
Conservation of
THE EID MISKIIY,
MALE'
Republic of Maldives
2006



National Council for Linguistic & Historical Research, Male'
Republic of Maldives
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Project Report

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1. INTRODUCTION

In early times, locally available coral stone and wood had been used for construction purposes in Maldives. As development took place, old houses and other establishments were demolished and reconstructed with new material. However, old mosques were not changed much other than occasional repairs and replacing of thatched roof by corrugated asbestos/metal sheets, and a number of old mosques exist even today in Maldives. Walls of important mosques are made of beautifully carved coral stone blocks, and wood has been used for pillars and multi-tier domed ceiling. In these structures, grooves and pinions in the coral stone blocks have been used to hold them together without any mortar. Most wooden parts are carved or turned and decorated with lac work, and the beams and the panels are painted with floral designs and verses from holy Quran.

Most of these mosques were in a bad state of preservation, but their conservation based on standard practices being followed today had never been attempted before. In the year 1985, National Research Laboratory for Conservation of Cultural Property, Lucknow (NRLC), an institution of the Ministry of Culture, Government of India, stepped in the conservation of the coral stone mosques of Maldives. Problems of conservation of the coral stone and wood used in the mosques were studied and methods for their conservation treatment developed and standardized, and the most important mosque of Maldives, the Hukuru Miskiiy of Male, was conserved during 1986-1987. Subsequently, other very important mosques, the Hukuru Miskiiy of Fenfushi Island, and the Dharumavantha Rasgefaanu Miskiiy of Male' were conserved during 2000-2001 and 2004, respectively.

During the course of conservation work of Hukuru Miskiiy of Fenfushi Island, Mr. Mohamed Thoriq, Assistant Advisor, National Council of Linguistic and Historical Research (NCLHR), Male', Republic of Maldives took keen interest and assisted the conservation team of NRLC throughout the progress of the work. Again when the conservation team of NRLC were working for the conservation of Dharumavantha Rasgefaanu Miskiiy at Male', Mr. Mohamed Thoriq and Mr. Ahmed Zameer of NCLHR assisted the conservation team of NRLC throughout the progress of the work.

The Eid Miskiiy at Male' had suffered serious deterioration due to natural weathering and needed conservation treatment. While working at the Dharmavantha Rasgefaanu Miskiiy at Male', the team of NRLC was requested by the authorities of the NCLHR to examine the state of preservation of Eid Miskiiy, Male'. Accordingly, an inspection of the Eid Miskiiy was undertaken by the team of NRLC in September 2004, and after preliminary examination of the Mosque, it was observed that the nature of deterioration and problems of conservation of Eid Miskiiy were some what similar to those of Hukuru Miskiiy of Fenfushi Island, except the condition of the wooden members which were in fairly good state of preservation. The coral stones blocks were severely infested with biological growth and the details of painted works were obscured due to the darkening of thick coatings applied over the painted wooden members. The coral stone blocks were required to be disinfected from the biological growth and the painted wooden members were required to be cleaned. Accordingly, it was brought to the knowledge of the authorities of the NCHLR that almost a similar course of action would be needed for the conservation of the Eid *Miskiiy*, Male' as was taken by the team of NRLC while conservation of Hukuru Miskiiy of Fenfushi Island, except the extent of consolidation of wooden members.

Looking at the success achieved in the conservation of the above three mosques and the practical experience gained by their staff during conservation work of Hukuru Miskiiy of Fenfushi Island and Dharmavantha Rasgefaanu Miskiiy at Male', the authorities of NCLHR decided to carry out the conservation work of Eid Miskiiy independently, and entrusted the work under the leadership of Mr. Mohamed Thoriq, Assistant Advisor, NCLHR. Accordingly, Mr. Mohamed Thoriq, Mr. Ahemad Zameer and his team members carried out the conservation work of the Eid Miskiiy systematically with the occasional help over telephonic / e-mail from the team members of the National Research Laboratory for Conservation of Cultural Property, Lucknow (India). As the work of conservation of Eid Miskiiy is about to be completed, it has been requested to evaluate the conservation work of Eid Miskiiy being undertaken by the team of NCLHR.

2. THE EID MISKIIY, MALE'

As the coral rocks and wood was the only building material available locally, they have been used as a building material in Maldives since early times, and the *Eid Miskiiy*, Male is an extant example of structure built from white coral in the past centuries. This mosque is said to be the first Eid Miskiiy of Maldives which was built during the reign of Sultan Mohamed Mueenuhdheen Iskandhar (1799AD-1835AD).

For centuries this mosque was used to perform the Eid prayers, and at present it is a living monument of utmost historical and religious importance for the people of Maldives.

Typical in its layout of the Maldivian Mosques, the main structure stands on a raised coral stone plinth with steps up to entrance in the centre.



The walls of the mosque are made of white coral stone blocks, and the windows and

doors of finely carved wood. The ceiling is made of wood. The roof of the mosque was originally a thatched one, which was replaced with corrugated iron sheets giving adequate extension to protect the exterior walls from rains. It seems that the original thatched roof of the mosque was not projecting enough to save the walls from torrential rains of Maldives and whole structure had suffered badly. It seems that the roof of corrugated iron was laid later during past interventions. Since the prayer hall of the mosque is very small, an additional extension was added on eastern side to accommodate the devotees.

The Mosque is virtually a very small prayer hall with an aisle of three of its sides. The main prayer hall of the Mosque is divided into nine structural bays by four coral columns, positioned at the corners of a rectangle in the middle of the hall. The load of the roof is mainly supported on these columns. The ceiling of the central bay is dome shaped and decorated with lacquer work, whereas the ceiling of other eight bays is flat. Most of the coral blocks of the Mosque are finely carved with geometric and floral designs. The quality of the coral stone blocks and the workmanship is exceptionally fine.

Most of the wooden members used in the Mosque are painted with verses from Holy *Quran*.



All beams are painted on three sides. It seems that the four turned coral columns might have been painted with modern paint very lately. The doorframes are also beautifully carved. At the upper end of the coral stone wall there are wooden panels painted with verses from the Holy *Quran*. These panels are fixed in sturdy wooden frames, and the ceiling structure is resting on these frames.

3. STATE OF PRESERVATION

The team of NRLC while working on conservation of Dharumavantha Rasgefaanu Miskiiy, Male' examined the state of conservation of the Eid Miskiiy during September 2004, and the observation was:

It seems that before the replacement of thatched roof, the Mosque has stood exposed to vagaries of nature over the last centuries, suffering extensive deterioration. The main problems were:

3.1 Bio-deterioration

The climate of Maldives, which is determined by two monsoons and nearness to equator, is warm and humid round the year. The average daily temperature is 30 ± 2 °C and the R.H. for most part of the year remains more than 80%. As such, these climatic conditions favour biological activities, and insects, algae and fungus develop profusely. High water absorption capacity of coral stone further facilitates the biological growth on them. It was no wonder that the *Eid Miskiiyy, Male'*, was found badly infested with these agents. Since these biological agencies develop more on specific substrates, wood and coral stone were found to be affected differently.

3.1.1 Coral Stones

Coral stone was profusely infested with algal growth. The outer sides of walls all around had very thick growth, which, at places, appeared black and had covered the carvings completely. Even the inner side of the walls were also affected by algal growth.



The Coral stone being highly porous and pore diameter being moderately large, the algae had penetrated deep inside the pores, which appeared unsightly. Moreover, the organic acids liberated by the biological growths were further damaging the coral stone.

3.1.2 Wooden Structure

Most of the wooden members were found to be in fairly good state of preservation, except some members which were mainly affected by insects and fungus. The painted surface of wood remained largely resistant to fungus and insects, but some unpainted wooden members were found to be damaged at some places. It

seems that most of the damaged wooden members were replaced during last interventions

3.1.2.1 Fungus

White mycelial activity was also noticed on wood. At some places, orange, yellow-green, and green patches were also observed.

3.1.2.2 Insects

From the patterns of the damage it was evident that termites, woodborers and bumblebees might have damaged the wood.

3.2 Structural problems

As such, no major structural problem was observed during the examination of the Mosque. However, some minor problems were noticed:

3.2.1 Coral Stones

The Coral stone surface of the *Eid Miskiiyy, Male'* being continuously lashed with heavy rains during past had become very rough on the outer sides and at several places pitting of the coral stone was also observed.

3.2.2 Wood

The insects and fungus had mainly caused the damage to some of the wooden members. The parts of wood on the outer side were affected in the past by splashes of water and salt laden wind. At some places charring of wood was also visible. The charring was mainly present at the nodes, which could have been caused by the decomposition of the lignin present there.

3.3 Other Problems

At some places, chalkiness had developed on painted areas. Flaking of paint was also visible at several places. The painted area on some beams and panels were faded more in comparison to others. Some painted portions were darkened.

4. DIAGNOSTIC INVESTIGATIONS

Since the construction materials and the problems of deterioration of Eid Miskiiyy were some what similar to those of Hukuru Miskiiyy of Fenfushi Island and thus, the diagnostic investigations carried out by the NRLC for the Hukuru Miskiiyy of

Fenfushi were taken as reference while undertaking the conservation work of Eid Miskiy.

5. CONSERVATION TREATMENT

5.1 Dis-infection & eradication of Bio-deteriorating agents

Though no living insect activity was observed, *Termicide* solution mixed with 2% solution of Pentachlorophenol in ethanol was used for dis-infection and eradication of insect and fungus activity on wood. Spray of 1% aqueous solution of Benzalkoniumchloride was used for the dis-infection and eradication of algal growth on coral stone.

5.2 Cleaning of Coral Stone

Removal of algae from the coral surface was not a serious problem, but the algae that had penetrated inside the pores, was posing difficulty in its removal. The algae present inside the pores were removed using a jet of water at a suitable pressure. The water pressure of 4 kg/cm² was enough to clean the surface in most cases. To see the effect of water jet on the surface of the stone, NRLC while working for the conservation of Hukuru Miskiy of Fenfushi Island, carried out the surface roughness studies on coral stone samples before and after the cleaning with water jet, and it was observed that there was no measurable erosion of the coral stone surface at the above mention water pressure, used for short durations just sufficient to clean the surface.

5.3 Filling of cracks and lacunae in the coral stone

The cracks and gaps in the coral stones were filled with putty made from lime, coral powder and PVA emulsion with an algacide (0.1% of solution of Ziram)

5.4 Cleaning of the painted wood

The cleaning of painted wooden members was carried out with cotton swabs moistened with a mixture of ethanol and turpentine while securing the loosely held paint with a tissue paper wherever needed.

5.5 Filling of cracks and lacunae in the wood and consolidation

After removing the excreta of insects and debris etc with a vacuum cleaner, the cracks and gaps in the wooden members were filled with putty made from saw dust, whiting and PVA emulsion with a fungicide (1% of solution of pentachlorophenol in ethanol). Since most of the wooden members were in fairly

good state of preservation and therefore, consolidation of decayed wood was attempted only at few places which was done with injection of diluted PVA emulsion under gravitational force.

5.6 Application of fungicide on wood

To prevent growth of fungus on wood, 1% solution of pentachlorophenol in ethanol was sprayed on bare wooden members.

5.7 Application of Algaecide on Coral stone

To prevent algal growth on coral, 1-2-ppm aqueous solution of *Ziram* was sprayed on coral stones.

5.8 Re-integration of treated lacunae on wood

The areas filled with the putty were re-integrated with suitable earth colours to give a harmonious appearance.

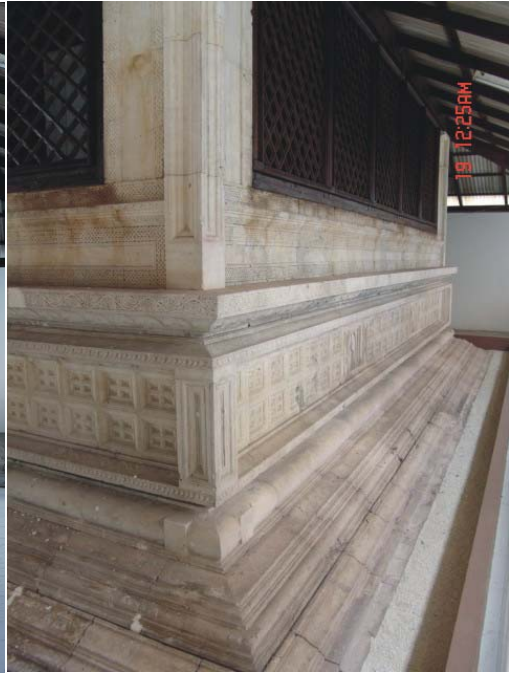
5.9 Application of preservative on wood

An application of picture varnish diluted with turpentine was given on painted wooden surface, and the bare wooden members were treated with clear varnish mixed with turpentine as a thinner.

6. PRESENT CONDITION OF THE MONUMENT

The monument got conserved to the fullest satisfaction of the conservators, which can be roughly assessed from the picture of the mosque before and after conservation. Cleaning and development of the surroundings along with interior decoration of the floor, will further improve the appearance of the mosque.







7. DURATION OF THE PROJECT

The execution of conservation of the mosque was carried out from 15th November 2005 to 15th July 2006. Initially it was estimated that the project will be completed within six months but, the algal growth was very deep seated in the coral stone blocks and its removal from the coral stone blocks took considerable time which was beyond control of the conservation team and could not be estimated earlier, and therefore, the duration of the project was further extended for two months.

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