vimanam by leaving certain portions at eastern and southern side in longitudinal shape as an evidance. At present Antharalam and Sanctum sanctorum walls are in ruins. The Mahamandapam walls are in tact. Main of this temple was kept at Mahamandapam.

Weathering course at Ambal shrine was disturbed due to the vegetation growth. Loose sculptures from the Koshta and other places lie scattered. Some koshta sculptures in north and southern sides of the outer veneer are housed in its position. New Nandhi Mandapam and Navagiraha Mandapam were found as latest additions.

In G.O.Ms.No 287 TDC & RE (MA2) Dept. dated 27.11.03. under XI Finance Commission grants as recommended by the S.L.E.C. Government have allocated a sum of Rs.8.00 Lakhs for the preservation works to the above temple.

The Archaeological Technical consultant Thiru. M.G.Chellapillai a retired Assistant Superintending Engineer of ASI, inspected and submitted a note for rectifying the defects has opined that the provision made in the estimate for re-construction of vimanam is not enough. Hence Thiru T.S.Sridhar, IAS, Special Commissioner, had assessed the situation based on the Sthapathi's drawings, and permitted to close the roof by using pavukkal with weathering course in proper gradient, after documenting the available vimanam portion for future reference.

Works Identified:

* Scattered vegetation to be removed around temple for easy access to carry out works
* Damaged broken vimanam to be removed slowly by using wooden chisel to retrieve the existing bricks for re-using.
* Available outer and inner veneer to be removed including koshta sculptures found in their niches after numbering them in a proper manner.

* Surveying locally and collecting the scattered stone members from the various places /fields.
* Undulated stone flooring to be removed and stack them for re-use.
* Strenghening foundation by RR Masonry packing with combination mortar with footings upto its upa-upanam level.
* Re-setting in order the stone courses "varkam by varkam' according to its number without changing the inscriptions.
* In between the outer and inner veneer core wall to be filled with 40 mm - 60 mm HBJ stone jelly with combination mortar mixed with an extract of gallnut and jaggery.
* Removed stone slabs to be dressed and reset in proper manner. Pointing to be done as a recessed pointing.
* Closing the karuvarai with pavukkal and weathering course to be provided as per the existing mahamandapam.

* Wooden rafters and planks to be provided at the inner ceilings of sanctum sanctorum according to its original pattern.
* Doors at Anthralam and entrances to be provided.
* Chain link fencing with RR stone masonry bed using cement mortar to be provided. MS angle post and gate will be supplied by the Department of Archaeology.

Apart from the XIth Finance Commission grant, a separate allotment was made for providing vitreous enamel information and protection notice board for Rs.12,500/-

Works Carried Out:

* Scattered stone members collected from the surrounding places/ fields and temple premises.
* Rank vegetations removed from the available protected area.
* After the proper documentation by photos existing leaned vimanam removed by providing scaffolding.

* Similarly after numbering the stone inner and outer veneer the existing flooring slabs were removed duly stocking them in order for re-use.
* Foundation strengthened by providing concrete and RR masonry has been constructed with footing to its upa-upanam level.
* Resetted the stone courses of outer and inner veneer
* Moolavar (Deity) placed in its original posture in the sanctum sanctorum from the mahamandapam.
* Balance works are in full swing of completion by PWD

Special commissioner of Archaeology Thiru T.S.Sridhar, IAS, inspected the monument while the works were in progress and stressed to complete the works within the stipulated period without changing its aesthetic value. He instructed the PWD authorities to provide weathering course at the Ambal shrine.

The temple requires further more repairs to be carried out. They are:

* Vimanam to be re-constructed using brick work in combination mortar from its niches
* Stone flooring around the prakaram to be provided
* The Bairavar shrine, suryan and other parivara shrines are to be removed and reconstructed.
* Strengthening the existing well by providing weld mesh cover as a safeguard.

Though the temple has been conserved partly with the available funds, the works done will definitely be beneficial to the devotes. The local community is happy with the department's efforts and we have to support the maintenance of the temple.

* * *

CONSERVATION WORKS TO PACHIL AMALESWARAR TEMPLE AT ALAGIYA MANAVALAM IN TRICHIRAPPALLI DISTRICT

The 10th CE Siva temple at Alagiya Manavalam in Trichy District which was constructed by the king Uthama Chola has been declared as protected monument vide G.O.Ms. No. 269 / TDC / Dated 20.12.94 under Tamil Nadu Ancient Historical Monuments and Archaeological Sites and Remains Act 1966 (T.N. act 25 of 1966) Ramayana panels are found in its basement. This temple is referred to in the Rajarajan inscriptions at Thanjavur Big temple.

Structural Condition :

This temple was almost in a dilapidated condition and was on the verge of collapse. Whole structure including the vimanam having the brick work was leaning towards western side. The vimanam was supported by new

Pachil Amaleeswarar Temple - Alagiya Manavalam - Before Conservation

Pachil Amaleeswarar Temple - Alagiya Manavalam - After Conservation

brickwork on both sides of north and western karuvarai. To some extent on the three sides of the main shrine veneer stones are available.

Ardha Mandapam, Mukha Mandapam portion ceiling slabs, pillars and other stone members were dislodged and out of plumb; the sub shrine on the north western corner also stands in ruined condition.

Government have allotted funds to a tune of Rs. 7.00 lakhs under the XI Finance Commission grants in G.O.Ms. No. 283, TDC & RE Department dated 27.11.03. As ordered by the Government P.W.D. was asked to prepare the estimate for the restoration work without changing its aesthetic value with technical guidance of Thiru. M.G. Chellappillai who is a retired Assistant Superintending Engineer of ASI.

Works Identified :

- For adopting the Archaeological principles, the leaned out brickwork vimanam should be properly documented and numbered.

- Vimanam to be dismantled by supporting with props very carefully to retrieve the old materials.
- Similarly present remains of the stone members like pillars, capitals, beams, ceiling slabs to be removed very carefully supported with props.
- Fallen portion of the sub shrine to be re-constructed by providing missing stones in the outer veneer including the weathering course.
- Existing barbed wire should be replaced with 12G- 3 ply barbed wire and supporting angle should be painted.

While preparing the estimate it was mentioned by PWD that the funds allotted is not enough to fulfill the entire work. Hence as an alternative instructions were issued to prepare estimate for carrying out repairs to the main and sub shrine work issued leaving garbhagraha portion.

Works carried out :

- The inner and outer veneer stones numbered and documented
- Scattered stones collected surveying the various fields.
- Entire portion of inner and outer veneer excluding karuvarai with vimanam has been removed and stacked serially for re-setting.
- 15 cm depth of river sand was laid at the bottom for strengthening foundation and 15cm depth of stone jelly concrete was laid for strengthening its foundation over that 90 cm depth RR masonry work was carried out on the three sides of the monument.
- Amman sub shrine re-constructed.
- Similarly main temple frontage also reconstructed to its originality
- As ordered by Thiru T.S. Sridhar, IAS, Special Commissioner of Archaeology, Technical Consultant has inspected the

temple and suggested for utilizing the savings amount as follows :

1) Basement using cut stone around main and sub shrine recommended.
2) Instructed to provide 2 ply barbed wire by using the existing MS angle post. Special Commissioner has inspected the monument on 25.9.2004 and seen the progress of work and stressed to complete all the works within the stipulated period of 31.3.2005.

Thus the temple has been conserved for the sake of local devotees and posterity.

* * *

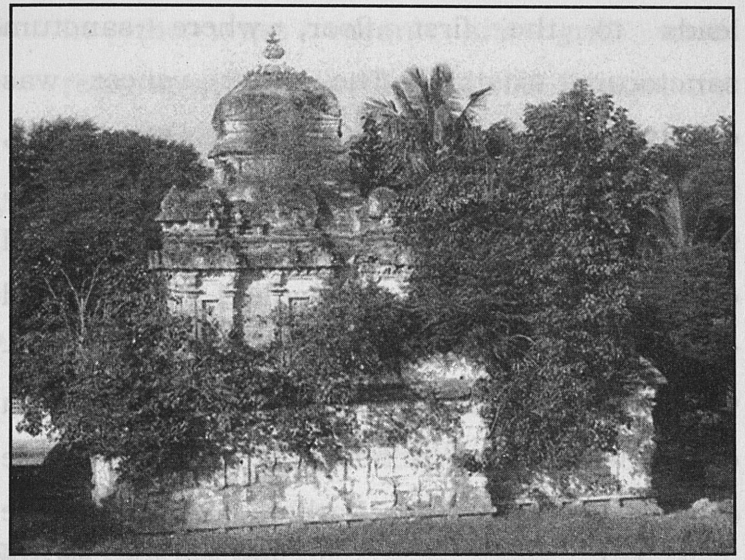
CONSERVATION WORKS TO CHANDRAPRABHA TEMPLE AT TIRUPARUTHIKUNDRAM IN KANCHEEPURAM DISTRICT

The Chandraprabha Jain Temple has been declared as a protected monument in G.O.Ms. No.23/ Tamil Development Culture Department dated 12.2.1993, which is situated adjacent to the Trilogyanatha Jeena Swamy Temple - also a declared monument.

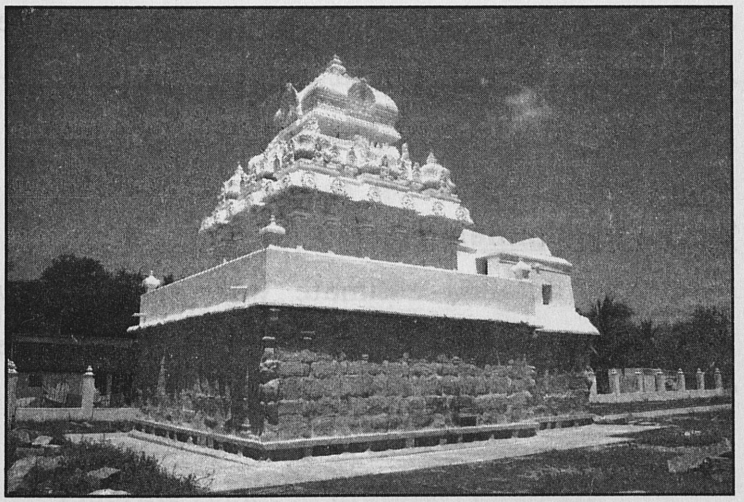
Government allotted funds to the tune of Rs.10.00 lakhs for its conservation in G.O.Ms. No 283 T.D.C. & R.E. (MA2) Department dated 27.11.03. The above monument was inspected by the Commissioner of Archaeology with P.W.D.officials and instructions issued to carryout the works without changing its aesthetic value.

Conditions of the Structure:

The shrine is located in a vast open area at the backyard of the field. A flight of steps



Chandraprabha Temple - Before Conservation



Chandraprabha Temple - After Conservation

leads to the first floor, where sanctum sanctorum exists. The outer veneer was constructed with laterite stones. Due to age, natural effects and growth of heavy vegetation, the shrine got deteriorated, and also tilted out from its plumb. A headless deity existed when the Department took it over for preservation. It was decided to provide the Replica of the head. Encroachment around the temple due to issuance of Natham Patta in the protected area was identified by Thiru T.S.Sridhar, IAS, Special Commissioner and action taken to evict them through the revenue authorities. Now the area is free from occupation.

Works Recommended :

The detailed estimate was prepared by PWD and approved. Thiru M.G.Chellapillai is the Technical Consultant for this work also.

- In the vast vacant site grill work recommended over the bed of R.R. masonry as a protective measure
- Rear side of the Vimanam to be reconstructed.
- The cracks found at the inner side of the front portion and shrine, to be grouted using combination mortar.

Works Carried out :

- Dislodged / out of plumbs laterite stones of outer veneer were removed by the PWD, and reset after removing the tank vegetation from its roots; Gaps caused due to removal of vegetation also properly packed with brick jelly with combination mortar.
- Dilapidated / scattered stucco figures completed with its original shape at Vimanam
- Flooring replaced around Vimanam.
- Grillwork around the boundary over the bed of R.R. masonry was provided.

- Deplastering and replastering the whole monument with combination mortar was carried out.
- Face-lift given by colour washing the main shrine and Vimanam with acrylic i.e. water bound cement paint in Biscuit colour.
- The cut stone flooring was laid.
- Teak wood door at main entrance of the shrine provided.
- Stone flooring around Vimanam has been completed.
- Electrification work also done.
- Fencing with gate and garden provided.

Special Commissioner Thiru. T.S. Sridhar IAS, has inspected the above monument during the execution of works on 6.8.2004 and permitted to provide replica face of the main deity of Theerthankarar.

Thus the great Jain Temple was preserved from deterioration and restored to its pristine

glory. This Temple is a popular pilgrimage center for Jains from North India. Along with the Archaeology Department's effort, the Tourism Department has provided civic amenities for the Tourists visiting the monument.

Now, the place looks very attractive and the local Jain Community is eager to resume religious and devotional activities in the Temple after a long respite.

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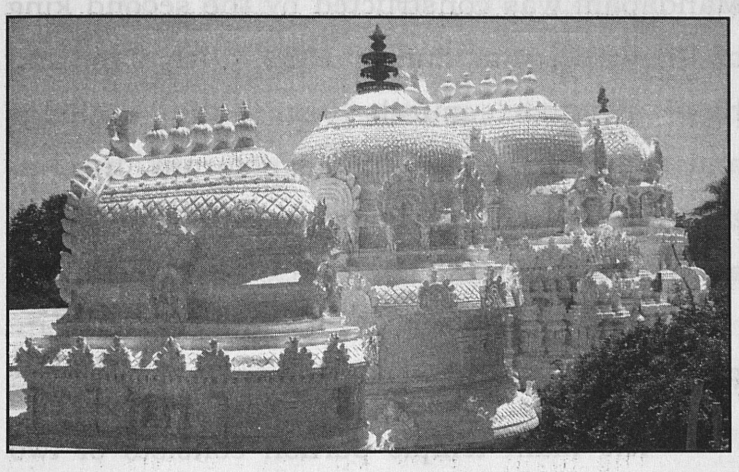
CONSERVATION WORKS TO TRILOKIYANATHA JEENASWAMY TEMPLE AT TIRUPARUTHIKUNDRAM VILLAGE IN KANCHEEPURAM TALUK AND DISTRICT

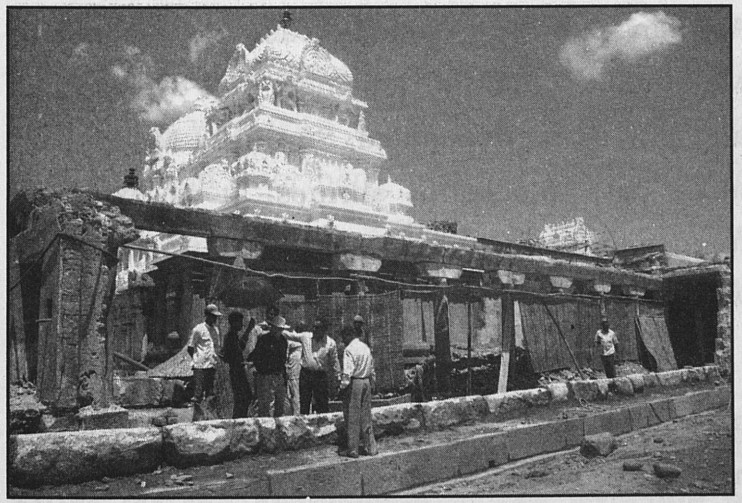
Trilokiyanatha Jeenaswamy Jain temple, located in the field survey no. 169/1 of Tiruparuthikundram village (no. 61) of Kancheepuram Taluk and District has been declared as a protected monument in G.O.Ms. No. 20 T.D.C. dated 30.1.1990 and maintained by the State Department of Archaeology.

Brief History :

This temple belongs to 6th CE (556 CE). It was constructed by the Pallava king Simha Vishnu and later it was extended by the various kings of Pallava, Chola and Vijayanagara dynasty step by step. Sangeetha



Trilokiyanatha Jeenaswamy Temple



Trilokiyanatha Jeenaswamy Temple

Mandapam was constructed by the second king of Vijayanagaram during 1382 (14th CE); and has painted murals on the ceilings and walls of the sanctum sanctorum. Inscriptions are found at various places of the shrine and inner Gopuram.

Present Condition :

The main temple portion consists of two blocks. Each block contains two Garbhagiraham and Antharalam (Ardha Mandapam) of main deity and one small Garbhagiraham of Amman shrine, facing east. A common Mahamandapam is adjoined in two blocks and it is further extended. Savahasa Mandapam links both blocks of shrines. It is extended further to Sangeetha Mandapam with 23 pillars which contains murals on the ceiling.

The stucco inside Garbhagiraham is made up of coloured traditional combination mortar and certain stuccos are painted. When we examined the loose sculpture's texture it was found to be marble.

The main shrines are covered by prakaram, Mandapam in southern side and corridors in other side with prakaram. In south west corner parivara temple of "Brahmar" is located. Similarly in the south-west corner lies Madapalli, adjacent to it vahana Mandapam and a well in north east corner exists. In northern side a tomb of parsuvanathar blocks available; this block consists of tombs of parsuvanathar, rooms on either side and an underground passage on eastern end of the room.

The whole complex is enclosed by a high compound wall with buttress all round except eastern and northern sides. The frontage is beautified by the 3 tier Gopuram. At the northern terrace over the corridor an "Unjal Mandapam" is existing.

Heavy growth of vegetation is the main cause for the dilapidation of the structure of

the entire temple. Due to this factor massive cracks have developed all over. Padmaprabha amman shrine block entirely collapsed with vimanam due to age and weathering effects, which was originally constructed with brick in mud mortar. Over the debris heavy vegetation were grown. Uneven settlement was noticed at western side of the compound wall and corridor. During the previous renovation pure cement was used. Local people have also vandalized by pasting cow dung to produce dry cakes. The whole shrine has been white washed. The previous conservation done by the trust modern method and materials were used, which is mot according to archaeological principles.

Existing weathering course at Sangeetha Mandapam is not properly provided with gradient. Hence rain water stagnated on either sides. Due to this, murals on ceilings of savahasamandapam, first and second bay of Sangeetha Mandapam and painting on the stone beams are badly deteriorated.

Similarly wall paintings on the side walls of the sanctum sanctorum were covered by soot, dust and dirt. Likely painted stuccos of Moolavar in sanctum sanctorum are also covered with soot, oil accretion, dust and dirt etc. Due to lack of ventilation birds have created adverse effects. The wooden panel paintings at the entrance of Antharalam is also found with dust and dirt. Loose stone sculptures (marble and granite) are found adhered with massive oil accretions, soot, dust and dirt etc.

It was a great temple, exquisitely with a lot of royal patronage in the past, is in ruined condition.

The Government have allotted a sum of Rs. 29 lakhs under the XI Finance Commission grant works in G.O.Ms. No. 283 T.D.C.& R.E (MA2) Department dated 27.11.03 to preserve this monument to its posterity.

The then Commissioner of Archaeology along with the then District Collector of Kancheepuram, Executive Engineer PWD Kancheepuram, D.R.O., Kancheepuram and Tourist officer Mahabalipuram inspected the monument and suggested the works to be carried out on priority basis.

Accordingly an estimate was prepared by the PWD and approved. Thiru M.G. Chella Pillai, a retired Assistant Superintending Engineer of ASI was appointed as the Archaeological Technical Consultant.

Works Identified :

* Complete photographic documentation and working drawing to be prepared before commencement of work with the assistance of Departmental Sthapathy.
* Replica of the Amman shrine including vimanam should be constructed on removal of scrub and debris.

* Supporting the inner vimanam at ceiling of karuvarai in all shrines country wood rafters of illuppai or poongali to be provided.
* A net made up of piano string to be provided at non ventilated places to eradicate the entry of bats.
* Entire cut stone flooring should be set right by removing. Proper care should be taken to retrieve the existing slabs in good condition.
* Marble stones to be provided in the main shrine as is usually paved in Jain temples.
* Major detached portion should be stitched by grouting with dowel joints using copper flats.
* Removing dead mortar of existing weathering course and relaying with fresh combination mortar in the proportion of 1 : 1 : 3 as per Archaeological norms with proper gradients.

* A coating of four square trade ochre colour should be coated for the vimanam.

* Existing electricity should be re-oriented without spoiling its aesthetic value.

* Supporting pillars in the corridor Mandapam are seen out of plumb and it should be set right.

* The PWD was instructed to engage contractors with due past experience in the conservation of the ancient monuments and mural paintings.

Works Carried Out :

The Public Works Department carried out the following structural conservation works with the technical guidance of Thiru M.G. Chella Pillai.

* Padma prabha shrine was re-built with combination mortar including vimanam with stuccos.

* The rank vegetation all over the monument including vimanam and compound wall were completely removed filling the gaps with brick bats and combination mortar 1 : 1 : 3. They removed and placed the stones in its position after clearing the roots. Mostly the monument is free from vegetation at present.

* To safeguard the valuable stone, icons and other artifacts with iron grill work a strong room was provided with basement as steps.

* Western side compound wall with corridor was removed completely with its existing buttress wall and its foundation was examined by the Superintending Engineer PWD and it was decided that 30 cm depth and 1.5 m width of stone jelly concrete in the ratio of 1 : 2 : 4 has to be laid in the foundation and then 1.20 m. depth of random rubble masonry to be provided. Accordingly western side compound wall

was re-constructed after strengthening its foundation. Similarly as requested by the Chief Engineer (B) PWD southern side wall was also permitted to be reconstructed by adopting the same method from the available savings with a condition that no extra fund will be provided.

* Cracked/cleavages portion stitched with dowel joints using copper flats and grouted with combination mortar slurry.

* Existing weathering course removed and redone with proper gradient.

* Existing flooring was replaced by cut stones and dislodged portion was also set right.

* Wooden rafters provided at the ceiling of the inner sanctum sanctorum and the gaps fallen in between the rafters was covered by the piano wires for avoiding the entry of bats at inner vimanam portion.

As already explained mural painting on the walls and the ceilings at inner sanctum - sanctorum and Sangeetha Mandapam exist. These priceless paintings will deteriorate unless they are conserved/restored leading to avoid public criticism. Government have allotted extra grant of Rs. 4.09 lakhs for restoring the murals painting on completion of its structural conservation work vide G.O. Ms. No. 44/TDC & R.E. (MA2) Department dated 10.2.2004. The Special Commissioner of Archaeology Thiru T.S. Sridhar, IAS, inspected the temple and the paintings on 06.08.2004 and 20.3.2005 and recommended the execution of painting works during his inspection.

Painting works done :

Mural painting conservation carried out by removing soot, oil contents, dust and dirts etc.

* Part of painting conservation works were carried out through PWD by engaging the

experienced contractor at Sangeetha Mandapam by cleaning dust and applying preservative coat from the allotted fund.

Remaining works to be carried out :

* Re-constructing the remaining compound wall
* Examining the underground chamber
* Providing marble flooring at sanctum sanctorum
* Providing vitreous caution board around the temple
* Removing the white washed layers from the inscription wherever required and applying preservative coat.

More funds are necessary to preserve the remaining items of works. This great Jain temple attracts large number of visitors from all over the country, especially from Rajasthan. It now stands as a splendid monument for inter-cultural interaction and religious tolerance.

Thus the great Jain Temple has been preserved from deterioration and restored to its pristine glory. This Temple is a popular pilgrimage center for Jains from all over the country, especially North India. Along with the Archaeology Department's effort, the Tourism Department has provided civic amenities for the Tourists visiting the monument. Now, the place looks very attractive and the local Jain Community is eager to resume religious and devotional activities in the Temple after a long respite.

* * *

CONSERVATION WORKS TO VITTALAR TEMPLE AT VITTALAPURAM IN KANCHEEPURAM DISTRICT

Vittalar Temple was built during the reign of Vijayanagar a King Krishnadevaraya by Kondaya Deva Chola Maharaja, one of the official Chieftains of the King as a replica of the Vittalar temple that existed in Vijayanagara. Situated in survey No. 408/3 with an extent of 1.26 Hectares in Vittalapuram Village in Kancheepuram District it was declared as a protected monument by the Government under Tamilnadu Ancient And Historical Monuments and Archaeological Sites and Remains Act 1966 (TN Act 25/1966) vide G.O.Ms. No. 1224/ Education Edpartment / dated 14.6.82.

Structural Condition :

The temple is facing east with flight of steps at north and south to reach the main temple. Main temple consists of five portions

i.e. Sanctum Sanctorum, Mahamandapam, and Sobhana Mandapam. In the middle of Sanctum Sanctorum, the moolavar of Vittal Perumal is found in standing posture. Main temple belongs to Pallava and Chola periods.

Outer stones in western sides are completely disturbed and found to be out of plumb. Similarly northern side outer komugam, and sculptures at koshtam are found missing. Uupa peedam is almost interned in the earth. Northern side of the Mahamandapam has almost fallen and does not concide with existing outer portion. Main beams have cracked at the center and stands very dangerously. Due to this effect pavukkal roof slabs are hanging. Pali peedam, Parivara temple, Front gopuram, Thirumathil have collapsed and stones found scattered around the Monument. Vegetation growth is found everywhere. Generally due to age, weathering action and vandalism this temple was in a dilapidated condition. For the

above reasons entry to the temple was felt unsafe.

Formation of Committee :

Assessing the situation the local villagers formed a committee called Sri Vittalapuram Pandurangan Kaingarya Sabha and registered it as a public Charitable Trust on 9th July 1999 with the intent to restore Pandurangan vittal temple at Vittalapuram in the public interest. They addressed this Department seeking permission for carrying out the restoration work to a tune of Rs. 4.00 Lakhs collected from donations.

As requested by the Sabha necessary proposals were sent to Government for consideration under section 14, sub. section 1 of section 18 of Tamilnadu Ancient and Historical Monuments and Archaeological Sites and Remains Act 1966 for granting permission to carryout the work by the Sabha.

The Government granted permission to carryout the work for Rs. 4.00 Lakhs by the Sabha in G.O.Ms. No. 92 TDC & R.E. (MA2) Department dated 11.6.2002 with the following conditions.

* Work should be carried out with the technical guidance of the Archaeological Department.
* Archaeological principles shall be adopted while carrying out the work

Norms prescribed in the Memorandum of Understanding

Based on the Government order a Memorandum of Understanding was executed between the Department of Archaeology, Government of Tamil Nadu and Pandurangan Kaingarya Sabha in a stamped paper on 28th June 2002, with certain norms and conditions stipulated as given below:-

* All the renovation works to be undertaken as per Act 25/1966.

* They shall submit the approximate estimate and get the concurrence from the department.
* Assured that they will undertake only renovation work as per the estimate and that they will do no new construction.
* Agrees to document the temple by photo before commencing the work.
* They shall not use any new stones and shall not change the architectural work during the execution and further agrees to use the old stones on getting concurrence of the department.
* They shall not cause any damage, hindrance or loss to the sculptures in the temple while carrying out the work.
* They shall be solely responsible for any untoward happening such as injuries / death if any caused to the construction employees while carrying out the work. They agree to take insurance policy covering injuries / death to the construction employees at the time of employment.

* They shall keep the proper accounts for carrying out the renovation work and shall submit to the department when ever called for.
* They shall not claim any rights or interest whatsoever with the above temples or temple lands in future.
* Repair work shall be completed within twelve months from the date of commencement of work.

The said norms were accepted by the Secretary of Sri Vittalapuram Pandurangan Kaingarya Sabha and the work was started. The Sabha again applied for obtaining electricity service connection for lights and pump sets agreeing to pay the deposit and also current consumption charges monthly / bimonthly. The Department accepted the same with certain conditions, as per usual procedure.

As a preliminary work, the sabha found out the existance of a well in the inner

prakaram, which was interned 20'-00" below the ground level and brought to light. As per the agreement, Sabha has submitted their estimate as a project report on 2.1.2003 at a cost of Rs. 3.95 Lakhs for carrying out the major works in Garbhagraham, Mukha Mandapam and inner & outer walls of Antharalam of the main shrines.

The estimate was scrutinized and accepted by stressing to follow the norms indicated in Memorandum of Understanding.

On receipt of the concurrence, the Sabha started the work on 7.3.03. Before starting the work personal accident and death policy through M/s Royal Sundaram to all workers in the above said project was taken by the Sabha as pointed out in the memorandum of understanding.

They started the preliminary work of cleaning the site, removing vegetation and

heaped earth, marking inner and outer veneer and up-rooting the scattered vegetation grown over the structure.

The Assistant Executive Engineer of this department has inspected the monument on 25.3.2003 and the then Commissioner Archaeology also inspected on 22.4.2003. Certain instructions and guidelines were issued. Special Grade Junior Engineer has also inspected on 12.5.2003, 24.5.2003 and on 8.6.2003 along with the archaeologist. During the inspection necessary guidelines were given for strengthening the foundation, Surveying the missing stones and identifying the scattered pillars for installation.

During the execution of the main work as requested by the Sabha necessary permission was accorded by this department for reconstructing the Thirumathil, Palipeedam and Dhvajastambham after analyzing the main work with various angles.

The then Commissioner has inspected the temple on 1.8.03 and again instructed the procedure for executing work and issued orders permitting additional works such as

* Preparing replica sculptures of Bhama Rukmani, Karudalwar by mentioning the period at the bottom of the sculpture.
* Providing door at main entrance and Mukhamandapam
* Removing and resetting the Amman shrine with vimanam as per the archaeological principles.
* Protected area boundary to be preserved from the encroachment by laying stone pillars.
* Conducting kumbabishekam
* Providing Nandavanam around temple.

This department has ordered on 16.10.2003 that the mounment conservation

works are to be carried out with the consultation of Thiru M.G. Chellapillai, Archaeological Technical Consultant.

Thiru M.G. Chellapillai, who is a retired Assistant Superintending Archaeological Engineer from the A.S.I. has inspected the temple on 26.1.2004, 6.3.2004, 12.4.2004, 27.5.2004 and instructed certain works to be carried out.

On completion of additional works, Sabha started the work in the sanctum sanctorum after doing the 'palalayam' on 11.2.2004.

Sabha applied for the extension by twelve months period of Memorandum of Understanding on 27.2.2004. Department granted 3 months extension from 26.4.2004 for completing the balance works and certain details were called for from the Sabha as under

* Rough cost estimate for the remaining works with the required period.

* Expenditure incurred so far.

As a result Sabha has submitted expenditure statement in their letter - dated 31.3.04 for the completed works of Mahamandapam, Ardhamandapam, Palipeedam, Dhvajastambham (flag staff), Thirumathil and Karudan sannidhi. The reason for the low expenditure was stated that the local villagers, devotees of Vittalar have carried out the work by voluntary contribution at free of cost. Similarly the donors donated stones and bricks. Hence the cost incurred for certain works like wages of sthapathies, purchasing gallnut, jaggery, cement, lime and sand have come down.

In the mean time technical consultant has submitted his recommendation based on the photo documentation pertaining to

vimanam of Main shrine and Amman shrine in consultation with Thiru K.T. Narasimhan, Superintending Archaeologist of Temple survey Project of ASI.

Thiru T.S. Sridhar, IAS, Special Commissioner inspected the monument on 4.9.2004 and granted extension of time for further period of six months from 20.9.2004 for Main shrine vimanam construction and directly enquired the organizer of works who was present at that time on various aspects. He instructed the Trust to produce the following particulars along with audited accounts for sanction of subsequent works.

* Copy of the agreement entered with Pandurangan kaingarya Sabha and organizer of the work.

* A detailed report indicating the work completed so far with achieved physical and financial progress

* Anticipation of expenditure for further works to be taken up and the time limit required.

The Special Commissioner also directed fencing of the vacant site opposite to the temple which falls within the protected area.

Pandurangan Kaingarya Sabha has submitted the detailed report along with the Audit certificate obtained from Vijay Sarathy & Co, for an amount of Rs. 2,07,700/-

After completion of the main vimanam the Special Commissioner instructed the Technical Consultant to inspect the site; based on his report dated 12.9.2004 permission was granted to re-construct the Amman shrine after strengthening foundation with vimanam. Instructions were also issued to speed up the madapalli and north - west shrine which were already permitted.

List of Works done :

* Interned Adhistanam of the temple and existing well were brought to light
* Removing main shrine which contains Shobana Mandapam, Mahamandapam, Savahasa antharalam, Mukhamandapam and Garbhagiraham up to its 'upa upanam' level and reconstructed after strengthening the foundation to its original condition as per of Archaeological principles.
* Both Main Shrine and Amman Shrine Vimanams re-constructed.
* Similarly ruined parivara shrine in south east and south western corner of the prakaram were also removed and reconstructed after strengthening foundation to its originality.
* Moolavar reset to its original posture
* Prakara Mathil re-built to its original level

* Palipeedam, Karudan Sannidhi and basement of Dhvajastambham re-built by using the scattered stone.

* Temple model doors at Sannidhi provided.

List of works to be carried out :-

* Restoring the Rajagopuram

* Forming Nandavanam

* Strengthening existing fencing by chain link

* Constructing pedestals for scattered sculptures

* Providing vitreous enamel boards

* Providing mesh frame to the well with locking arrangements

* Installing Dhvajastambham

* Providing temple model main door at Rajagopuram

* Forming approach way to enter the temple from the fencing area.

The Sabha have also requested permission to carry out the above works, which is under examination by the Department. This work entrusted to Sabha paved way for the commencement of a new public private partnership in the preservation of our heritage buildings. It has served as a good model for taking up further heritage conservation works involving the community and other stake holders.

* * *

PROVIDING ACCESS TO THE ROCK PAINTINGS AT SETTAVARAI IN GINGEE TALUK OF VILLUPURAM DISTRICT

Rock art is term used to denote artistic expressions on rock media such as bare surface of caves, rock shelters and boulders. They appear in several forms such as painting, etching, engraving, bruising etc. The early cave man was a nomadic hunter-gatherer, whose life was inextricably linked to his physical and natural environment. What he saw he reduced to painting in the caverns inhabited by him. Rock art is a vital piece of evidence linking man with his creations left behind for posterity. It study throws enormous light - as any archaeological excavation would - on the lifestyle of early man. Till date, more than thirty sites along the Western and Eastern Ghats have been identified, many of them by officers of the State Department of Archaeology.

Realising the importance of rock art and the need to preserve them from deterioration due

Rock Paintings, Settavarai, Villupuram District

Approach access to Rock Paintings, Settavarai, Villupuram District

to quarrying or vandalism, the Government of Tamil Nadu has notified four sites namely Alambadi, Kilvalai, Settavarai and Vettaik-karanmalai as protected monuments. Rock paintings at Settavarai in Gingee Taluk of Villupuram District has been declared as a "Monument' Under Tamil Nadu Ancient Historical Monuments and Archaeological Sites and Remains Act 1966 (Tn Act 25 of 1966) in G.O.Ms.No.80/TDC Department dated 23.3.1987.

Brief History:

The distinctive pre-historic paintings at Settavarai is about 15 km. West of Kilvalai near Vettavalam in Villupuram District. The paintings are drawn on the rock surface of a nutural cavern of Ayyanar hill of Settavarai at about 100-0 mts.height from the ground level. On the basis of the execution and style of the figures the date can be assignable to 1500 BCE. The approach pathway to the painting is very difficult. Evidences of rain water shedding over the painting was also identified.

Government have allotted funds to the tune of Rs.3.00 lakhs under XI Finance Commission Grants as recommended by the SLEC in G.O.Ms.No.283 tDc & RE Department (MA2) dt.27.11.03 to carry out necessary measures to preserve the paintings and to protect them from rain and natural causes. Estimates were approved by the then Commissioner of Archaeology prepared by PWD. Thiru M.G.Chellapillai who is retired from ASI was appointed as a Technical Consultant for giving guidance to carry out the works cautiously.

Works Identified:

* Scrub jungle to be up rooted and eradicated
* Approach way from the ground level to certain extent to be set right. In certain places rocks may be cut and shaped as steps by chiseling and cutting or dressing or way can be built using the available stones, according to the site condition.
* Hand rails to be provided according to the site condition wherever required to safeguard the visitors from falling down.

* Barricade to be provided at the frontage platform of the paintings in the ticket gate.
* The water shedding over the painting during rainy season has to be prevented by cutting a channel at top of the rock away from the edge of the rock carefully without vibration and provision of way for water flow on either side of the rock arranged.
* Vitreous enamel board to be provided for information and protection notice board.

Works carried out:

* Heavy jungle clearance with thorny plants removed away from the hillock.
* Big boulders which obstructed the approach pathway was broken to pieces and stepped pathway was constructed.
* Necessary hand rails / barricades / ladders provided with safeguard wherever required at the steepest portion as directed.
* Vitreous enamel board laid for information and protection notice board.

* Cleaning of the painting is to be carried out departmentally

The Special Commissioner of Archaeology Thiru T.S.Sridhar, IAS, inspected the monumnent during the execution of works on 1.10.2004 and issued instructions as follows:

* Works to be completed expeditiously.
* Hand rails to be provided at the steepest portion.
* Paintings to be treated with chemical cleaning
* Obstructing rock at the frontage of the painting should be chipped off for avoiding the visitor's entry very close to the paintings.

By execution of the above works the unapproachable pre-historic rock paintings are easily accessible and the paintings have been restored to their original beauty for the benefit of interested visitors and archaeologists.

* * *

CONSERVATION OF MANORA MEMORIAL PILLAR IN THANJAVUR DISTRICT

The Manora memorial pillar with an extent of 3.01 hectares had been protected under Tamil Nadu Ancient Historical Monuments and Archaeological Sites and Remains Act 1966 (Act 25/1966) as per G.O Ms.No 118 Tamil Development - Culture Department dated 22.6.1990 by the state Department of Archaeology. It lies at Sarabendrarajapattinam in Pattukottai taluk of Thanjavur District on the East-Coast road, 72 km from Thanjavur on the south-east direction and 24 km from Pattukottai.

Brief History :

The monument "MANORA Memorial Pillar' belonging to 19th CE was constructed by the Maratha king SERFOJI II (in 1841) of Thanjavur,

the ally of the British Empire in commemoration of the victory of British army over Nepolean for showing his solidarity with the English.

Structural Condition :

The central column pillar is 22.30m (75'0") height in nine storeys. Top most floor called as upparigai is open to sky. The column had been constructed in hexagonal shape and is surrounded by two rows of chambers with a moat in between them. There are also two rows of chambers in the front portion; it has been used for housing the soldier's horses and materials etc. Ground floor to first floor was constructed using ashlar stone masonary in lime mortar at the outer veneer. Stepped staircase was provided for getting up to the top of the column. Column was built up of brick work in lime mortar and Mogal plastered. It looks like a fort in shape. Maratha king Serfoji II visited Manora with his family

and stayed there. It was also used as a light house. The main purpose of erecting this edifice is inscribed in four languages viz. Tamil, Telugu, Marathi, English and the inscription reads that, "His Highness Maharaja Serfoji of Thanjavur the friend and ally of British Government erected this column to commomorate the triumphs of the British arms and the down fall of Bonaparte in 1841 CE'. This column had been gets damaged at some places & minor cracks occurred, due to its prolonged exposure to sea wind, natural calamities and manmade vandalism. The chief materials used for the column construction are brick work in lime mortar and various sizes of wooden rafters. The structural elements of the roofs are mostly arches and vaults of brick work in lime mortar. The concealed wooden scantling are used as compression and tension members. These members are affected by weathering action. Plastering or blistering affected due to sea breeze and also damaged by frequent

visitors. Pot holes are also formed in the Brick flooring. Top most floor of upparigai got damaged due to failure of its supporting beam due to age. Originally at every floor flight of steps entrance lintel was provided with wooden members. Later on these wooden lintels also got decayed.

After the monument was taken over by this department, certain works were carried out by the PWD using pure cement and top most floor of upparigai was supported with pre-cast R.C.C beams. In due course by the activation of sea breeze saline action rust were formed. Hence, it has lost its strength. As a result longitudinal cracks developed all over the upparigai and side walls. As a precautionary measure public were not admitted to the top most floor.

In order to give a long life by conservation and preservation works, the State

Government have allotted a sum of Rs.3.78 lakhs and Rs.10.00 lakhs under XI Finance Commission grants in two phases in G.O.Ms.No.42 T.D.C & R.E. Department dated 14.3.2002 and G.O.Ms.No.232 T.D.C & R.E. Department dated 25.9.2002.

Before carrying out the work under XI Finance Commission grants, it was inspected jointly by then Commissioner of Archaeology with Superintending Archaeologist of ASI who ascertained the condition of the column and advised to carry out the following works by adopting the Archaeological norms with the technical opinion of Thiru M.G. Chellapillai, who is a retired Assistant Superintending Archaeological Engineer from the Archeological Survey of India.

Works Identified :

- The pre-cast RCC beams provided by the PWD in the previous round of repairs at the

tower near the top were found cracked as opined by Thiru K.T. Narasimhan, Superintending Archaelogist of Archaeological Survey of India.

- The joists may be replaced by seasoned teakwood rafters covered with good quality of coir purchased through the Coir Board of India for good adherence of the mortar. The rope should be tied round the joist.
- The work should be carried out without damaging the side walls since the space for movement is less. However, before executing the above process necessary props and struts to fit flush with gaps in the ceiling with the T.W.Joists should be provided.
- The joists should be plastered with combination mortar to avoid exposing the rafter and coir rope. After the work is over, the load should be gradually placed on the beam.

- Similarly, the pre-cast lintel provided at each floor may be removed and the above process is to be repeated till only wooden joists are in place on all the floors.

- Cement plastering wrongly used in the inner and outer walls of Manora in the last round of repair by the P.W.D may be de-plastered. Removal should be done by a proper power tool (chipper) without shocks to the structure.

- If any crack is found on the surface of the wall, it may be injected with combination mortar slurry or properly grouted.

- Re-plastering may be made with combination mortar with proportion of 1:1:3 using lime free from salt which is available only at Pollachi (as sourced by ASI). While using combination mortar No.12 sieve mesh may be utilized to sieve and screen sand. Zeera of gallnut and jaggery in 12 kg.per cum in equal proportion is also to

be added at the time of execution. Simultaneously juice of cacuts is also to be added for its required consistency as medicine for anti-saline action.

- Pot holes found in the inner flooring and steps are to be rectified by using brick lime mix with combination mortar or lime mortar finishing.

- The white washed layers over the ashlar stones masonry works may be chemically washed and protective coating may be also be applied for avoiding its further deterioration by utilizing the services of the departmental chemist.

- The brick flooring at ground floor alround the pillar and moat are found damaged. This may be rectified by adopting the same size of bricks with combination mortar without raising its original level.

- Necessary provision may also be made for removing the earth and blockage from the inlet and outlet of the moat to facilitate the nearby sea backwater as prevailed in ancient times.
- The wicket gate entry of third floor may be replaced by teak wood planks with necessary locking arrangements. A teak door with leaves can also be provided at the main entrance with necessary locking arrangements.
- Partition wall constructed on the moat may also be removed using proper power tool and debris to be removed.
- The earth has to be excavated till the old channel prevalent to link up with the sea as prevailed earlier.
- The outer portion of Manora may be color washed with "four square' trade of ochre colour distemper with fevicol. This method is being adopted in North Indian minars.

- As per archaeological principles photo documentation was recommended in various stages of works (i.e. before, during, after) for future utility.

Works Carried Out :

- As recommended and directed by the Superintending Archaeologist of ASI during the visit of Archaeological Technical consultant to Manora, the rotten pre-coat R.C.C at top most terrace of Manora column has been carefully removed with small chisel and hammer, bit by bit. Since the original was made of iron, I - section was found completely rusted and later on to support these members round twisted steel rods 2nos. of each member was given and plastered outside. After the removal it was replaced with best teak wood members painted with anti-corrosive paint and wrapped with lotus leaves and bounded

with coir string as advised. Then it was plastered with 1:1:5 combination mortar in the same level as of other lintels found in all floors.

- Simultaneously wooden lintels provided at each floor was removed and replaced as advised previously.
- Pot holes found in the inner flooring and steps were rectified by using brick lime mix with combination mortar finishing.
- The cement plastering used on an earlier occasion was de-plastered and combination mortar used.
- The cracks found on the surface of the wall were injected with combination mortar slurry.
- The brick flooring at ground floor all round the moat and column was rectified by adopting the same size of the brick (8" x 5" x 1") and combination mortar in the ratio of

1:1:3 (one cement, one lime, three sand) in two layers over the 10 cm thick (4") brick jelly concrete in pure lime mixing with zeera of gallnut jaggery and pointing with combination mortar.

- White washed ashlar stone masonry works were rectified by removing white washed layers using acetic acid and protective coating applied for avoiding its further deterioration.
- The method adopted in North Indian Minars were recommended using four square trade of ochre colour distemper with fevicol and the same has been adopted.
- The wicket gate entry of third floor replaced by teak wood planks with necessary locking arrangements. Similarly a teak door with leaves has been provided at the main entrance with necessary locking arrangements.

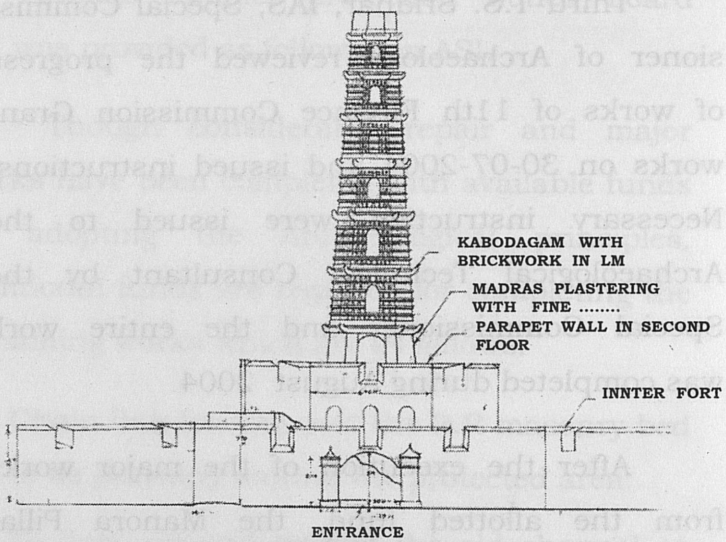
- Vitreous enamel protection notice board was provided as followed in ASI.

Though considerable repair and major works have been completed with available funds by adopting the Archaeological principles, additional funds are required for completing the remaining works which are as follows.

- Chain link fencing over the R.R masonry bed to be provided around the protected area.
- To find out and protect the old channel as prevailed in ancient times.
- Providing lighting arrangement around the boundry.
- Providing a lightning conductor.
- Providing safe guard arrangement to prevent the entry of bats.
- Cut stone brick flooring to be provided at the entry of approach way to the monument.

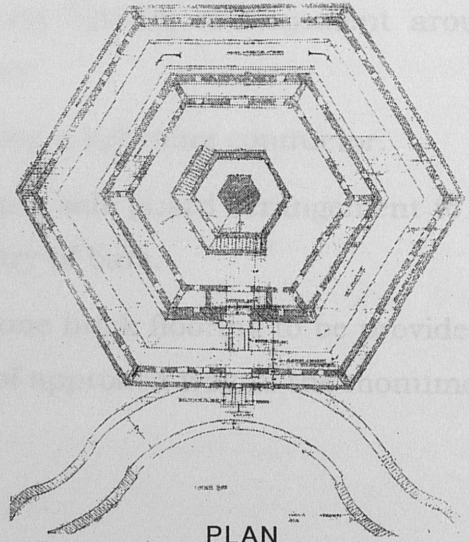
Thiru T.S. Sridhar, IAS, Special Commissioner of Archaeology reviewed the progress of works of 11th Finance Commission Grant works on 30-07-2004 and issued instructions. Necessary instruction were issued to the Archaeological Technical Consultant by the Special Commissioner and the entire work was completed during August 2004.

After the execution of the major works from the allotted fund, the Manora Pillar stands in an impressive manner displaying its aesthetic, heritage value.



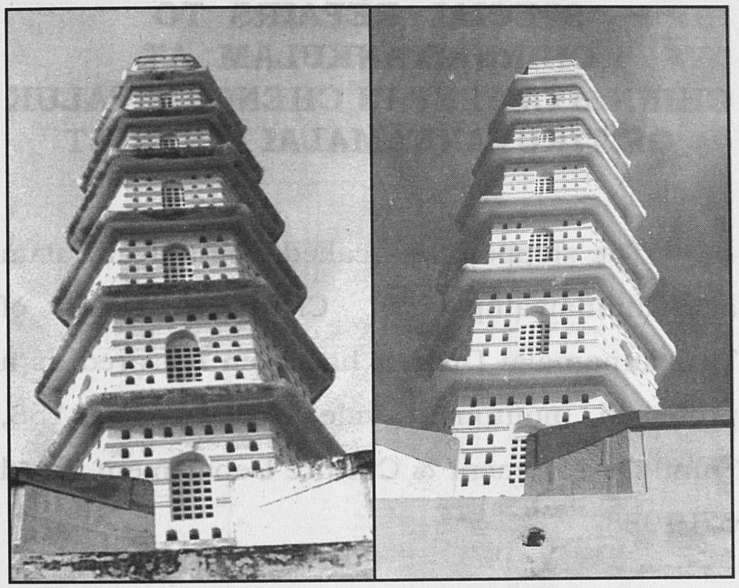
ELEVATION

PLAN MANORA COLUMN



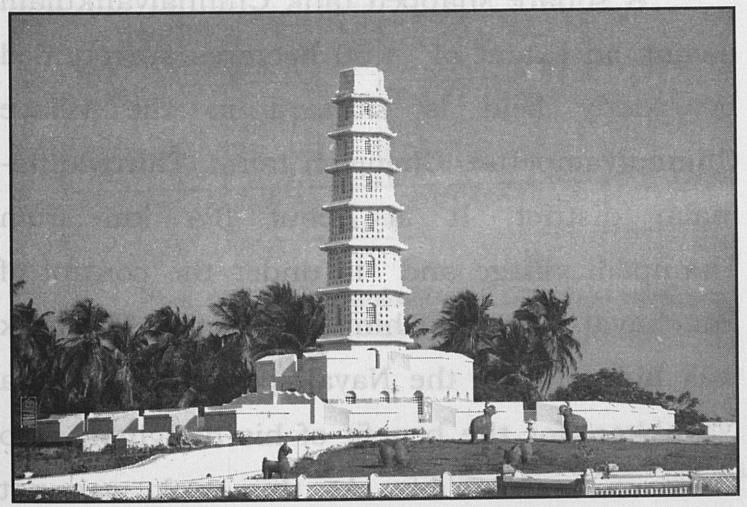
PLAN

MANORA COLUMN



MANORA MEMORIAL PILLAR

Before Conservation **After Conservation**



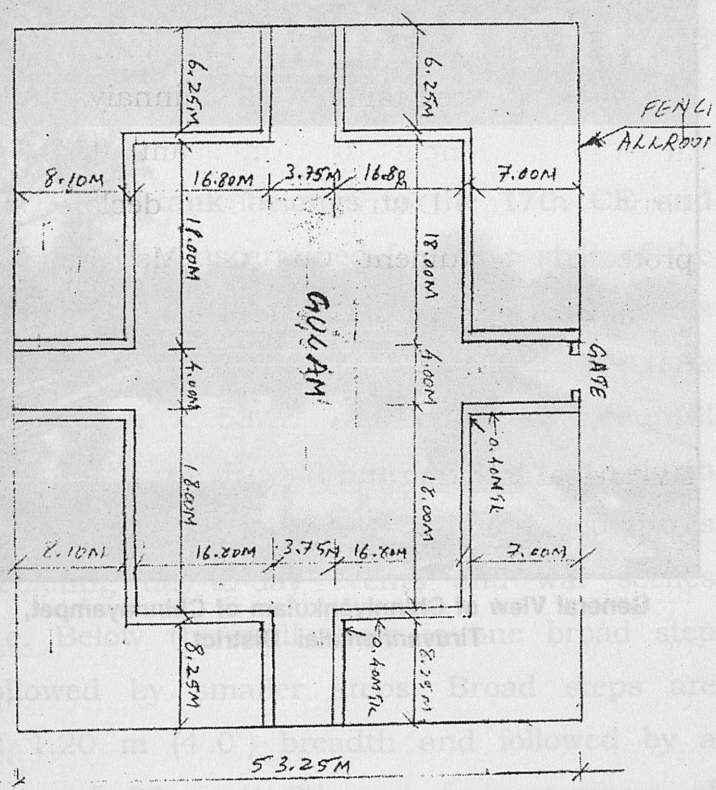
FULL VIEW OF THE MANORA COLUMN

SPECIAL REPAIRS TO CHINNAIYANKULAM AT CHINNAIYAMPET IN CHENGAM TALUK OF TIRUVANNAMALAI DISTRICT

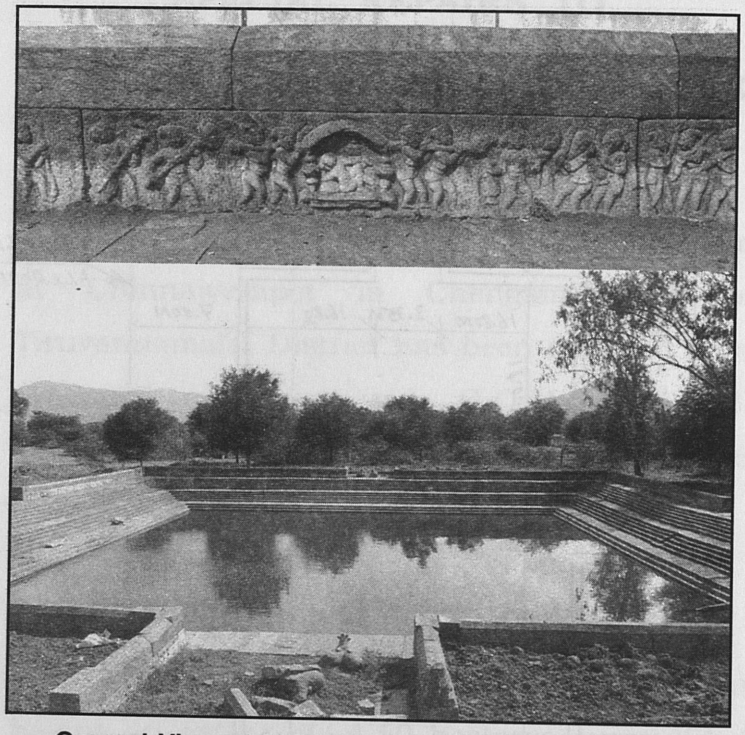
The stepped tank called Chinnaiyankulam at Chinnaiyampet in Chengam taluk of Tiruvannamalai District has been declared as a protected monument vide G.O.Ms. No. 158, Tamil Development & Culture Department dated 6.5.1988.

Historical Background :

A square shapped tank Chinnaiyankulam having an extent of 4.50 hectares surrounded by paddy field is situated in the village Chinnaiyampettai, Chengam taluk, Thiruvannamalai district. It is about 3½ km from Thanipadi village and is under the control of Panchayat Union of Chinnaiyampettai. The tank was built during the Nayak period of "Chinna Nayakkar" for the benefit of his daughter, who failed in married life. As this tank was not



Plan of Chinnaiyankulam at Chinnayampet, Tiruvannamalai District.



General View of Chinniyankulam of Chinnayampet, Tiruvannamalai District

properly maintained, the local people began to occupy the tank unauthorisedly and cultivated Kambu & Cholam. It is believed that Seelappa Nayakkar alias Chinna Nayakker was living in "Semedu" on the northern side of the tank.

This tank belongs to the 17th CE and the period is ascertained from the style of the sculptures in the steps and parapet walls of ashlar stone masonry. The size of the tank is 55.30m x 53.25 m. There are beautiful sculptures in Hoysala style; there are also many erotic sculptures of animals, sculptures depicting day-to-day events and war scenes etc. Below the wall there is one broad step followed by smaller steps. Broad steps are of 1.20 m (4'.0") breadth and followed by a step of 30cm (1'-0") and four numbers of steps 20 cm (8") each. Then there are three feet broad steps followed by four number of steps of 20cm (8"). The tank is 4.5 mts (ave) deep; the rest of the steps are under water while inspecting the monument.

Engraved sculptures are also found on the side of the steps. An outlet is on the western side above the second three-foot step. Inlet and source is not visible at the time of scrutiny. Local people are spoiling the water by washing, bathing and misusing it as drying yard for clothes. No grooved slabs are used for joints. Similarly no pointing is also found. It is merged and suited with adjacent stone and appears to be dressed stone packing without mortar. The last slabs are of laterite up to the first 3-foot slab from bottom. Some sculptures like twin Nandhi joined with single head are found in the corners of the tank and some are damaged. Totally there are 32 sculptures found in the tank.

Due to age and exposure in nature, the tank steps and parapet walls are dislodged from its original position. For rectifying the defects found in this monument, as a special repair, Government have allotted funds to a tune of Rs. 3.70 lakhs under XI Finance Commission

Grant as recommended by the S.L.E.C. vide G.O.Ms. No. 42 T.D.C. & R.E. (MA2) Department dated 14.3.02. For utilizing the funds in proper manner the then Commissioner of Archaeology and Museum inspected the monument, ascertained the repairs and an archaeological prescription was issued to the concerned Executive Engineer of PWD.

For adopting the archaeological principles while carrying out the work necessary instructions were issued; and an Archaeological Technical Consultant was appointed for technical guidance whenever required.

Works Identified :

* Dislocated steps to be removed carefully after documentation and numbered.
* Ashlar stone slabs and parapet wall portions are found missing in one or two places and the same to be replaced.
* Chemical washing to be applied as a protective coat for avoiding its further deterioration. Documentation also specifi-

cally instructed as per the Archaeological Principles for future reference.

* Specially advised that the resetting should be made carefully as per existing structure without spoiling its aesthetic value.
* Apron recommended all around the tank about 1.00 m breadth.
* Silt to be removed by pumping water.
* Earthwork excavation should be carried out all around the stepped tank to bring out the interned portion of the parapet wall.
* Vegetation growth found within the fencing may be removed. Suitable lawn grass (cynodon dactylon) may be planted.
* Necessary provision may be made for removing the earth and blocks from the inlet and outlet of the tank up to the nearby Channel.

Works carried out :

* Vegetation growth found in the gaps of the stone slabs was eradicated by using blow lamp.

* Silt has been removed by pumping out the water.
* Barbed wire fencing provided around the tank.
* Dislodged stones rectified on its removal after numbering the same
* Existing gate pillar was strengthened.
* Tank parapet wall and steps were cleaned by using chemicals.
* Vitreous enamel board placed.

While inspecting the monument on 9.12.2004 the Special Commissioner advised to provide RCC benches around the stepped tank from the available savings.

From the allotted funds PWD has completed entire repairs at south and eastern side of the tank and partly at west and northern side of the tank. Now the monument looks attractive and has become a popular tourist spot for visitors.

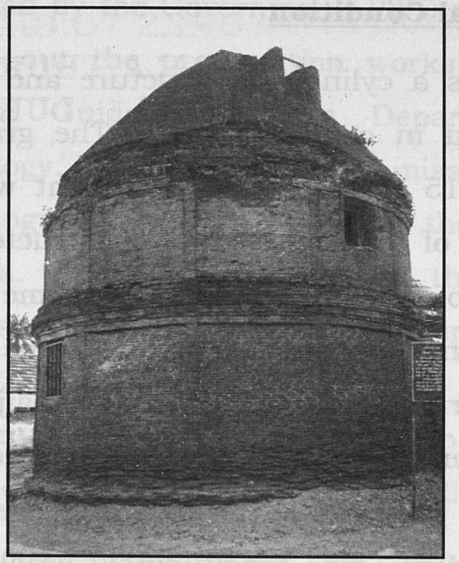
* * *

PRESERVATION WORKS TO GIANT GRANARY AT TIRUPALAITHURAI VILLAGE IN PAPANASAM TALUK OF THANJAVUR DISTRICT

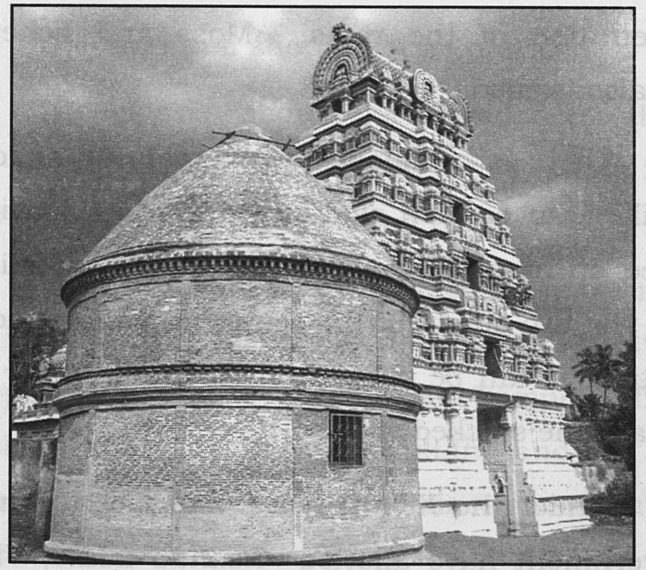
The Giant granary of the Nayak period is situated in the North East corner of outer prakaram of the Palaivananathasamy temple at Tirupalaithurai in Papanasam Taluk. It has been declared as a protected monument under Tamil Nadu Ancient Historical Monuments and Archaeological Sites and Remains Act 1966, vide G.O.Ms. No. 99 / Tamil Development Culture Department / dated 31.5.1990.

Brief History

The 17th Century Granary was constructed within the Prakaram wall near the entrance during the Nayak period. It is believed that Govinda Dhikshithar, Minister of the Maratha king constructed it in the reign of Ragunatha Nayak. More than 3000 kalams of grains can be stored in this granary.



Giant granary, Tirupalaithurai - Before Conservation



Giant granary, Tirupalaithurai - After Conservation

Structural Condition

It is a cylindrical structure and the top is finished in conical shape. The granary is having 8.15 m dia., 9.50 m. height with wall thickness of 0.90 m. It was constructed using two size of bricks with grounded lime mortar. By rubbing the bricks modified the shapes on the ornamental works and Chaajja. The brick layer in exterior faces have deteriorated in some places due to age and weathering action. Very big longitudinal cracks have occurred due to the growth of vegetation and penetration of the roots. Moss and lichens are also formed.

There is a chaajja (traditional sun-shade) available at eastern side of the top belt, having three openings, one in the lower most portion and the two others in the center and upper most portion. It can be opened one after the other to release the stacked grains.

Under the XI Finance Commission grants Government have allotted Rs.2.95 lakhs, Vide G.O.Ms.No.42 TDC &RE Dept. Dated 14.3.2002.

As ordered by the Government, PWD was asked to carry out the preservation works with the Technical Guidance of the Department of Archaeology. The then Commissioner of Archaeology & Museum approved the detailed estimates. Thiru. T.S.Sridhar, IAS., the Special Commissioner of Archaeology has inspected the site on 24th September 2004. While executing the work, instructions were issued to the PWD authorities to carry out the work as follows:

1) The Information Board and fencing around the granary has to be fixed.
2) The Bore well should not be provided.
3) The glasses should be provided on three sides of the entrance to avoid water flow inside the granary during rainy season.

The Department of Archaeology appointed Thiru. M.G.Chellapillai, a retired Assistant Superintending Archaeological Engineer from ASI as the Technical Consultant and he has rendered the necessary guidelines in executing the works.

Essence of work suggested

- Lime should be used free from salt available at Pollachi as suggested by A.S.I.
- Existing dead pointing found at the super-structures should be removed by using nail points manually without defacing and damaging the adjacent bricks and re-point the same as recessed pointing using combination mortar.
- For strengthening the conical shaped roof necessary strutting should be given by making the conical shape on a steel plate (lined with jute sacks to act as cushion) on the inside to act as centering. This will free the load on the roof for stitching the roof bricks. After making sure the roof has set sufficiently, the centering should be slowly removed.
- Documentation at each stage as per archaeological principles should be done.
- Before execution, the P.W.D. was also advised to verify the depth of basement

and foundation by a trial trench very carefully without making any damage to the adjacent structure. If the foundation is not satisfactory after the trial trench, it should be excavated on the outer side. Footing should be given so that new settlements after the preservation do not take place. Similarly for removing the vegetation over the structures, care should be taken & manual-pulling method used.

- ❖ Strengthening the foundation all round the granary by grouting.
- ❖ Poke out the deteriorated bricks and replace the same size bricks without changing its existing shape while removing the deteriorated bricks for the superstructure of the granary. Proper care should be taken to remove the bricks layer by layer after rectification of each row.
- ❖ Eradicated the moss and lichens found on the outer surface by using chemicals

- Provided brick jelly concrete in combination mortar 1:3:6
- Apron to be provided around granary.
- Provided stairway on either side of the entrance.
- Finished the peak point of the granary in conical shape.
- Top and middle opening may be closed with glass shutters for avoiding the entry of rainwater.
- Fencing for the gate to be provided.
- Chaajja to be replaced, as it existed.
- Ladder to be provided both inner and outer entries.

Works Carried out :

- The foundation was verified through a trial trench and there was no settlement in foundation. However, foundation was strengthened by grouting.

- Worn out bricks were replaced by manufacturing the same size of bricks and pointed with nail using combination mortar mixed with an extract of gallnut and jaggery.
- Chaajja was re-placed with its original condition by shaping and sizing the bricks manually.
- Apron provided around the granary.
- Frontage covered by fencing with gate entry.
- Peak point of the granary was finished as conical in shape as instructed.
- Opening closed with glass shutter as directed.

On the basis of the inspection report of Special Commissioner, and instructions of Technical Consultant, the wonderful 17th Century Giant Granary at Tirupalaithurai has been conserved for posterity and it is in good condition.

* * *

A REPORT ON CHEMICAL CONSERVATION OF PRE-HISTORIC PAINTINGS AT ALAMBADI AND SETTAVARAI OF VILLUPURAM DISTRICT

Introduction :

The Pre-historic paintings at Alambadi and Settavarai of Villupuram district have been conserved under the XIth Finance Commission grant. The work was entrusted to PWD, Government of Tamil Nadu. The chemical conservation part was carried out under the direct supervision of Archaeological Conservation Chemist Department of Archaeology.

History of Pre-historic paintings

The art of mural paintings is very old and its origin goes back to the pre-historic period. The earliest examples are first hand print made with liquid colouring matter (red earth and even blood in some cases of the

upper Paleolithic of Europe, around 30,000 BCE). The most outstanding examples of pre-historic painting are found in Altamira in Spain. It is interesting to note that pre-historic paintings in India were noticed 12 years earlier to the famous discovery of cave paintings of Altamira. Some of the prominent sites with shelters carrying pre-historic paintings are Pachmari in the Mahadeo hills of Madhya Pradesh, Bhimbetka in the Bhopal region, Bellary region of Karnataka, and Dharmapuri, Villupuram districts in Tamil Nadu.

Pre-historic Painting technique

In the pre-historic period the painting were done directly on the rock making use of the roughness of the natural rock surface to bind the colours. Even the contours of the uneven rock surface were sometimes deliberately made use of to give a three-dimensional effect to the figures. The pigments most

commonly used were the naturally occurring oxides of Iron, haematite and limonite to produce shades of red yellow, orange and brown. For white kaolin (white clay) or lime stone was used, charcoal or manganese dioxide provided the black colour.

Details of the Alambadi and Settavarai Pre-historic paintings

The paintings of Alampadi are executed in red ochre depicting a cow and its calf, deer, wild bear etc. the intestine of the cow are shown. This system of drawing is seen in the paintings found at Chaturpet Nattallah which are believed to have been drawn in the Chalcolithic age. As per details recorded in the book "Art panorama of Tamils" it is dated to the chalcolithic period.

Settavarai paintings

The Tamil Nadu State Department of Archaeology has located some distinctive pre-

historic paintings at Settavarai which is about 15 km west of Kilvalai near Vettavalam in Villupuram District. The paintings are drawn on the rock surface of natural cavern of Ayyanar hill of Settavari. In this painting the drawings of animals are prominent. Especially a deer and a fish are depicted in big size. The outlines of these two figures are drawn in red ochre, while the inner portion is painted white. The figure of buffalo is drawn completely in red. There are also figures of a tiger & wild bear. A small amount of flesh is fried with the help of long pole. On the basis of execution of these paintings and style of the figures one could easily assign a date earlier than Kilvalai paintings i.e. around 1500 BCE.

Environment of the Pre-historic paintings at Alambadi and Settavarai

Even though the rock displaying the pre-historic painting is elevated from ground level

in the area where the paintings are found, the water stains could be noticed due to free flow of drippings of rain water. The entry of moisture through free entry of air. The relative humidity is high which is favourable for the growth of fungi. The temperature is maximum during summer, which is also well suited for the growth of micro-organisms. The salt action from the rocks due to movable particle through capillary action. Human vandalism could be noticed by the way of scribbling engraving and urinary. Lot of shrubs and small plants growth found all around.

Conditions of the paintings at Alambadi & Settavarai - Different agencies acting on the paintings

There are various agencies of deterioration in the rock shelters displaying the pre-historic paintings. The major agencies are leakage, seepage high salt action, temperature and vandalism.

The major factor for deterioration of pre-historic paintings is due to leakage and seepage. This is due to free flow of rain water and dripping from the collection of rain water as pools formed above the rock surface. This is turn aggravates the salt action through capillary action. Temperature another deterioration factor which covers fading and source for micro-organisms. Flaking is also notice due to prolonged capillary action. Stains are noticed due to dead moss, human vandalism in the form of scribbling with charcoal, oil paint etc.

Chemical conservation methods adopted to preserve the pre-historic paintings

1. All around micro vegetation were removed with the help of 1% Extran (neutral) solution along with 1% Ammonia solution.
2. The leakage and seepage were plugged.

3. The dust and firmly adhered dirt were removed with the help of organic solvents such as rectified spirit, Acetone, Turpentine was added to act as restrainer. If need arises 1% Extran solution was used for hard stains formed by bird and bat droppings.

4. The oil paint were removed with organic solvents and very old and firm stains were removed with the help of 1% Sodium Hydroxide solution.

5. The alcohol salt was extracted with acid free blotting papers moistured with distill water.

6. Finally a 1% poly vinyl acetate in acetone was applied to act as preservative.

Conclusion

The red ochre used in painting the pre-historic paintings are now clearly visible. The area is now fenced and protected by closing

all the entry points. Due care has been taken to clean and expose the pre-historic paintings in a better possible way. A book entitled 'Rock Art of Tamil Nadu' has been recently published by the Department of Archaeology listing the 30 cave painting sites in Tamil Nadu, illustrated with colour / Black & white photographs for the benefit of art lovers and archaeologists.

* * *

PROVIDING VITREOUS ENAMEL BOARDS TO THE PROTECTED MONUMENTS

Tamil Nadu State Government has so far declared 88 monuments for protection and preservation by the Department of Archaeology, which includes secular monuments such as temples, tanks and other religious buildings like Palaces, Forts, Memorials etc.

These monuments were identified by various technical officers of this department from its inception before sending proposals to Government for declaration as a heritage monument. The historical interest of a monument is decided with the help of its artistic workmanship and the style it depicts. If it is a temple its antique value is understood with the help of the inscriptions and sculptures available.

Usually, the monuments, which are more than 100 years old, are declared as monument

under the Act. Most of the monuments declared so far were much affected by various reasons like weathering action, age, poor quality of materials, natural calamities etc. Apart from the above factors man made vandalism in various aspects without knowing its importance i.e., removing stone slabs, removing bricks / brick jelly etc, pasting cow dung for producing dry cakes, modification for conducting film shootings, constructing factories, etc. additionally affected the monuments.

Monuments of National importance are protected by Archaeological Survey of India, Government of India. As most of the monuments publicity through hoardings to denote its importance and create awarness to the pubic, Government have sanctioned an amont of Rs.5.00 lakhs under the XI Finance Commission grants for providing vitreous enamel boards to the monuments as per the Archaeological Survey of India standards.

Accordingly this department in the first phase, for providing vitreous information and protection notice board, identified major and affected monuments; special specification was also prepared as follows and the PWD directed to make the Board.

Fabricating and supplying vitreous enamel protection notice board having a size of 0.50 m x 1.0 m and information board having a size of 2.00 x 1.00 m made out of 16 G.MS sheet and enameled in blue back ground with white letters with the specified matters in two languages viz. Tamil and English as directed by the department with Government of Tamil Nadu emblem and framed with ISA 5050-5 mm angle and supported with 50x5 mm Ms flat on its rear side and to be fitted in ISA 7575 - 10 mm ms angle post at the center for protection notice board and on either side for the information board having 3.40 m height with necessary struts and the bottom to be welded

with cross piece and the cost including the bolt and nut required for fixing the board, painting with approved quality of smoke grey colour over the primary coat for the frames, angles posts etc and also labour for set righting and fixing boards by providing plain cement concrete and earthwork etc complete.

The written matter supplied by the departments was prepared by the Epigraphists based on the historical background referred through inscriptions. Consolidated estimates were prepared by the Chief Engineer (B) PWD Chennai and the cost of one set of vitreous enamel information and protection notice board fixed as Rs.12,500/- uniformly. Accordingly a sum of Rs.5.00 lakhs was issued to various Executive Engineers of PWD for erecting 40 vitreous enamel boards.

Archaeological officers of this department were instructed to inspect the boards provided by PWD in all the 40 places to find out the manufacturing of boards according to the

specification of the department, verify the board matter as given and suggest correction if any to be carried out to the PWD Engineers, verify once again after corrections were carried out and send a final report to Special Commissioner.

Special Commissioner of Archaeology Thiru T.S.Sridhar, IAS, inspected several works and satisfied himself regarding the installation of notice boards.

Apart from the above funds, 14 vitreous enamel boards have also been provided from the funds allotted to the monuments under XI Finance Commission works.

So far, 54 monuments have been supplied with new vitreous enamel boards. In the coming years steps will be taken to complete the provison of vitreous enamel board to the remaining monuments under the control of Archaeology Department..

* * *

PROTECTED MONUMENTS UNDER THE CONTROL OF THE DEPARTMENT

Sl. No.	District	No. of Monuments
1.	Chennai	1
2.	Kancheepuram	12
3.	Tiruvallur	1
4.	Vellore	5
5.	Tiruvannamalai	5
6.	Villupuram	10
7.	Cuddalore	2
8.	Salem	1
9.	Coimbatore	1
10.	Dharmapuri	3
11.	Tiruchirappalli	7
12.	Perambalur	3
13.	Karur	2
14.	Nagapattinam	2
15.	Thanjavur	4
16.	Madurai	16
17.	Dindugal	2
18.	Ramanathapuram	2
19.	Sivagangai	1
20.	Tuticorin	4
21.	Tirunelveli	3
22.	Kanyakumari	1
	Total	**88**

PROTECTED MONUMENTS

Sl. No.	Name of the Temple	Taulk	District
TEMPLES			
1.	Sivankoil, Sivapuram	Tiruperum-pudur	Kancheepuram
2.	Mahadevarkoil, Edayarpakkam	Tiruperum-pudur	Kancheepuram
3.	Sivankoil, Sivankoodal	Tiruperum-pudur	Kancheepuram
4.	Vittal Temple, Vittalapuram	Thirukazhu-kundram	Kancheepuram
5.	Tirulokyanatha Jeenaswamy Temple, (Jain) Tiruparuthi-kundram	Kancheepuram	Kancheepuram
6.	Chokkeeswarar Temple, Kancheepuram	Kancheepuram	Kancheepuram
7.	Sivankoil, Kooram	Kancheepuram	Kancheepuram
8.	Chandraprabha Temple (Jain), Tiruparuthi-kunram	Kancheepuram	Kancheepuram
9.	Visaleeswarar Temple, Villakanampoondi	Pallipattu	Tiruvallur

Sl. No.	Name of the Temple	Taulk	District
10.	Vallesswarar Temple, Thakkolam	Arakkonam	Vellore
11.	Thadagapurees-warar Koil, Madam	Vandavasi	Tiruvanna - malai
12.	Poondi Arugur Temple (Jain), Irumpedu	Arani	Tiruvanna - malai
13.	Gangaikonda Choleeswarar Temple, Koolampandal	Cheyyar	Tiruvanna-malai
14.	Sivankoil, Kandamangalam	Villupuram	Villupuram
15.	Muthiyaleeswarar Koil and Seetha Cave, Perumukkal	Tindivanam	Villupuram
16.	Tirumoolanathar Temple, Perangiyur	Ulundurpet	Villupuram
17.	Sivankoil, Ulagapuram	Vanur	Villupuram
18.	Vishnu Koil, Ulagapuram	Vanur	Villupuram
19.	Rudrapathi Temple, Keelakadambur	Chidambaram	Cuddalore

Sl. No.	Name of the Temple	Taulk	District
20.	Kadambavaneswarar Koil, Erumbur	Chidambaram	Cuddalore
21.	Ramaswamy-Krishnasamy Koil, Mallapadi	Krishnagiri	Krishnagiri
22.	Sivankoil, Alampakkam	Lalgudi	Tiruchirappalli
23.	Sivankoil, Azhagiyamanavalam	Lalgudi	Tiruchirappalli
24.	Pachil Amaleeswararkoil, Azhagiyamanavalam	Lalgudi	Tiruchirappalli
25.	Agastheeswarar Koil, Perungudi	Tiruchirappalli	Tiruchirappalli
26.	Sivankoil, Pazhur	Tiruchirappalli	Tiruchirappalli
27.	Sri Kailayamudaiyar temple, Cholamadevi	Tiruverumbur	Tiruchirappalli
28.	Irataik koil (Twin Temple), Keelaiyur	Ariyalur	Perambalur
29.	Sadayar Koil, Tiruchinampoondi	Thanjavur	Thanjavur
30.	Ladan Koil (Jain), Anaimalai	Madurai	Madurai

Sl. No.	Name of the Temple	Taulk	District
31.	Kalvettu Padukkaigal Murugan Koil, Varichiyur	Madurai	Madurai
32.	Asthagireeswarar Koil, Varichiyur	Madurai	Madurai
33.	Udayagireeswarar Koil, Varichiyur	Madurai	Madurai
34.	Sivan Koil, Arittapatti	Melur	Madurai
35.	Sivan Koil, Ayyapatti	Melur	Madurai
36.	Vettuvan Koil (Jain), Kazhugumalai	Kovilpatti	Tuticorin
37.	Tiruneelakandan Koil, Pananjadi	Ambasamudram	Tirunelveli

CHATRAM

1.	Pillaichatram, Selvazhimangalam	Tiruperumbudur	Kancheepuram
2.	Vazhipokkar Mandapam, Thangi	Kancheepuram	Kancheepuram
3.	Thirumalainaicker Mandapam, Azhagarkoil	Melur	Madurai

Sl. No.	Name of the Temple	Taulk	District
TOMB			
1.	Kanja Sahib Tomb, Sholingar	Walajah-pettai	Vellore
2.	Dutch Tombs, Nagapattinam	Nagapat-tinam	Nagapattinam
3.	British Tombs (44), Panchalankurichi	Ottapidaram	Tuticorin
4.	British Tombs (5), Ottapidaram	Ottapidaram	Tuticorin
5.	Tombs of Ceylon Kings, Vellore	Vellore	Vellore
TANK			
1.	Chinnayankulam, Chinnayampettai	Chengam	Tiruvanna-malai
2.	Swasthikwell, Tiruvellarai	Lalgudi	Tiruchirap-palli
PALACE			
1.	Thanjavur Palace, Thanjavur	Thanjavur	Thanjavur
2.	Tirumalai Naickar Palace, Madurai.	Madurai	Madurai
3.	Ramalinga Vilasam Palace, Sooranko ttai.	Ramnatha-puram	Ramnatha-puram

Sl. No.	Name of the Temple	Taulk	District
INSCRIPTION			
1.	Rockwells & Ancient Tamil Inscription, Ammankoilpatti	Omalur	Salem
2.	Inscription & Rock Bed, Velayutham-palayam	Karur	Karur
3.	Brahmi Kalvettugal, Anaimalai	Madurai	Madurai
4.	Brahmi Kalvettu, Kongarpuliyan-kulam	Tirumanga-lam	Madurai
5.	Ovamalai Kalvettu, Meenashipuram	Melur	Madurai
6.	Tiruvadavur Kalvettu, Tiruvadavur	Melur	Madurai
7.	Karungalakkudi Kalvettu, Karungalakkudi	Melur	Madurai
8.	Pandiyan Kalvettu Padukai, Ramanathapuram	Veda-chandur	Dindigul

Sl. No.	Name of the Temple	Taulk	District
9.	Poolaudayar Kalvettu, Seevalaperi	Palayam kottai	Tirunelveli
10.	Atiyaman peruvazhikkal (mile stone), Pakkirimedu.	Dharmapuri	Dharmapuri
SCULPTURES			
1.	Kalinga sculptures, Sengamedu	Udayar-palayam	Perambalur
2.	Theerthangarar sculptures, Anaimalai	Madurai	Madurai
3.	Kugaikoil Chinn-aivar malai sculptures, Ivarmalai.	Palani	Dindigul
4.	Rajakkalmanglam Sculpture, Iraniyan-Kudiyiruppu	Nanguneri	Tirunelveli
5.	Sapthamathrika sculptures (Seven mother's sculptures), Perunkanchi.	Walajapettai	Vellore

Sl. No.	Name of the Temple	Taulk	District
PILLAR			
1.	Pathu Thungal, Madurai	Madurai	Madurai
2.	Memorial Pillar, Saidapet.	Guindy-Mambalam	Chennai
PAINTINGS			
1.	Rock Paintings, Kilvalai	Tirukkoilur	Villupuram
2.	Rock paintings, Sethavarai	Tirukkoilur	Villupuram
3.	Rock Paintings, Alambadi	Tirukkoilur	Villupuram
3.	Ancient Paintings, Vettaikaranmalai	Narasima-puram	Coimbatore
4.	Armamalai Cave, Malayampattu	Gudiyatham	Vellore.
GENERAL			
1.	Kabilar Rock, Pennaru river.	Tirukkoilur	Villupuram
2.	Maligaimedu, Ulkottai	Udayar-palayam	Perambalur
3.	Amaravathi river bed, Thanthoni	Karur	Karur
4.	Nerkalanjiam (Granary), Tirupalathurai	Papanasam	Thanjavur
5.	Kovalanpottal, Palanganatham	Madurai	Madurai

Sl. No.	Name of the Temple	Taulk	District
FORTS			
1.	Alambarai Fort, Alambarai	Cheyyur	Kanchee-puram
2.	Karunguzhik Kottai, Karunguzhi	Madhuran-thagam	Kanchee-puram
3.	Vandavasi Fort, Vandavasi	Vandavasi	Tiruvanna - malai
4.	Jagadevi Fort, Jagadevipalayam	Krishnagiri	Dharmapuri
5.	Thyagadurgam Fort, Thyagadurgam	Kallakurichi	Villupuram
6.	Danish Fort, Tranquebar	Tranquebar	Nagappat-tinam
7.	Manora, Sarabendraraja pattanam	Pattukkottai	Thanjavur
8.	Kattabomman-kottai, Kamuthi	Mudukula - thur	Ramnatha-puram
9.	Marudhupandiyar Fort, Aranmanai - Siruvayal.	Karaikudi	Sivagangai
10.	Kattabomman Fort, Panchalankuruchi	Ottapidaram	Tuticorin
11.	Udayagiri Fort & De Lannoy tomb,	Kalkulam	Kanya - kumari

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