SAFEGUARDING MY SON WORLD HERITAGE

- Demonstration and Training in the Application of International World Heritage Standards of Conservation at My Son Group G Monuments -

- 2005 –

Preliminary Technical Report
March 2005
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1. Introduction

Accordi with the Work Plan the 2005 Field Season should have been started on the beginning of January but because the house for the experts in My Son has not been ready (ref several letters to Ministry of Culture and UNESCO Bangkok Office) the commencement has been postponed to 1st of March with almost two month’s delay.

According to the revised Work Plan (attached at the end of this report) sent to UNESCO Office, Bangkok, and to the Ministry of Culture and Information of Vietnam finally the field activity started on March and during this month archaeological excavations (see Archaeological report by P.Zolese) and architectural works (see Architecture report by P. Condoleo) re-stared in My Son G Group.
Preliminary report on the archaeological activity carried out at My Son
- March 2005 -

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The archaeological activity planned for the II phase of Mi So’n project, is focused on the continuation of excavations, in Group G and E7 monument. In this campaign is also included the study of inventoried artefacts recovered during the past season. To proceed in sintony with the activity of the conservator- architects, the archaeologists must put in light all the original structures or architectural materials that can be replaced or can be utilised during the conservation work.

Priority has been given to G group, for its large extension and for the numerous building in course of conservation. The area is covered by a huge amount of debris resulted from the last conflict. The removal of debris, as shown also by the season activity, is covering the original layers and structures. At present the activities carried on are:

1. Preliminary general cleaning of the whole area;
2. Debris removal and excavation of monument G4;
3. Collapse removal of the north façade of G1 and excavation of the interior of the sanctuary;
4. opening squares F11/12 on the south side of G1;
5. On-field inventory and documentation of archaeological material;
6. Dumping removal along G1 northern side;
7. Opening of archaeological trenches in squares B/C 10-14;
8. Sorting and storing of the dump material
1. Preparation and general cleaning of G area

The present field season in My So’n Sanctuary will be devoted both to the prosecution of the archaeological excavations on G group area, and to the conservative intervention of standing structures.

The area has been prepared by removing the vegetation growth during the rainy season.
Superficial vegetation and small roots have been carefully removed, leaving in place the roots penetrated into the walls that will be submitted to selective injections of herbicide capsules.

According with the results obtained by test carried out in the past season on the trees located inside G4 walls, three specific kinds of chemical products will be combined in different dosage, to guarantee a complete elimination of the vegetation affecting the stability of the masonry.

Accomplished the clearance of the whole surface, grid and levelling procedures have been accomplished in view to open the new trenches. Loose and superficial debris has been removed, after the recording.

2. Debris removal and excavation of monument G4

G4 building is concerning the so called “south building”, a service annex to the temple.
The present day condition of this structure is very worst, being mostly collapse and affected by numerous tree – roots, that damaged the poor walls still standing.

This building, sizing about m. 6.50 x 4.20, has an opening facing the north side and two low windows on east and south sides.
The building is placed very close to the laterite enclosing wall, (the distance from the wall is only 40 cm. and in its general whole is presenting un-usual architectural characteristics compared to other Cham similar buildings). At present the interior area of the monument, was covered by debris and recent filling, and the outer surface covered by rubble related to the laterite wall, and from the monument itself.
To proceed with the documentary record, graphic and photo geometric, and to understand the real state of preservation of G4, superficial rubble, mainly represented by detached brick fragments inserted into a silt–sand filling, have been removed.
Figs. 7-8 Surface rubble removal
The interior room has been divided in four squares, to facilitate the recording of possible finds during the archaeological cleaning. The excavation has exposed a thick layer composed by beaten brick fragments, sandstone flints, small pebbles, tile and pottery sherds, identified as foundation to settle the floor, actually lost.

Only a terracotta accent, with carved floral pattern, has been recovered during the surface filling removal.
The excavation performed between the monument and the enclosing wall, exposed the original ground floor.

After the removal of about 20 cm. of recent filling, part of the monument’s collapsing has been found out. Most part of the bricks was broken and disjointed. Only in correspondence of the corners have been found some samples still in connection.

Among the bricks have been noticed some terracotta fragments, representing a necklace’s globular beads, probably related to a human or animal sculpture.
Figs. 11-12 G4 collapsing, exposed after the recent filling removal

Particular attention has been devoted to the clearance of the masonry in correspondence of G4 entrance, preserving at present only the sandstone threshold, previously covered by a thick layer of soil deposit.
During the archaeological cleaning has been noticed that the bricks in this stretch, covering a width of 1.75 m., have been moulded and arranged to place sandstone steps, nowadays lost. The parapet, composed by 5 rows of bricks, is projecting about 70 cm. from G4 exterior wall.

3. **Collapse removal of the north façade of G1 and excavation of the interior of the sanctuary**

G1 sanctuary is seriously affected by vegetation, and is covered by a thick layer of rubble produced by a shell bomb, with a thick layer of recent alluvial deposit.
The fragile condition of the monument is requiring a careful cleaning, to expose the remaining structure. The shell bomb affected the north side of the building, in correspondence of the north door. The elevation collapsed, and as consequence the north side of the main entrance, with pillar and lintel. The rubble is partly covering the outer side, and part collapsed in the interior.
A high and large mound of bricks was covering the north side of G1 (h 1.80, large 3 m.). The rubble has been removed starting from the top, and selecting the bricks that could be reused for the conservation.

Most of the material was in fragmentary condition. Under the rubble has been found the north sandstone steps, completely detached from their original setting. In the meantime, the corridor connecting the entrance with the cella, has been cleaned too.
4. **Opening squares F11/12 on the south side of G1**

The clearance of the masonry took place together with the archaeological excavation on the monument’s southern side, in correspondence of the lateral entrance of the vestibule attached to the main body.
The excavation has been carried out to facilitate the architectural survey of the *kalan*, removing a incoherent rubble in the area surrounding the southern parapet.
The surface covered by squares F11 and F12, totally 8 m. width, has been submitted to a preliminary clearance. The superficial dumping, mainly composed by complete and fragmentary bricks covered by a dry and hard silt layer, has been removed.

Among the incoherent brick collapsing, along the southern side of G1 main entrance, have been found few terracotta artefacts representing floral accents, a doe’s body fragment and the head of a female deity.
The archaeological finds have been documented, removed and recovered.
The excavation has been then prosecuted to investigate G1 original ground level and to expose the basement. After the removal of the superficial artefacts, numerous other decorative fragments have been found out.
The fragments are probably the evidence of an ancient looting, which took place before the excavation of the French architect H. Parmentier, at the beginning of last century. In fact from the picture left by Parmentier, is clear that he cleaned only part of the monument basement and left 4 brick rows still underground.

The terracotta artefacts have been purposely placed leaning against the base of the south side of the main entrance. The ancient looters excavated a hole, probably to search some precious material, sometime hidden under the ground floor. After reaching the bedrock, that is quite superficial, they piled the terracotta decorations, in past times not valuable. The edge of the pit has been detected during the excavation.
Fig. 28 Artefacts leaning against the main entrance’ south side, and the edge of the pit detected during the excavation.

The outcrop natural bedrock was used to place the foundation of the building, and then refilled with a beaten surface composed by soil and brick fragments. This original surface has been detected during the excavation, and is showing the same levelling datum and geomorphologic characteristics of the surface recovered last season, around G3.

Among the 25 artefacts, it is important to point out a tympanum representing a female divinity (Laksmi) and one sandstone “breast” belonging to the pedestal of G1. The pedestal is decorated by 20 breasts and one was missing. Originally the pedestal was inside the cella.
Figs. 29-30 Tympanum representing a Laksmi, and the sandstone “breast” belonging to G1 pedestal

The finding of this piece inside a looting pit is showing also that the interior of the temple has been vandalised. The area, as also the entire Mi So’n complex, has been submitted to different spoliations starting just after the Cham abandonment.

The excavation has been then extended to the S entrance’s eastern side, square F12, to remove collapsed bricks that were covering the original exposed surface.
During the removal has been found a terracotta fragment, representing a terracotta *Kirthimukha* mask.
Figs. 32-33 Terracotta fragment representing a *Kirthimukha* mask, found during excavations in square F12

The fragment belongs to G1 basement, and is specifically related to the mask in niche n. 5, previously considered lost.
The archaeological find has been documented and carefully removed.

5 On-field inventory and documentation of archaeological material

The artefacts found in square F11, covering an area of 2.40 x 1 m., have been carefully documented before their removal. Each object has been identified by on – field inventory numbers, that will be later on reported on 2005 field inventory book. Elevation data have been registered, together with an accurate photographic documentation before their recovering inside the storeroom.

6. Dumping removal along G1 northern side

The northern edge of the hill where Group G was placed, has been used to pile the dumping resulted by Parmentier’s excavation and that resulted by the last conflict. The long and high stretch of rubble is covering an area of about 30 m long and 15 large. The rubble is also covering the enclosing wall, surrounding the complex, never completely excavated.
The necessity to remove the debris is due to give a correct visibility to the site, to sort material for the conservation work and, of course, to reach the original architectural features of the area.
Last season has been put in light the southern side of the hill (see report 2004). The excavation is interesting squares B-C 10/14, m. 4x 4 each, for a total surface of 80 sq.m.

Few decorative artefacts have been recovered during the clearance of the superficial dumping, mainly composed by complete and fragmented bricks inserted into a silt soil, with numerous tree roots of medium and big sizes.

7. Opening of archaeological trenches in squares B/C 10-14

On the basis of the grid setting performed over G group area, a series of archaeological trenches have been opened inside the squares taken into consideration.
The archaeological excavations have been carried on to investigate the state of conservation of the laterite enclosing wall, along G1 northern side, and to remove a large collapsing mainly concentrated in square C10.
The area submitted to excavation was located close to Parmentier’s dump area, and composed both by ancient collapsing occurred after the site abandon, and by dump material piled up during the clearance of the 80’s, following the American bombing.

The superficial rubble, chaotic and covered by recent filling, showed no regular trend.
After the removal of this superficial layer has been found the ancient collapsing, still showing the trend of collapse.

After the removal of recent filling, in the NW corner of square C10, a dump composed by numerous terracotta decorative fragments has been recovered.

The dumping was composed by selected material, mainly accents carved with floral decoration, and was probably the result of past spoliation, piled in this specific area.
Inventory numbers have been given to the objects, and photographic documentation has been carried out before the removal.

Till now, the excavations performed on G1 northern side pointed out the same results previously achieved on the southern one, during the past fieldwork season.

Few rows of the enclosing wall are still preserved. Some stretches appears to be seriously damaged by humidity, and especially by the growth of thick vegetation inside the masonry.
Fig. 41 Excavation of laterite enclosing wall
Between the wall’s collapsing, composed by bricks and melted laterite blocks, have been noticed fragments of terracotta accents and antefix, probably topping the wall itself. The excavation is still in progress.

8. Sorting and storing of the dump material

The dump material, collected during the clearance and the excavations performed on G area, has been carefully selected and divided before the recovering.

Complete and half bricks have been collected, brushed and recovered inside new wooden stores, built along G4 southern side.

The brick fragments have been piled up, to be then utilized to obtain brick powder that will be mixed to the natural resin joint in view of the next conservative phase on G group monuments.
Figs. 42-43 Brick collecting inside new wooden stores
1. PLANNING FOR THE ON SITE ACTIVITIES

On March 5th Binda, Condoleo, Cantini and Core started the mission having a survey to the site. All the monuments of group G have been controlled to plan the future actions to carry on during the intervention of conservation. The following observations have been pointed out.

1.1 G3 - Mandapa

Particular attention has been devoted to the North-East corner, to control and to evaluate the results of the intervention carried out during last season. The results of the intervention are very good. Apparently the resin behaved perfectly and the bricks are very well bonded one to the other. The intervention on the corner was very well executed with accuracy according to the principles described during the last season. Prof. Binda recommended to avoid a strong contrast between the restored surfaces and the original one.

East side

- The work was very well performed, but it must be paid attention to the joints alignment, that must be not continuous: they must show an offset (Fig. 1).
- The bricks in the corner should always be positioned alternatively header/side, also in the internal part according to the Cham technique (Fig. 2).
- In presence of deep holes, cracks, etc, it is necessary to repair in order to prevent and to avoid progressive damages (Fig. 3).
- Eventually, where the damage is even large, but not deep, it is not strictly necessary to repair it (Fig. 4).
- In correspondence with east entrance, is necessary to rebuild the original shape in order to house the large sandstone step, at present displaced from its original setting.

**North side**

- This masonry is showing different type of pressures. In fact the masonry is partly missed and partly lost the interior filling, so that the outer leaves are free. In this case the conservation will be performed only to prevent collapses but not to perform a complete reconstruction.
- The stability of the wall will be ensured maintaining the present elevation profile.
- The base molding partly lost, can be repaired but not reconstructed. It is important to support the wall avoiding a fake reconstruction of decoration (Fig. 5).

**North-West corner**

- The corner must be reconstructed in order to carry out the connection of the West and South sides.
- Also the molding can be built.
- The external and internal faces should be built where missing (Fig. 6).
Fig. 5 Part of the external molding is missing

Fig. 6 – Example of missing faces in the masonry

West side
- The entrance is in worst state. The connections between masonry elements seem to be lost and the leaning of the masonry must be taken under control.
- The sandstone step must be removed and its foundation frame must be verified and eventually repaired (Fig. 7).

West-South corner
- The presence of the big dead tree embedded into the masonry is giving problems to the structure. The removal seems to be reasonable, but this will imply the total reconstruction of the corner (Fig. 8).
- After removal the corner will be repaired following the general principles described above.

South side
- Also if the wall is leaning inward, all the material is still maintaining its original trend and location. The removing will be made dismantling course by course after the numbering of the bricks (Fig. 9, 10).
Towards the South-East corner there are situations similar to the South-West corner, which will be solved by applying the same principles of conservation described above.

**Fig. 9 – General view of the south side**

**Fig. 10 - View of the collapsed wall on south side**

**Internal floor**

- According to the studies carried out by Patrizia Zolese, the original floor reached the threshold of the entrance (Fig. 11) marked by a step to enter inside. At present the original floor is missed and has been found the foundation made by a beaten surface of anthropic material.

- A first proposal was to fill by soil until the original floor level. Due to the not uniform height of the wall, that in some parts are very low, it has been decided to put the floor slightly lower of the original one.
Proposals for exposed sections
- Horizontal surfaces should be finished by a course of bricks tied together with a very thin joint.
- For the vertical surfaces the filling between the two wall faces will be protected by bricks and bricks purposely shaped to avoid water infiltration, that can produce erosion of this original filling.

Laterite layer at the bottom
- The basement of the monument is showing a row of laterite. Where laterite is missing it must be replaced with new laterite.
- Where there is a danger of settlements, new laterite can be forced under the bricks in order to make a supporting layer. This intervention must be done in subsequent steps in alternate positions (Fig. 14).
The reconstruction of the corner, started during last season, is going on, following the principles of anastilosis techniques. Existing detached bricks are dismantled, after the survey of each element, and replaced in the correct position (Fig. 13, 14).

Scaffolding
The provisional covering built last year to protect the building from the rainy monsoon season has been dismantled (Fig. 15). This decision was taken to avoid
dangerous influences of the roof on the masonry during this period, characterized by hot temperature and wet climate.

A covering has been built on the masonry of the North-East corner (Fig 16) to protect the workers and the structures during the execution of the intervention.

1.2 G5 - POSHA

The survey continued to Posha G5. The restoration of this building does not seem to be very difficult. Only few courses of the original walls are still standing (Fig. 17). After excavation by the archaeologists the floor will be filled again and the work will be started by repairing the remained courses. The bricks to be used are quite in place.
This building is very badly damaged with partial collapses near every corner and large pieces or piers of wall standing but not very stable (Fig. 18).

The restoration approach, as for the other buildings, will be to preserve as much as possible. It will be tried to reposition and fix the large remaining portions of walls which are now cracked and dislocated. Attention will be paid to the possible reconstruction of the entrances. When and if possible the stone frames of the doors should be repositioned (Fig. 19).

**Fig. 18 – The ruin of gopura G2  Fig. 19 – The stone frames of Gopura G2**

### 1.4 TEMPLE G4

**Consideration on the use of herbicide on the trees**

The treatment made by poison gave good results (Fig. 20). The injected trees died and the poison did not have any negative result on the surrounding vegetation (Fig. 21).
Fig. 20 - Example of trees born inside the wall: before and after the treatment

Fig. 21 – General view of the building

Conservation strategy for the building

The main problem for the building is the exceptional number of trees grown inside the walls (Figs. 22, 23). It has been decided to dismantle one leaf of the wall in contact with
a tree root (Figs 24, 25). The tree was already treated with poison during the past season. Being the extension of the roots not deep (Fig. 26), and the trunk no more alive, the trunk was cut off and the remaining alive roots treated again by poison. In this first case only a small part of the wall has to be repositioned again. The operation will be repeated step by step carefully everywhere in G4 in order to avoid invasive interventions.

Fig. 22 – General view of temple G4 after cleaning
Fig. 23 - Example of tree born inside the wall

Fig. 24 – Numbering the bricks

Fig. 25 - Dismantling the masonry

Fig. 26 – Not extended roots inside the masonry
2. GEOMETRICAL SURVEY OF THE G - GROUP

The geometrical survey of the temples of G-Group required a first cleaning of the superficial surfaces (especially horizontal surfaces) from soil deposit (Figs. 27, 28). After removing the damaged materials, it was possible to take the first measurements of the most important building elements to have a preliminary evaluation of the geometry of each monument. To proceed forward with the geometrical comprehension of the temples, the rubble materials inside and outside the buildings have been removed (Figs. 29, 30).

To define the correct procedure to survey such a complex geometry (above all the one of temple G1), first sketches were studied to understand the volumes which build up the monuments: this first analysis was used to define the main geometrical parts which form the different levels of the monuments.

**Phases of the work**

Considering Temple G1, the most preserved among the other structures, it is possible to identify three main bodies of the building:
- the basement, until 1.35 m height overlined by a layer of laterite;
- the main body of the temple, characterized by the entrance and the cella;
the roofing of the temple, that is totally lost. It is possible to recognize only few elements at the end of the main façade which introduce a geometrical decoration with a horizontal development that represents a gap between the main facade and the roof of the temple.

Recognising these elements, it was possible to plan a correct survey using the total station. To represent this complex geometry, it was not possible to build a polygon of points for one level of the building. In this case the difficulty of the 3D representation of the different levels of the monument required a strategy that is summarized in the following steps, describing the survey carried out on the basement.

The first step was to make the survey of the basement profile, where the monument preserved the original development of the external decoration (Fig. 31).

The second step was a geometrical 3D model representation, of the basement, drawn by AutoCad (Fig. 32).
The third one was the survey of the main lacks on basement surfaces. To perform the survey, an ortho-photographic documentation of each part of the basement. By the picture was possible to define and to locate the perimeter and the depth of each lack. This documentation has been drawn back in a correct scale by AutoCad program. The representation provides a 3D model of the basement of the present day state of conservation.

As final action, the total station (Fig. 33) was used to control the development in the space of the main elements of the building. Some points were taken by the total station vertically, on the external profile of the basement, twice for each side. This strategy permitted to define the correct position of each different plan which compose the geometry of the basement and to verify the linear measurements.

This procedure was applied also for the other levels which compose the building, in order to obtain the correct horizontal section of each level. The final result of the described procedure is shown in figure 34.

The topographic survey of the area was performed by the total station: figure 35 shows the relationships between buildings and the archaeological trenches.
Scaffolding

Scaffoldings, built to prevent possible collapses of the structures during the monsoon season, have been removed. A new provisional structure was built to save the new excavation near the leaning wall of the main stair of the monument. (Figs 36, 37)
3. TYPOLOGICAL AND DAMAGE SURVEY OF THE BUILDINGS

The evaluation of typological characteristics and damages of the monuments in My Son was started last year and now is going on by a deeper study of the vulnerability of the buildings. This analysis is based on specific voices contained in a card for the building description.

4. STUDY OF THE BUILDING TECHNIQUES USED IN THE TEMPLES

While surveying the buildings of G - Group, the analysis of the construction techniques, started last year, is going on. By the cleaning of the materials collapsed inside G1, it was possible to study the characteristics of the brick connections used for the masonry. The analysis was focused on the particular shapes given to bricks.