
Adobe Pyramid of Amenemhet III at Dahshur – Egypt Risk Study, Conservation Strategy and Development of the Surrounding Area

*Mahmoud Abd El-Hafez a, *, Abd El-Rahman M. Fahmy a*

a Conservation Department, Faculty of Archaeology, Cairo University, Egypt

Abstract

Dahshur archaeological site is one of the most important sites in Egypt and maybe in the world. This Site has an ancient history, and contains many pyramids dated back to the old kingdom, such as the red pyramid (northern pyramid) of king Snfru, the white pyramid (southern pyramid or bent pyramid) and the black pyramid; as a flag of Egypt, which contains: red, white and black colors. The adobe pyramid of Amenemhet III (sometimes known as; black pyramid) as it is built from mud bricks that make the shape of pyramid to be black.

Keywords

- Adobe Pyramid
 - Amenemhet III
 - Dahshur
 - Deterioration
 - Restoration
 - Development
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1. Introduction

Dahshur archaeological site is one of the most important sites in Egypt and maybe in the world. This Site has an ancient history, and contains many pyramids dated back to the old kingdom, such as the red pyramid (northern pyramid) of king Snfru, the white pyramid (southern pyramid or bent pyramid) and the black pyramid; as a flag of Egypt, which contains: red, white and black colors. The adobe pyramid of Amenemhet III (sometimes known as; black pyramid) as it is built from mud bricks that make the shape of pyramid to be black.

Site and History

Dahshur is located 40 km south of Cairo, on the southern tip of the cemetery of Memphis. Dahshur archaeological area is an open museum; that includes pyramids and temples of ancient Egyptians in the Old and Middle Kingdom.

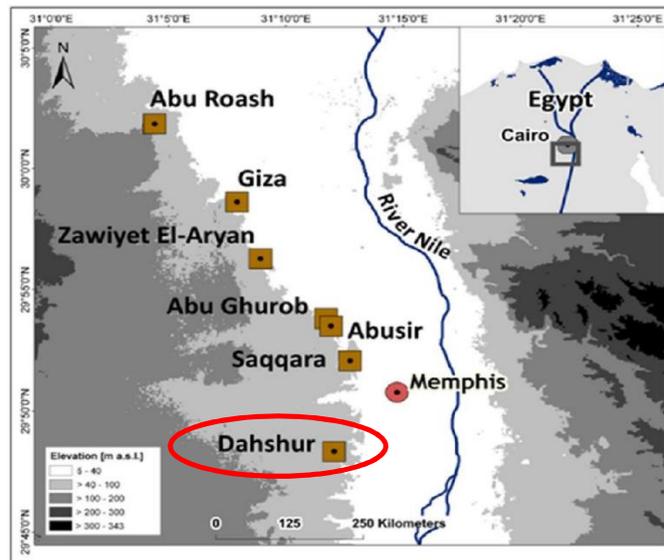


Fig. 1. Location map of Dahshur site

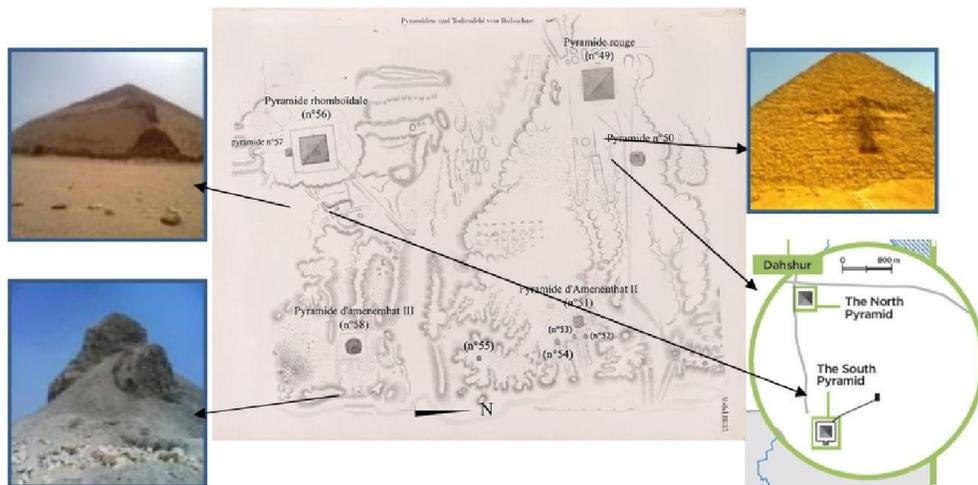


Fig. 2. The most important archaeological sites at Dahshur- Egypt

Architectural Planning of Amenemhet III Pyramid

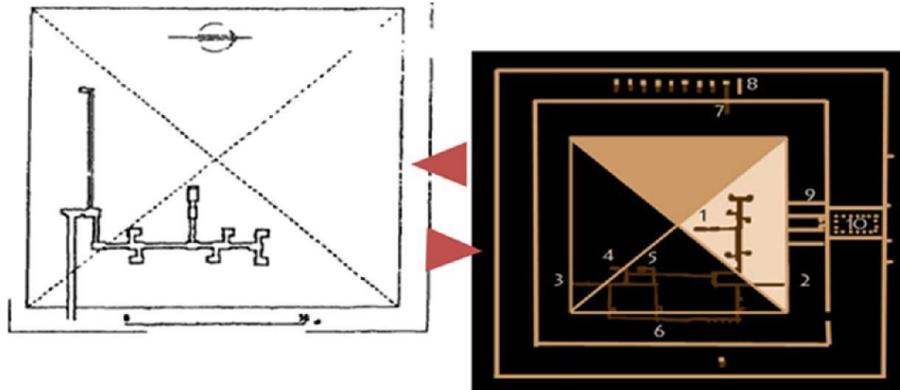


Fig. 3. Plan of The adobe pyramid of Amenemhet III

Fig. 3 shows the plan of Amenemhet III Pyramid, where:

1. King's burial chamber.
2. king's entrance.
3. Queen's entrance.
4. Aat's burial chamber.
5. other queen's burial chamber.
6. southern chapels.
7. Nubhetepikhered's shaft tomb.
8. Hor's shaft tomb.

Geology of Dahshur

Fig. 4 shows the geological map of Dahshur area. It's worth mentioning that the geological features play a significant role in deterioration processes of the adobe pyramid of Amenemhet III.

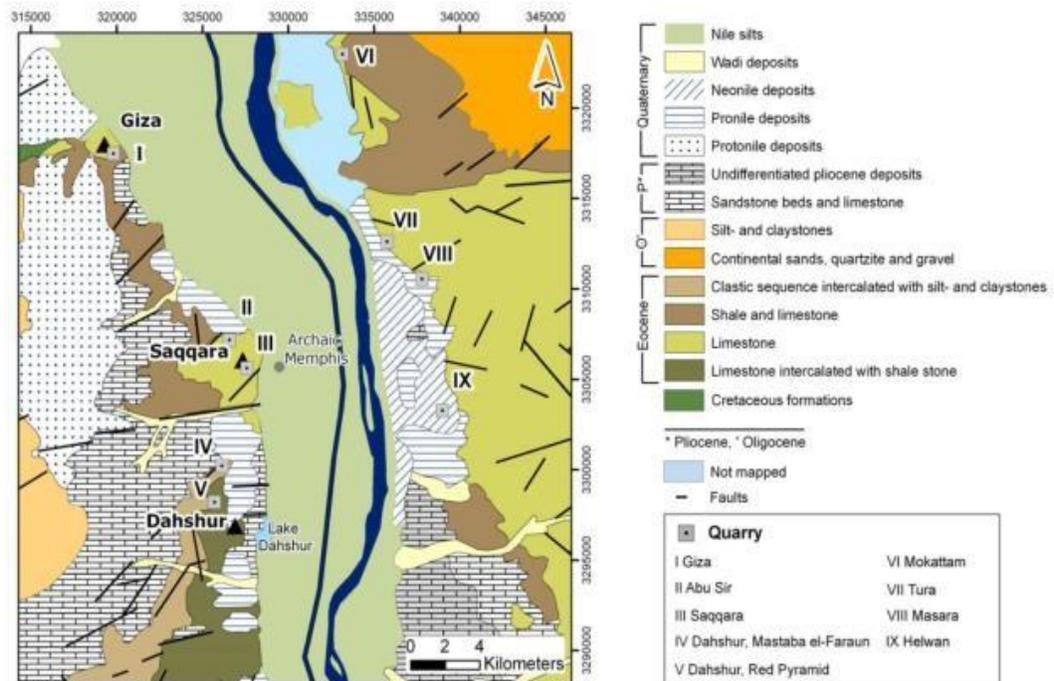


Fig. 4. Geological map of Dahshur area

Risk Study

There are three main risks affect the adobe pyramid of Amenemhet III and the archaeological site: inherent/structural risk, environmental risk and human risk.

Deterioration Factors and Aspects

The adobe pyramid of Amenemhet III as is the case in neighboring archaeological sites; was not spared from deterioration and destruction. Severe climatic conditions, structural risk, neglect of restoration works and lack of archaeological awareness are the main and most significant factors that caused the damage to the black/adobe pyramid of Amenemhet III.



Fig. 5. The general view and deterioration aspects of the black/adobe pyramid of Amenemhet III.

There is no doubt that each site has its own problem and threatens, so the maintenance and restoration plans vary from one site to another. The pyramid of Amenemhet III and surrounding areas threatened to a lot of problems and dangers, which make defects and structural problems due to soil problems. The environmental conditions of heat and humidity and their fluctuation, wind and finally the risks and threats, which is related to human activity and human encroachments on the perimeter of the pyramid of Amenemhet III.

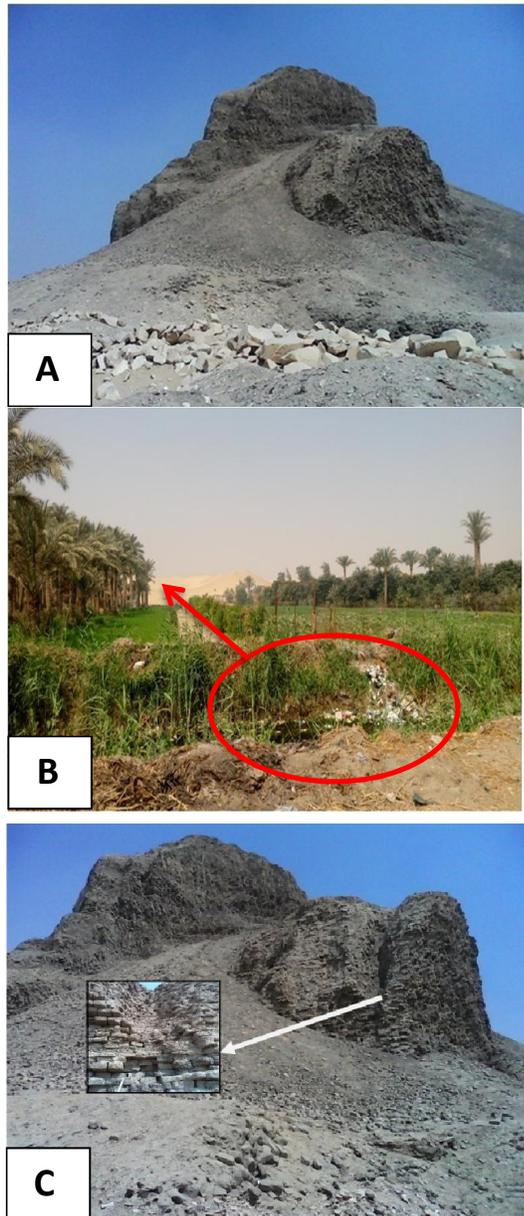




Fig. 6. A. Falling of the covering stone layer from the pyramid, B. Al-Ibrahemeya canal which affect the pyramid and the archaeological site. The arrow indicates the location of the adobe pyramid, C and D. show the collapse and erosion of adobe blocks due to windstorms and other environmental factors.

In this paper, the researchers will focus mainly on the basic influential factors, and how to cut their impacts on the pyramid, by proposing a plan or strategy of restoration, conservation of the adobe pyramid and development of the surrounding area to become a tourist attraction and make the pyramid and the archaeological site saved and under consideration.

Conservation Strategy of the Adobe Pyramid and Development of the Surrounding Area

The research methodology especially in assessment of the pyramid of Amenemhet III depends on the visual and in situ analysis in evaluation of the building materials of adobe pyramid conditions; in addition to that XRD (X-ray diffraction) had been

used to identify the composition of mud bricks used in the building of the pyramid of Amenemhet III.

The development of the archaeological area at Dahshur is part of the preventive maintenance/conservation to preserve the effects that surround the area. The development strategy must be based on the principles of sustainability and the participation of the people of the site in this development. Therefore, the importance of this part of the research in the search for solutions to maximize the role of the individual in the community and non-specialized people and people to share the specialists in the preservation of our heritage.

The scope of the research is to show the importance of the archaeological region and hence the importance of preserving it from various damage factors and to present a new strategy in development of the surrounding area and restoration and conservation plan to the pyramid of Amenemhet III.

The Restoration and Rehabilitation Strategy of the Adobe Pyramid and Surrounding Area will briefly include:

- Analytical Study of the building materials (Fig. 7 as example).
- Reconstruction (According to the archaeological system of building, see Fig 8).
- Proposing a solution to reduce the impact of the Al-Ibrahemeyacanal.

- Build a fence around the pyramid (Fig. 9).
- Proposals for sustainable development of the archaeological site(Fig. 10).

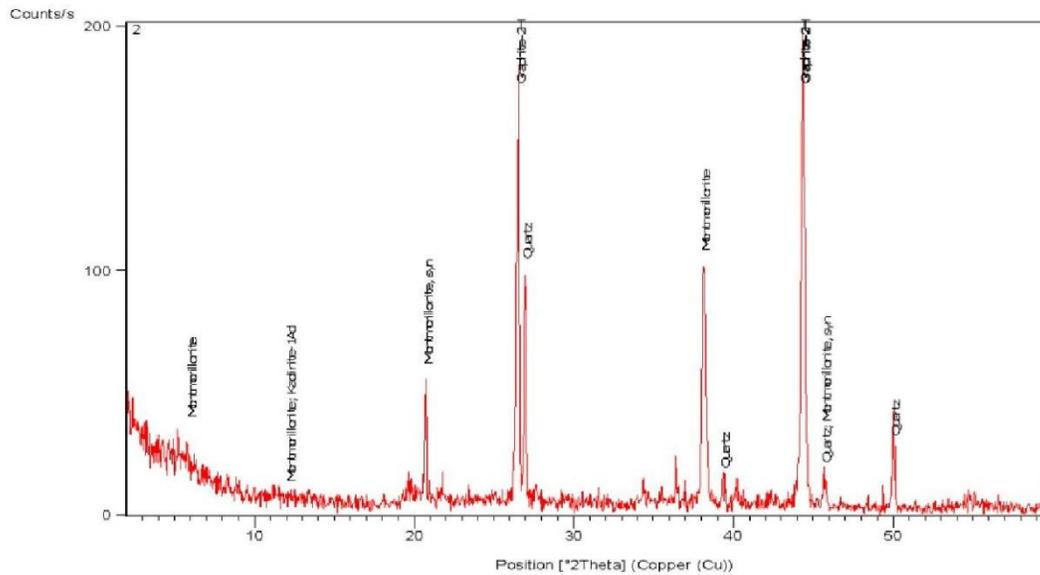


Fig. 7. XRD analysis of adobe blocks (Amenemhet III pyramid pyramid)



Fig. 8. Reconstruction of the adobe pyramid according to the archaeological system of building



Fig. 9. Build a fence around the pyramid



Fig. 10. Proposals for sustainable development of the archaeological site

It is worth mentioning that all previous items of conservation strategy will be completely explained and sponsored with showing figures in the full paper. The full paper will be submitted in Arabic language with full results, recommendations and references.

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