Plastering of the Protective System

Amer Ahmad

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Introduction

The protective system used to preserve the palace walls at Tell Mozan is unique and exceptional within the region, as no comparable system has been adopted at any neighboring archaeological site. Consequently, most sites in northeastern Syria have lost portions of their archaeological features over time, whether due to natural factors, human activity, or even animal interference, which often results in the destruction of ancient structures.

At the beginning of the Syrian conflict, some archaeological missions covered exposed structures with layers of soil for protection, as in the sites of Tell Sha'ir and Tell Khazna. Although such measures offer limited protection, they are far from ideal.

Erosion caused by rain and wind gradually removes the upper layers of soil, leaving the underlying architectural remains increasingly vulnerable to damage (Fig. 1).

Challenges at Tell Mozan

In the case of the palace at Tell Mozan, relying on soil to cover the walls was not a practical solution, especially given the presence of earlier protective systems. Some palace walls reach heights of nearly two meters, making soil coverage both exhausting and complex. Moreover, such coverage hinders the presentation of the site to visitors, as it blocks direct visibility of the architectural and archaeological details. As a result, it fails to fulfill the primary goal of showcasing the site as an open space for presentation and interpretation.

The Current Protective System at Tell Mozan

The palace walls are composed of mud-brick and stone foundations, the mud-brick portions being more susceptible to deterioration due to weather factors such as rain, wind, solar radiation, and temperature fluctuations, as well as human and animal activity. Since the ancient architecture cannot be relocated, the need for a sustainable and

effective protective system becomes essential—one that also allows for the inspection of the walls in their original position.

Since 1990, the mission has developed a specialized protective system for the palace walls, which evolved into the current framework consisting of metal rods and structures that follow the contour of the walls, forming a virtual reconstruction of the building (Fig. 2). Brown burlap is attached to the structure to shield the walls from rainfall. This system is simple and efficient, allowing easy inspection of the walls (Fig. 3).

This approach combines both museological and conservation objectives: it protects the architectural remains while enabling visitors to clearly observe the structure.

Since many walls survive only at the foundation level (Fig. 4), the system is crucial for helping visitors visualize the original form and architectural layout, making it an ideal tool for the visual presentation and interpretation of the site.

Routine Maintenance

Since the mission physically left the site, routine maintenance continued regularly. Damaged areas of the protective system were repaired using mud plaster. This included sealing gaps caused by weathering (Fig. 5), and occasionally reapplying thin surface layers of plaster (Fig. 6), the most recent of which occurred in 2021. Over time, large sections of the mud plaster became fragile and detached, diminishing its protective function (Fig. 7). The underlying fabric (burlap) also showed signs of deterioration in certain areas (Fig. 8), while in others the mud plaster appeared patchy and inconsistent —containing voids—particularly in sector H (Fig. 9).

Plastering Process

This year, the complete removal of the old mud plaster layers was carried out. The process required approximately one month and three days, as only three workers were available—an insufficient number considering the scale of the task.

Completing the work faster would require at least six workers. The distance between the work area, especially sector H, and the location where the mud plaster was prepared was relatively long (Fig. 10), increasing the difficulty of the task.

The work area consisted of two main sections: Sector H and the service wing sectors. Work began in Sector H before progressing to the other sectors. The process involved the removal of all fragile and deteriorated mud plaster (Fig. 11), which resulted in debris accumulating at the base of the walls and on the room floors (Fig. 12). The debris was collected (Fig. 13) and transported away from the excavation areas (Fig. 14) for disposal at a more distant location later.

Additional metal wires was installed in areas requiring reinforcement (Fig. 15), followed by the placement of plastic sheet (Fig. 16) of the type commonly used locally to cover mud-brick houses (Fig. 17). A layer of cardboard was then added to reduce pressure on the plastic sheet and wires (Fig. 18) and to prevent clay blocks from slipping through lower openings.

Subsequently, a layer of soil from the old mud plaster was applied (Fig. 19). Due to the fragility and deterioration of the old plaster, it was not used in its entirety. Additionally, excessive weight on the surfaces could cause the metal rods to bend, as observed in one of the rods at the opening of the south wall of Room C3 (Fig. 20), or lead to the lowering of the sheet metal (tutiya), which came into direct contact with the wall, as seen in Wall F1-4 (center) (Fig. 21). Although a blacksmith had previously been present on-site, the rods were not adjusted in order to avoid any unintended damage to the protective structure.

Once the surfaces were prepared, the soil was moistened to ensure adhesion with the new mud plaster (Fig. 22). The mud plaster was then prepared (Fig. 23), and a thicker-than-usual plaster layer was applied (Fig. 24), as traditional plaster layer is typically thin.

In the service wing sectors, the surfaces were prepared all at once (Fig. 25), unlike in sector H, where each section was prepared and plastered before moving to the next (Fig. 26). This sequential method increased the duration of work and the cost of water supply. Work in sector H took 13 days, while plastering in the service wing required only 5 days, bringing the total effective working time to 18 days.

The mud plaster condition in the service wing was found to be better than in sector H (Fig. 27). The workers proposed limiting the intervention to filling weather-related gaps and applying a thin mud plaster layer without fully removing the old one, as had been done previously. This was tested on two walls (Fig. 28), where the protective

surfaces were plastered without removing the previous layers. These will be monitored during winter to assess the effectiveness of this approach.

Nonetheless, I determined that the optimal choice was to remove all old mud plaster and reapply it from scratch, despite workers' assurances that partial intervention would be sufficient. After consulting with the team and directors, it was decided to remove all old mud plaster before applying the new layers.

Some protective systems in the service wing are covered with sheet metal (tutiya) (Fig. 29). After evaluation, it was concluded that mud plaster should not be applied over the sheet metal (tutiya). Instead, a nylon layer directly on the walls is sufficient and should be monitored during the winter. Mud plaster does not adhere well to sheet metal (tutiya) surfaces, and moisture retained by clay can cause rust and deterioration beneath the plaster.

Therefore, if a more visually coherent appearance is desired, the sheet metal (tutiya) may be painted with an earthy color similar to the walls. This ensures both visual harmony and effective protection against corrosion. Additionally, the gaps created by overlapping the sheet metal—as well as the existing holes—were sealed with silicone to prevent water leakage (Fig. 30).

Alongside replacing deteriorated burlap in the palace area as part of the general maintenance plan, the plastering process constitutes the first phase of a broader conservation program. The second phase will involve a detailed assessment of the condition of the walls, followed by an evaluation of the nylon coverings and their replacement when necessary as part of the third phase, as the nylon has become brittle and cracks easily (Fig. 31).

Logistical Challenges

In addition to the limited number of workers and the considerable distance between the work area and the mud plaster-preparation location, the team faced difficulties supplying water, as the well is far from the palace and extending hoses to the work area is difficult. The absence of electricity at the site posed another challenge: the village of Mozan receives only one hour of electricity per day, making it difficult to operate the water pump. To overcome these issues, support was provided by a resident of the nearby village of Qarah Qub, approximately one kilometer southwest of Mozan, who supplied water, soil, and straw—the essential components for preparing the mud plaster.

Figures

Figure 1: An image illustrating the impacts of weathering on the Tell Khazna excavations

Figure 2: The protective system as a virtual reconstruction of the palace building

Figure 3: The simplicity of the protective system and the brown-colored burlap

Figure 4: Some walls surviving only at the foundation level

Figure 5: Sealing the gaps on the surfaces of the protective systems

Figure 6: Reapplying thin surface plaster layers to the protective system surfaces

Figure 7: An image showing the fragile and detached mud plaster

Figure 8: An image illustrating signs of deterioration in the burlap

Figure 9: Patchy and inconsistent mud plaster on protective shelters in sector H

Figure 10: Long distance between work area and the mud plaster preparation area

Figure 11: Removal of the fragile and deteriorated mud plaster

Figure 12: Debris accumulated at the base of the walls and on the room floors

Figure 13: Collection of the debris

Figure 14: Debris transported away from the excavation areas

Figure 15: Metal wires installation

Figure 16: Placement of plastic sheet

Figure 17: Type of plastic sheet used to cover local mud-brick houses in Mozan village

Figure 18: Adding cardboard layers

Figure 19: Applying a layer of soil from the old mud plaster

Figure 20: Bent metal rod at the opening of the south wall of Room C3

Figure 21: Contact of the sheet metal (tutiya) surface with the top of Wall F1–4 (center)

Figure 22: Soil moistening

Figure 23: Mud plaster preparation

Figure 24: Application of a thick plaster layer

Figure 25: Preparation of service wing surfaces

Figure 26: Sequential plastering in sector H

Figure 27: Mud plaster condition in service wing

Figure 28: Applying thin mud plaster on the protective system of one wall without removing the old plaster

Figure 29: Protective systems in the service wing covered with sheet metal (tutiya)

Figure 30: Sealing gaps and existing holes in sheet metal (tutiya) with silicone

Figure 31: Torn and worn nylon over the walls