
**TELL ES-SULTAN/JERICHO
IN THE CONTEXT
OF THE JORDAN VALLEY
Site Management, Conservation,
and Sustainable Development**

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THE JERICHO QASR HISHAM ARCHAEOLOGICAL PARK

Roberto Sabelli*

1. Introduction

The Khirbet al-Mafjar complex lays in the agricultural area of Jericho, an area once accurately irrigated. After its discovery – first by Warren and Condor in 1873, then by the Palestinian Antiquities Department from 1934 to 1948, published by Hamilton in 1959¹ – the Palace appeared completely destroyed, probably because of an earthquake occurring in 747-748 AD. The archaeologists who first discovered the Palace asserted that the construction might have been completed at the time of the earthquake and that the Audience Room presented just some signs of use.

The name "Hisham" appears on some underground passages of foundation, and it refers to its builder, Walid Ibn Yazid (Hisham's nephew), who succeeded his uncle in 743 and was murdered the year later. Creswell asserts instead that Hisham began the works in 739 and that his nephew, Walid the Second, continued the construction until the hall. According to some other archaeologists the hall appears complete and presents signs of use.

The different building times of the complex, the baths, the castle and the mosque, are linked by the introduction of a rectangular porch-court. One of the major scholars of the complex of Khirbet al-Mafjar, Hamilton, has definitely demonstrated that Walid Ibn Yazid was the purchaser, and he brings as proof the fact that the baths had already been used, even if the Palace had not been completed.

The Building, in the period of the excavations effected throughout the '30ies and the '50ies of last century, had some interventions of "maintenance" at first by means of R.W. Hamilton and subsequently by means of the Jordan government (up to the 1967) and by means of Israeli military government (up to the '80ies). Such interventions, up to today, not always well recognizable because of the use in the works of

* DIRES - Dipartimento di Restauro e Conservazione dei Beni Architettonici, Florence University. Master Plan by: Roberto Sabelli, Architect (Contractor - University of Florence). Collaborators: Francesco Ciampinelli, Ombretta Dinelli, Gianfranco Micalizzi, Carmela Puglisi (architects), Riccardo Papi (engineer). Scientific Advisor and Project Directors: Prof. Michele Piccirillo (Studium Biblicum Franciscanum), Dr. Hamdan Taha (Palestinian Department of Antiquities).

¹ Hamilton 1959.

"reconstruction" of material coming from the excavations or material entirely similar to the original ones, have partially modified the original elevation, regularizing the levels of the masonries, and, in some cases, have reconstructed architectural structures, as the "polilobati" pillars of the Great Hall of the Baths, sometimes using modern material. Such interventions, at this point, are historicized and have been kept in proper consideration in the elaboration of the definitive proposal of project.

2. Proposal for a Conservative Intervention

The monumental conservation of the Qasr Hisham site in Jericho is now in precarious conditions. Most damage is due to wind erosion, high temperature and climate drifts, hitting the region every day and causing degradation of materials; furthermore, a strong anthropic degrade has worsen the situation, since the state of the complex is already fragile in its nature.

Our intervention aims to defend the entire complex and will provide the final valorization of cultural heritage both as economic resource and as symbol of the Palestinian National Authority.

Since 1995 it was clear the necessity to revise the visit system to the Palace, together with the protective and service measures. The master plan wants to define some programmatic lines, so as to give a priority order to the conservative operations and to conform the infrastructures of the site to a modern idea of development.

The geophysical survey and chemical and physical analysis of excavated materials² have emphasized that the archaeological remains are affected by intense degradation phenomena affecting the present state of the site. The area we are examining is made up by lapideous materials of different hardness, easy to sculpture but scarcely resistant to atmospheric agents. There are materials resulting from calcareous rocks, light and porous, originating from a quarry about 5 Km. far. Qasr Hisham north side, called Khirbath as-Samrah. The serious state of degradation is due to different factors: the wall remains, the carrying structures and the covering surfaces fastened the erosion of seasonal rains, strong winds and temperature drifts.

The aim of the project is mainly conservative, both for the archaeological heritage already discovered and for what has still to be found, and consequently, preserved.

² See the report in Sabelli 2001.

The first phase of the restoration project for the archaeological Qasr Hisham site, according to the director of the Department of Antiquities, the Scientific Advisor and the UNESCO office for Palestine, foresees:

- planning of fruition routes, parking areas and non-visible service buildings;
- structures and surfaces consolidation and restoration specifications;
- planning to realise expositive and specialized spaces;
- executive covering projects for: the Gate and the corridor to the main colonnade courtyard; the stairwell to the Sirdab; the Large Bathroom and the Diwan, with mosaics.

2.1. Planning of Fruition Routes, Parking Areas and Non-Visible Service Buildings

The project foresees the realization of a parking area, equipped with sanitary fittings (the one obtained in a breach of the ancient walls of the Palace will be demolished). It is also foresees a little expository area for sale of tourist material. Such area is foreseen on the left of the arrival road by Jericho to the Palace. This area is the result of removing and remodelling the artificial hill that has been obtained from the archaeological excavation, as screen and element of separation from the monument. From the hill it will be possible to see all the area of the Palace, giving a view of the whole territory. Into the first boundary of the Palace it is foreseen a route for disabled people, that leads to the Big Hall called of the Bathrooms, avoiding, in this way, a long route (fig. 1).

2.2. Restoration Specifications

The punctual and diffuse restoration interventions on the mural structures and the coverings are definite by technical intervention forms. These forms give an indication of the typologies of degradation, providing methodological and technical information on the way to work for the restoration. The forms are adaptable to typologies of unforeseen degradation and they give us the possibility to intervene every time a type of degradation occurs. All the foreseen interventions are thought for conservative purposes and following the idea of the minimum impact and of the max reversibility (fig. 2).

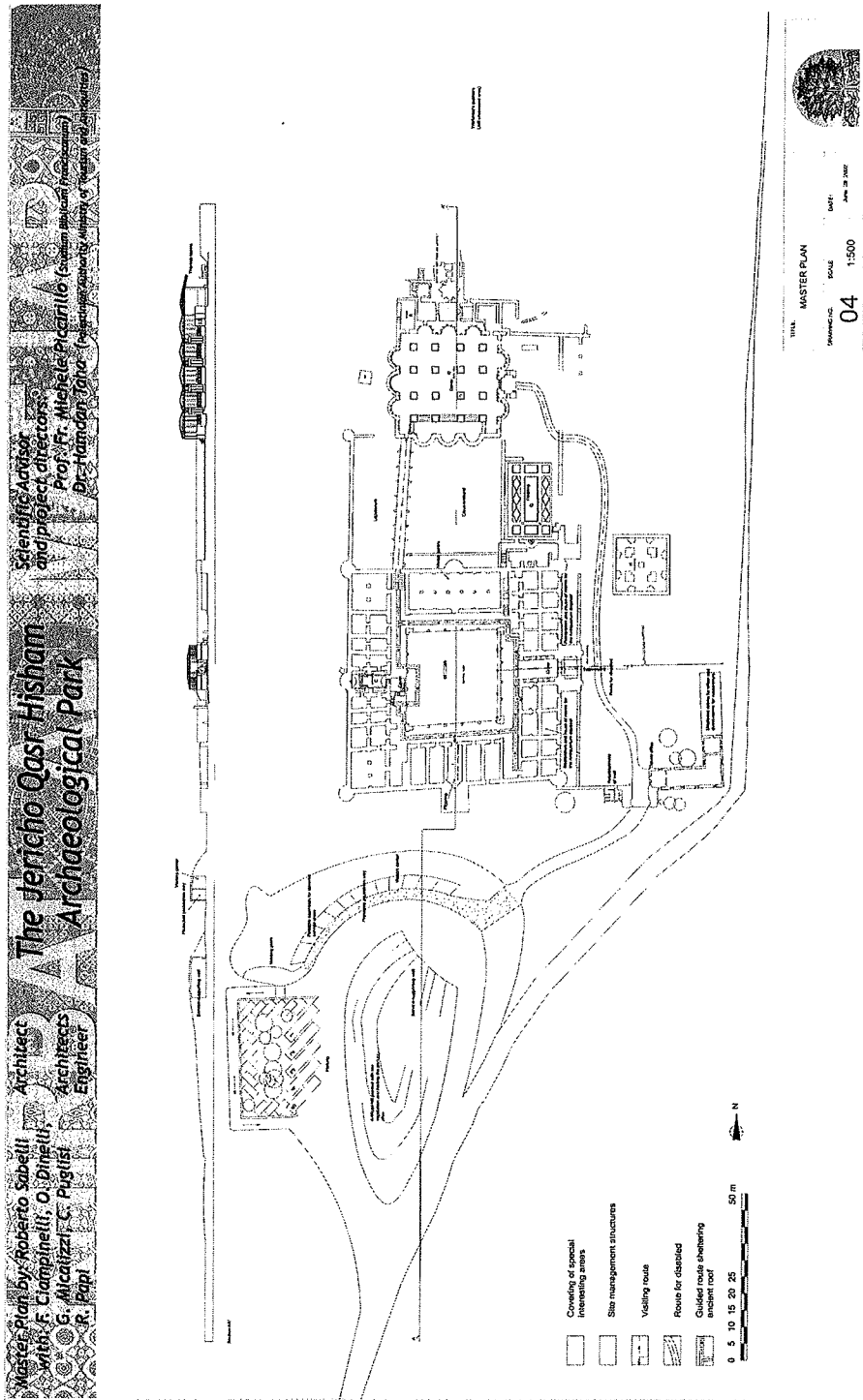
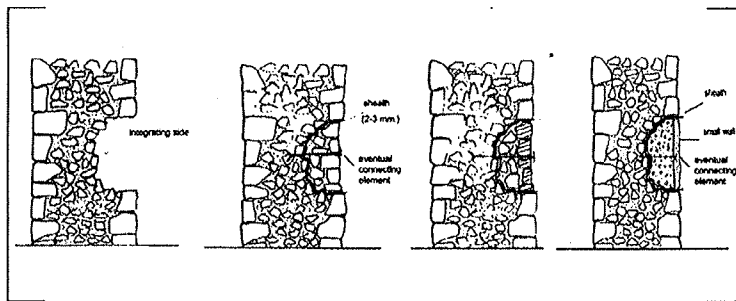


Fig. 1 - The project of the Jericho Qasr Hisham Archaeological Park.

MORTAR WALL CONSOLIDATION

Integration of middle position GAPS



INTERVENTION PROCEDURE

- a) surface cleaning
- b) protection of the side to be treated
- c) integration execution: intervention must always be shown with a proper signal:
 1. use of a material similar to the original but some centimetres backward; between integration and original surface a separating sheath of proper material must be interposed*
 2. use of a different material** in order to show integration along the curtain

*In order to assure integration intervention total reversibility, contact surfaces between original wall and integrations must always be protected. This protecting layer must however prevent condensing: it must be air-proof. A particular type of nonwoven fabric can be used

- **
- a) stone material of the same chromatic tonality but different from the original
 - b) calcium based conglomerate, admixed with inert of the same material of the original wall
 - c) plastic material suitably shaped and coloured can be used

Fig. 2 - Procedures of restoration interventions.

2.3. Expositive and Specialized Spaces

The project foresees the individuation of a few environments to be destined to equipped spaces for the management and to increase in value of the site. In particular, the importance of the two mosques, a big one and a small one, which will be highlighted by the realization of a flooring, leant against the current countryside plan, in white and pink stones (the so called "Jerusalem stone"). Another area that will be utilized as Visitor

Centre is the big rectangular area with central pillars close to the big central courtyard.

Other usable environments as deposits of archaeological materials and as possible offices are the ones concerning the rooms on the east wing of the Palace, to the sides of the access door to the Big Hall. It is also provided, in case of necessity, the enlargement of the body of factory of the current *Antiquarium*, having it gone on along the east limit of the enclosure area.

2.4. Covering Projects

2.4.1. The Gate

The access door to the internal principal court, at present not covered, needs a covering, like also the lying one behind corridor, because, as it turns out from the geophysical survey, the stony material is subject to strong thermal excursions due to the direct exposure to the sunlight and for this reason it must be sheltered from the sun. The importance to protect this part of the monument is due to the presence of a few decorative elements and original plaster portions. The adopted solution is conformed to the used technical choice for the Big Hall of the Bathrooms and foresees the realization of a covering of spires, opened on the sides, with a structure made of inox steel and with covering made of slabs of copper 6/10 the natural one.

2.4.2. The Sirdab

The Sirdab has been object of a restoration intervention in the last years. Such intervention has had as object the internal surfaces of the Sirdab, plasters and mosaics, and the protection of the link stair between the superior court and the hypogeum room. The problem of the big erosion of the vertical walls of the room has not been solved yet at today. The erosion, caused by the characteristics of the stony material, is made worse by the water infiltrations coming from the superior levels and by the exposure to the sunlight and to the wind. All these appearances have been faced to arrive to the definitive covering proposal in this project.

Therefore a "reconstructive" covering of a Peristyle section is foreseen with wooden frames and mantle of pantiles and big tiles. Some clay elements concerning original coverings are preserved in a few neighbouring rooms to the Sirdab. The proposed typology tries to acquit also to a didactic function which, in similar cases, had found good expository solutions. The parapet of the climbs, at present rebuilt in metal material, it is foreseen to do again it on the documented original model, realized with pillars alternated to slabs in stone. Such solution, besides for aesthetic factors, finds justifica-

tion in the necessity to reduce the action of the wind which, in the case of the climbs, makes a dangerous Eolian whirl to the stony material (fig. 3).

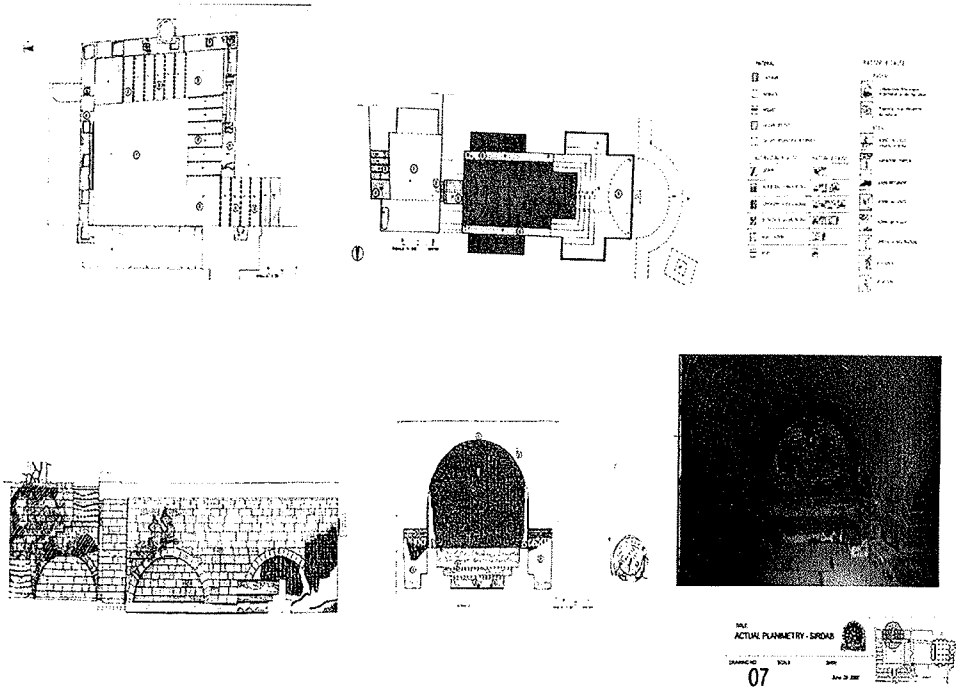


Fig. 3. - The Sirdab Restoration Project.

2.4.3. The Large Bathroom and the Diwan

The project foresees the covering and the side closure of the environments of the Big Hall of the Bathrooms and of the Diwan, with an extent of the only covering on the thermal environments to North of the room. The necessity of "obscurely" closing the Big Hall is dictated by the demand to preserve the wonderful mosaic floor at today still covered. Such request has been advanced also by the Prof. M. Piccirillo and from Dr. H. Taha.

The carrying structure of the covering is foreseen in truss in inox steel anchored to the internal quadrilobed rebuilt pillars and perimetrically on internal punctual anchorages steel to some of the slabs in synthetic stone, which with the alternation of slabs constitute the perimetrical vertical screen of the Big Hall and of the Diwan.

The covering is foreseen constituted by reduced pyramidal elements with amplexness imposed by the light of the stitch of the trusses. The pyramids are constituted by a cover of elements with slabs in copper 6/10, leaning

up panels in sea fir with interposed a bituminous sheath; the panels in fir will be anchored to metal battens of the thermal insulation system in insulating panels (ISOTEC kind), which will lean on the structure in steel of the pyramids and on the sleeper parallels. The intrados of the covering will be finished with panels in plasterboard, screwed on wooden lists, stuccoed and painted with a colouring dust made of stone, with granulometry and with shades as the local stone. The Big Hall and the Diwan will be lighted by the inclusion in the covering of diffusers elements (Solatube kind), whose capacity of refraction of the light allow to obtain, by natural light, a lighting diffuse, optimum for the legibility of the mosaic floors.

Inside, the natural system lighting up the insertion of an electric lighting system is foreseen, usable in a few moments during the winter and, in particular, nights during visits. The electric plant is foreseen by the use of conductors in Pirotenax, that allows to trace the plant outside the structure, with high qualifications of security, aesthetic adaptability and complete reversibility.

The banked route, for the protection of the mosaic floors, is foreseen anchored and suspended to the lattice structure of covering by round elements in steel. To the round elements it is foresees to anchor a structure in inox steel for footbridge with trampling plan realized with a zinc plated painted and grill. All the structures of the covering and the vertical one of closing is gatherable out work and completely reversible. The internal route to the big room appears through a glazed ribbon on the environments of the thermal bath placed to the North. The doors of access and exit at the room will be realized by metal frames and tampon doors with panels in wood, covered with punched slabs made of copper. All the doors will open towards the outside and will be supplied with panic bolt (figs. 4-7). The graphics (fig. 4) clear up the details of the adopted solutions for the vertical closing elements, with the possibility of adding windows that can be opened. To clarify the relationship between the existing walls and the new vertical elements a section of wall was chosen among the most decayed and with different heights. This choice has made necessary to integrate a minimal part of the face below, to have a surface which is sufficiently regular to connect to new buffering elements. The section also clears up the relationship between the existing walls and the new panels. The dimension of the new closing elements are very reduced compared to the current walls, so as to leave the top surface of the walls almost completely free. The axonometric graphics clarifies the relationship between the various parts and the free vertical communication space within the conference room.

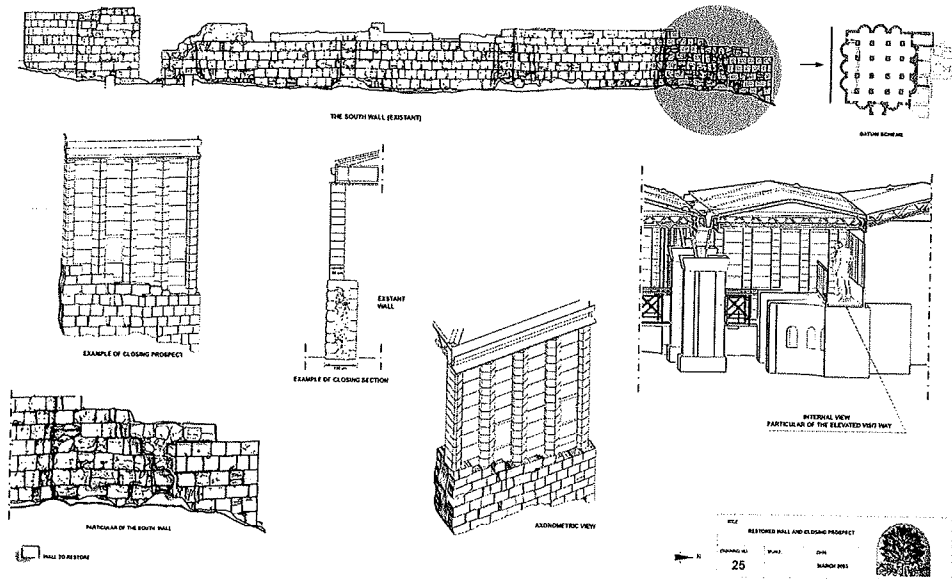


Fig. 4 - Adopted solutions for the vertical closing elements.

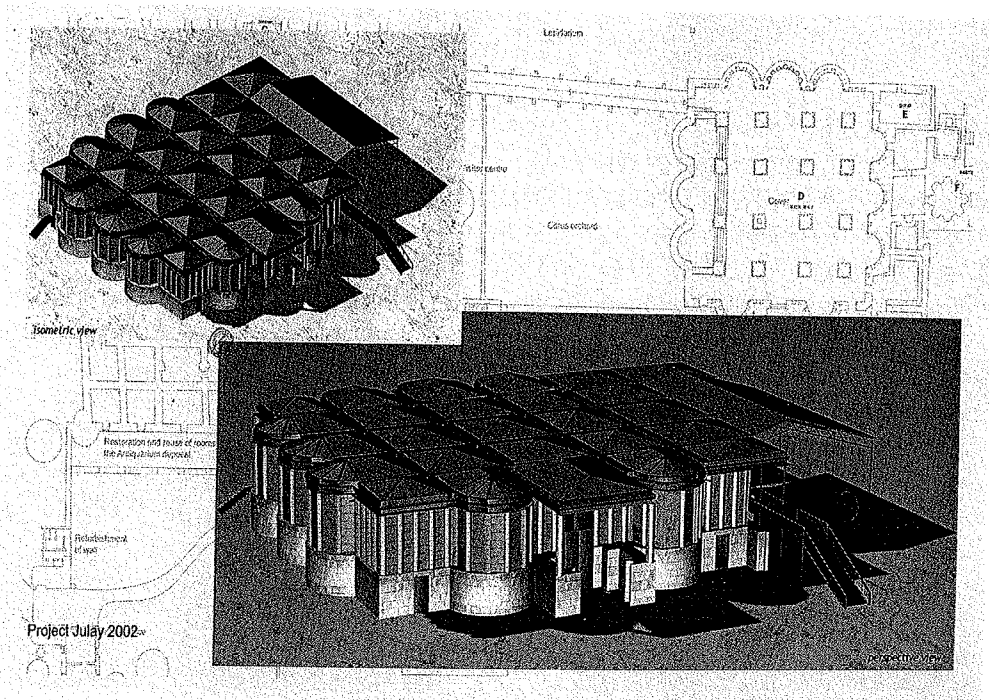


Fig. 5 - Covering project of the Big Hall and the Diwan Hall.

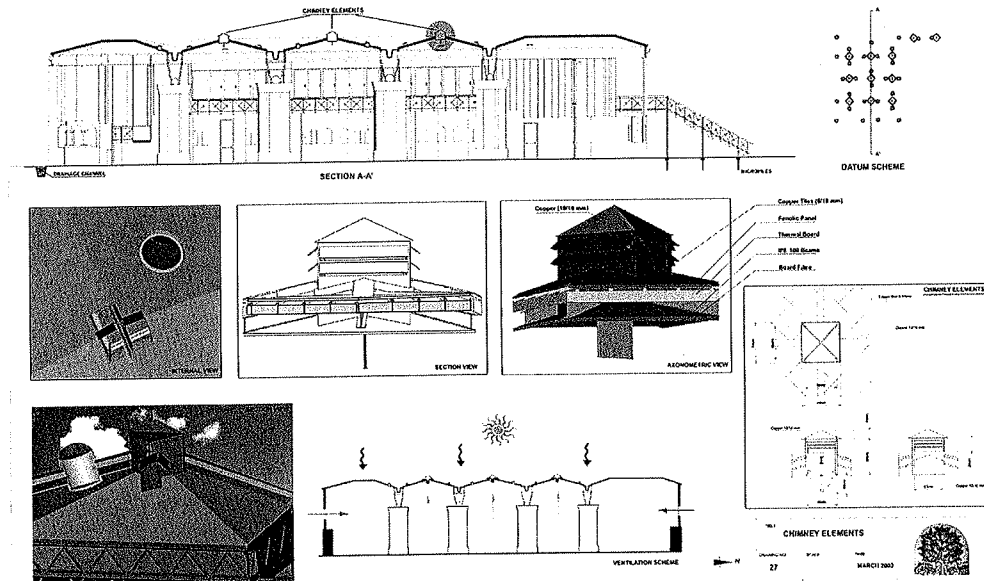


Fig. 6 - Covering project of the Big Hall and the Diwan Hall.

The pavilions with copper roof (fig. 6), insulated and ventilated panels, have a rain drainage gutter around their perimeter. The top part of the pavilions will be open, using overlapping of copper (10/10 mm) "chimney" elements. These chimneys, along with ventilation grating placed on the room doors and perimeter windows, will permit an adequate change of air, which will be easily to regulate, based on the seasons and external climate conditions. Regulation can be effected by opening and closing the vertical elements and chimneys. The total time for completely changing the air in the Large Room and the Diwan is estimated to be approximately two hours.

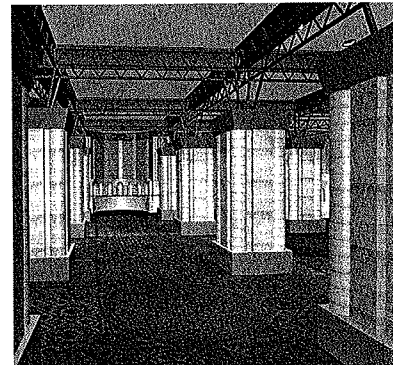
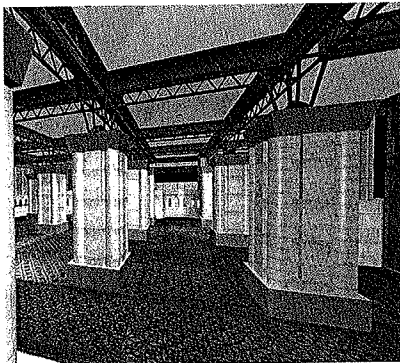


Fig. 7 - Covering project of the Big Hall and the Diwan Hall.

3. Chronicle of the Project

In 1995, following an agreement with the Palestinian Authority - Ministry and Antiquities, the Studium Biblicum Franciscanum and the Syremont (sponsor), the above mentioned institutions together with the architects L. Marino, R. Sabelli and O. Dinelli were designated to give effect to a project on the feasibility of restoration and the creation of the Jericho Qasr Hisham Archaeological Park.

This project is aimed to salvage, through the necessary restorative operations, a valuable area and highly important Islamic monument. It also aims to provide a programming instrument for digs still to be carried out, for salvage of uncovered structures and the building of new structures and infrastructures suitable for a modern monumental area with high tourist possibilities.

The feasibility project carried out has given us the possibility of asking for, formally and profitably, economic contributions and specialized intervention so as to help the Palestinian Authorities to conserve and increase the value of this important testimony of their cultural heritage.

3.1. Phase I

The first contributions (1998) made possible the restoration of the rooms in the Sirdab (Sabelli's project) together with restoration of the mosaic floorings and the plaster work. This work was carried out by those restorers who later created the Jericho Mosaic School.

3.2. Phase II

Thanks to UNESCO other contributions were given so as to carry out the second phase of the project and, in particular:

- geophysical survey and chemical and physical analysis of excavated materials;
- covering projects for: the Gate and the corridor to the main colonnade courtyard; the stairwell to the Sirdab; the Large Bathroom and the Diwan, with mosaics;
- specifications about structures and surfaces consolidations and restorations;
- planning of fruition routes, parking areas and non-visible service buildings;
- planning of reutilization of some structures directed to realise exhibition and specialised spaces;
- planning of the futures archaeological investigations.

In July 2000, an agreement between UNESCO and Roberto Sabelli was drawn up so as to carry out the above said project. After inspection and meetings with others involved in the project, intervention strategies and needs were decided on ("hermetic" sealing of the Grand Bathroom, overhead visiting route for the mosaics, etc.) These requirements have characterized and influenced the solutions adopted. Following research and seeing the problems created by the visible deterioration, a geo-radar research was requested together with a chemical-physical study of the materials so as to understand their deterioration mechanisms.

Following the forced stoppage, caused by political situation in Palestine, research was started by Efferre s.r.l. in June 2001 and concluded in October 2001. Project work, in spite of the stoppage, has continued, even if with difficulty due to the impossibility of on-site working.

Planning procedure, with particular reference to the proposals of coverings and the possibility of visiting the Bathroom, has been coherent, even if articulated, and based on the requirements and observations made by the Palestinian Authorities and by the Studium Biblicum Franciscanum.

More than ten proposals have been made (fig. 8), which began with a flat covering, but after seeing the characteristics of the site and the amount of intervention needed, concluded with the definition of a solution which combines the salvage needs of the structure with those of the whole context.

Following various meetings in Palestine (June 2001) and in Italy (November 2001) a proposal for the covering has been planned which, in spite of the use of advanced techniques especially for the supports and covering surface, respects the whole site and at the same time improves the architectonic space, being an inevitable element for perusal of the monument, the mosaic floor and the site as a whole.

Seen the extensive 20th century re-constructions and seen the extension of the walls, it seems advisable to rest the covering structure partly on them as it causes no risks to the original structure. This choice is supported through knowledge of the wall's carrying capacity and by the certainty that eventual external basements could create ulterior problems to adjacent structures yet to be investigated. In November 2001, a technical revision to be carried out by Prof. Blasi was proposed, with particular reference to the covering of the Bathroom.

After having had a meeting with Prof. Blasi, where some ideas were put forth, he suggested, as he had to go to Paris for other reasons, to take the projects with him so as to show them, unofficially, to Dr. A. Beschusch and Dr. O. Lehmann. On his return, Prof. Blasi raised some technical doubts on the project.

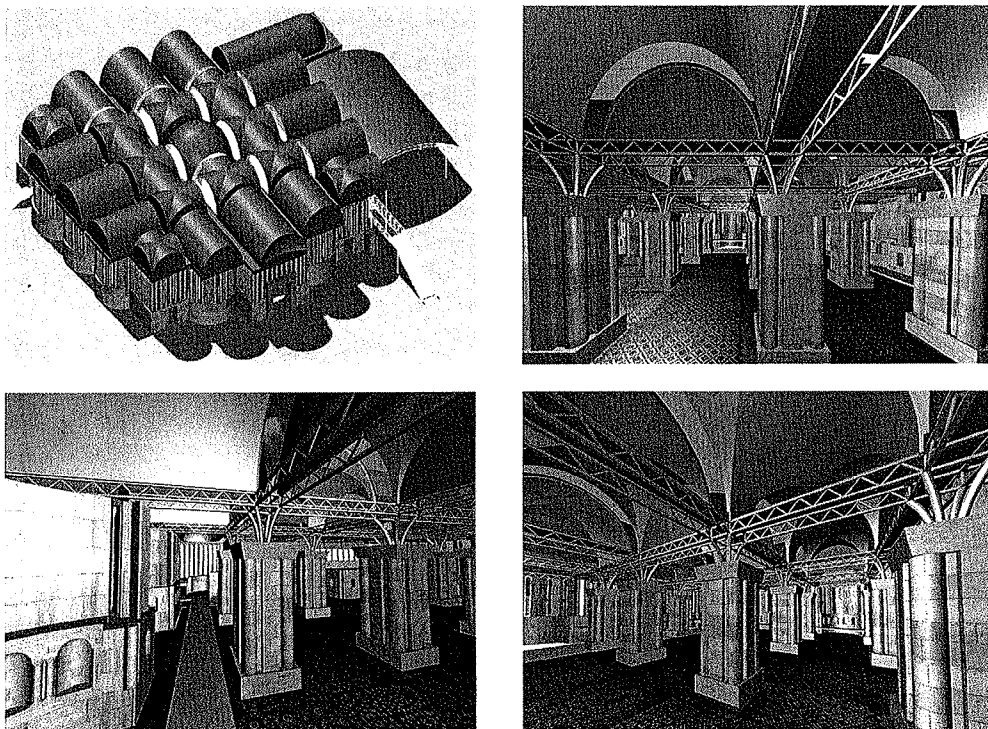


Fig. 8 - One of the many solutions proposed.

The doubts raised were mainly in reference to the burden on the pillars and perimetrical walls. Prof. Blasi also suggested, with the use of some drawings, that we try to design a "overhanging" structure so as to free the covering from the perimeter of the room. Both requirements have found a solution. The arches are foreseen to be realized by thermic insulated sandwich panels, which are supported with a centering, these determines a burden of 35 kg per mq, distributed on the side walls, and can be rapidly created off-site and mounted subsequently. The "overhanging" solution has two proposals: the first with a network of beams having a thickness able to support the "overhanging" and the second with external "stays" so as to reduce the free "overhanging" and therefore the necessary section of the beams. The solution with a network of beams has also been used for the arched coverings so as to verify the possibility of using the same technique for the architectonic shape previously studied and shown in Paris. Following these controls some doubts have been arisen. The "overhanging" structures which must be anchored to the existent pillars in reinforced concrete inside the room are difficult to create due to the surface to cover

and the length of the "jumps". Also, these structures would not be able to support the overhead visiting route which we don't want to anchor to the existing walls. "Overhanging" structures, seen the size, must necessarily be characterized by extremely simple forms, which in this case would not be suitable for the monument and their visual impact would be detrimental to the "reading" and enjoyment of the whole monumental complex.

The "overhanging" solution necessarily assimilable with flat structures causes an obvious aesthetic handicap which would damage the highly delicate context of the whole complex.

It is our conviction, and not only ours, as many experiences of this type have been carried out in Italy and abroad, that the anonymity of a modern structure which "serves" antiquities does not always give dignity to the monument and to the context to be protected and does not conserve those characteristic architectonic structures within the whole context which are apart from the original monument.

We therefore believe that the best proposal, which satisfies all requirements, is that of adopting a solution which, respecting the existent structure (nothing existent is taken away or altered and what is added is reversible), allows conservation, makes visiting needs compatible and, at the same time, is pleasant to the eye and respects the monumental and environmental context and the local architectonic traditions.

3.3. Phase III (Present Phase; 2004-2005)

Following the conclusions and recommendations of the "Symposium on Cultural Heritage Conservation in Palestine – Conservation Plan of Hisham's Palace", held in Jericho on 7-8 December 2003, the Action Plan considers five key areas of intervention. However, absolute priority will be given to the emergency conservation and restoration of the stone-built elements of the Palace and urgent safeguarding measures to be carried out on the site.

Given that preliminary conservation of mosaics has been already undertaken³ and that the protection of the mosaics of the Great Bath Hall is currently ensured by a 30 cm layer of sand, UNESCO Office in Ramallah, in consultation with Palestinian specialists, evaluated that emergency safeguarding measures for the protection and conservation of the stone-built archaeological and architectural elements must be implemented as soon as possible. Therefore, this activity is the absolute priority.

Following this recommendation, the Project Steering Committee requested Mr. Sabelli, expert in archaeological restoration and already in charge of

³ Hamdan - Benelli 2005.

the project of the Master Plan of the Hisham's Palace Archaeological Park as a UNESCO Consultant, to submit a proposed Operational Plan of Actions for the protection of the stone materials. Mr. Sabelli submitted his proposal on 11 March 2004. Mr Sabelli, in the specific, is responsible for the overall coordination of the conservation works, including the diagnosis of the existing elements *in situ*, in close cooperation with the Department of Antiquities and Cultural Heritage and Studium Biblicum Franciscanum.

The tasks to be carried out are the following:

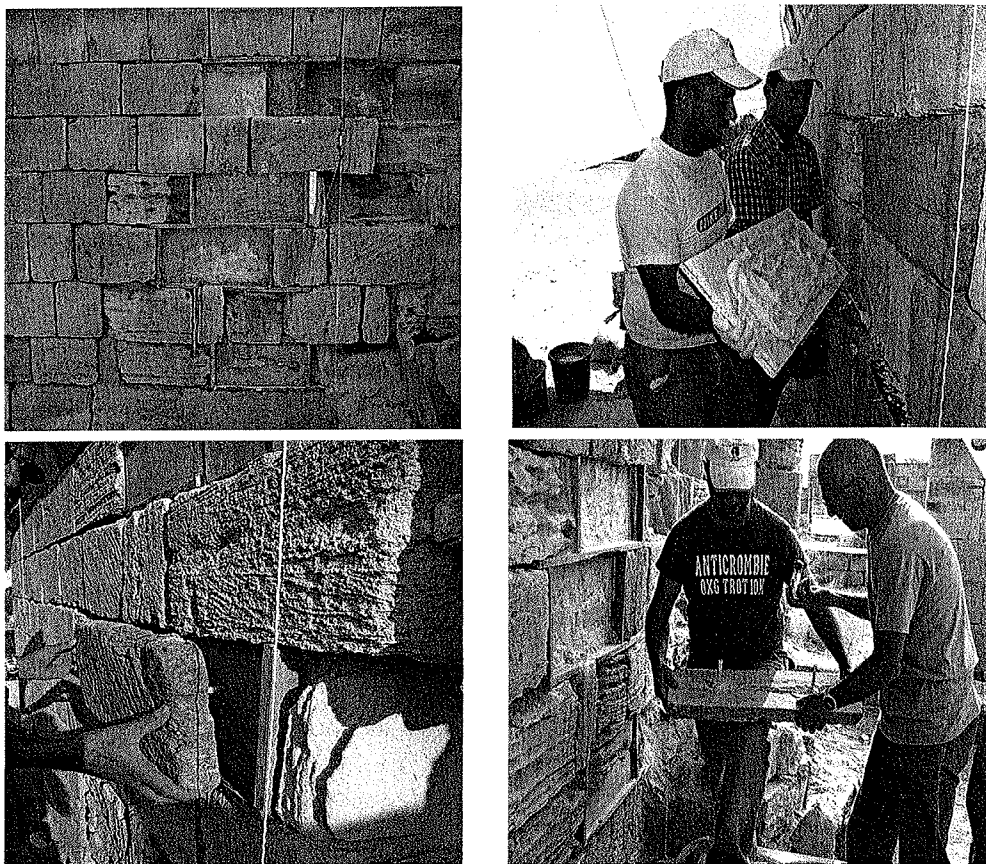
1. set up of the methodology for interventions;
2. mapping of the degradation of stone materials, including the indication of practical interventions;
3. preparation of the Maintenance Practical Protocol;
4. preliminary testing on materials (in cooperation with the geologist);
5. topographic positioning of the areas of interventions (in cooperation with the land surveyor);
6. verification of alterations (in cooperation with the geologist);
7. testing on materials, by mortars' absorption and aging tests (in cooperation with the geologist);
8. training of four local trainees in stone conservation and restoration;
9. supervising the conservation works to ensure the quality and checking the finished works before taking-over;
10. monitoring and reporting.

The Palestinian Department of Antiquities and Cultural Heritage, co-responsible of the coordination of the project⁴, will provide four workers/trainees in stone conservation, one geologist with expertise in petrography, and one topographic land surveyor responsible for the mapping, and will undertake the required salvage work and testing. Mr. Sabelli will be assisted by an international specialist in conservation, Mr. Stefano Sarri (from Museo Guarnacci of Volterra) who will work under his supervision (figs. 9-12)⁵.

The Qasr Hisham Project was implemented by the Palestinian Department of Antiquities in partnership with UNESCO and the Studium Biblicum Franciscanum of Jerusalem, and it was funded by the Government of Italy for the benefit of the Palestinian Ministry of Tourism and Antiquities.

⁴ Taha 2005, 179-188.

⁵ During the last one mission (May 2005), we have tested some solutions to consolidate the lacunae in the walls. In this pictures you can see the solutions by natural stone and by artificial stone. These tests shall be verified after summer.



Figs. 9-12 - Tested solutions to consolidate the *lacunae* in the walls.

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