

# Disaster Area Excavation Department Model For Cultural Assets: Disaster Archeology Documentation

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## Abstract

Art galleries, museums, libraries, archive buildings and archaeological sites, which contain humanity's cultural heritage and knowledge, are greatly affected by the devastating effects of emergencies and disasters such as earthquakes, fires and floods. Collections in buildings and protected areas serve as a bridge from the past to the future. They are treasures that must be protected. Reducing risks before and after disasters in the buildings and areas where these works are located is an issue that should not be ignored by decision makers. However, such areas are places where many visitors and employees are present at the same time. For this reason, proactive methods in which disaster-related measures are taken in advance should be adopted and collective protection methods (human and collection origin) should be taken as basis. In recent years, intensive studies have been carried out on risk-reducing techniques in buildings containing significant numbers of collections. Conducting disaster-oriented risk analyzes such as earthquakes and fires is important in risk reduction studies in historical buildings and structures built or to be constructed with modern techniques. In the study, the measures taken by institutions such as the Turkiye Ministry of Culture and Tourism and the General Directorate of Foundations in cultural heritage works after the Kahramanmaras - Turkiye earthquake disaster that occurred on February 6, 2023 were examined.

**Key Words:** Cultural heritage, post-disaster measures, protective risk measures, documentation, disaster management.

## Introduction

Nowadays our cultural heritage is under constant threat and danger. Architectural structures and sites are threatened by pollution (air pollution, acid rain, birds, etc), tourists, wars as well as environmental disasters like earthquakes or floods or climatic changes (Campana and Remondino, 2007). Cultural Heritage is an essential part of each society's identity. Therefore, it is imperative that the preservation of Cultural Heritage for society is highly prioritised, this is best achieved when divided into three basic tasks: documentation, preservation and research. In recent years, the possibilities offered by digitisation have led to the development of new methods and procedures that have significantly changed the way cultural assets are handled (Belledorf, 2020). Documentation is

a holistic and long process: a broad set of activities that include research, examination, observation, elaboration, description, obtaining terminological information and other data. Museums, libraries and archives; collecting collections. In addition to their documentation and exhibition duties, they also carry out the "protection" task. If collections are destroyed or severely damaged in a possible emergency/disaster, documentation is needed for their reconstruction (Kuzucuoglu, 2015).

The techniques to be applied in Cultural Heritage Documentation can be classified differently according to many parameters. The aim of the study is to classify the collections based on documentation in LAM institutions also for in-situ conditions according to the purpose of documentation and to determine the parameters and standards in line with this purpose. Documentation by digital methods is suitable for recording buildings, collections, cultural panoramic sites or archaeological excavations. Smaller objects such as collections, buildings, architectural details or sculptures can also be easily digitized with developing technology. Within the scope of the study, it was also suggested to prepare an INVENTORY SYSTEM that includes a database that can be used as metadata for both in-situ objects and areas where they are protected.

## **06 February 2023 Kahramanmaraş Earthquake**

Turkiye Emergency and Disaster Management Presidency (AFAD) announced that the epicenter of the earthquake was the Pazarcık district of Kahramanmaraş, 26 kilometers east of Gaziantep, on the Eastern Anatolian Fault line. The magnitude of the earthquake was 7.8 Mw and 7.5 Mw and two earthquakes occurred consecutively. As a result of the earthquakes, according to official figures, at least 50,783 people died in Türkiye and at least 8,476 people in Syria, and more than 122,000 people were injured in total. After the earthquakes, more than 40 thousand aftershocks with magnitudes up to 6.7 MW occurred.

But its sphere of influence was much broader than that; The earthquake was also felt in Cyprus, Lebanon, Iraq, Iran and Syria. It was felt in some places in the north and west of Türkiye.

Earthquakes leave very serious negative effects in places where there are old building stocks that have repeatedly been destroyed by historical earthquakes. Especially with industrialization, intense migration from rural areas to cities, rapid population growth and unplanned urbanization, the abundance of earthquake-resistant structures increases the vulnerability to earthquakes. The effects of destruction are also seen in the buildings and areas where cultural heritage works are located.

## **Debris Archeology**

In the great disaster that occurred on February 6, 678 historical monuments registered within the General Directorate of Foundations were seriously damaged. Religious buildings in cities are also among these works. Work has been carried out by the teams of the General Directorate of Foundations to complete the revival of these works, restore them and put them at the service of citizens. Intensive work has been carried out on historical monuments such as Habibi Neccar, Hatay Ulu Mosque, Adiyaman Ulu Mosque, Kahramanmaraş Ulu Mosque, Malatya Yeni Mosque, Antakya Greek Orthodox Church and other churches, foundation bazaars, fountains and mausoleums, which are other foundation works.



Figure 1- Destruction in Habibi Neccar Mosque <sup>1</sup>

Teams examined ruined works such as Habibi Neccar Mosque, one of the first known mosques of Anatolia, and created three-dimensional models of historical buildings. The studies carried out were mostly called photogrammetry and lidar, a working principle generally carried out by survey engineers. Firstly, three-dimensional imaging of the surrounding buildings and the most important structure was made using a laser scanner. It is aimed to carry out damage assessment studies with the product to be created by looking at these. Likewise, with the images taken by the photogrammetric method with the drone, the photographs go through the necessary stages; Afterwards, the necessary model of the building was produced and damage assessment studies were carried out. Within the scope of the project, studies were carried out to keep a digital record of the works.

Antakya Greek Orthodox Church is an important registered asset and contained many liturgical works, especially icons. The teams safely removed these materials from the area and made an inventory, and then the works were returned to the church's foundation representatives.

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<sup>1</sup> <https://www.gazeteduvar.com.tr/hatayda-hasar-goren-tarihi-yapilara-uc-boyutlu-modelleme-galeri-1604664?p=2>



Figure 2- Icon work recovered from the earthquake debris of Antakya Greek Orthodox Church



Figure 3- Rare artifacts recovered from the earthquake debris of Antakya Greek Orthodox Church <sup>2</sup>  
([www.aa.com.tr](http://www.aa.com.tr))

Teams affiliated with the General Directorate of Cultural Heritage and Museums removed 288 artifacts from many historical and cultural buildings destroyed in the earthquake through debris archeology studies. Artifacts such as inscriptions, coins, icons, oil lamps, Ottoman coats of arms and crosses, 265 of which were recovered in Hatay and 23 in other provinces, were taken under protection in museums and excavation houses.

## Disaster Area Excavation Directorate For Cultural Assets

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<sup>2</sup> <https://www.aa.com.tr/tr/asrin-felaketi/depremde-yikilan-kilisenin-enkazindan-cok-sayida-ikona-ve-incil-cikarildi/2847066>

The Ministry of Culture and Tourism of Türkiye carried out studies on the detection of damage to cultural assets in 11 provinces that were seriously damaged in the earthquake. After the disaster, they started a rapid work, and the Disaster Area Excavation Directorate was established to save the valuable cultural assets in the wreckage of the buildings registered as cultural heritage.

A team of 502 people affiliated with the General Directorate of Cultural Heritage and Museums within the Ministry continued its detection efforts intensively. A separate team consisting of 38 teams and 77 people affiliated with the General Directorate of Foundations also made determinations regarding the foundation properties. Within the scope of the field work, protection signs were installed to ensure the separation of all registered cultural assets from other structures, regardless of whether their ownership is public or private, and protection tapes were installed in accessible areas.

In the provinces where many historical and cultural buildings were damaged in this earthquake disaster, valuable cultural assets that could be saved in the rubble of registered buildings were protected by the quickly established Disaster Area Excavation Directorate. Later, as the debris blocked the roads at some points, the debris was pulled back in a controlled manner to open the roads, and protection signs were hung. Since there are building materials in these wrecks that can be used in reconstruction and restoration later, operations such as saving them and moving them to healthy environments were carried out. In addition, portable cultural assets recovered from the wrecks are also protected.

While carrying out work on the rescue of registered assets that need to be saved as a priority, a rapid restoration and reconstruction of registered buildings is planned, as well as the removal of correct, historical and cultural rubble from the wreckage.

The artifacts, which were identified, classified, cleaned and documented in the wreckage, were transferred to museums and temporary excavation house warehouses by keeping inventory records. As of March 21, 2023, preliminary preparation, exploration and sorting of artifacts from the debris were carried out on a total of 63 registered properties, including 23 mosques, 8 masjids, 3 churches, 3 baths, 3 public buildings, 5 tombs and 8 fountains, and 10 residences, in Hatay. . 21 inscriptions, 18 liturgical materials, 13 icons, 7 decorated architectural pieces, 6 ceramics, 2 oil lamps, 1 Ottoman coat of arms, 1 metal cross, 7 manuscript holy books, 185 religious books, 2 door knockers and 1 wooden door leaf. A total of 265 artifacts, including coins, were removed from the debris and taken under protection.

During the wreck archeology studies, 23 artifacts were rescued from the wreckage in other provinces other than Hatay. A total of 7 pieces, including 3 building inscriptions, 2 tombstone inscriptions, and 2 lotus palmette motif reliefs, were rescued in Malatya and delivered to the Malatya Museum. 15



pieces, including the Castle inscription and architectural pieces, were rescued from the destroyed Gaziantep Castle in Gaziantep. One coin was among the artifacts recovered in Adiyaman. Our disaster area excavation teams continued their debris archeology work together with AFAD, ICOMOS and other stakeholders in the cities in the earthquake zone. During the ongoing identification, classification and documentation efforts in provinces other than Hatay, many artifacts such as castle inscriptions, decorated architectural elements and other movable cultural assets were rescued. The teams continued their detection and rescue efforts in the Diyarbakır walls and Gaziantep Castle. Restoration work has started for the collapsed column of the Karakuş Tumulus in Adiyaman. Debris archeology was carried out in all places known to contain artifacts in the region. "These were both documented and protected in museums, and were intervened quickly to prevent any smuggling".<sup>3</sup>

### Rehabilitation Works Carried Out In Museums

The artifacts found in various museums in Hatay were collected in the Archaeological Museum with the help of restorers and archaeologists. The works were safely taken from the display cases and transported. In the Hatay museum, restorers and museum experts collected the works and moved them to a safe area to prevent any damage to the artifacts. Expert teams also restored some of the works in the tents set up in the garden of the museum. 210 mosaic panels of 3,500 square meters and 555 works from other museums have been preserved in the Hatay Archeology Museum. 3 thousand 763 artifacts in the museum showcase were also collected and secured in the laboratory.

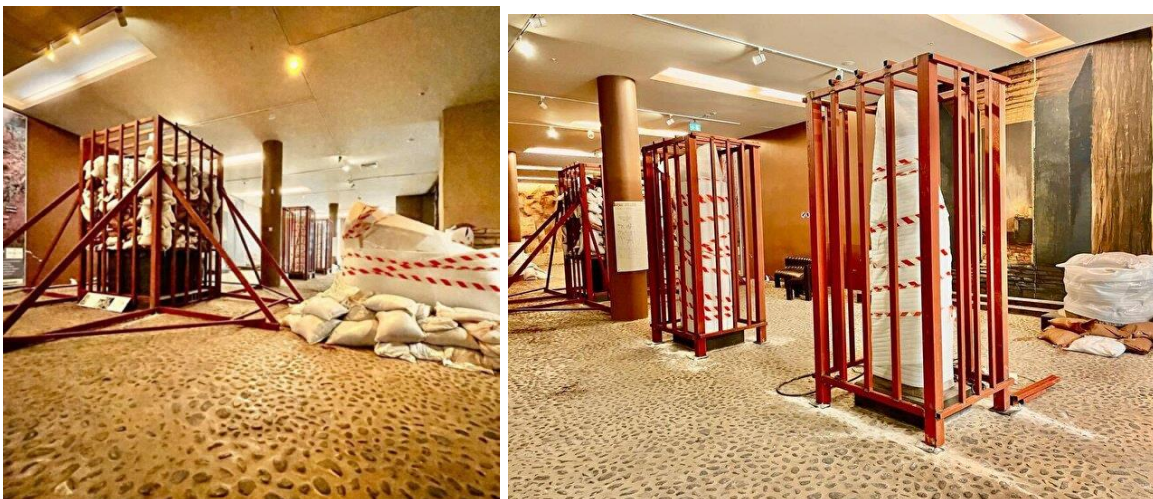


Figure 4- Preventive protection measures taken in Hatay Museum

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<sup>3</sup> <https://www.dha.com.tr/foto-galeri/enkaz-arkeolojisiyle-288-eser-kurtarildi-2225474/19>

The 1.5 ton statue of the Hittite king Suppiluliuma, the Arsuz stela, the Antakya sarcophagus, mosaics and the like in the Hatay Archaeological Museum, which were partially damaged in the earthquake, are protected in steel cages in which sacks filled with pozzolana are placed, which serve as light pillows.

## Protection Measures For Debris

Disaster Excavation Directorate was established by the General Directorate of Cultural Heritage and Museums in the provinces where the earthquake occurred, and expert teams carried out excavations in demolished registered buildings. The main reason for these works is to save the artifacts that can be salvaged, then move the rubble, called cultural rubble, to separate places, separate the architectural building elements to be used in the restoration and construction process, and then start the restoration.

The following statements were included in a protection banner hung in a mosque: "Ownership of the building belongs to the General Directorate of Foundations. Unauthorized entry and interference with building elements is strictly prohibited. In accordance with Law No. 2863, legal action will be taken against persons or institutions that act contrary to cultural property registered as antiquities."



Figure 5- Damaged cultural property sign (Architect Birsen Parlar archive)

On the sign hung by the Ministry of Culture and Tourism in the Kahramanmaraş Grand Bazaar: "It is a registered cultural asset. It is stated that "no intervention can be made without permission."



Figure 6- Damaged cultural property sign (Architect Birsen Parlar archive)

## **Ngo Works**

Following the oral discussions held with the Ministry of Culture and Tourism and the Ministry of Environment, Urbanization and Climate Change on 31 March 2023, it was published as a joint opinion of 29 non-governmental organizations (associations, foundations and initiatives), including scientific expertise organizations, on 1 April 2023 and the relevant The text, which was also sent to the Ministry of Culture and Tourism and the Ministry of Environment, Urbanization and Climate Change, drew attention to the following issues in outline:

- Maps showing the locations and boundaries of protected areas and registered or unregistered cultural heritage structures should be urgently forwarded to the relevant institutions and organizations in order to form the basis for post-earthquake interventions; Necessary markings regarding these should be made on site.
- Detection, evaluation and debris removal work in these areas must be carried out with great sensitivity, with the owner of the debris informed, and under expert supervision; Heavy machinery should not be allowed into these areas.
- Detailed documentation with photographs must be made before debris removal.
- Building materials of destroyed and largely damaged cultural assets are valuable objects that can be used in repair and restoration works and bear traces of destroyed structures. For this reason, in case the remains of cultural assets disrupt transportation or pose a danger to the environment, they should first be collected and stacked within the parcel, and not moved to another place; In cases where it is necessary to move it to another place, it should be separated from other rubble (in a separate area and classified separately on the basis of building and building block as much as possible) and stored; It is important to keep the existing dangerous structures and building ruins in place by suspending them as much as possible, instead of demolishing them, in order to preserve the originality of the settlements.
- These recommendations should be urgently included in debris removal efforts.

## **Conclusion**

Risk reduction plans and emergency plans to be prepared for museums, libraries, archive buildings and protected areas should be both employee and visitor focused, as well as building and collection focused. For this purpose, plans to be prepared with a proactive approach should aim to minimize or completely eliminate possible losses of life and property. Scenario studies should be prepared according to the worst possible situation, and emergency teams should be formed, equipped and trained accordingly.



In case of large-scale earthquakes, advance planning should be made for the evacuation and inventory of artifacts. Electronic inventory systems should be prepared for disaster excavation directorates. Cooperation should be made with national and international organizations.

The protection of cultural assets that serve as a bridge from the past to the future is an important duty for all individuals and organizations. Because, after a possible disaster or deterioration, irreparable damage may occur to the objects. Diagnosis to prevent these damages is the most important step in terms of structure and object health.

DOCUMENTATION WORKS for the restoration of the work in cases of possible risk, emergency or disaster are examined IN ACCORDANCE WITH A STANDARD, and Conservation Practices and Applications are established within the Library, Archive and Museum (LAM) institutions, Restoration and Conservation Regional Laboratories, Special Provincial Administrations, Metropolitan Municipalities and municipalities permitted by the Ministry. To bring a MODEL SUGGESTION to PROTECTION-FOCUSED ORGANIZATIONS such as Audit Bureaus (KUDEB).

Documentation studies are of great importance in times of crisis such as emergencies and disasters. Such methods are called NDT (non-destructive methods). Non-destructive techniques are a type of inspection performed without damaging the integrity of the material or part to be examined. These are possible with measuring instruments and sensors as well as imaging techniques.

Documentation is a holistic and long process: a broad set of activities that include research, examination, observation, elaboration, description, obtaining terminological information and other data.

1- Guides and publications containing the results obtained from disaster debris archeology studies are used in the documentation of damaged cultural heritage artifacts in disaster areas;

2-Visual and inventory information in the preliminary documentation of stolen works and collections; ensuring,

3-Contribution to the cultural heritage practices of official institutions,

4- It is thought that it will contribute to "preventive protection" studies by ensuring the formation of the Information System including Inventory and Documentation Systems.

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