CONSERVATION AIMED EVALUATION OF THE BATH RUIN IN GÜLBAHÇE, URLA, İZMİR

A Thesis Submitted to
The Graduate School of Engineering and Sciences of
İzmir Institute of Technology
In Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE

in Architectural Restoration

by
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March 2021
IZMIR

ACKNOWLEDGEMENTS

I would like to express gratitude towards my dear thesis advisor, Prof. Dr. Mine HAMAMCIOĞLU TURAN thank you for scientific support and guidance.

This thesis wouldn't be complete without her moral and technical support. Besides, I would like to present my endless gratitude and respect to the members of the jury. I dedicate this thesis to my lovely family and I am very thankful for their love, support and patience during my studies. Special thanks to my friends for their supports. Especially Pınar Yüksel, for her incredible support and patience during the completion of this thesis.

ABSTRACT

This study takes into consideration a historic geothermal spring bath house on the coast of Gülbahçe bay in Urla, İzmir. The aim is to identify its cultural asset values and architectural conservation problems. Gülbahçe thermal spring bath house is a historic monument that has preserved its bathing function for health purpose. It is part of the geothermal spring bath group in Urla-Seferihisar region, which is famous with its geothermal sources. The modest structure has preserved its authentic characteristics such as rubbles tone masonry walls exposed without plastering and dimly lighted bathing space circumscribing a pool. Its rubble stone and cement mortar vault reflect the repair attitude of the early Republican era. The monument integrates with its natural setting in between a Mediterranean coated mount and the coast. So, the methodology includes tachometric documentation of the bath house, its visual analysis, historical research and archive research, identification of similar bath houses in Urla-Seferihisar region, comparative study with these similar bath houses, evaluation of the cultural asset values and conservation problems, and proposal for restoration of the bath house.it represents the thermal bathing tradition in the geothermal region of Urla-Seferihisar together with the other baths in Cumalı, Karakoç, Kelalan and Ilıksu.

Being positioned within the campus area of İzmir Institute of Technology gives privilege to the monument in terms of its restoration possibility. It will be first scientifically restored thermal spring bath house in its region. As a result, this study carries importance in terms of understanding of the Gülbahçe geothermal spring bath house, and illuminate the way for future studies on vernacular Anatolian bath houses.

ÖZET

İZMİR, URLA, GÜLBAHÇE'DEKİ HAMAM KALINTISININ KORUMA AMAÇLI DEĞERLENDİRİLMESİ

Bu çalışmada İzmir, Urla'da Gülbahçe körfezinin kıyısındaki tarihi jeotermal kaplıca yapısı ele alınmıştır. Amaç, kaplıcanın miras değerini ve mimari koruma sorunlarını ortaya koymaktır. Hamamın takometrik belgelemesi, görsel analizi, tarihsel araştırması ve arşiv araştırması yapılmıştır. Urla-Seferihisar bölgesindeki benzer kaplıcaları da geleneksel tekniklerle belgelenerek yapıyla kıyaslanmıştır. Gülbahçe kaplıcası, sağlık amaçlı yıkanma işlevini korumuş tarihi bir anıttır. Fay hatlarının yer aldığı Urla-Seferihisar bölgesi jeotermal kaynaklarca da zengindir. Bununla ilişkili olarak, bölgede, mütevazi ölçekte, geleneksel mimari özelliklerle kaplıca yapıları inşa edilmiştir. İncelenen örnek söz konusu yapı grubunun özgün bir temsilcisidir. Çarpan körfezi kıyısındaki sulak alan ve doğal Akdeniz peyzajının yanı sıra, tarihi kervan yolu ve köprü izleri kültürel peyzajın elemanlarıdır. Denizle kayalık tepe arasına sıkışmış bir şekilde konumlanan yapı kısmen ana kayaya oturmaktadır. Dış cepheleri sıvasız bırakılmış moloz taş yığma duvarlar, pınarın içine dolduğu havuzu ve çevresindeki sekileri kuşatmaktadır. Kapı ve tek bir ışıklıkla aydınlanan yıkanma alanı loştur. Üst örtüyü oluşturan beşik tonozdaki kalıp izleri, yirminci yüzyıl başında çimento harçla moloz taşların birlikte kullanımı ile gerçekleşmiş bir onarıma işaret eder. Gülbahçe jeotermal kaplıcasının temel koruma sorunu denize bitişik duvarının bütünlüğünü yitirmiş olmasıdır. Konsolidasyon sonrasında yapının düzenli bakımı yapılmalıdır.

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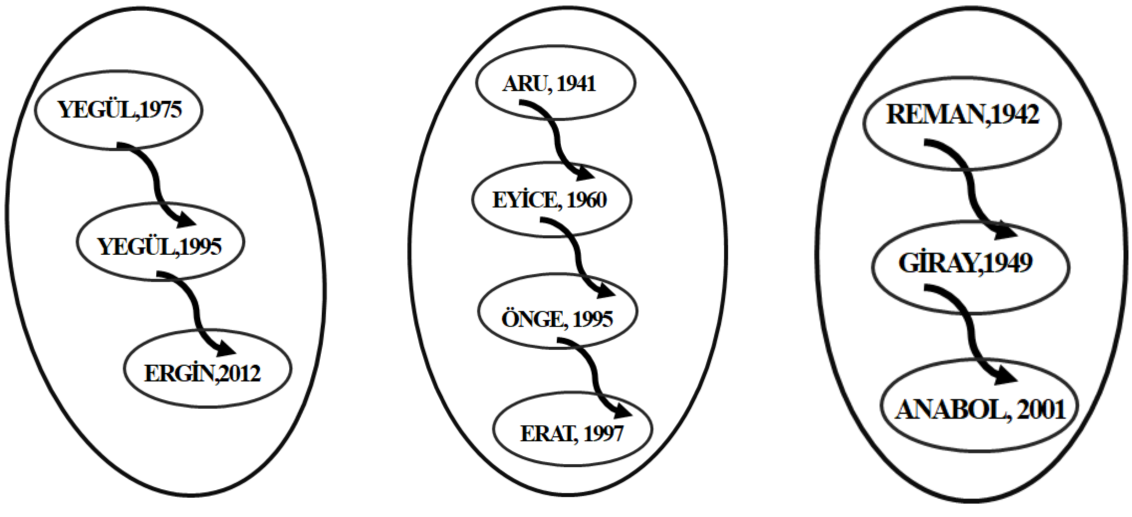
CHAPTER 1

INTRODUCTION

This study makes a conservation aimed evaluation of the geothermal spring bath house in Gülbahçe, Urla, İzmir. The studied region is rich in geothermal sources. The case study bath is an end-product of this natural formation. The monument envelopes the geothermal water springing up the rocks at the coast of Çarpan gulf in Gülbahçe bay. The modest structure is a representative of the local architecture with its rubble stone walls exposed without plastering. It has not been maintained regularly; so, it is in poor state of conservation.

There are plenty of studies on the historic baths in Anatolia (Figure 1). Yegül (1975; 1995) is the primary source for antique baths of Anatolia. Ergin (2012: 41, 67-79, 264, 271) identifies the bathing culture during Eastern Roman and Early Turkish periods. Aru (1941: 31) decribes Turkish baths. Erat (1997: 29) focusses on the characteristics of Anatolian baths in Emirate period. Eyice (1960: 99-120) provides a classification for the historic baths of Anatolia during Classical Ottoman period (Figure 1.1).



Baths in Antiquity | Baths in Turkish Period | Geothermal Spring Baths

Figure 1.1. Previous studies on historic baths in Anatolia
(Source: Çağlıyurt, 2021)

However, there is limited information on baths built in relation with geothermal spring water. Reman (1942) considers the geothermal springs of Anatolia from the view point of human health. He provides an inventory. Giray (1949) considers the geothermal baths in Yalova from the view point of therapy. Anabol (2001: 26) identifies the Roman thermal baths in Anatolia. Önge (1995: 273, 279-288) describes the geothermal baths in Anatolian *Selçuk* period.

There are a number of studies dealing with historic baths in Urla-Seferihisar region. Majority of them are within the limits of the discipline of architectural restoration: Tümöz, 1987; Çizer and Hamamcıoğlu-Turan, 2003: 108-113 and 2004: 88-377; Çizer, 2004; Uğurlu, 2005; Hamamcıoğlu-Turan and Reyhan, 2005: 10-24; Reyhan, 2004 and 2011; Çıtak, 2010; Çıtak and Hamamcıoğlu-Turan, 2011: 167-177; Acar, 2012: 129-153; Balta, et all., 2013: 79 and Alp, 2016. Therefore, there is a detailed documentation of the historic baths that heat their own water in Urla-Seferihisar region. Bayrakal evaluates the baths in Urla from the view point of art history.

The studies on baths benefiting from geothermal springs in the Urla-Seferihisar region (Figure 1.2) are relatively less in number and limited in content, compared to those on baths heating their own water. The geographer Pausanias who lived in the second century AD had mentioned that the region, especially the vicinity of the antique cities of Lebedos, Teos, Eryhrai and Clazomenai; is rich in small geothermal spring baths carved into the rocks by the coast. He underlined the presence of pools in them (Pausanias, 1918; 5, 10-13; Meriç, 1986: 302). Meriç (1986: 301-310 and 1989: 362-366) has carried out geo-prospection in the region with an eye on the geothermal bath ruins of the antiquity. Bayrakal (2009: 73-79) has provided a brief description of Gülbahçe Bath House from the point of view of art history. He dated the monument to the 18-19th.century taking into consideration the semi-circular arch of its door. IYTE (2019) presents the restoration project of Gülbahçe Geothermal Bath House.

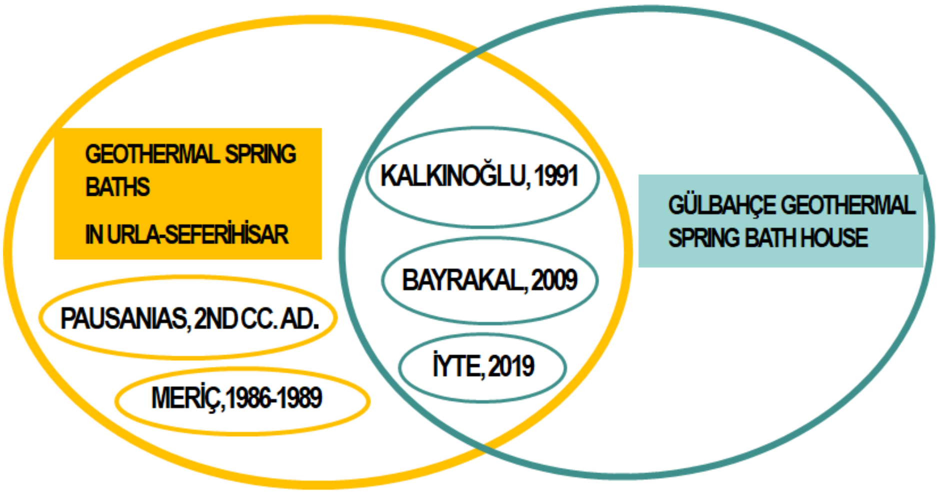


Figure 1.2. Studies on geothermal spring bath houses in Urla-Seferihisar region (Source: Çağlıyurt, 2021)

This study focusses on conservation issues of the Geothermal Spring Bath House in Gülbahçe village of Urla. Today, the historic monument is within the campus of İzmir Institute of Technology (RT, 2012). It is in block 391 and lot 11 (Title Deed-Cadaster, 2020). The former lot number was 652. The monument was listed as the first group structure with the decision of İzmir Number 1 Regional Board for Conservation of Cultural Assets numbered 3814 and dated 06.11.2015 (Appendix A.1). First group structures must be conserved with their historic, symbolic, memorial and aesthetic characteristics, defining the material history of their community (RT, 1999). The bath is also situated within the protection zone of geothermal site of Gülbahçe (Izmir Governorship, 2019). The restoration project of the bath was approved by the Regional Conservation Board with the decision numbered 9642 and dated 29.08.2019 (Appendix A.2). The bidding process has been continuing.

1.1. Aim and Content

The aim of this study is to document the geothermal spring bath house in Gülbahçe, evaluate its cultural asset values and discuss its conservation problems. The thesis consists of seven chapters. Chapter 1 reviews the literature on thermal spring bath houses, and presents the aim, method, and content of the study. Chapter 2 concentrates on the historical and geographical background of the Gülbahçe thermal bath house. The focus of chapter 3 is understanding the bath house at architectural scale. Chapter 4 presents the other geothermal spring bath houses in Urla-Seferihisar region. Chapter 5 includes the restitution proposed for the case study spring bath. Chapter 6 comprehends the evaluation of the cultural asset values of the bath and conservation problems. A restoration scheme is proposed. The last chapter includes the conclusive remarks regarding the conservation of Gülbahçe geothermal spring bath house.

1.2. Method

The site survey was carried out with conventional techniques of the discipline of architectural restoration. The site survey includes sketching, conventional and tachometric measurements, and photographic documentation. Sketching was the primary documentation method. In the measure phase, both conventional and tachometric methods were employed. The hypothetical zero lines passing through different heights were determined in the traditional method. The construction drawings were rescaled by indirectly measuring the building elements' dimensions (via hands or a stick). The tachometric method was used in sections that are difficult to measure with the conventional method, such as measuring a site plan or vault. The tool of tachometric measurements was Zeiss Rec Elta RL-S brand electronic theodolite. The survey drawings were drafted in AutoCAD 2017. With modelling programs, it was aimed to support two-dimensional conventional drawings. The modelling programs used were Sketch up and Rhino 3D. For the renders, Lumion 3D Rendering program was used. The building and its architectural elements were documented in detail by photographs both from inside and outside. The camera was Nikon D80 DSLR.

This was followed by archive and historical research. Literature reviewed to gather information on geographic and historic background of the case study. RT Directorate of State Archives, Municipality, Conservation Council and IYTE Archives were searched. Comparative study was made in three steps. Similar geothermal spring bath houses in the region were survey with conventional techniques.

The synthesis of this information gave way to identification of the Gülbahçe Geothermal Spring Bath House. The related geographic and historic characteristics, and physical were analyzed. In the physical analysis, mapping technique was used. Three themes were considered: Morphology Analysis, Construction Technique and Material Usage Analysis, Structural Failures and Material Deterioration Analysis (Appendix C).

In the planning of the restitution, first the study made within the limits of the restoration project of İYTE was evaluated (Appendix D). This study was taken as the basis of restitution. The restitution sources in this set were enriched with information coming from comparative study with similar geothermal bath houses in Urla-Seferihisar region. The comparative examples were surveyed with conventional techniques. Most of the bathing units were surveyed from their exteriors and interiors. Width and length measurements of the building elements were taken with laser meter and steel tape to draft the sketches. However, a few could not be entered since they were locked (Case C in Cumalı). So, only exterior survey was realized. As a result, the remains in the Gülbahçe thermal bath house, the information gathered in similar geothermal spring baths in Urla-Seferihisar region, information coming from literature and archive research and architectural necessity were the sources utilized in the restitution. The reliability degrees were defined: the first degree is traces coming from building itself; the second-degree reliability is comparative study with other buildings; and the last one is the architectural necessity.

This was followed by evaluation of cultural asset values and conservation problems. Finally, the conservation approach was formulated. The decisions on interventions, restoration proposal and management plan were prepared. The intervention decisions were illustrated each shown on the measured drawings. The restoration proposal was prepared as a separate set with conventional drawings and a three dimensional model.

CHAPTER 2

GEOGRAPHICAL AND HISTORICAL CHARACTERISTICS

2.1. Site Characteristics

The case study is in the borders of Gülbahçe village of Urla province of the metropolitan city of İzmir. Urla is at the west of İzmir, 35 km in distance to the city center (Figure 2.1).

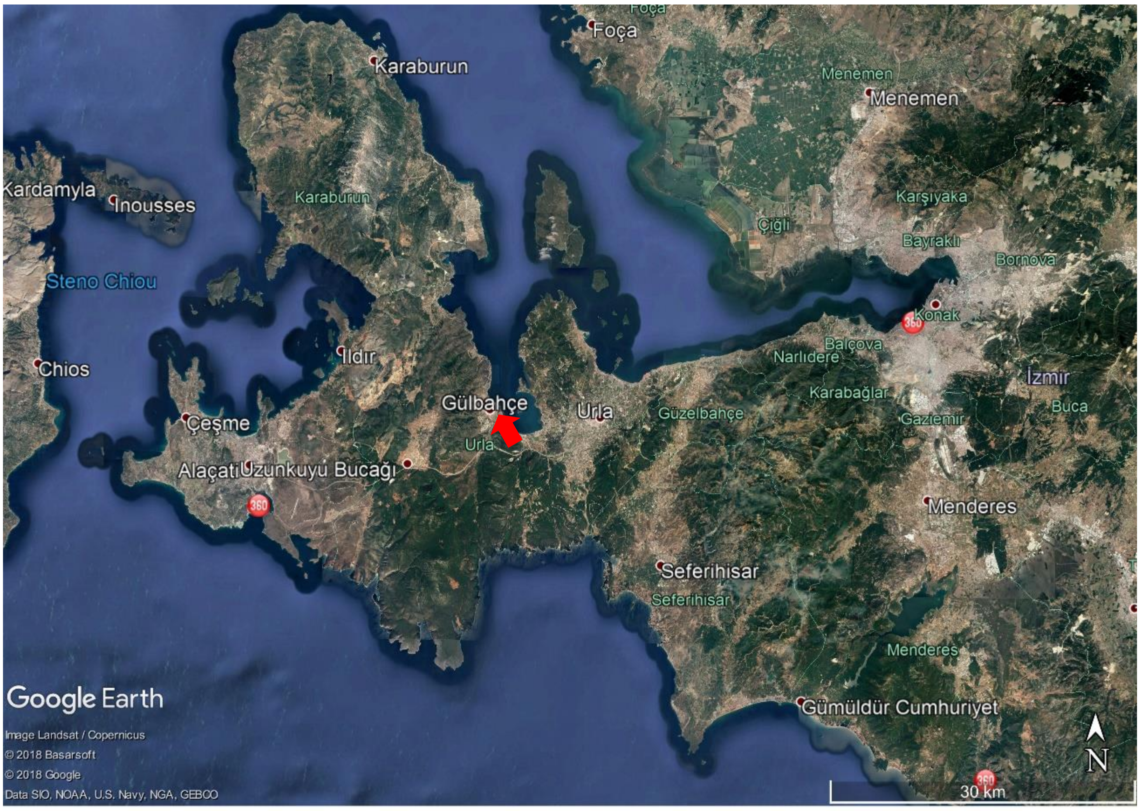


Figure 2.1. Urla Peninsula and its sub provinces

(Source: Google Earth, 2020)

Gülbahçe village's coordinates are 38°19'55''N and 26°38'40''E. The village was declared as second degree natural site with the decision of İzmir Number 1

Regional Conservation Council of Cultural Assets, numbered 7739, dated 11/02/1999. (Figure 2.1) (İzmir Governship, 2012).

Urla peninsula divides Aegean Sea into north and south parts and provides protection for the bay of Izmir. The total area of the peninsula is 1420 km^{2}. and its coordinates are between 26º13’49’’-26º55’47’’latitude and 38º40’48’’-38º06’10’’ longitude (İZKA 2013). The Gülbahçe gulf is part of Gediz Graben and general geographical characteristic of the peninsula is horst-graben structure (Figure 2.2) (Pekçetinöz, 2007: 413).

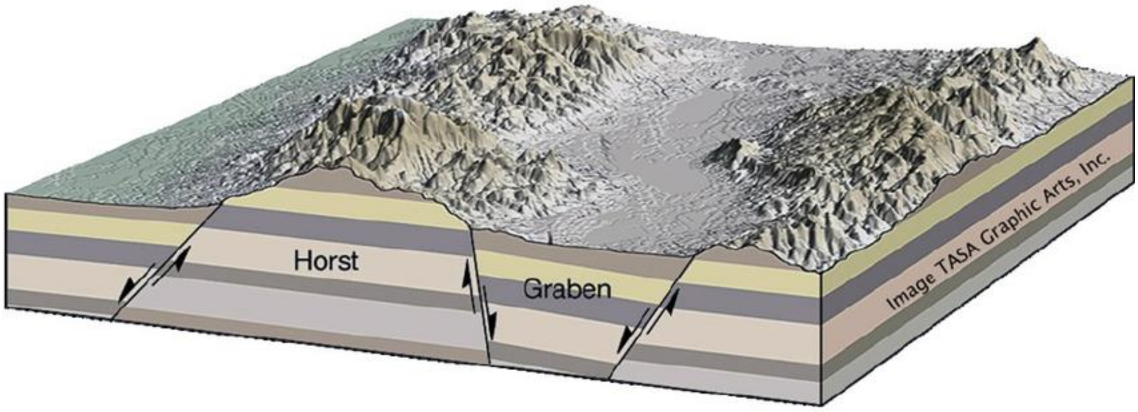


Figure 2.2. Horst-Graben Scheme

(Source: Wood, 2015: 5)

The coastline of peninsula is characterized with lowland. When moved away from the sea, hills separated with lowlands in between them are seen. There are underground water sources that are drinkable in Çeşme and Gülbahçe region. Gülbahçe village is on tectonic land (Tarcan 1988: 94). And the studied bath is located on the graben part of the wetland by Çarpan Gulf. Defining this region as a graben After geographical formation. The area is like a basin earth because of earth formation relevant with tectonic movements on this region (Figure2.2).

In addition; Gülbahçe village has potable natural water resources. The public fountains of the village are still actively used by the villagers. The quality of natural spring water of Gülbahçe is very good and its ph level is proper for daily consumption (Mater,1982: 48).

According to Kandilli Observatory and Earthquake Research Institute's archives, two destructive earthquakes were recorded in the Urla Peninsula at the end of the 19th century. Among them, the first earthquake occurred on the 3rd of April, 1881 on Sakız-Çeşme fault line. The second one was about two years later, on 15th of October, 1883, in the Çeşme-Urla periphery. The official records in the Ottoman period described them as the most damaging disaster in the region (State Archive, 2021). It caused many buildings to collapse and death of many people (Satılmış, 2012: 510). The villages of Urla were affected more than the center. The latest significant earthquake in the region occurred with a magnitude of 6.6 in Seferihisar on 30th October 2020. After this earthquake, two new geothermal springs were observed in Gülbahçe, close to the seaside (DHA Press, 2020)

2.2. Historical Background

Before starting to evaluate the case study; the Urla region's history might be guiding to figure out.

2.2.1. History of the Urla Region

The history of the region dates back to prehistoric times, circa 4000 BC. In Limantepe, which comprehends the earliest ruins from antiquity in the region, there are remains from the Chalcolithic to the Roman period (Erkanal, 2010: 220). As the archeological excavations indicate, Limantepe was famous with overseas trade. At the Early Bronze Age Period, the Limantepe port became a focal point for the Anatolian trade network. (Figure 2.3) (Şahoğlu, 2005: 339) Both Limantepe and Baklatepe settlements, which was located in the North of Izmir bay, were important port cities of the antiquity. These port cities acted as a bridge between the land and sea trade (Izka, 2013: 51; Şahoğlu, 2015: 340) Limantepe port maintained its commercial significance between the third millenium and fourth century BC (Erkanal, 2010: 220).

Figure 2.3. The port ruins of Clazomenai

(Source: İzmir Metropolitan Municipality 2012)

The twelve Ionian cities located on the western coast of Anatolia had united at the beginning of the third millennium (İzmir Kent Ansiklopedisi, 2006:21-26, Mansel, 1984:91 cited in Akyıldız, 1988:29). Clazomenai was one of the twelve Ionian city-states, whose remains are located in Urla's Pier today. The region was known as Mimas peninsula (Izka, 2013:51). The current settlement of Urla on the hill skirts at the south of Clazomenai, which dates to 546 BC (Baykara, 1974: 71 cited in Akyıldız, 1988:44), is approximately 5 km to the coast. The case study geothermal spring bath house is located in Clazomenai, but close to the border between Clazomenai and Erythrai, which is another Ionian city. The boundaries of Erythrai extended to Güzelbahçe gulf (Figure 2.4) (Koparal, 2010: 340).


Figure 2.4. Mesopotamia Trade Network in the Region

(Source: Şahoğlu, 2005)

The commercial developments in Clazomenai date back to the peace provided by the treaty signed with Lydia. In the 6th century, the Lydian King Alyatte attacked Clazomenai, but he could not cope with the strong defense. A peace treaty was signed and the peace continued until the Persian occupation in 546 BC (Texier, 2002: 247). Due to this occupation, the Clazomenai citizens are forced to migrate to Ambrioulla, known today as Quarantine Island (Heredot, 142:170 as cited in Akyıldız 1988: 34). After that, Alexander the Great, took control of the city. In 334 BC, he built a 400 m long road between the island and the mainland (Texier, 2002: 249).

The Seleucid Empire and then the Kingdom of Pergamon took the dominance of Clazomenai after Alexander the Great. The city was handed over to Rome Empire as a testament. Clazomenai gained its independence in 188 BC. Later, the Roman Empire split into Western and Eastern Roman Empires. Constantine adopted Christianity as the official religion of the state in 306 AD. In this period, Smyrna and the surroundings' status have been transformed into a notable religious center of East Roman Empire. Clazomenai became a significant place of worship (Milioris, 2002: 92; İzmir Governorship, 2012: 590).

In the 11th century, The Turkish tribes' invasion expanded to Anatolia. This expansion resulted in Smyrna's conquering in 1076. Among those tribes, Çaka Bey conquered Urla as a result of naval expeditions to the Aegean coast. In 1098, Urla became Byzantine land once again (İzmir Governorship, 2012: 587). In 1317, Turks re-conquered İzmir.

After the Turkish hegemony in the 13th century, the bazaar in Urla, which was urla center 5 km to the coast, was integrated with the historic caravan route.Urla developed rapidly as a village with a Friday bazaar and a mosque; and gained the characteristics of a town (Baykara, 1991: 17). Starting with the 14th century, Urla and its environs became very active as a commercial region.

Evliya Çelebi visiting Urla in the 16th century pointed out that Urla and its environment were one of the richest trade places in the peninsula Çeşme harbour was the largest port of the peninsula with its foreign trade capacity in the 16th century. The island of Chios across Çeşme was under the control of the Genoeses. The commercial products accumulating in the island were imported from the Çeşme harbor, and transported to Istanbul and inner Anatolia following the above mentioned trade route. Çeşme harbor used to provide goods to Istanbul more than any other harbor in İzmir region (Kütükoğlu, 2010: 196).

However, in the 17th century, İzmir harbor became the most important commercial center of the region (Ülker, 1994: 56).

This was followed by conquest of Urla and Çeşme (Kütükoğlu, 2000: 15). Urla was the focal point for trade until the 16th century. The growing trade rate in Cesme and Izmir Port cause Urla Port to lose its importance.

Commercial activities had been shifted from Urla and Çeşme to İzmir Port in the 17th century. Nevertheless, the significance of Urla harbour re-increased with the increase of *Rum* population as a result of their migration from the Aegean islands in the 19th century (Beyru, 2011: 53). Urla was invaded by the Greeks in between 1919 and 1922 (Izmir Governorship, 2012: 588). The circuits of ships in Urla harbor continued until the 1950s (Marter, 1982: 121).

2.2.2. History of Seferihisar

Seferihisar town of İzmir neighbors Urla at its south. The archaeological sites in the vicinity of Seferihisar are Teos at its south and Lebedos at its very south, which is known as Ürkmez today. These two ancient cities were part of the twelve Ionian cities as well. Teos was founded by the Cretans who were running away from the Achaeans in 2000 BC (Texier, 1865: 13). Lebedos was established as a state by son of the King Kodros Andropompos in the 7th century BC. The citizens of Lebedos were brought here from Ephesus. (Bean, 2001: 130). The city was abandoned in time because its trade was not developed as well between the Ionian cities in terms of trade relations. Since it was surrounded by the cities of Teos and Colophon from the mainland, it could not do opportunity land trade and the port could not develop commercially due to the fact that two strong ports such as Ephesus and Teos remained between itself in maritime trade, which caused the city to be abandoned and emigrated in time.

Lydians, Persians, Athenians and Spartans took the control of the region in between the 7th and 5th centuries BC. Then, it was ruled by Pergamon Kingdom, Macedonians and Romans, respectively (Özzengi,2004 as cited in Karadağ, 2004: 86).

Its history during Byzantine period is not well known since the excavations have not revealed much information (Arıkan, 2004: 2). In 1084, it was captured by the Turkish Emir Çakabey. Seferihisar was ruled by Aydın Emirate starting with 1320. Ottomans conquered the region in 1394 (of İzmir Governorship, 2002: 588).

Sığla (Sığacık) port of Seferihisar was an important pirate shelter in the region during the 15th century. (Arıkan, 2004: 2). In 1521-1522, Süleyman the Magnificent ordered the construction of Sığacık Castle prior to his Rhodes campaign (İzmir Governorship, 2002: 7). By the end of the 16th century, the port gained the characteristics of a custom's area, providing a significant amount of revenue to the Ottoman treasury (Arıkan, 2004: 2). In the end of the 19th century, Seferihisar was known as one of the important agricultural centers with its olive oil factories and grape warehouses. Sığacık port continued its exporting function. The majority of the trade was with the Aegean islands; especially with Chios Island (Bean,1995 as cited in Karadağ, 2004: 86).

The municipality of Seferihisar was founded in 1884 (Merter,1982:117 as cited in Karadağ, 2004: 86). As a result of the western policy supporting the movement of Rums living in the Aegean islands to the Western Anatolia (Merter, 1982: 118), the structure of population in Seferihisar presented a composition of Turks and Rums in half shares by 1919 (Merter,1982:120 as cited in Karadağ, 2004: 86). After the population exchange in 1923, Rums moved to Greece.

2.3. History of Gülbahçe

The village of Gülbahçe is situated at the narrowest portion of Urla peninsula, on its northern coast. Strabo had referred to this narrowest portion as Hypokremnos (Khersonessos). It is composed of planes between the hills extending in north-south direction (Meriç, et all., 2012: 41) (Figure 2.5). At the same time, this area is at the intersection of the Ionian cities Erythrai, Clazomenai and Teos. Strabon mentioned that Alexander the Great organized a feast involving sportive activities and games in the south of Hypokremnos in 334 BC. The historic trade route that used to connect Anatolia with overseas states through the harbors of the mentioned cities passed through Hypokremnos (Meriç et al., 2012: 40) (Figure 2.5).

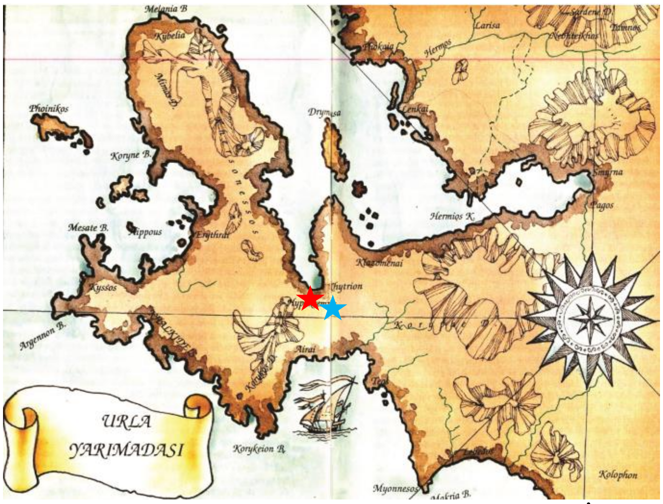


Figure 2.5. Urla peninsula in the Antiquity, Gülbahçe and İçmeler illustrated with a red and blue star, respectively

(Source: Oyarçın, 2014)

In the early Byzantine period, Gülbahçe was a sacred destination for people (Figure 2.6). There was a Basilica with a baptistery (Weber, 1901: 568-573 as cited in Kalkınoğlu, 1990: 71). The Geneoseans had used to come to the region for overseas trade.

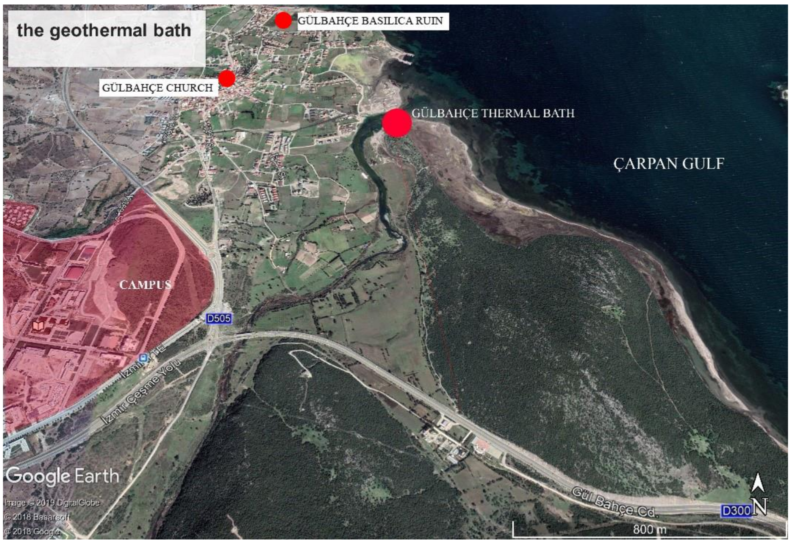


Figure 2.6. Ariel view of Gülbahçe

(Source: Google Earth, 2020)

Starting with the 13th century, the trade route system was controlled by the Turkish tribes (Kütükoğlu, 2000: 15). The series of bridge ruins parallel to the sea shore in İçmeler, which is 5 km at the east of Gülbahçe, give insight about the existence of the historic caravanserai route. İçmeler is a site famous with its potable natural springs. The bridge ruins in İçmeler (Figure 2.7), and the ruins of a bridge and road system at the south of the case study Gülbahçe Geothermal Bath (Figure 2.8) can be evaluated as the remains of this historic caravan route. The historic route connecting Çeşme harbor and Urla Bazaar to Anatolia (Baykara, 1991: 17) was close to the coast and passed by the springs. The presence of a series of geothermal springs along the route was mentioned by Dreux, who visited the region in 1668 (Pınar, 1998). (Figure 2.6).

Figure 2.7. Hypokremnos Viaduct

(Source: Uygun 2013)

Figure 2.8 The bridge ruin (right) at the south of the Gülbahçe Geothermal Bath House (left)

(Source: Çağlıyurt, 2014)

In the early 1800s (State Archive, 1854), a farm was recorded in Gülbahçe. This may be evaluated as a result of the increase in *Rum* population in the peninsula. The farm developed into a village in the end of the 19th century (State Archive, 1883). The remains from the Eastern Roman Empire period, e.g. the 7 AD century church (Weber, 1901 as cited in Kalkınoğlu,1990: 71) and from the late Ottoman period; e.g. the 19th century church (Milioris, 2002: 93; Hamamcıoğlu-Turan, 2005: 843-848); overlap in the same location at the west of the Çarpan gulf (Figure D). The preference of this positioning may be linked with the presence of qualified potable water.

2.4. Geothermal springs and bathing culture

A thermal spring is where geothermal water gushes out or taken out with human intervention, e.g. well drilling (JMO, 2019). Geothermal spring water may have different temperature, and gas and mineral composition in relation with its geography. Thermal water has been used for relaxation and therapeutic purposes since ancient ages (JMO, 2019). *Ilıca*, *çermik*, and *içmeler* are the Turkish words that may be used for a thermal spring. They refer to the warmness of thermal water and its potableness. *Kaplıca* means an enclosure built by or on a natural thermal spring. Therefore, water temperature is related with the proximity of the bath house to its thermal spring: the closer the building, hotter the water. Recent evidence has put forward that the earliest utilization of geothermal springs was in the Indus Valley (Erfurt-Cooper & Cooper, 2009) between 3000 and 1700 BC. In Mesopotamia, Anatolia, Egypt and Europe, ancient civilizations were aware of the healing benefits of thermal sources as well (Alptekin 2009; Taşçıoğlu, 1998: 79). In between 1680 and 1193 BC, the Hittites had used geothermal spring water for recreation and healing purposes (Özgüler and Kasap, 1999:51-67, Erfurt-Cooper, 2010: 2). In 1430 BC, Geothermal spring water would be poured into stone covered pools that were probably used for therapeutic thermal baths at Lipari-Sicily in Italy (Cataldi et all,1999:137-144, Erfurt-Cooper, 2010: 2). In China between 1050-771 BC, the most preferred thermal bath house is Huaqing Hot Spring by many dynasties of Emperors (Schafer,1956:57-82, Erfurt-Cooper, 2010: 2). The pioneer on their time; the Maya Empire was an innovative civilization including Mexico in Yucatan Peninsula, Guatemala, partial Belize and Honduras that lived in the millennium BC. Thus, they used the geothermal water in various ways (Erfurt-Cooper, 2009, Erfurt-Cooper, 2010: 2). At about the same time in Western Europe 1000BC, visiting the geothermal spring sources as a sacred place for healing (Erfurt-Cooper, 2009, Erfurt-

Cooper, 2010: 2). At the 8th century BC in Italy; The people of Pompeii benefitted from the geothermal spring water for heating the building and used at the baths (Erfurt-Cooper, 2009, Erfurt-Cooper, 2010: 2). At the same century in Greece where is the eastern part of Europe, Thermae today called Loutraki was getting re-popular again because of the athletic games (Fytikas, 1999:69-102, Erfurt-Cooper, 2010: 2). At 7th century BC in Greece, by several scholars from classical periods such as Homer, Hippocrates, Plato, Aristoteles, Pliny the Elder, initially being awakened theirs' interest in the geothermal waters (Cataldi et all,1999:137-144, Erfurt-Cooper, 2010: 2). The establishment story is about the city Bath in England, was the King Lear brought his father Bladud to here for curing his illness with thermal water in 863 BC (Erfurt-Cooper, 2009, Erfurt-Cooper, 2010: 2). In between 750-500BC the Etruscans in the north of Rome were using the geothermal spring waters within the hydrothermal activities such as bathing or by-products (Cataldi et all,1999:137-144, Erfurt-Cooper, 2010: 2). In 700BC, one of the oldest and best-known onsen hot springs is Dōgo Onsen in Ehime Prefecture on the island of Shikoku in Japan. it may have been used almost 3000 years ago or it might be from the Jomon and Yayoi periods (JNTO,2009, Erfurt-Cooper, 2010: 2).

Table 2.1. Early users of natural hot and mineral springs (Source: Erfurt-Cooper & Cooper, 2009)

3000-1700 BC Indus Valley, Pakistan
1680-1193 BC Anatolia, Turkey
1430 BC Lipari-Sicily, Italy
1050-771 BC Huaqing, China
1000 BC Mesoamerica
1000 BC Western Europe
8th Century BC Italy
8th Century Loutraki, Greece
7th Century BC Greece

863 BC Bath, England
750 to 500 BC Italy
700 BC Japan

Hippocrates wrote a book on hydrology and climatology in 400 BC (Taşçıoğlu, 1998: 79). He evaluated the importance of water therapy in another book: *De Nature Hominis*. The ancient historian Heredot underlined the importance of balneotherapy in 5th century BC (Kilerci ,2003: 31). Galen of Pergamon was another famous figure who emphasized the importance of geothermal water for curing purpose. In Greek culture, seawater was also used for heath purpose: *thalassotherapy*. With this scope, special places were provided for benefitting from geothermal springs and sea water. Asclepeion means a sanctuary dedicated to Asclepius in Greek culture (Çekirge,1991: 40) Such sanctuaries were used as health and hydrotherapy centers. They used to host patients to be treated from all over the world. The priests of an Asclepeion were doctors at the same time. Asclepeion temples were widespread in Greek mainland, western coasts of Anatolia and Aegean islands during fourth century BC (Alptekin 2009).

Some famous examples of geothermal spring baths of Anatolia during Greek period are Hierapolis in Denizli, Aesculape in Bergama, İzmir; and Agememnon in Balçova, İzmir (Reman, 1942: 42). The site around the geothermal spring was arranged in form of a pool. It is recorded that the bath house on the spring in Hierapolis was a dry masonry structure out of conglomerate stone blocks. It was spanned with a barrel vault, whose one portion is exhibited in Denizli Museum of Archaeology at present (Anabolu,2001.26).

During the Roman period, people believed that deities brought health and treatment with natural thermal water. Therefore, thermal baths for therapeutic and healing purposes had also spiritual connections. For instance, the antique Roman city Bath in England dating to the 1st century AD was famous with its geothermal spring bath. It had gained a great reputation thanks to its healing capability. The geothermal springs are often situated in volcanic land (Erfurt-Cooper, 2010: 2). The thermae of Stabia at Pompeii in Napoli is one of these examples: It is by Vesuvius Volcano (Table

2.1). It is a seaside geothermal spring bath house in the Gulf of Naples dating to 340 BC (Aqua Thermae, 2001; StarNetwork, 2020).

Figure 2.9. The geothermal spring bath in Bath, England (left), the Thermae of Stabia in Naples (right)

(Source: Çağlıyurt, 2010 and 2013, respectively)

An important example of geothermal spring baths of Roman Anatolia was Pergamon-Asclepeion in Bergama, İzmir (Anabolu, 2010: 26). As pointed out in the above, the history of benefitting from the geothermal spring in Pergamon goes back to early Hellenistic era (Radt, 1988: 78; Wulf, 1997: 172; Bilgin,1996: 60). The spring place was connected to the city center with a street. Drinking water from the sacred fountain used to play an important role in the medical treatment (Figure 2.9). The circular plan of the curing section is still preserved. Its dome is assumed to have an oculus at its top. The bathing complex consisted of outer and inner pools (Figure 2.10), a temple, a theatre, a library, a meeting room and underground rooms (Çekirge, 1991: 40). Hierepolis in Denizli, Salavatlı in Sultanhisar and Akaraka in Aydın are other famous geothermal spring baths of Roman Anatolia (Anabolu, 2010: 26).

Figure 2.10. Asclepeion: the Fountain (left), Asclepeion: a Curing Pool (right)

(Source: Hamamcıoğlu Turan, 2013)

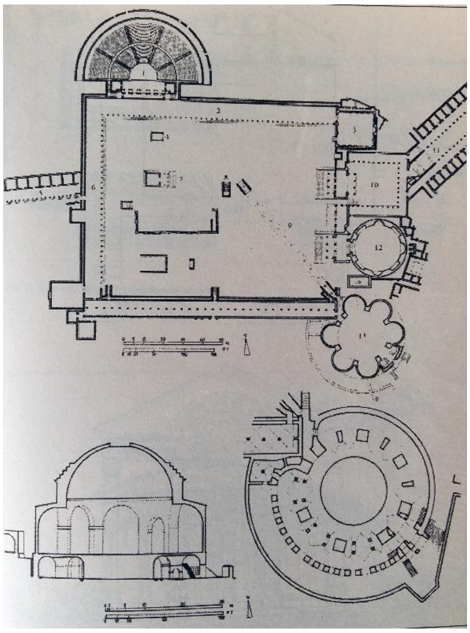


Figure 2.11. The plan scheme of Pergamon-Asclepeion geothermal spring bath complex area

(Source: Anabolu, 2010: 55, drawing: 5)

With the rise of Christianity, the worship places of Pagan deities were abandoned and/or demolished. For example, Asclepion of Pergamon was partially occupied by houses and a church (Foss, 1977: 480-481). Bathing was less experienced (Yegül, 11: 256). Nevertheless, there were some geothermal spring baths built in Byzantine Anatolia: *Kurşunlu Hamamı* in Yalova (Çekirge, 1991: 41) and *Eski Kaplıca* in Bursa (Figure 2.11, 2.12, 4.7 and 2.13), which were built by Christodulos in 1389

(Aru, 1949: 29). *Eski Kaplıca*’s plan has basilical form, referring to the former structure (Aru, 1949: 53).

Figure 2.12. Elevations of *Eski Kaplıca* (*Armutlu Hamamı*), Bursa by Çetintaş.

The South Façade (left) The East Façade (right)

(Source: Ödekan, 2001: 68-69)

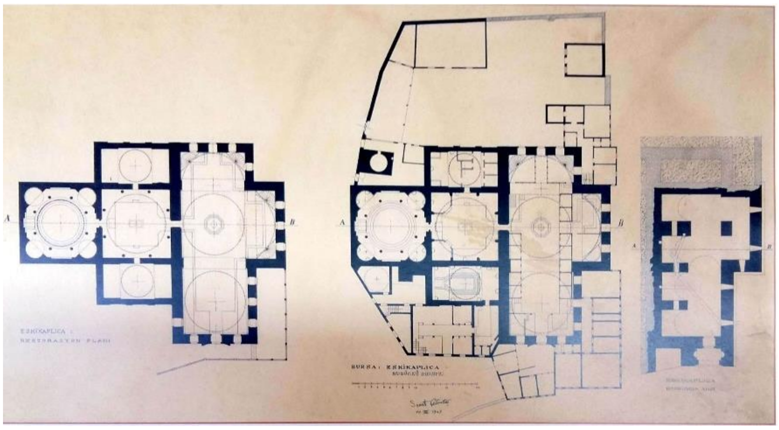


Figure 2.13. The plan drawings of *Eski Kaplıca* (*Armutlu Hamamı*), Bursa by Çetintaş.

The restitution (left), measured survey (right).

(Source: Ödekan, 2001: 70)

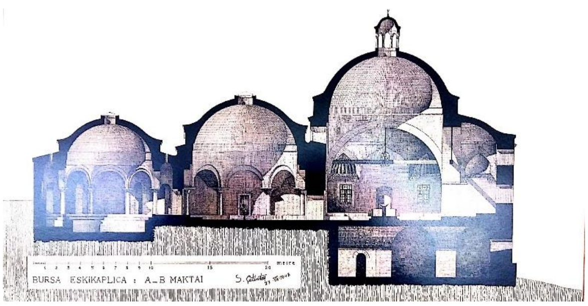


Figure 2.14. The section drawing of *Eski Kaplıca* (*Armutlu Hamamı*),

Bursa by Çetintaş

(Source: Ödekan, 2001: 71)

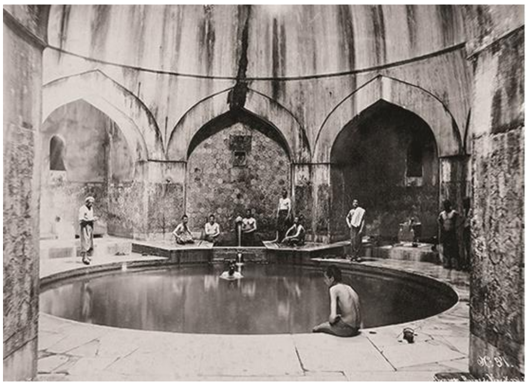


Figure 2.15. An old photograph of the bathing space, *Eski Kaplıca* (*Armutlu Hamamı*), Bursa (Source: Cantay 2019)

Turkish tribes brought both the Middle-Asian routines and Islamic rituals in terms of bathing culture, when they conquered Anatolia. They revitalized the Roman geothermal spring baths in accordance with their cultural habits. These were named as *Sağaltma Hamamı* (Taşçıoğlu, 1998: 80). As the name reveals, geothermal spring baths were used for curing therapy rather than cleaning. It was a necessity to clean the body before entering the pool filled with geothermal spring water (Reman, 1942: 48). Many therapy centers in Anatolia were renovated by Turks: e.g. Yoncalı thermal bath in Kütahya (Reman, 1942: 47), and others in Bursa and Yalova (Önge, 1995: 10). Kılıç Arslan the First ordered the building of a thermal bath house in Kırşehir: *Karadut Kaplıcası* dated 1135. It was flanking a khan (Reman, 1942: 47). It was called *Ilıcahangah,* probably because it used to combine accommodation function with bathing in geothermal spring water (Çekirge, 1991: 41). *Ilgın Kaplıcası* in Konya is another early example (Önge, 1995: 279). It was known as *Abıgerim (Ab-ı Germ*) during the period of Karamanlı Principality. It is also mentioned in Evliya Çelebi's travel notes. The thermal bath house consists of two parts, a male and a female sections (Reman, 1942: 452). *Ilgın Kaplıca* was built on order by Alaeddin Keykubat in 1236 (Ilgın sub-Governorship, 2020). The bath used to comprise of three parts: the changing room, the bathing room where the pool is located and the water tank. The structure was expanded to the north in the period of Sahib Ata: the women's section was provided. Murad the fourth had stayed here on his way to Baghdad expedition and ordered construction of a pavilion. It was repaired a number of times (Reman, 1942: 452; Önge, 1995: 282).

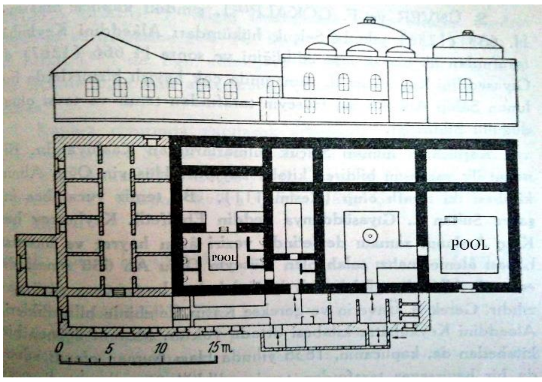


Figure 2.16. *Ilgın Kaplıcası*, Konya.

(Source: Reman, 1942: 451).

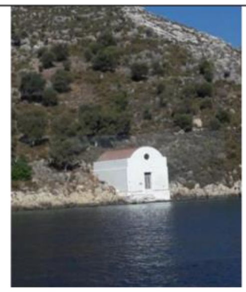
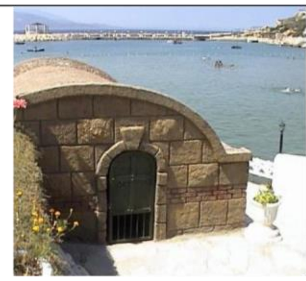
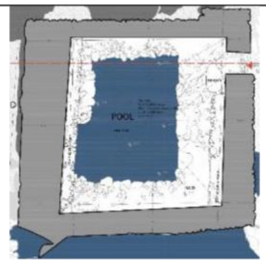
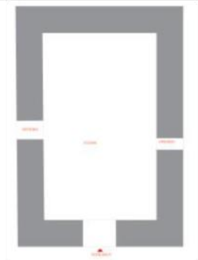
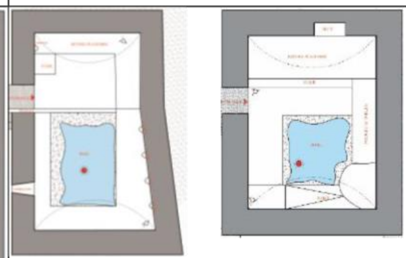
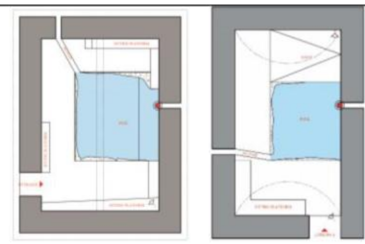
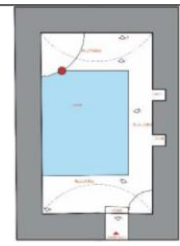
In 1556, *Yeşil Direkli Kaplıca* (*Rudas fürdö*) in Budan was constructed under the supervision of Sinan. The donor was the Ottoman governor of Budan: Sokullu Mustafa Paşa. The monument had a central plan with a pool as its datum element. Its dome with oculi was supported with eight semicircular arches and circular columns (Önge, 1988: 411) (Figure 2.16).

Figure 2.17. *Yeşil Direkli Kaplıca (Rudas fürdö)*, Budan. The section drawing (left) and photograph of the interior (right)

(Source: (Reman,1942:13, Pinterest, 2020)

Value attributed to health increased as a result of scientific developments in Europe (Kilerci, 2003: 57). This gave way to re-appreciation of hydrotherapy centers. They became touristic hot spots in Europe. Karlovy Vary in the Czech Republic and the Széchenyi Thermal Bath in Budapest are two examples. In parallel with this appreciation, Europeans travelling in Anatolia mentioned the geothermal spring baths in their travelogues (Urquhart, 1862; Başoğlan, 2010: 24). Meanwhile, the wealthy families of the Ottoman State were visiting the geothermal spring bath complexes for both vacation and trade purposes. Sultan Abdülhamit had decided to renovate the Yalova Geothermal spring baths (Giray, 1949:20; Başoğlan, 2010: 24).

Table 2.2. Comparative Study

	GÜLBAHÇE	GAZADAKİ	CUMALI	KARAKOÇ	KELALAN	ILIKSU
SITE LAYOUT						
MASS CHARACTER						
PLAN SCHEME						
SUPERSTRUCTURE	BARREL VAULT	BARREL VAULT	BARREL VAULTS	BARREL VAULTS	SLAP ROOF (A) BARREL VAULT (B)	BARREL VAULT
WALLS	RUBBLE STONE MASONRY	RUBBLE STONE MASONRY	RUBBLE STONE MASONRY and RENEWED MATERIAL	RUBBLE STONE MASONRY	RUBBLE STONE MASONRY and RENEWED MATERIAL	RUBBLE STONE MASONRY
ACCESS BUILDING SPRING RELATION	CONSTRUCTED ON THE SPRING	NO SPRING	DIRECTED TO THE BUILDING FROM WALL	DIRECTED TO THE BUILDING FROM VAULT	DIRECTED TO THE BUILDING FROM WALL	CONSTRUCTED ON THE SPRING

2.5. Geothermal springs and bath houses in the Studied Region

Pausanias mentioned that there were geothermal spring bath houses carved in the rocks on the coasts of the region (Pausanias, 1918: 5; Meriç, 1988:362). There is an example in a Greek island which fits to this description in terms of its positioning and morphology. The *Gazadaki* is a Greek chapel at the west of *Catellorizo* harbor of Megisti (*Castellorizo*) island, which is at the southwest of Kaş, Antalya. This building and the Gülbahçe thermal bath house remarkably resemble each other. There is similarity in their context and mass characteristics. Both of them were built at the sea side, and are prismatic masses spanned with a single barrel vault. (Figure 2.18, 2.19).

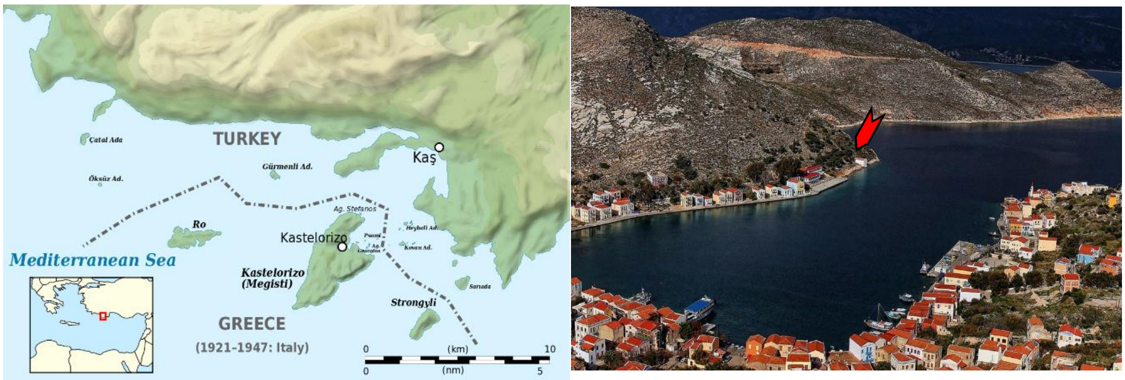


Figure 2.18. A Greek chapel by the coast, Megisti.

(Source: Wikipedia, 2020)

Figure 2.19. The Elevations view of Greek chapel by the coast, Megisti.

(Source: Çağlıyurt, 2017 (front view), Pinterest 2020)

In addition to this case, whose function is not a bath house at present, geothermal bath house groups in the studied region were identified (Figure 2.20). These are still being used by the local community. Ilıksu is in Urla and the rest (Cumalı, Karakoç and Kelalan) are in Seferihisar.

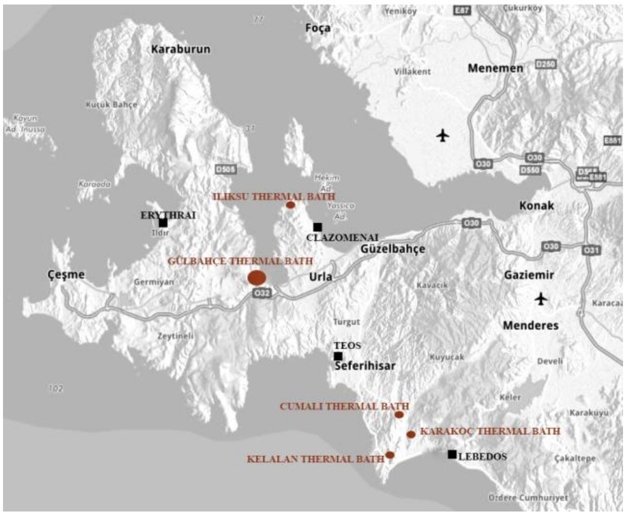


Figure 2.20. The Location of the Case Studies

(Source: Google Earth, 2020)

It is known that Urla Peninsula is rich in geothermal sources (Emekli, 2004: 147). It consists of four sub-regions: Çeşme, Güzelbahçe, Seferihisar, and Urla (Figure 2.20.). Evaluating the geothermal sources at the peninsula divides three parts where the spring water sources coming out. (Mater,1982: 48). The first part is west side of Urla, Malkaça, İçmeler, geothermal spring source comes out this periphery. The second is Seferihisar that contains Doğanbey district and having coast: foreland of Doğanbey, and also Ürkmez district with Karakoç geothermal areas (Emekli,2004:154). The third and last one is Çeşme-Ilıca-Şifne periphery line (Mater, 1982: 48) (Figure 2.21). However, historic geothermal bathing houses are not present in all of these geothermal places.

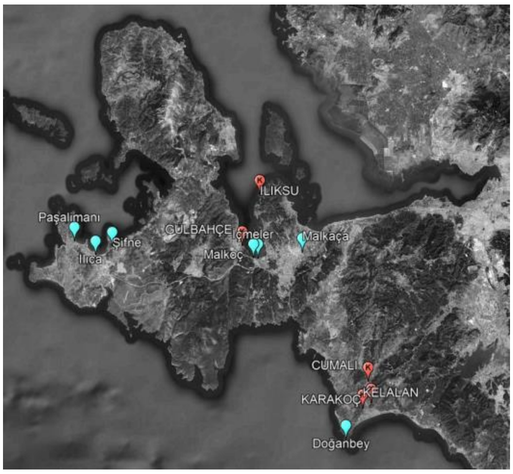


Figure 2.21. The geothermal springs located at the peninsula

(Source: Google, 2020)

2.5.1. Cumalı Thermal Spring Bath

In Kavakdere Village of Seferihisar, there are three thermal spring bath houses known as the Cumali Thermal Spring Baths (Figure 2.22). They are located at the skirt of Kavacik Mountain, in between the main highway of Seferihisar and Karakoç brook. They are listed as second group buildings (İzmir Governship, 2002). The historic site was the property of the Special Administration of İzmir Province (*İzmir İl Özel İdaresi*) (İzmir Provincial Directorate of Culture and Tourism, 2002) until 2014 (Milliyet, 2014). Then, it became a property of the treasury. İzmir Metropolitan Municipality has gone to court for regaining the ownership of the property that was originally owned by the Special Administration of İzmir Province (Hürriyet,2015). The thermal bath is dated to the sixteenth century (Izmir Provincial Directorate of Culture and Tourism 2002).

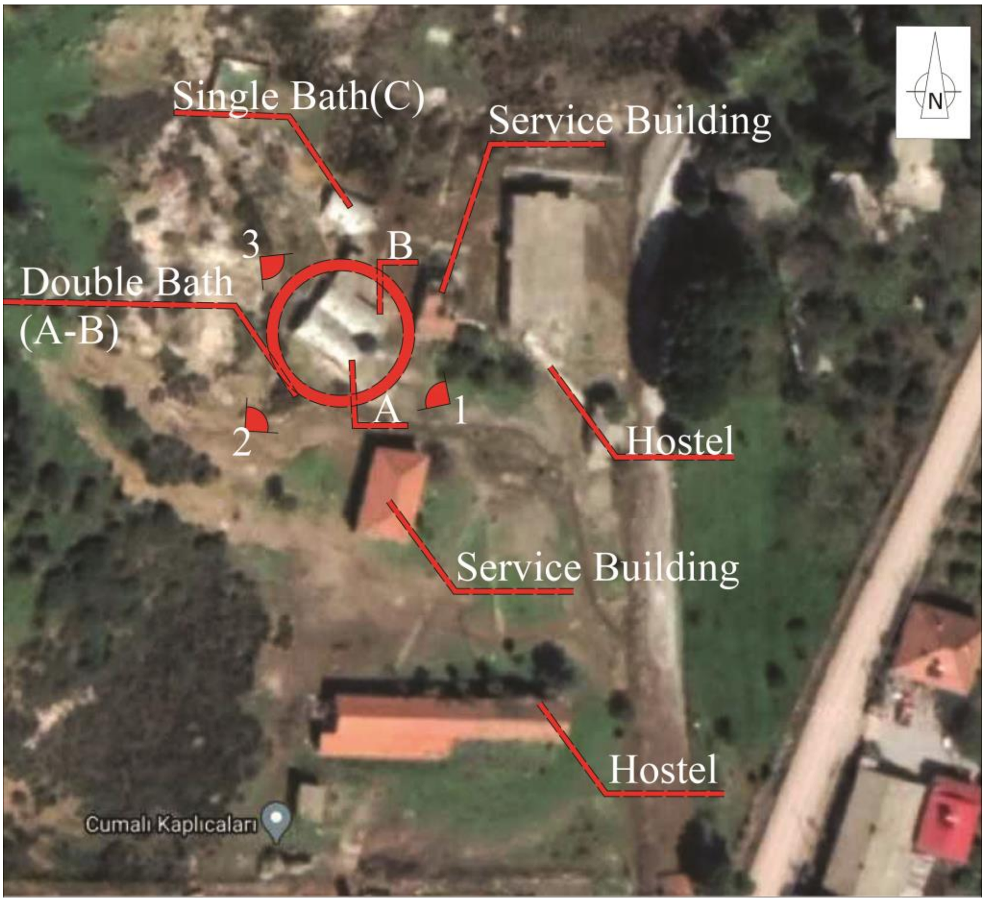


Figure 2.22. The Location of the Cumalı Thermal Baths, aerial photography (Source: Google Earth, 2020)

The historic site is composed of three bath houses whose of two juxtapose each other (A and B) (Figure 4.23). The third one (C) (Figure 2.24) is approximately 2 meters at the west of the double baths. All of them are prismatic units crowned with individual barrel vaults. The maximum building height is around 4 meters. The blind building surfaces are plastered and white washed (Figure 4.23). Their arched doors are narrow approximately 75 cm in width. There are two embrasures (w: 9 cm x h: 70 cm) at the southwestern wall of the double bath houses. Each vault has two oculi providing day light and ventilation. There is a service facility as a canteen at the south of the bath houses. It is abandoned today. There are 2 buildings serving as hostels for the bathers. The bath houses flanking each other have their entrance at the north (A) and the east (B). The entrance of the individual bath house (C) is at the east.

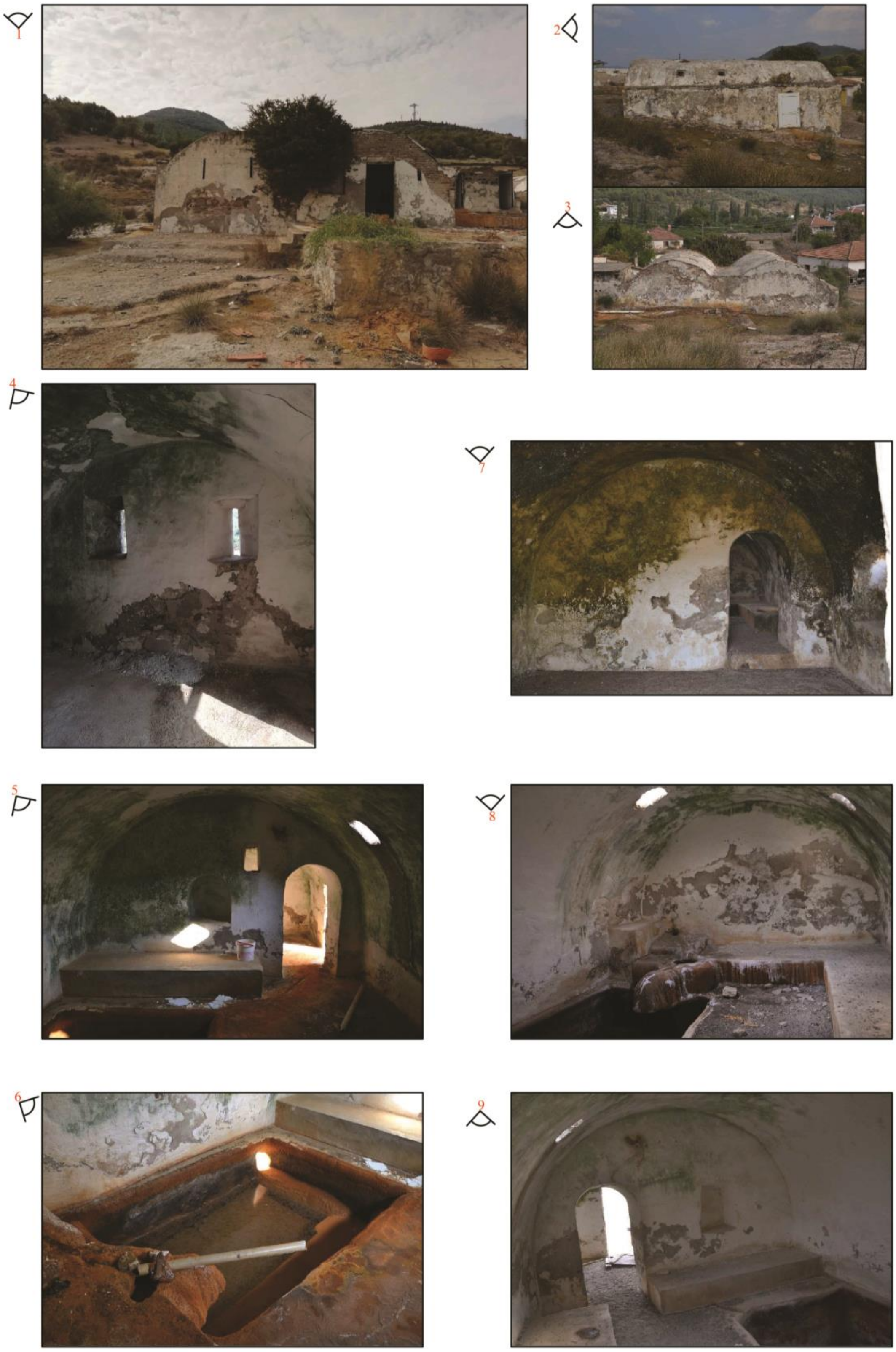


Figure 2.23. Cumalı Thermal Spring Bath Houses, A and B, Photographs

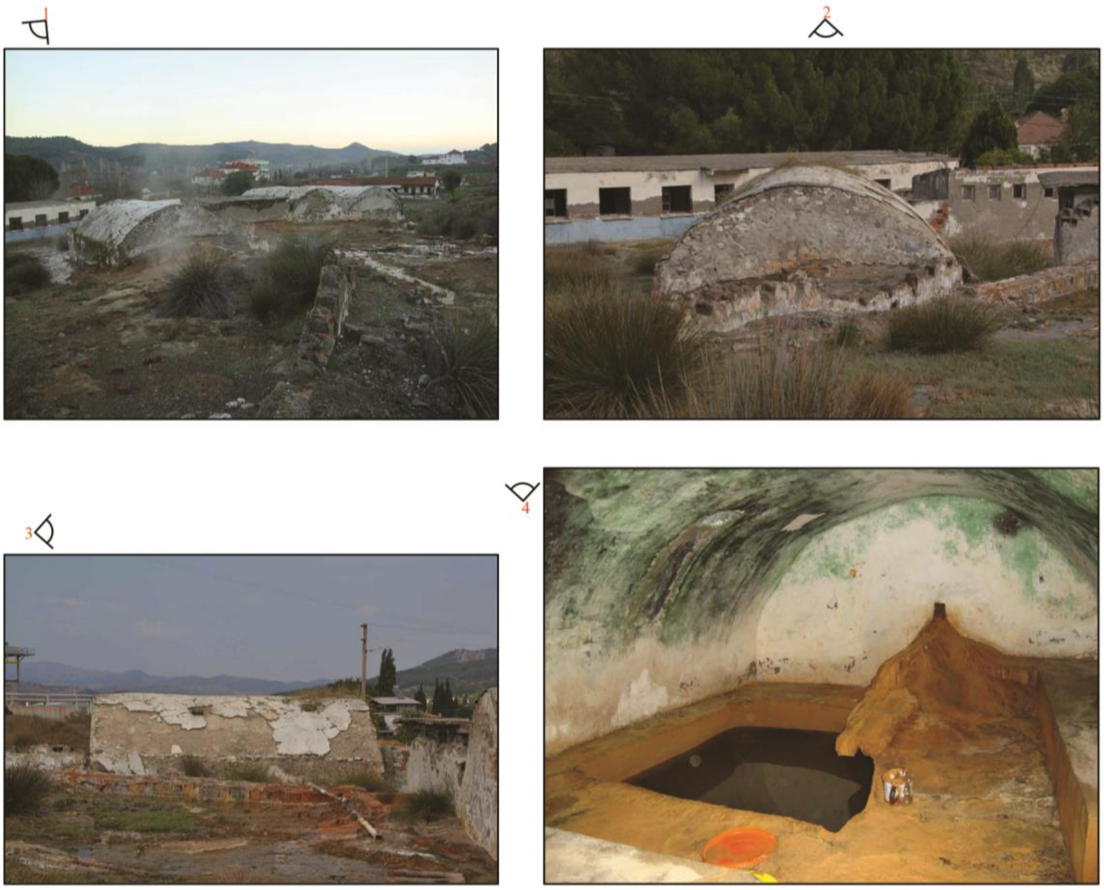


Figure 2.24. Cumalı Thermal Spring Bath House, C, Photographs

The bath houses A and B are both rectangular planned (8.45 m x 4.15 m) (Figure 2.23). Unfortunately, the bath house C in Cumalı could not be surveyed since its door was locked. The photographs taken during the field study in 2015 give an idea about its interior. The bath house (C) is rectangular planned as well, approximately with the same dimensions as the other two bath houses (Figure 2.24). Each of the bath houses A and B are composed of a changing room and a bathing room (Figure 2.25). There are pools at the bathing units. They are surrounded by sitting platforms at their sides. The spring water comes from the nearby hills to the bathing rooms. The drainage system is not legible at present. The water temperature is 55-65 ℃ (İzmir Provincial Directorate of Culture and Tourism, 2020).

The construction material of the vaults is not visible since there is cement plaster and white wash on the surfaces. The walls of the bath houses A, B and C are rubble stone masonry finished with cement plaster and whitewash. They are 68 cm in thickness at A and B. Some wall portions corresponding to the changing room of bath B are out of brick and finished with cement plaster and whitewash. So, a repair was realized after partial collapse of these wall portions. The interior surfaces of the walls, the sitting platforms and the floors inside the pools are all finished with cement plaster and whitewash (Figure 2.25, 2.26). Because of precipitation of the minerals in the spring water, there is a brownish layer observed on the surfaces of the floors and pools.

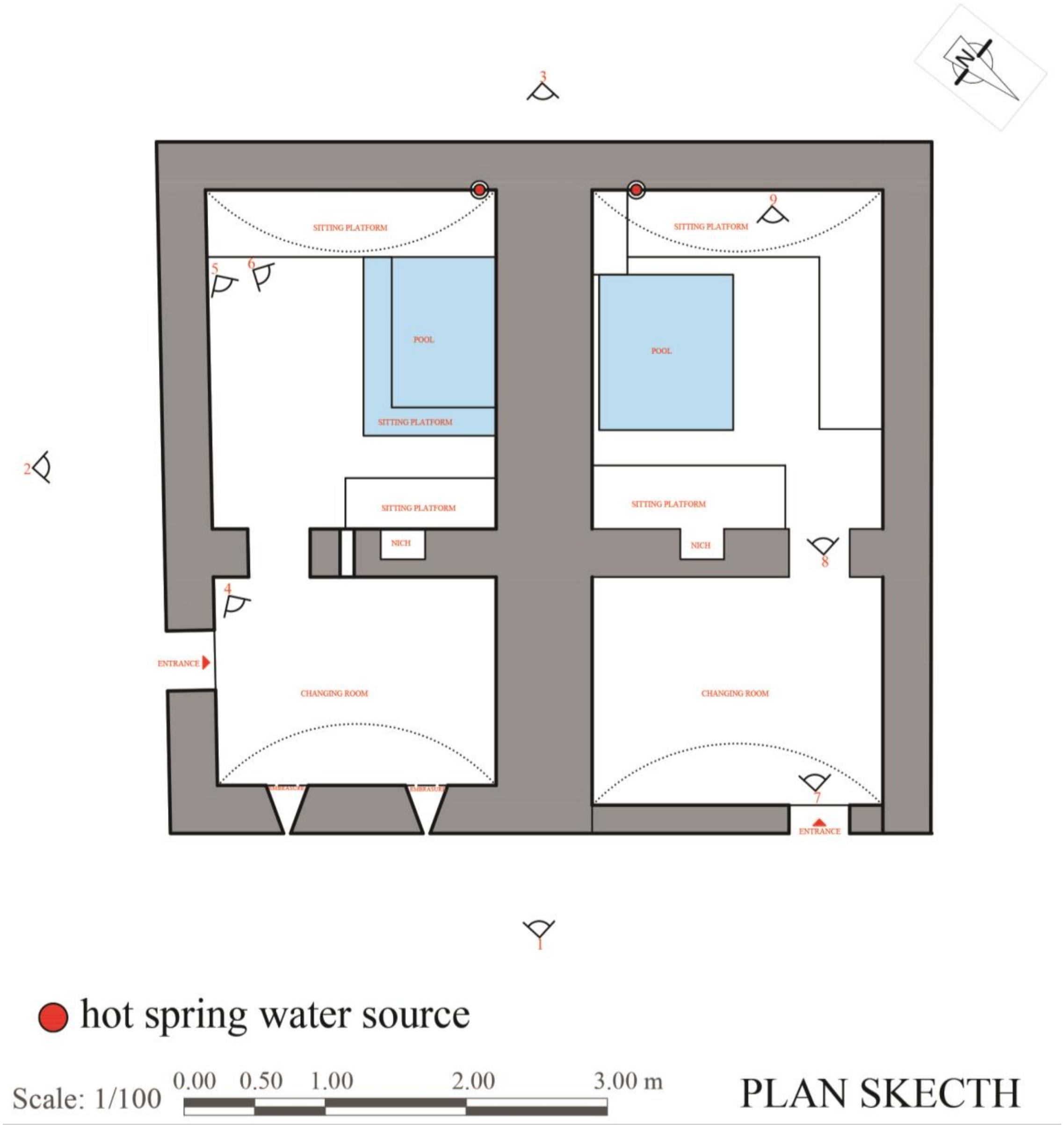


Figure 2.25. Cumalı Thermal Spring Bath Houses, A and B, Plan Scheme

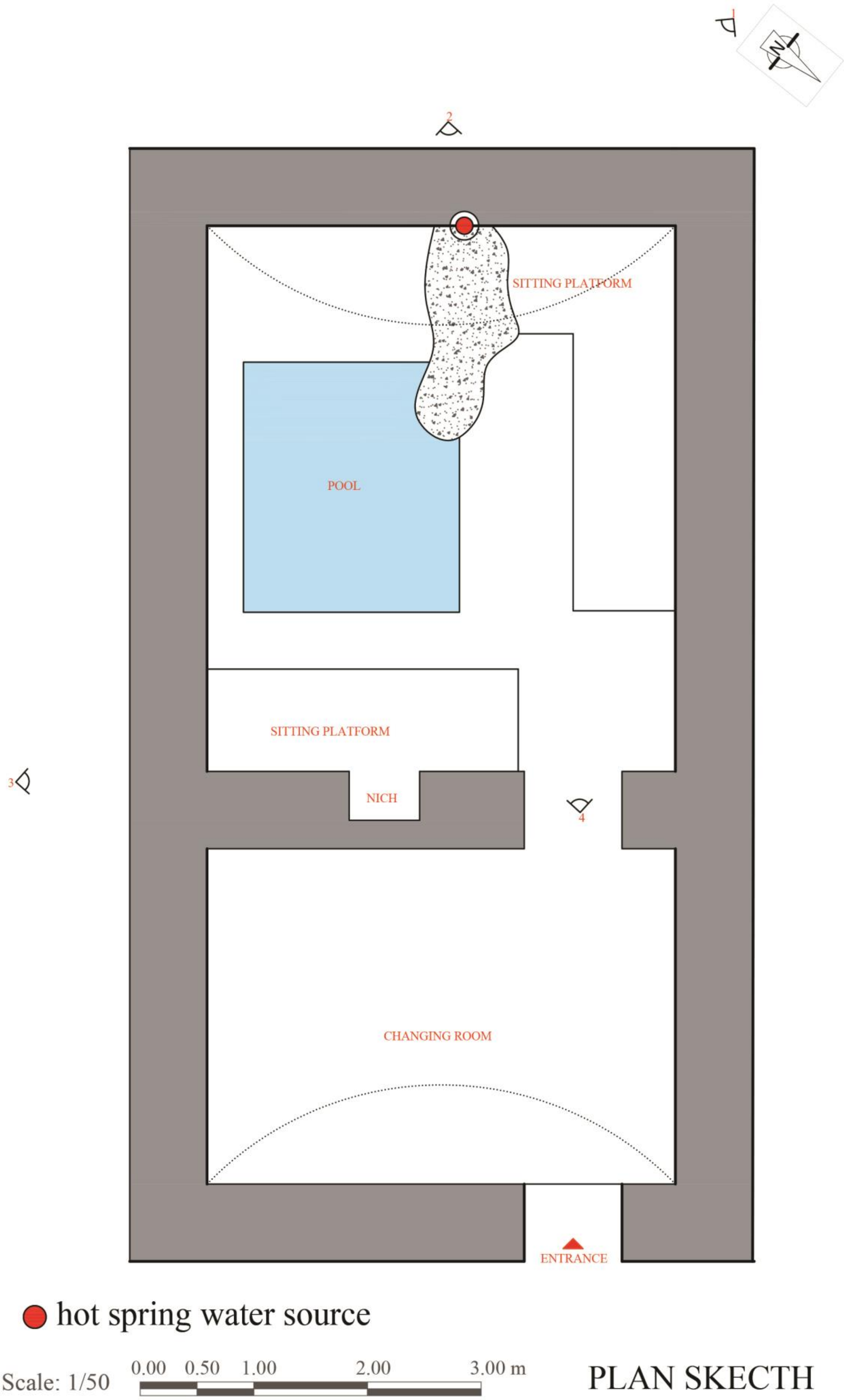


Figure 2.26. Cumalı Thermal Spring Bath House, C, Plan Scheme

2.5.2. Karakoç Geothermal Spring Baths

The Karakoç Thermal Spring Baths (Figure 2.27) are located at the mountainside of Karakoç brook at Doğanbey town of Seferihisar. The bathing site is ~70 daa (General Directorate of Land Registry, 2020), and covered with Mediterranean coat. The parcel number is 5273 (Tittle Deed and Cadaster, 2020). In addition to the two historic thermal spring bath houses at the northwest of the site, two abandoned contemporary buildings and a Roman bath ruin (Figure 2.28) are present at the southeast and east of the site, respectively. A new geothermal power plant is being established at the North of the site since January 2019 (Özgüven, 2020).

Figure 2.27. The Location of the Karakoç Thermal Spring Baths, aerial photograph (Source: Google Earth,18.10.2017)

The ruin of the Roman bath is hardly perceived among the vegetation. The entrance through a vaulted opening at the western side. The form of plan and architectural elements cannot be understood due to the vegetation inside the building at present (Figure 2.28, 2.29). Fortunately, Meriç (1989) had surveyed the building in 1988 (Figure 2.30).

Figure 2.28. Thermal Spring Bath Ruin dating to the Roman period, view from the north

Figure 2.29. Thermal Spring Bath Ruin dating to the Roman period, the interior viewed from the west

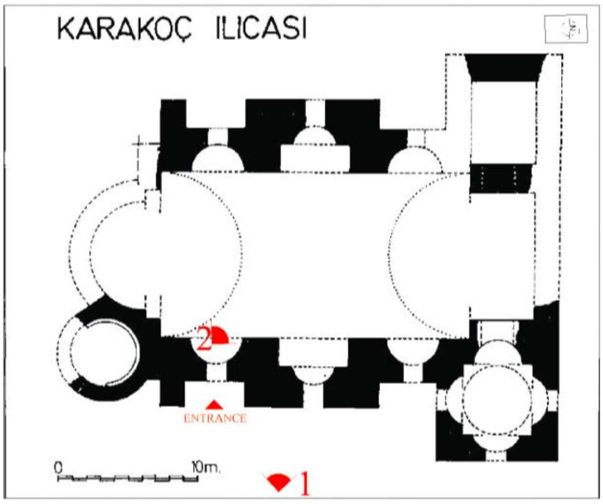


Figure 2.30. Thermal Spring Bath Ruin dating to the Roman period, Plan

(Source: Meriç, 1989: 364)

The Roman bath is rectangular planned (Figure 2.30), and used to be spanned with a single barrel vault (Meriç, 1989: 364). The arched entrance ruin is at the east. It is assumed to be opening to a palestra. The square projection at the southeast is evaluated as an addition. There are niches along the long sides, and an apsis at the west.

The two thermal spring bath houses (Figure 2.27) are close in distance to each other: almost 2 meters. They are both prismatic structures spanned with single barrel vaults. The envelopes of the bath houses are generally blind. The maximum height is around 3 meters. Due to access of the thermal spring water to the baths through an oculus at each of their vaults, the precipitation of the minerals in the geothermal water leaking on the exterior surfaces has created irregular layers, which are yellowish - brownish in color.

The bath house A (Figure 2.31) at the northwest of the composition is entered through an arched door (width: ~70 cm). It has rectangular plan (~20 m^2). There is a pool with curvilinear edges (1.90 m x 2.2 0m) at the eastern portion, while an L formed sitting platform (width: ~ 60 cm, height: ~ 45 cm) is provided at the west of the entrance. It is reached through a single step by the entrance. The embrasure with irregular edges (30 cm x 30 cm) at the entrance facade is the only window of the bath. There is also an oculus at the north. Consoles for placing candles and oil lamps are provided by projecting cut stones of the walls into the space at four places: one at the west of the entrance, and the others along the northern wall. The spring water runs down the opening at the center of the barrel vault into the pool (Figure 2.31, 2.32). The temperature of geothermal water is 55-65℃ (İzmir Provincial Directorate of Culture and Tourism, 2020). It is discharged from the pool with a channel through the entrance door.

The single barrel vault spanning the bath house is out of rubble stone and lime mortar. The walls are rubble stone masonry finished with cement plaster and whitewash. The interior surfaces are plastered and white washed (Figure 2.32).

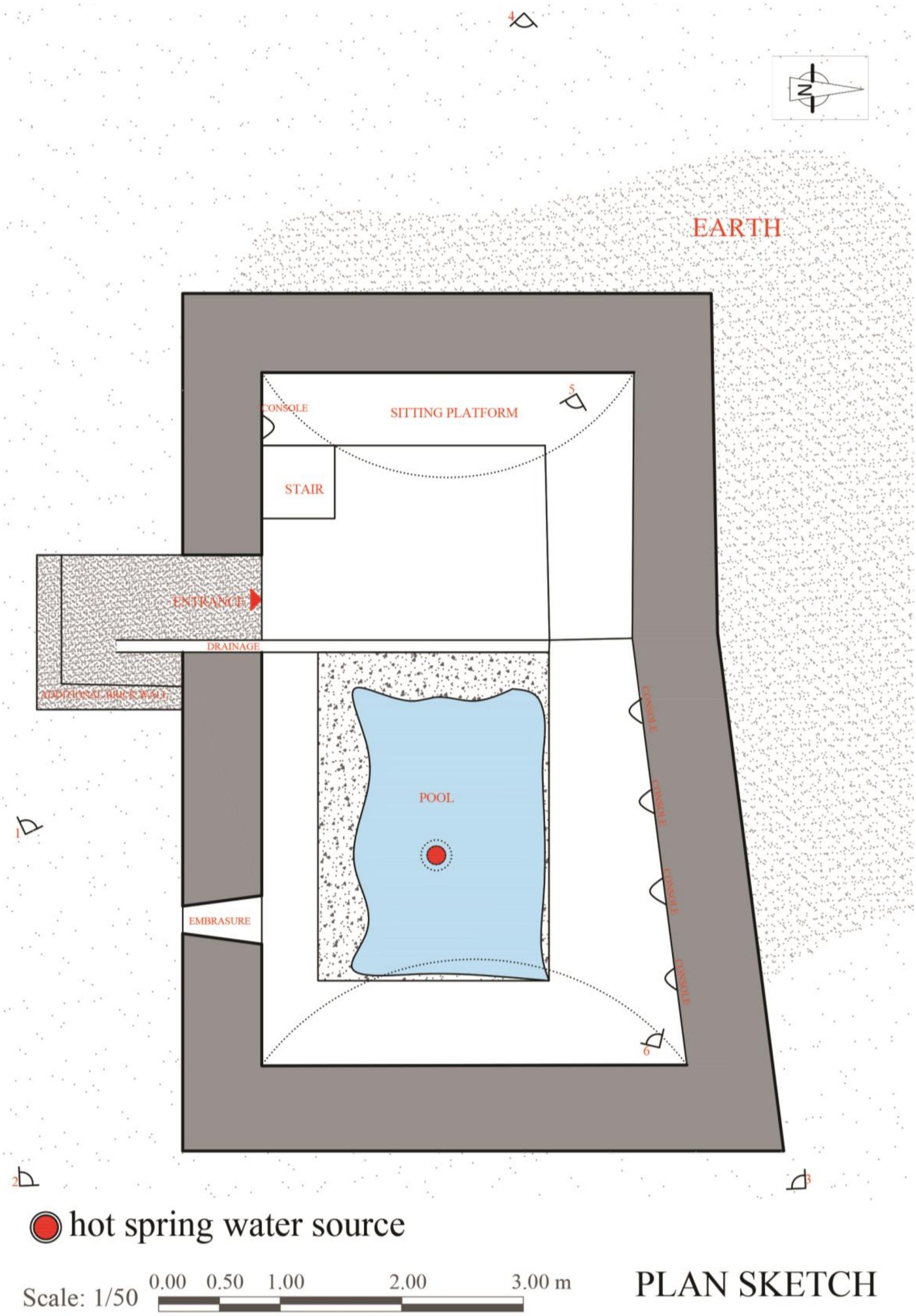


Figure 2.31. Karakoç Thermal Spring Bath A, Plan Sketch

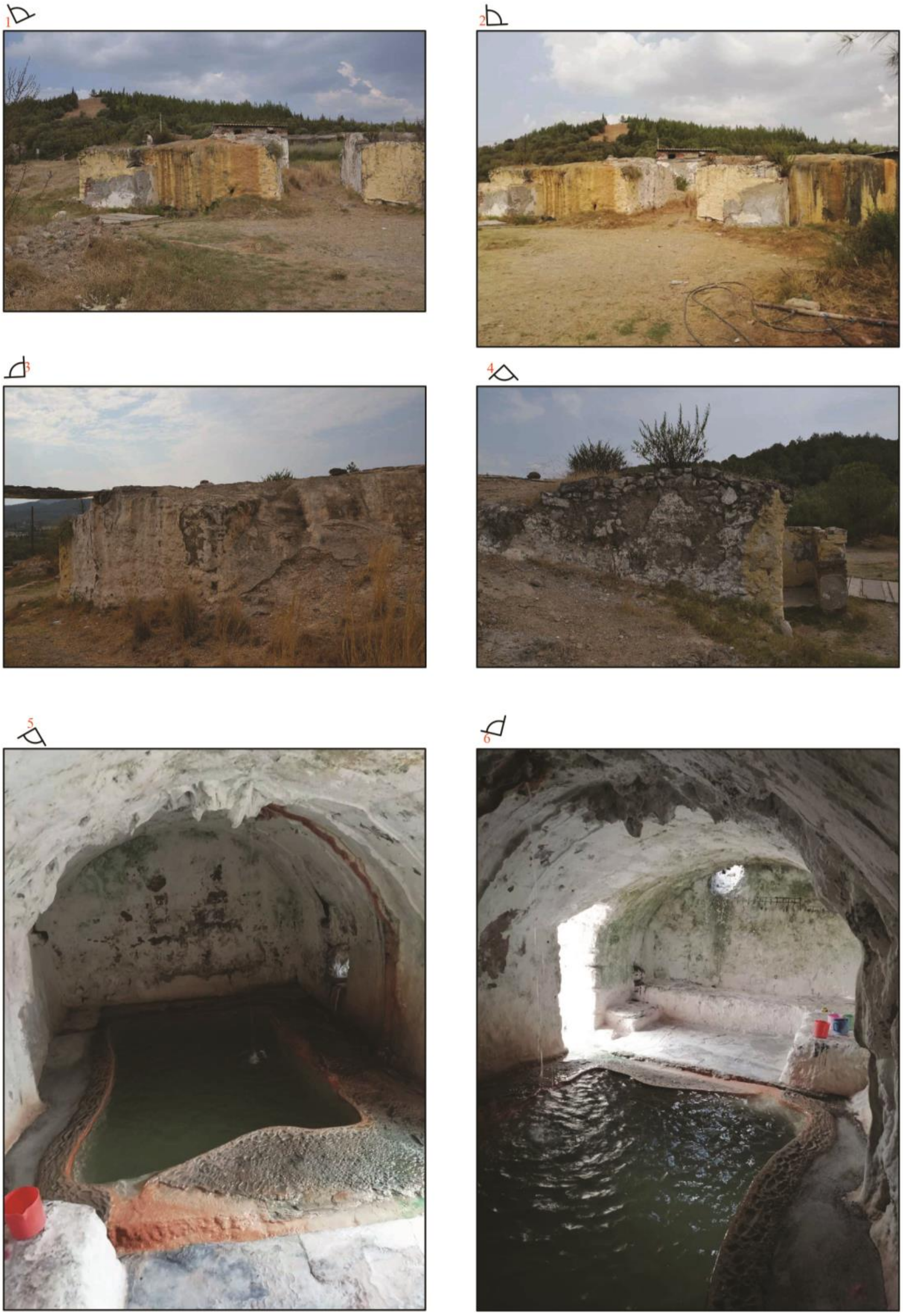


Figure 2.32. Karakoç Thermal Spring Bath A, Photographs

The bath house B at the northeast of the composition is entered through an arched door at its southern wall (width: ~70cm). The entrance is hidden behind an L formed partitioning wall. There is no opening other than the door. It has a rectangular plan (~15 m^2). There is a square pool with curvilinear edges (1.90 m x 1.90 m), nearly at the center of the eastern portion, while sitting platforms are provided along the western (length: ~ 3.22 m, width: ~ 1.17 m, height: ~ 45 cm) and northern (length: ~ 1.36 m, width: ~ 65 cm, height: ~ 45 cm) sides. They are reached through a single step along the western side. There is a rectangular niche (width: ~65 cm, height: ~ 85 cm, depth: ~ 35 cm) at the western wall. At the northeastern corner, the bedrock is visible. There is an oculus at the vault through which the spring water runs down into the pool (Figure 2.32). The water is discharged from the pool through a channel perpendicular to the door. The temperature of the geothermal spring water is 55-65 ℃ (İzmir Provincial Directorate of Culture and Tourism, 2020).

Both the vault and the walls (thickness: ~70 cm) are out of rubble stone and mortar. At the exterior, the vault is plastered, while there are patches of plastering on the walls. The precipitation of minerals in the spring water have formed a sedimentary layer on the roof. Higher plants and microorganism are seen here as well. The interior surfaces are finished with cement plaster and whitewash (Figure 2.34). The floor is covered with screed.

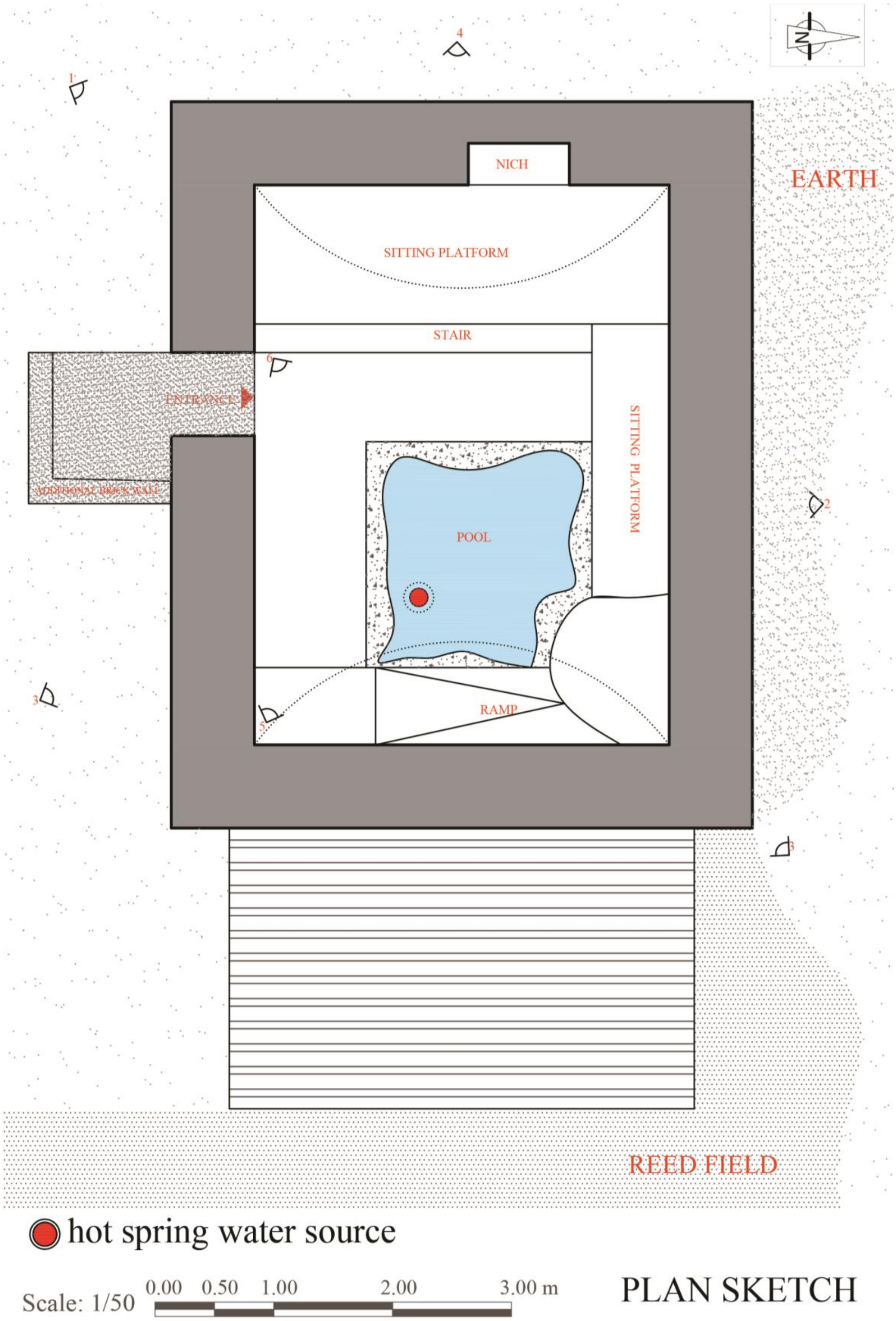


Figure 2.33. Karakoç Thermal Spring Bath B, Plan Sketch

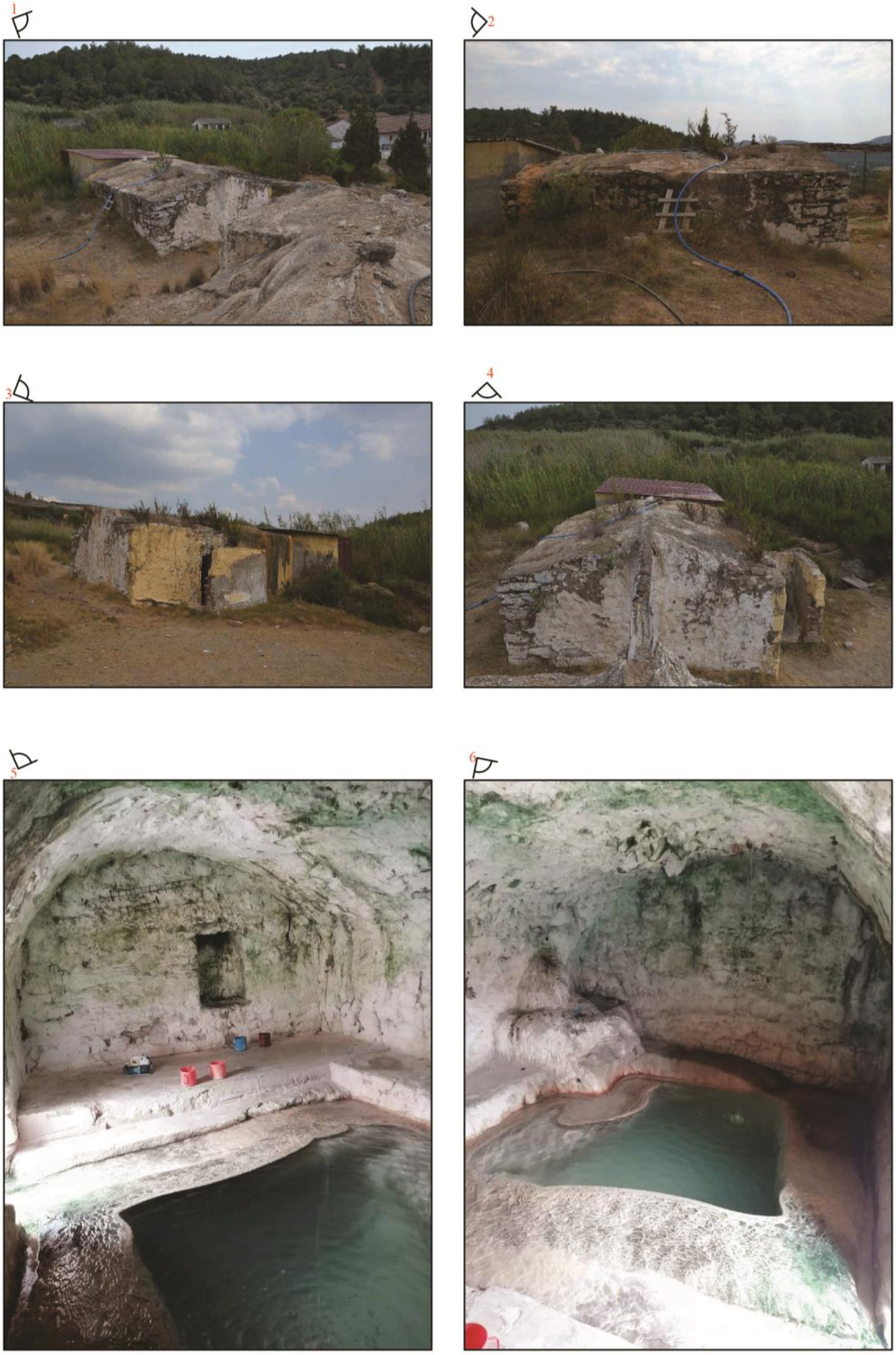


Figure 2.34. Karakoç Thermal Spring Bath B, Photographs

2.5.3. Kelalan Geothermal Spring Bath

Kelalan Geothermal Spring Baths are located at Doğanbey town of Seferihisar. The Karakoç Brook runs at the North of the bath houses. The bathing site is 8 784 m^2. The area is listed as an archeological site (General Directorate of Land Registry, 2020). The earth of the region is alluvial soil so on the fields settle so many greenhouses because of that. One of two baths is used by men and the other by women at present. Within the Mediterranean landscape, two historic thermal spring bath houses and Roman bath ruins (Figure 2.35) are hidden. The Roman ruins are at the south and east of the case study bath houses.

Figure 2.35. The Kelalan Geothermal Spring Bath, aerial photograph

(Source: Google Earth, 2020)

The two thermal spring bath houses are approximately 2 m in distance to each other. The bath house A is a prismatic mass with a lean-to roof (Figure 2.36). It has lost its original superstructure and the upper portions of its walls. At its northwest, there are additional parts that supports the walls. The bath house B is a prismatic mass spanned with a single barrel vault. Both of the buildings' envelopes are blind. The maximum height is around 2.5 meters. The geothermal spring water accesses each of the pools through an opening at the northern walls.

The bath house A, which is used by men at present, is composed of a single bathing space (3.5 m x 5.15 m; 15 m^2). It is entered through a rectangular opening at the southwest (width: ~ 65cm). A pool with curvilinear edges (1.90 m x 2.20 m) flanks the northwestern wall. The geothermal spring water runs into the pool through a hole at the northwestern wall, approximately 50 cm above the ground level. It is drained out through a circular opening (Ø: ~ 10 cm) at the ground level of the southwestern wall. There are sitting platforms on all four sides of the space (Figure 2.37).

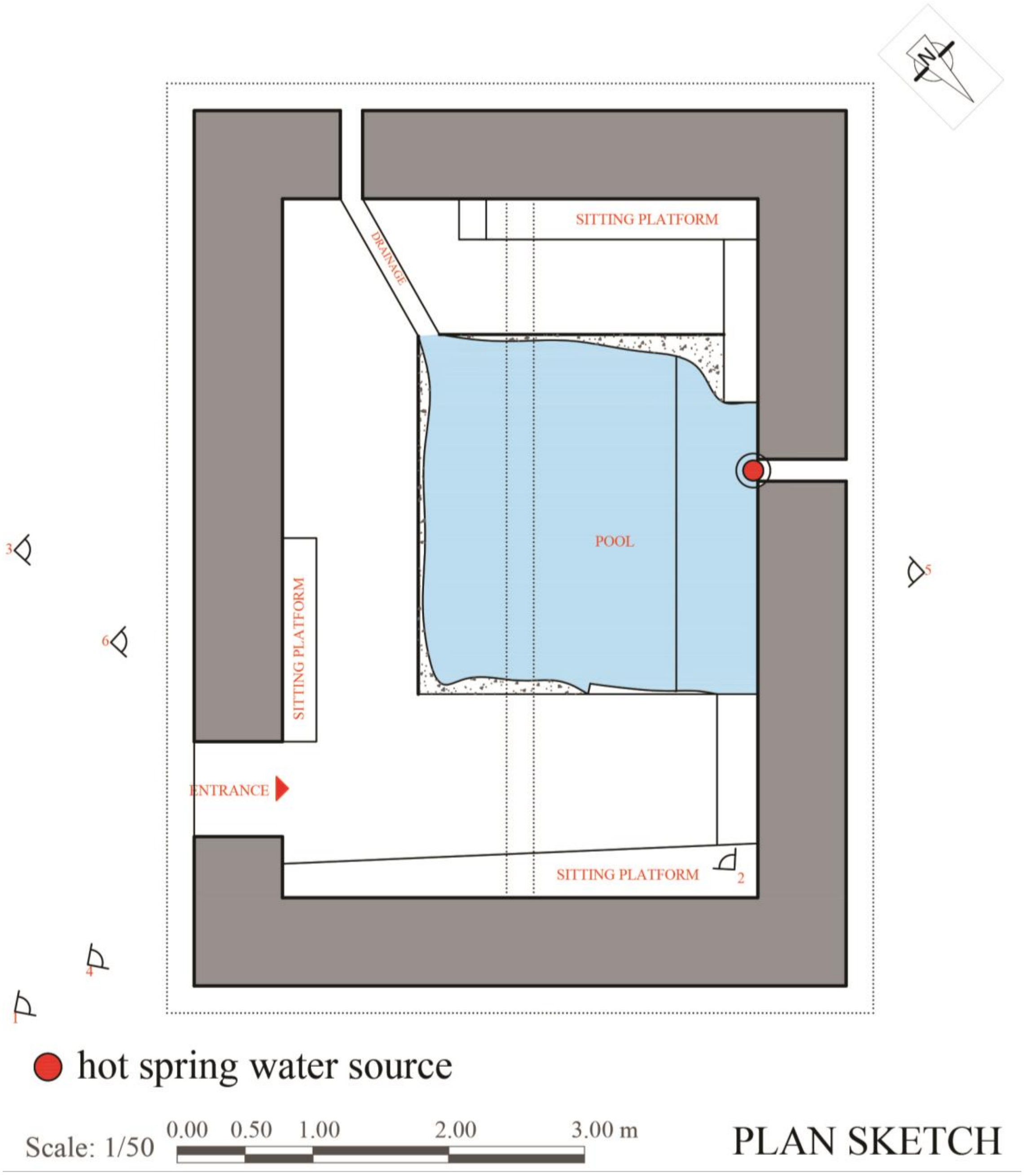


Figure 2.36. Kelalan Thermal Spring Bath A, Plan Sketch

Figure 2.37. Kelalan Thermal Spring Bath House A, Photographs

The renewed roof of A is out of timber and covered with corrugated sheets. The original walls are rubble stone masonry. The exterior is exposed without plastering, but there is repair mortar, plaster and whitewash, observed at various locations. The interior surfaces are plastered and whitewashed. The upper portions of the walls are renewed with hollow bricks and mortar. The floor of the bathing space is screed. The vicinity of the bath house has sustained its natural earth surface (Figure 2.36, 2.37).

The bath B is used by women. Its entrance is from the east side through an arched opening: approximately 70 cm in width. There is an additional L shaped wall in front of the entrance to provide privacy. B is composed of a single bathing space (3 m x 5.3 m). The pool (2 m x 2.20 m) flanks the eastern wall. There is an L-shaped sitting platform (width: 65 cm and height: 45 cm) at the east of the entrance. The geothermal spring water runs through a hole (Ø: ~ 10 cm), 50 cm from the ground level of the northern wall. The barrel vault is out of rubble stone and mortar. It has lost most of its plastering. There is widespread vegetation on the vault as a result of weathering. The walls (thickness: 70 cm) are rubble stone masonry and exposed without plaster at the exterior, but they were intervened with patches of plastering and whitewash. The walls are finished with cement plaster and whitewash at the interior. The floor covering is screed. Within the walls the remains of terracotta pipes (Ø: 10 cm) are observed, approximately 120 cm from the ground level. The geothermal spring water temperature is 55-65°C (İzmir Provincial Directorate of Culture and Tourism, 2020) (Figure 2.38, 2.39).

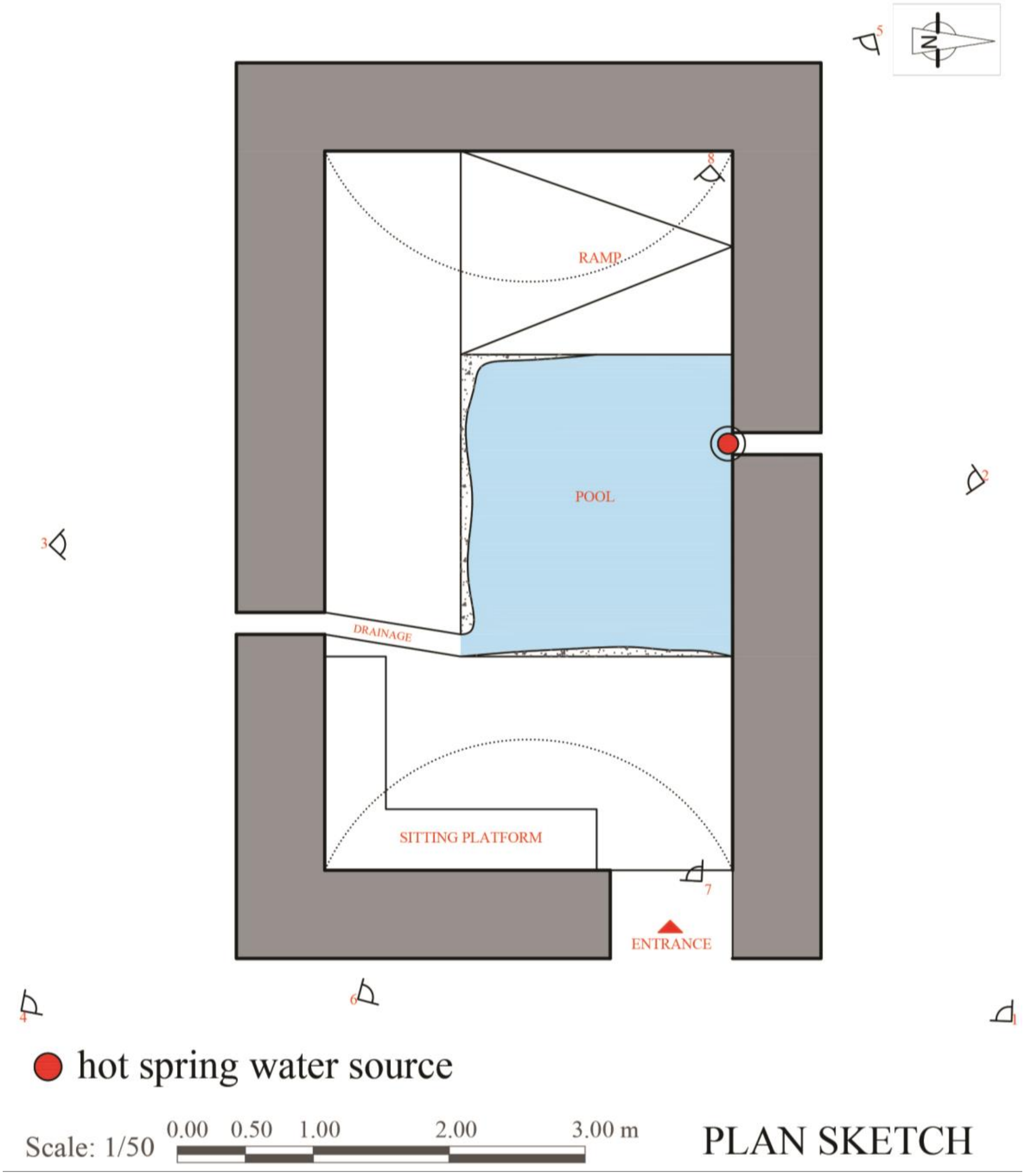


Figure 2.38. Kelalan Thermal Spring Bath B, Plan Sketch

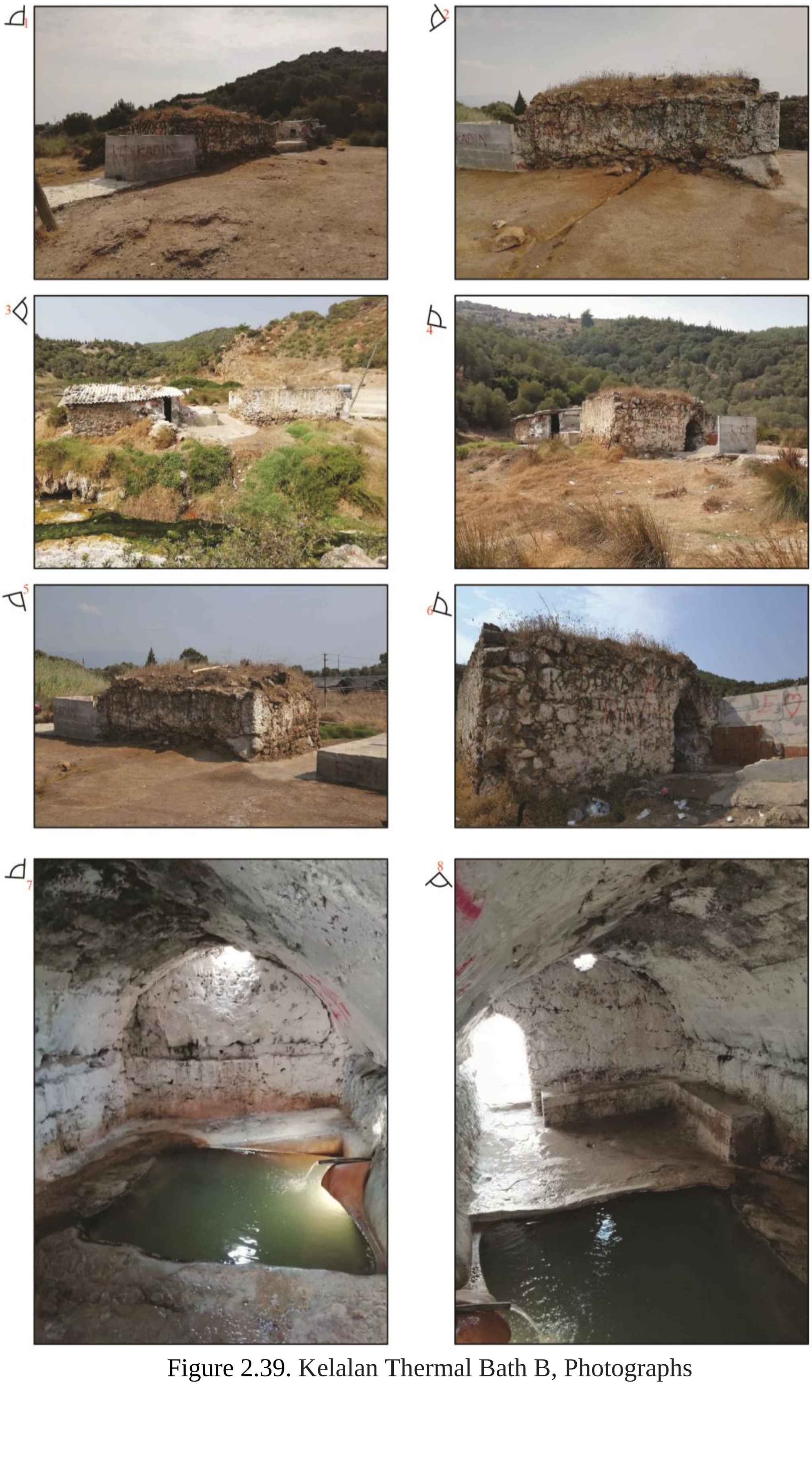


Figure 2.39. Kelalan Thermal Bath B, Photographs

2.5.4. Ilıksu Geothermal Spring Bath

The Ilıksu Thermal Spring Bath is located at the coast of Özbek Village in Urla. The site is part of the Military Camp today. The coast is used as a beach by the military staff. The bath house is dated to the 11th century (Figure:2.40). It is a prismatic mass covered with a barrel vault. The ground in its vicinity was filled; So, the bath house is in a slightly depressed position (50 cm) (Figure 2.43).

Figure 2.40. The location of the Ilıksu Geothermal Spring Bath, aerial photograph (Source: Google Earth, 2020)

The bath house is rectangular planned (3.45 m x 6.60 m) and spanned with a barrel vault (Figure 2.42). The building's height reaches 4 meters. All of the walls are blind. The arched entrance door (Figure 2.42) at southeast is the only opening (72 cm in width). It has an additional timber leaf. On the vault, there is a single oculus. The pool (2.66 cm x 3.23 m x 1.20 m) flanks the southwestern wall. There are platforms (width: 120 cm) at the other three sides, but they are not elevated. The spring water enters the bath house from the western corner. The way the spring water is drained could not be observed. There are 2 niches (width: 35 cm x depth: 35 cm x height: 55 cm) on the northeastern wall.

Figure 2.41. Ilıksu Geothermal Spring Bath, photo of entrance facade

(Source: Yaman, 1999: 53)

The walls of the bath house are out of rubble stone (thickness: ~70 cm) and the corners are reinforced with cut stone. The exterior surface of the vault was plastered, while those of the walls were exposed without plastering (Yaman, 1999:53) (Figure 2.41). Today, the walls are cement plastered, imitating cut stone covering (Figure 2.43). The bath house was repaired in 1932 and after 1999 by the army (oral source). So, this facade treatment is thought to belong to the renewal after 1999. About the inside; the interior surfaces of the walls are used cement plaster with whitewash. The vault is out of rubble stone with cement grout as plaster that has been seen scaffolding mould mark and covering whitewash. The water temperature is 17°C (Figure 2.42, 2.43).

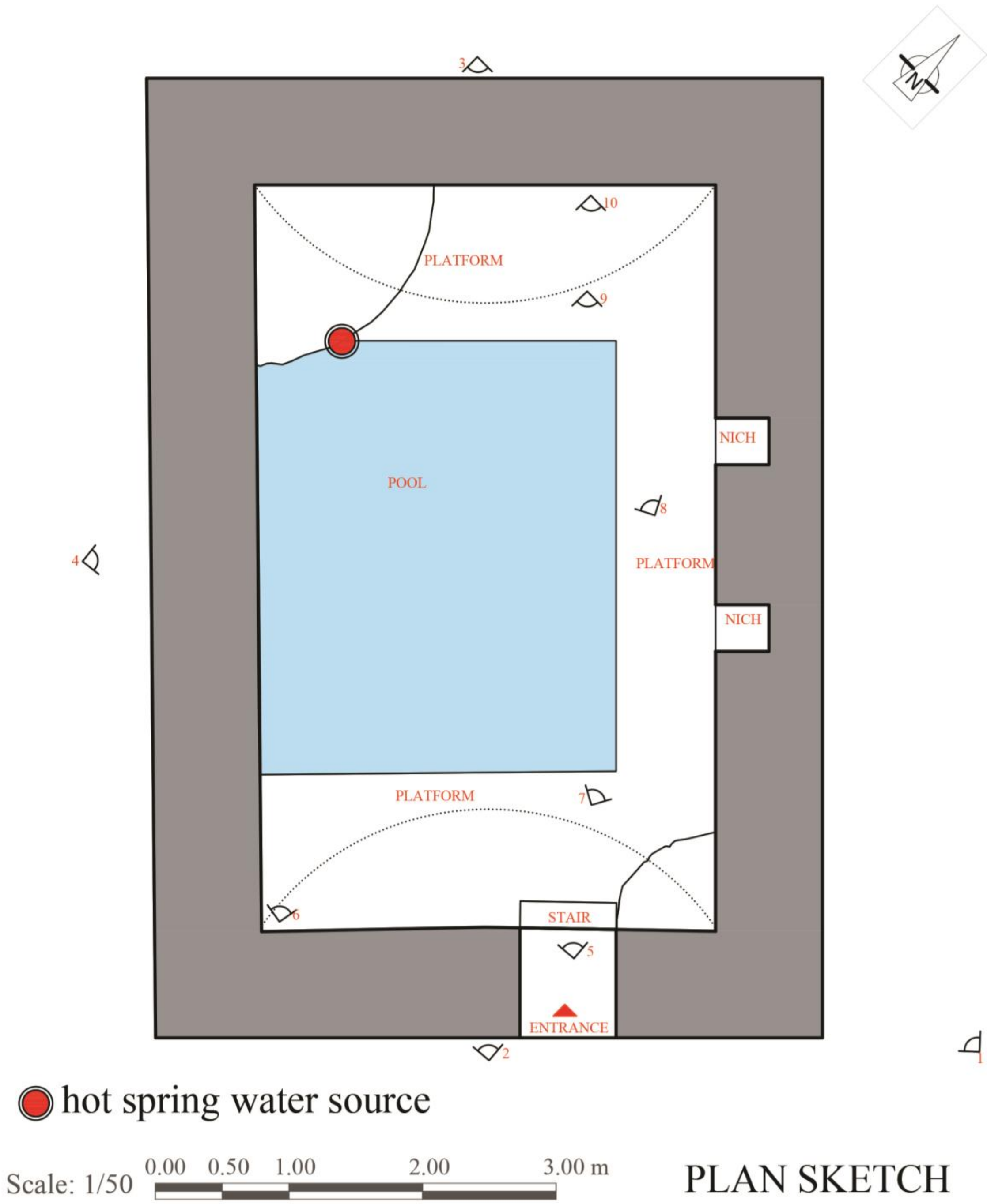


Figure 2.42. Ilıksu Thermal Spring Bath, Plan Sketch

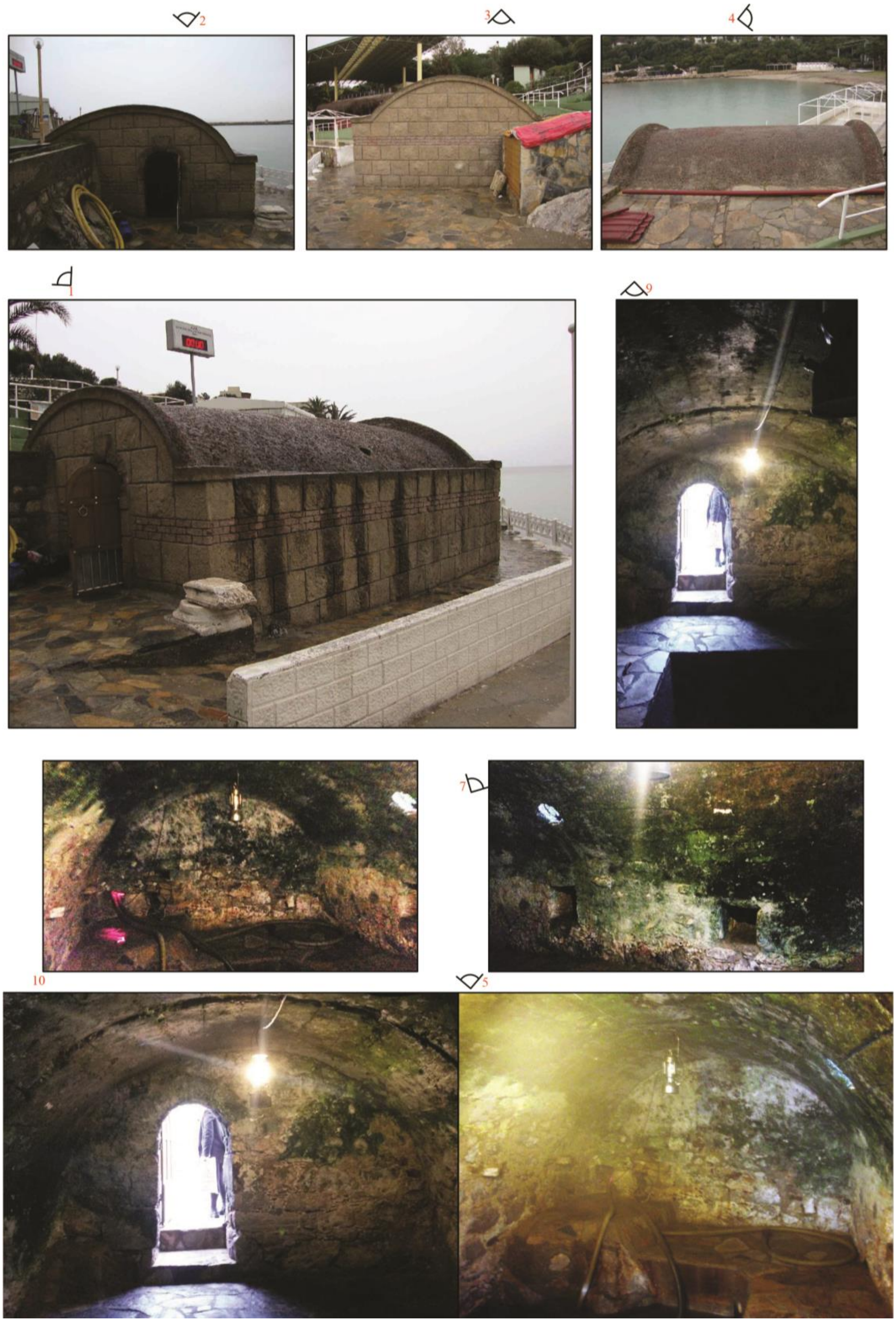


Figure 2.43. Ilıksu Geothermal Spring Bath Photographs

CHAPTER 3

ARCHITECTURAL CHARACTERISTICS OF THE BATH

In this chapter, the site characteristics, mass and facade characteristics, spatial characteristics, construction technique and material usage, alterations, structural failure and material deterioration are identified.

3.1. Site Characteristics

The case study was on the historic caravan route of the peninsula as revealed in the bridge remain at its southwest and the road remain at its southeast. Some other elements of this network can be seen in İçmeler (Uygun, 2013: 43). The bridge by the case study used to pass Çarpan Gulf. The case study is by Çarpan Gulf. Today, it can be reached both from the coast via a walking path parallel to the mount at the east of the building, and also from the sea, since the shallow gulf provides a secure place for the sailors. The structure is carved into the rocks and oriented to the west. The natural Mediterannean coat is preserved in the vicinity, while there is flora such as reeds and fauna such as dense flies specific to wetland close by the monument.

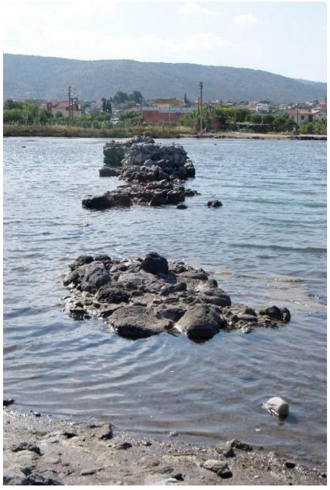


Figure 3.1 The bridge on the orthophoto (left) and as viewed from the east (right)

(Source: City Surf Globe,2018)

3.2. Mass and Facade Characteristic

The case study bath is a vaulted masonry unit juxtaposing the east side of the mount on the west coast of the bay of Gülbahçe. The mass is totally blind except the arched door opening at its east and the skylight at the west part of the vault and exposed without plastering. In this way, it seems to unite with rocky terrain of the mount since the rubble stones in its construction are totally local material (Figure 3.2).

Figure 3.2 The Case Study

3.2.1. Eastern Façade

This is the entrance facade (735 cm in width and 471 cm in height) that is only one opening to provide coming in the building. The door opening is semi-circular arched (72 cm in width and 180 cm in length) where is at the south corner of the facade. For the entrance into the building steps were not arranged instead of natural ground formation used (Figure 3.3).

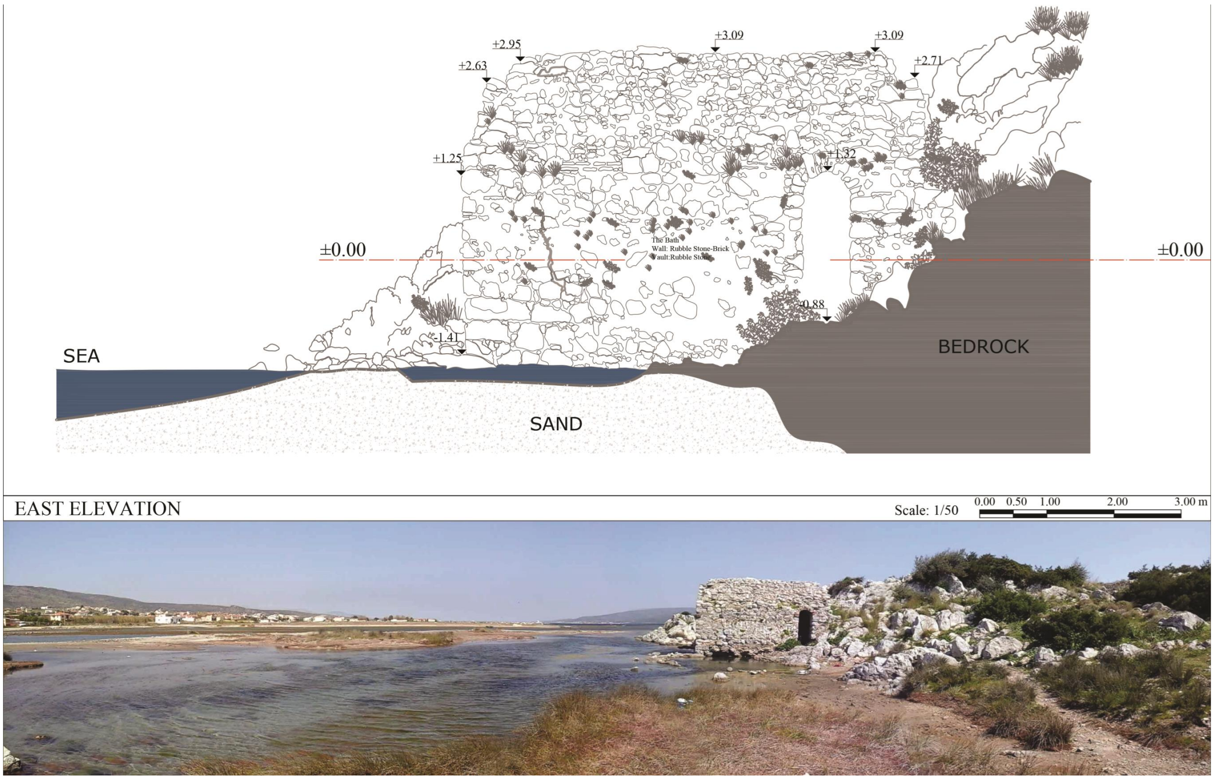


Figure 3.3 The Eastern Facade of The Case Study

Using material for construction is rubble stone, brick pieces and binding with mortar. Current situation of the east facade of the thermal bath's wall has a crack and loss materials but it is still durable. On the left side of the wall down has a cavity and it causes a crack that stretches out the vault. Furthermore, the lower part of the building, being exposed corrosion because of in connecting with the sea water

3.2.2. Northern Façade

The northern facade (792 cm in length, 414 cm in height) of the bath faces the sea. It is totally blind. The vault and the wall are composed of rubble stone and mortar and have no plaster on the surface of the wall is blind. The eastern corner and the middle portion have material loss probably caused by the abrasion of sea. There is lack of materials can be seen furthermore the wall’s left part demolished and at the middle part is collapsed. The bottom zone interacting with sea, especially the eastern corner and middle portion, has wide spread material deterioration creating risk of collapse (Figure 3.4).

Figure 3.4 The Northern Facade of the Case Study

3.2.3. Western Façade

This facade presents clearly that the bath was carved into the rocky terrain (691cm in width and 435 cm in height). It is totally blind. The vault’s height is 180 cm and lenght is 585 cm and being seemed half part of wall and its right collapsed.

The vault and wall are constructed with rubble stone and mortar. For vault and walls, there are not used any special binding technique . Even the edge of wall collapsed still understanding the wall’s arragement on building. The portion in contact with the sea had eroded inwards. There is an opening where its right side on the vaults created as a result of vandalism at 25 cm in widht ,35 in height of the vault (Figure 3.5).

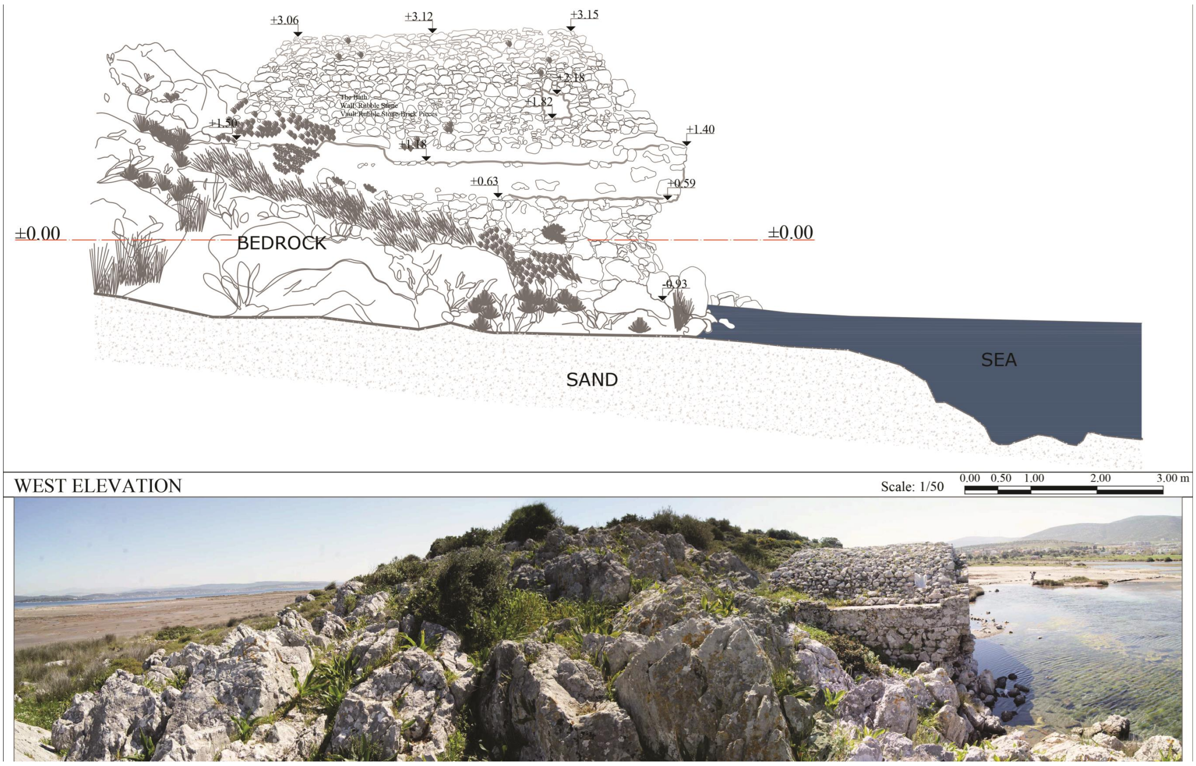


Figure 3.5 The Western Facade of The Case Study

3.2.4. Southern Facade

This is the rear facade (669 cm in width and 246 cm in height), juxtaposing the mount at its north. It is composed of south face of the barrel vault (~156 cm in height) and the upper portion of the south wall (~90 cm in height). There is not any opening at its surface. The facade is out of rubble stone in random order and exposed without plastering. The vault is ruined at its bottom portion while the wall is ruined at its west corner (Figure 3.6).

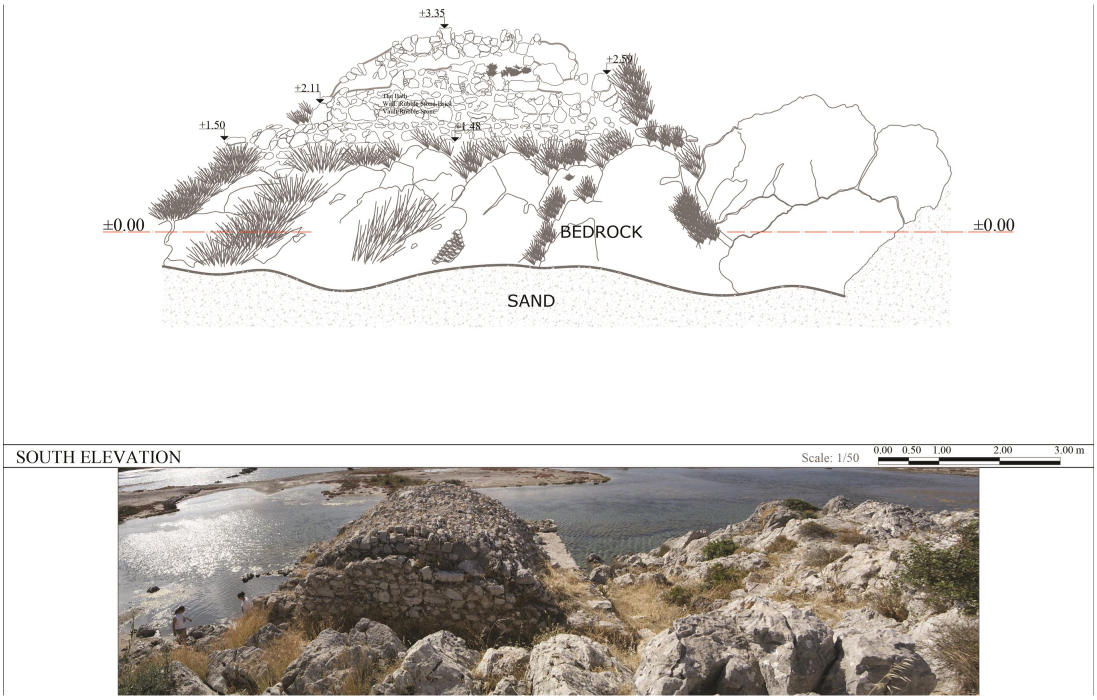


Figure 3.6 The Southern Facade of the Case Study

3.3. Spatial characteristics

The bath is composed by a single space (5.95x5.16m) with a rectangular pool (4.15x3.70m) at its center. The barrel vault crowns the space in north- south direction. The entrance door is at the east of the space. This opening is the basic illumination source. There is also an elliptical skylight (0.43x0.33m) at the southwest. Another is at almost the center of the vault (0.40x0.20m) but it is filled and closed at present. There are platforms at north, south, east, and partially west sides of the pool. The sitting platforms are east and west sides. (Approximately 40-50cm in width changes and 45cm in height) There are two steps at the west descending towards the pool. There is a brick arched niche at the western wall's southern portion. This is where the spring water comes in. the surface of the vault has traces of timber mould, which should have been used to stabilize the cement mortar attached to the rubble stone vault. At the central portion there is a skylight (43x33cm) filled in. there is also a collapsed and refilled portion at the center, the skylight (40x20cm) at the west-south portion, close to the springing line and the opening (210x200cm) created most probably to function like a chimney above the platform at the east-south corner provide light to the space. There are also a few other small light holes formed with material loss.

About the material used same as the exterior of bath Rubble stone, brick pieces and mortar in the walls exposed without plastering in general, but there are patches of plaster at the west portions, the two rows of bricks each composed of four brick rows, yellowish in color at the springing line of the vault are eye-catching. But comparing the rubble stone size's much smaller size then outside.

3.4. Construction technique and material usage

The bath is almost square plan. The barrel vault 20 cm in thickness at the eastern side, which has limited deformation, has a regular bonding. Rubble stones of various sizes (min 15x10x10 cm, maximum 108x45x55 cm) are used.

They are neither radially positioned nor corbelling. The molding traces on the cement mortar at the inner surface point out that a scaffolding supporting the timber mould was provided to re-construct the demolished vault over the old walls. So, the cement mortar at the bottom zone and the rubble stones of the vault are integrated to each other.

The major load bearing walls are the eastern and western ones. They are 170cm and 84.cm in thickness, respectively. The non-loadbearing walls at the south and north are 49 And 80.cm in thickness, respectively.

The walls are out of rubble stone and lime mortar in general. In original portions, mortar is recessed from the surface nearly 1 or 2 cm. there are brick rows at the east and west wall along the springing line.

The western one's top portion was partially ruined and completed with rubble during the construction of the vault.

There are no traces of construction holes. So, the vault and the walls are different eras; the vault is later and the walls earlier. There are bricks (5x20x50cm) observed at the various positions: at the outer bottom portions of the vault's eastern facade, at the bottom, the north portion of the entrance opening. These many belong to a possible earlier brick vault, which was replaced with the present irregular rubble stone construction.

At the floor and within the pool, the rocky terrain continues. At the platforms, rubble stone and mortar are observed.

The bath is almost square plan scheme. And it was built with load-bearing walls construction system which are out of rubble stone, cutting stone, brick and brick pieces and mortars in masonry system.

The walls are approximately 80 cm in thickness which constructed with using rubble stone cutting stone brick and brick pieces with mortar.

Vault is upper part of the superstructure and it’s made up of rubble stone, brick, brick pieces and mortar.

The floor of the courtyard is earth sand and stone. There is no floor covering material has been observed. The platform of the room was covered with rubble stone and mortar.

At the bath; there are 2 (two) arches on the building. The transition elements are out of brick with mortar building.

3.5. Alterations

Bathhouse and its surroundings have changed over time in the face of many problems caused by environmental factors and structural deterioration caused by using issue.

Firstly, about the observation is the renovation of the vault and the its contemporary construction technique related to it. The vault which was built with rubble stones with cement grout as a binder within the help of a wooden mold from inside the building, on the building at the west side of the wall’s upper part was modified that constructed with rubble stone and cement grout.

In addition, in front of the entrance facade there is an outer pool that fades its architectural features on the site today. On the environmental scale changes, Tatar stream filled with alluvial that carried by the sea over time. Then the geothermal bath house juxtaposes with the sea water because of the reason Is rising of sea level at the gulf.

Also, there is a ruin is close by the case study which remain the partial parts of abutment of the antique stone bridge.

3.6. Structural Failure and Material Deterioration

The major structural problem is the cavities at the southern wall and south-west corner. They should be supported with timber posts as an emergency intervention against collapse.

The second important problem is the thinning of the vault section at the east, bottom zone. Here, the pressure of the vault is maximum. Thus, the section should be thickened against collapse risk.

Another structural problem is thick (75 cm) cracks running transversally along the vault and continuing down the walls. In terms of weathering, it should be treated with a hydraulic lime injection.

The form of the bath maintains its originality in the existing condition. No additive parts or alterations can be seen in the building. The missing building parts cause no structural problems in the building. However, the building suffers from material deterioration.

CHAPTER 4
RESTITUTION

In this chapter, the restitution scheme developed for the Gülbahçe geothermal spring bath house is presented.

4.1. Site

As historical research revealed (Appendix D), there was a settlement with a significant basilica in Gülbahçe during eastern Roman Empire period (Weber, 1901; Milioris, 2002: 92). The case study geothermal spring could have been used for bathing by the inhabitants, at least by the religious figures, during this era. The Çarpan gulf with the Geothermal Spring bath at its east could have been regarded as a safe place for resting by Geneoses who had come to the peninsula for trade or for pirate activities. So, it is possible that a bathing place reached both by the sea and land could have been known in the Middle Age. However, there is no constructional evidence about the presence of a bath house on the geothermal spring at present. Future archaeological geo-prospects and excavations may reveal further information.

No village was recorded during early Turkish period in the place of Gülbahçe (Kütükoğlu, 2010: 42). However, the historic trade route connecting Çeşme harbor to Anatolia followed the northern coast of Hypokremnos. It had probably made a stop at a fountain at the west of the Çarpan gulf. The high-quality potable water of the natural spring in Gülbahçe location should have been known by the old travelers. Then, it passed across the Çarpan Gulf with the bridge , reached the Gülbahçe Spring, and continued up the mount at the southeast of the Bath House. So, it is estimated that there was a bath house built during the 16th century on the natural geothermal spring at the east of Çarpan Gulf. This assumption is also supported with the presence of a bathing tradition of the Turkish community in the region (Baykara, 1991: 61; Reyhan, 2004: sayfa; Alp, 2016: sayfa), and the construction technique and material usage in the case study building. The first phase of the case study is evaluated as the 16th century (Appendix D).

In the early 19th century, a farm was established in the position of Gülbahçe and it developed into a village. It is expected that the inhabitants benefitted from geothermal spring bath house. However, the earthquake at the turn of the century should have given way to partial collapse of the superstructure and the walls as revealed in the variation of the construction technique and material. This demolished state of the building is regarded as phase 2 in the restitution study (Appendix D).

After the proclamation of the Turkish Republic, it is assumed that the inhabitants repaired the Gülbahçe Geothermal Spring Bath house with their own effort. The vault should have been reconstructed with the rubble stones of the demolished structure, but with cement grout poured into a timber scaffolding constructed above the pool. The quality of the workmanship presents the limited budget of its constructers. This is regarded as the third phase of the building (Appendix D).

As a result, the west of the Çarpan gulf has been shaped by man throughout century: settlements were formed and abandoned in the same position in relation with the presence of potable spring water here. However, the east of the gulf has sustained its natural Mediteranean landscape and geothermal spring throughout centuries. The restitution of the bath house is considered in three phases: The Classical Ottoman era bath house, the bath house ruin just after the Chios earthquake in 1881 and the bath house reintegrated in the early Republican era. The earliest era comprehends the caravan route passing by the entrance façade of the bath house.

4.2. The bath house

In this section, the restitution proposed at building scale is presented with emphasis on the first phase: the 16th century.

4.2.1 The Bath House in the Classical Ottoman Period

There is a bathing tradition going back to the Ottoman era in the region. The majority of the examples date to the 15th – 16th centuries (Alp, 2016: 116). The construction technique of these baths (Reyhan, 2011: 149) present similarity with the Gülbahçe Geothermal Spring Bath House. They are generally masonry structures, spanned with domes and vaults. The studied geothermal bath is assumed to be part of this bathing tradition. The modest size of the building due to its single bathing unit, presence of a pool at the center of the bathing place and platforms around are in line with the characteristics of the other historic geothermal bath houses in the region. These comparative examples are dated to the same period as well.

The outer pool flanking the bath house is evaluated as an authentic component. Its function may be washing clothes. In fact, there are traditional laundries in the villages of Urla (İpekoğlu, 2001: 245).

The vault of the Gülbahçe bath is restituted as a semicircular profile, constructed with brick and mortar. The door of the bath is spanned with a brick arch. At the same time, the baths that heat their own water in the region (Reyhan, 2004: 30) and other vernacular buildings possess brick vaults and domes, in accordance with the geometry of the related spaces. So, it is third degree reliable. The exterior surface of the vault is plastered with double layer brick-lime plaster. The source of this restitution is comparison with baths that heat their own water in the region (Kader, 2004:76) and other vernacular buildings; e.g. the domes of the Eski Çeşme Mosque (Toköz, et al., 2016), the vaults of Saint Matrone Church (Hamamcıoğlu-Turan and Akbaylar, 2011: 13). It is third degree reliable. The interior plastering system is compared with the baths that heat their own water in the region (Reyhan, 2004: 15). Its reliability is third degree.

The oculi of the vault are restituted as four hexagonal shaped light cupolas on the top line of barrel vault covers with lanterns that might be evaluated. The source of this restitution is comparison with same period baths of Anatolia (Aru,1949:38). So, it is third degree reliable.

The upper portions of the walls are restituted as rubble stone and brick masonry walls. The source of restitution is comparison with the bottom portions of the walls. The reliability degree is one. The exterior faces of the walls do not have plastering at present. This is a typical characteristic of historic baths with heating system in the region (Reyhan, 2004: 118). This is also valid for majority of the vernacular buildings with various functions in the region (Uğurlu, et all., 2004: 104-106; Hamamcıoğlu-Turan, 2005: 843-848, Hamamcıoğlu-Turan and Akbaylar, 2011: 129-151; Hamamcıoğlu-Turan, et all., 2019: 4-13). So, no plastering is suggested for the exteriors of the walls. The source of restitution is the absence of any trace of a previous plastering and comparative study with vernacular architecture of the region. The reliability degree is one.

The floor is restituted as bed rock and rough-cut stone. The ruined portions of the original stone floor are completed with comparative study within the building itself. So, its first degree reliable.

4.2.2. The Bath House Ruin just after the Earthquake

The Gülbahçe bath house might have been partially collapsed during the earthquakes at the end of the 19th century (State Archive, 2021). The vault and the upper portions of the original structure were probably lost.

4.2.3. The Bath House in the early 20th century

The form of the current vault is a depressed profile with double centers (Appendix B) and inconsistent thickness, which is atypical for the 15-16th century example in the region. It is evaluated that the debris of the bath house which demolished in the above-mentioned earthquake was gathered and used in the repair work. A wooden scaffolding supporting a wooden mold with a depressed profile might have been constructed over the pool and the wall remains. Then, the old rubble stone gathered from the debris were placed on the mold. Finally, a cement grout was prepared and poured in the mold. After binding, the mold and the scaffolding might have been removed. The exterior surface of the vault might have been plastered, which was lost with weathering in time (Appendix C).

CHAPTER 5

RESTORATION

In this chapter, cultural asset values and conservation problems of the Gülbahçe Thermal Spring Bath are evaluated. Then, a restoration scheme is proposed for the bath.

5.1. Cultural Asset Values

It is evaluated that the natural landscape composed of the mounts with Mediterranean coat at its west, the lattice formed coast and the sea at its east have been preserved. The studied monument is in this preserved portion of the site. The Gülbahçe bath house was built by the sea in relation with the position of the natural spring. As a result, the site of the bath has preserved its authenticity.

It is evaluated that the geothermal spring has been utilized throughout centuries as a valuable natural resource by the inhabitants of the peninsula and the visitors both coming from the sea and the caravan route passing by the bath house. The case study monument and its site represent the authentic tradition of bathing for healing purpose in Urla peninsula. The inner pool provides bathing opportunity in hot spring geothermal water, while the outer pool provides an open-air bathing opportunity in a combination of geothermal and sea water. The authentic landscape with the rocky mount, its Mediterranean coat and the coast line have been preserved. The bath house is part of this authentic scene with its modest scale and local building material. Therefore, the bathing site have preserved its authenticity in terms of both spirit and physical characteristics. At the same time, the integrity of natural and cultural assets; and intangible and tangible qualities have been preserved.

The bath site has historic value since its position at the border of the land and the sea have provided it privilege to be used by those coming from the sea starting with Antiquity; and also, from the near-by cities such as Clazomenai and Erythrai, and their rural lands (Pausanias, 1918: 5, 10-13; Meriç, 1986: 302). In the Byazantine era, the site was significant for Christian worshipers (Tanriverdi,2019). In the Middle Age, its significance was sustained: Genoese were active in maritime trade in the site (TDV,1993). In the Ottoman era, the healing qualities of the bathing site were continued to be utilized (Cantay,2019). As a result, the bathing site has been a focal place though out history.

The building itself represents the Ottoman thermal spring bath architecture with its modest mass and spatial layout. The superstructure and the upper portions of the walls are contributions of the early Republican years, symbolizing the desire for continuation of the usage of the healing pool; and the limited budget and skills of the building masters in dealing with concrete material. So, the monument had documentary value with all its layers.

5.2. Conservation Problems

The basic threat against structural integrity is the weakening of the upper portions. The lost roof covering has given way to weathering of the superstructure, resulting in loss of some sections of the vault. The positioning of the bath by the coast has eroded the walls juxtaposing the sea side. These partial losses in the major structural elements need urgent intervention. Following them, regular monitoring and maintenance of the building is lacking: e.g. loss of mortar in the joints; micro biological growth, higher plants, graffiti and remains of candles on the building elements. Thirdly, comfort conditions of the bathers are low since there is no toilet or changing room near-by. There is also no program for managing usage hours for different groups such as men-women; children-adult, ill-healthy, etc.

Nevertheless, the structure itself is open to failures as it is by the sea and in close interaction with salty water. At the same time, it is in a first-degree earthquake zone and close by a fault line. In addition, the historical research and current observation have revealed that it has not been regularly maintained (Appendix E).

The evolution of the failures and deteriorations has been identified by comparing the measured surveys of the bath house in 2014 and 2019.

When a comparison is made between both March 2014 and 2019 survey drawings it is seen that sea is the major cause of failures and deteriorations. The northwestern wall facing the sea has eroded much more compared to the other portions of the bath house in the mentioned five years (Figure 5.1, 5.2). The material loss at the sea façade has probably given way to a movement of the related wall towards the sea direction. In turn, the structural crack at the west side of the entrance façade has become longer and the hole above it has enlarged (Figure 5.3). The most apparent material loss in the other portions is at the south corner of the mass. In addition, the arch of the spring has further eroded. This may be explained with the discharge of the mortar in the joints in close connection with geothermal water at highest temperature (Figure 5.4). The variation in level differences of sea water may be related with seasonal changes, tide turns and heaviness of rains.

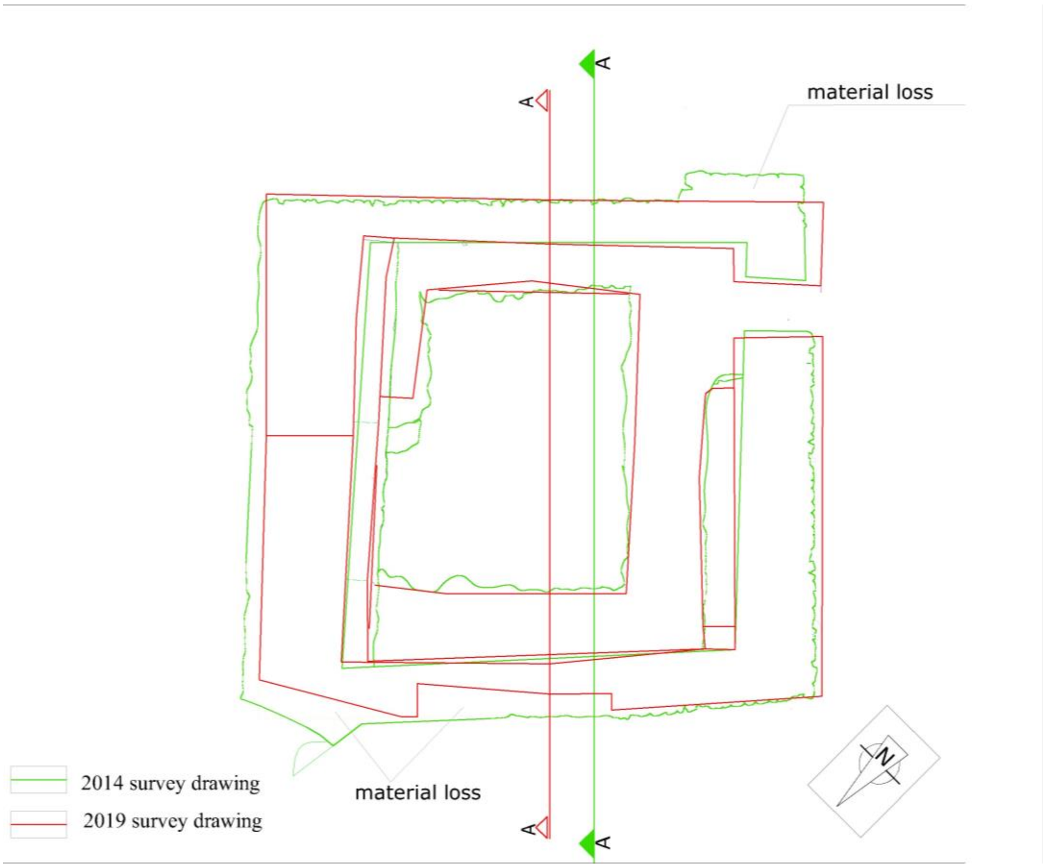


Figure 5.1. Plan Drawing

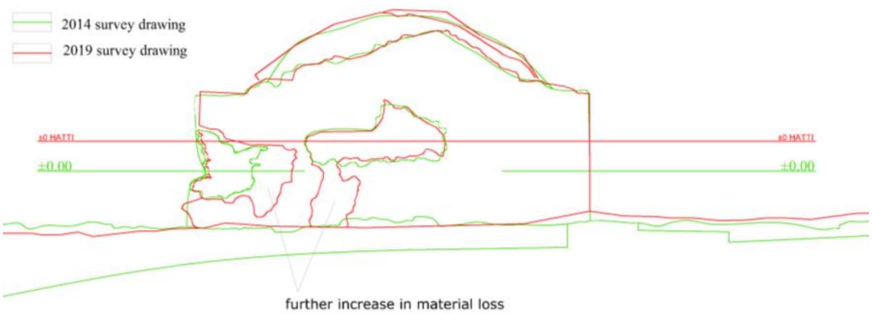


Figure 5.2. Northern Facade

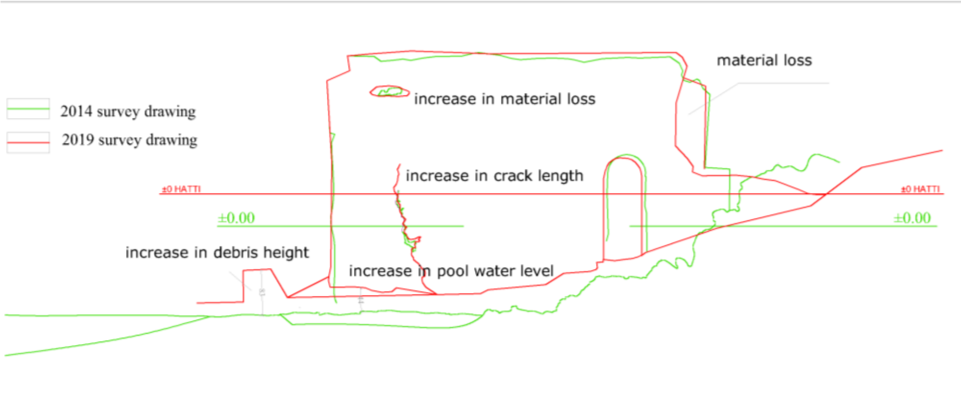


Figure 5.3. Eastern Facade

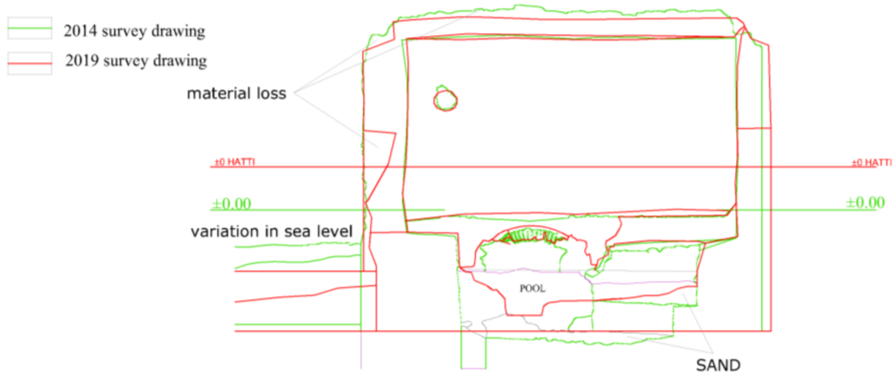


Figure 5.4. Eastern Facade

5.3. Restoration Approach and Intervention Decision

The historic conversions in the monument are to be conserved since they have documentary value. So, reconstruction of the vault is not considered. On the contrary; consolidation of the current structural system and conservation of the building material are to be realised with minimum intervention. The strenthening of the vault and the walls is the primary consolidation interventions to be realised. Coordination with civil engineers specialised in historic structures should be provided for planning the details of the implementation process. After cleaning the microbiological growth and higher plants with appropriate techniques; the gaps and cracks in the walls will be filled in with rubble stone and lime mortar. The plastering of the interior surfaces will be repaired with material compatible with the authentic one. The outer surface of the vault will be plastered with brick-lime plaster to provide protection against wheathering. The brick arch spanning the spring will be completed with brick and mortar similar to the original.

The Gülbahçe geothermal spring bath house is going to sustain its original function. The low illumination level in the bath is considered as part of its authentic spatial quality. So, the two oculi and the bath will continue to provide limited light and ventilation. Stainless steel screens are proposed for controlling entrance of birds, bats, etc. to the bathing space. They will be designed as reversible and removable elements with contemporary details. A fourth openning, a top window, at the northwest wall is suggested for slight increase in illumination. It will be designed with contemporary details.

The site of the bath is to be preserved as well. The services such as car park, toilets, changing rooms and showers necessary for contemporary comfort conditions are to be provided in a walking distance to the bath, but hidden in an appropriate position so that the natural qualities of the site are sustained.

Figure 5.5. Perspective view from the North- Restoration

Table 5.1. Monument Management Plan

	AIM	PHASES	ACTORS	TIMING
EMERGENCY MEASURES	-Urgent actions to prevent further damage and taking emergency precautions	-Preparation of condition report -Shoring of the sea façade, if necessary	-Urla Municipality -Izmir Number I Regional Conservation Council of Cultural Assets -Architectural Restoration Department of IZTECH -Civil Engineering Department of IZTECH -Construction Firm for Restoration works -Izmir Governorship, Investment, Monitoring and Coordination Directorate	Short term
	-Determining of budget for restoration project and its implementation	-An inter disciplinary team will be gathered. The head of the team will be selected -The restoration project will be prepared by IZTECH considering the principal decision numbered 660. -The project will be presented to the Izmir Number I Regional conservation council of Cultural Assets -The approved project will be presented to Izmir Governorship, Investment, monitoring and Coordination Directorate -The budget of	-Urla Municipality -Izmir Number I Regional conservation council of Cultural Assets -Arhitectural Restoration Department of IZTECH -Civil Engineering Department of IZTECH -Izmir Governorship, Investment, Monitoring and Coordination Directorate	Medium term

		implementation will be determined.		
RESTORATION	AIM	PHASES	ACTORS	TIME
	-Preparation of the bath for restoration	-The tender of restoration implementation will be realized. -The representative of construction firm will take mortar samples from the monument. -Laboratory report for characterization of authentic mortar and determination of intervention material will be prepared. -Coffer-dam for preventing penetration of sea water to foundation zone of the monument will be provided. -Sea water and spring water will be pumped out of the bath zone. -The foundation at the sea side will be examined and alteration of restoration project will be made, if necessary.	-IZTECH Rectorate -Izmir Governorship, Investment, monitoring and Coordination Directorate -Construction Firms for Restoration works -Laboratory of historic building material of conservation -Architectural Restoration Department of IZTECH -Civil Engineering Department of IZTECH	Medium term
	-Restoration	-Interventions proposal restoration project will be realized. -Systematic photographic documentation of restoration implementation will be made.	-IZTECH Rectorate -Izmir Governorship, Investment, monitoring and Coordination Directorate -The Construction Firm for Restoration works Architectural Restoration -Department of IZTECH -Civil Engineering Department of IZTECH	Long term
	-Presentation of the bath house	-Organization of an opening ceremony -Announcement of the restoration work of social media -Scheduling of a usage program for difference user groups: locals, students and personnel of IZTECH, patients.	-Iztech Media and Public Relations Coordinatorship -Iztech medical department -Iztech Rectorate	Long term

	AIM	STEPS	PROCEDURE	TIME
MONITORING	-To protect the building from failures and deteriorations	-Periodic control of the bath's conservation condition: after every rain season (May) -Infilling of discharged joints with intervention mortar defining in the laboratory report -Cleaning of vegetation -Repair of plaster	-IZTECH Directorate of Construction and Technical Works -Civil Engineering Department of IZTECH -Arhitectural Restoration Department of IZTECH	Regularly

Before starting the consolidation applications to be carried out in Gülbahçe geothermal thermal bath house, a management plan should be prepared the order to be followed regarding the applications to be made and the restoration should continue within the framework of these main elements during the implementation. The 4 main topics constitute(compose) a construction management plan.

First of all, urgent measures should be implemented immediately and it is necessary to prevent the structural damages in the building from continuing to enlarge the building.

In the second place, the restoration project is officially required, the project preparation, approval and the tender process, and the implementation project process and cost calculations of the construction firm to be implemented during this period.

The third one, the application part is starting from the environment of the registered building and starting the renovation with the measures to be taken. Framing the building with the help of the scaffolding at the very beginning of the process and cutting off the sea-related façades from seawater. In addition to this, the source of the spring water that fills the pool and comes out from under the ground should be determined, rehabilitated and controlled, and after the water in the pool is evacuated, the renovation and repair process should be started.

The last step of the construction management plan is observation, after the restoration process is finished, in this section is recommended to identify and repairing the deterioration in the building by creating an annual chart table by following the seasons regarding how and when the building was affected by environmental factors more.

CHAPTER 6

CONCLUSION

This study takes into consideration a historic geothermal spring bath house on the coast of Gülbahçe bay in Urla, İzmir. The rubble stone monument jutting through the rocks by the sea coast has integrity with its Mediterranean landscape. The *kaplıca* built on the geothermal spring by the coast documents the appreciation of curing quality of this natural resource by the communities living its vicinity and those coming from the sea throughout history. Since this bathing function for treatment purpose has been sustained until now, the monument has preserved its authenticity in terms of function. The bottom portions of the structure document the Classical Ottoman construction manners in the region with their rubble stone, brick and mortar walls, exposed without plastering at the exterior, and plastered at the interior; while the superstructure documents the repair attitude of the early 20th century with its vault rubble stone and cement vault with the traces of its wooden mold. So, material and workmanship authenticity are preserved as well. The monument is one of the *kaplıca*s in the geothermal region of Urla-Seferihisar. The other traditional examples are Cumalı, Karakoç, Kelalan and Ilıksu *kaplıca*s. So, it has group value. With its vaulted prismatic mass, single bathing space dimly lighted with a few oculi and the entrance door, central pool in which the geothermal spring water runs into, and the sitting platforms carved on the surrounding bed rock; the monument has architectural value as a typical representative of the *kaplıca* typology in the region. Presence of archaeological ruins regarding geothermal baths in some of these sites; e.g. Karakoç and Kelalan; provides age value to the bathing places. This bathing culture, which has been sustained since the antiquity, is evaluated as an intangible asset that should be preserved in Gülbahçe, and also in the region whole. The most crucial conservation problem is loss of structural integrity due to weathering of the vault and thinning of its section; and partial loss of wall portions flanking the sea. The proposed restoration approach is consolidation of the structure with minimum intervention, and continuation of its authentic bathing function.

Within this frame, the restoration implementation should be carried out with the collaboration of architect restorers, civil engineers and material scientists. A construction firm specialized in restoration of monuments should take the responsibility of the implementation in coordination with the project team and IZTECH authorities. Characterization of mortar in the walls and concrete in the vault should be made by a material conservation laboratory. The service road leading to the bath house should be improved. Necessary investigation of the foundation of the sea facade should be completed before the implementation starts. Shoring for supporting this sea facade and scaffolding for consolidating the vault should be provided. The sea facade should be reintegrated with compatible material. If necessary, tie rods should be provided. The transition zone between the old and the new should be made legible with a relatively thick mortar enriched with brick pieces. The pool should be covered with a wooden platform to avoid accumulation of construction material. After the implementation is completed, the structure should be maintained regularly in accordance with the proposed monument management plan. Future work should include the investigation of the bridge and caravan route remains in the site, and planning of the related preservation work.

REFERENCES

Acar, T. (2012). *Urla Hersekzade Ahmet Paşa Hamamı'nın Araştırma Kazısı Sonrasında Rölöve-Restitüsyon-Restorasyon Yaklaşım*. Tarih Okulu Ocak – Nisan, No XII, (129-153).

Akyıldız, B. (1988). *Urla Tarihi Doku Araştırması Koruma Ve Restorasyon Önerileri*. (M.Sc. Thesis). Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü Mimarlık Bölümü, İzmir, (25,29,31,44).

Alp, A., (2016). *Typology of Historical Turkish Baths in Urla and Seferihisar, Izmir*. Unpublished MSc Thesis, İzmir Institute of Technology, İzmir.

Anabolu M., (2001). *İstanbul ve Anadolu'daki Roma İmparatorluk Dönemi Mimarlık Yapıtları*, Arkeoloji ve Sanat Yayınları, Kanaat Basımevi, İstanbul, (26).

ANKUSAM., *Liman Tepe Tunç Çağı Liman Kenti*. access: http://ankusam.ankara.edu.tr/limankara/.

ARHEO, 26/2009

Aru, K. A. (1941). *Türk Hamamları Etüdü*, Doçentlik Çalışması, İ.T.Ü. Mimarlık Fakültesi, İstanbul.

Aru, K.A. (1949). *Türk Hamamları Etüdü*. İstanbul Matbaacılık.

Aqua Thermae, 2001. *Baths of Castellammare di Stabia*. https://www.aquathermae.net/campania_us/baths-of-castellammare-di-stabia/, accessed: 10.11.2020.

Balta, H. B., Hamamcıoğlu-Turan, M., Ocalı, O. (2013). *"Three-dimensional modeling via photographs for documentation of a village bath." International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Volume XL-5/W2, 2013 XXIV International CIPA Symposium, 2 – 6 September, Strasbourg, France.

Başoğlan, Ö. (2010) *Mimari Miras Yönetimi Ve Sürdürülebilir Turizm: Bati Anadolu Tarihi Kaplicalari Örneği,* Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü Doktora Tezi Mimarlık Bölümü, Restorasyon Bilim Dalı.

Baykara, T. (1974). *İzmir Şehri ve tarihi*. İzmir: Ege Üniversitesi Matbaası. 26-31, (69-71).

Bayrakal, S. (2009). *Urla ve Köylerindeki Türk Dönemi Sosyal Anıtları*. Ege Üniversitesi, İzmir (73-80).

Bean, G. (2001). *Eski Çağlarda Ege Bölgesi.* Arion Yayınları, İstanbul.

Beyru, R. (2011). *19. Yüzyılda İzmir Kenti*, Literatür Yayınları, İstanbul.

Bilgin, A.G., (1996) *Urban Archaeology: as the basis for the studies on the future of the town case study: Bergama*, Unpublished MSc Thesis, The Middle East Technical University, Ankara.

Cantay, G. G., *"Suyla Şifâ Bulan Şehirler", Z Dergisi, access :https://www.zdergisi.istanbul/makale/suyla-sifa-bulan-sehirler-119*.

Çıtak, G. (2010). *Three-Dimensional Modeling of Urla, Hersekzade Ahmet Paşa Bath Based on Tacheometric Measurement*, Unpublished MSc Thesis, İzmir Institute of Technology, İzmir.

Çıtak, G., Hamamcıoğlu-Turan, M. (2011). Urla, *Hersekzade Ahmet Paşa Hamamının Takeometrik Ölçüme Dayalı Üç Boyutlu Modellemesi.* Tarihi Yapıları Koruma ve Onarım Sempozyumu – TAYKON.

Çizer, Ö. (2004). *Investigation of Lime Mortar Characteristics for the Conservation of the Ottoman Baths in Seferihisar-Urla Region*. Unpublished MSc Thesis, İzmir Institute of Technology, İzmir.

Çizer, Ö., Hamamcıoğlu-Turan, M. (2003a). "Seferihisar'daki Büyük Hamam: Tanıtım ve Değerlendirme". *Arredamento Mimarlık*, No 155, (108-113).

Çizer, Ö., Hamamcıoğlu-Turan, M. (2003b). *"Visualisation and Evaluation of Structural Characteristics and Problems of a Classical Ottoman Bath"*, Proceedings of the 8th International Conference on Structural Studies, Repairs and Maintenance of Heritage Architecture, Brebbia, C. A. (ed.), WIT Press, Southampton, UK, (88-377).

Eczacıbaşı Sanat Ansiklopedisi, (1998), Yem, II.Cilt, 750-752,945-946, İstanbul.

Erfurt-Cooper, P. (2010) *The Importance of Natural Geothermal Resources in Tourism*, Proceedings World Geothermal Congress 2010 Bali, Indonesia, 25-29 April 2010.

Ergin, N. (2012). *Anadolu Medeniyetlerinde Hamam Kültürü: Mimari, Tarih, İmgelem*, Koç University Press: 23, İstanbul. (29,35, 41,67-83,269).

Erkanal, H. (2011). *Limantepe 2009 Yılı Kazıları, 32. Kazı Sonuçları Toplantısı 4. cilt*.

Erkanal, H., Şahoğlu, V. 2012 *Limantepe (1992-...) DTCF Arkeoloji Bölümü tarihçesi ve kazılar (1936-2011)* Anatolia supplements III.2 festschrift series, journal of the archeology department faculty of letters, Ankara (219-230).

Ersoy, Y., Koparal, E. 2008. *Klazomenai Khorasi Ve Teos Sur İçi Yerleşim Yüzey Araştırması 2006 Yılı Çalışmaları*. 25.AST Cilt 3. 28 Mayıs-01 Haziran 2007. Kocaeli, (47-70).

Ersoy Y., Tuna N., Koparal E., (2010). *Urla Ve Seferihisar İlçeleri Yüzey Araştırması 2009 Yılı Çalışmaları*, T.C. Kültür ve Turizm Bakanlığı Kültür Varlıkları Ve Müzeler Genel Müdürlüğü 28. Araştırma Sonuçları Toplantısı, 2.cilt , Ayrı Basım, İstanbul, 341.

Eyice, S. (1960). *İznik'te Büyük Hamam Ve Osmanlı Devri Hamamları Hakkında Bir Deneme*, *İ.Ü. Edebiyat Fakültesi Tarih Dergisi*, Sayı 5 Cilt XI, 99-120.

Eyice, S. (1997). "Hamam Maddesi". *İslam Ansiklopedisi 15.* Türkiye Diyanet Vakfı, İstanbul, (402-430).

Giray, S. (1949). *Yalova Kaplıcaları Tarihçesi ve Şifalı Suları ile Tedavi,* Bürhaneddin Erenler Matbaası, İstanbul. (20).

Gültekin, T. (1989). *Urla-İçmeler (İzmir) ve Çevresinin Jeolojik-Hidrolojik İncelenmesi Yeralti Sularinin Jeokimyasal Yorumlanmasi*, Yüksek Lisans Tezi, İzmir Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü Jeoloji Mühendisliği Bölümü Uygulamalı Jeoloji Anabilim Dali, İzmir.

Hamamcıoğlu-Turan, M., Reyhan, K. (2005). *Urla-Seferihisar Bölgesindeki Türk Dönemi Hamamları*. *Arkitekt*, No: Ağustos-Eylül 2005/ 501, (10-24).

Hamamcioglu-Turan, M., (2005). *Representation of Historical Stratifications in a Church Converted into a Mosque*, Proceedings of the 20th International Symposium of the International Scientific Committee for Documentation of Cultural Heritage CIPA 2005, S. Dequal (eds), 26 September – 1 October 2005, Cilt: 2, Torino, Italy, (843-848).

Hamamcıoğlu-Turan M. Akbaylar I (2011). *Documentation of Historic Structures for Assessment of Heritage Characteristics,* Journal of Architectural and Planning Research, Vol.28, No: 2, (129-151).

Hamamcıoglu-Turan M, Aktaş, E., Toköz, Ö. D., 2019. *Peyzaj Korumada Öncelik,* TAÇ Dergisi, No: 13, (4-13).

İpekoğlu, Başak. *Osmanlı Dönemi Köy Yerleşmelerinde Korunması Gerekli Tarihi ve Kültürel Bir Miras: Çamaşırhane.* Taç Vakfı'nın 25 Yılı Anı Kitabı: Türkiye'de Risk Altındaki Doğal ve Kültürel Miras. İstanbul. 2001, (245).

İZKA, (2013). *Urla-Çeşme-Karaburun Yarımadası Sürdürülebilir Kalkınma Stratejisi Mevcut Durum Analiz Raporu –Taslak-,* İzmir Kalkinma Ajansi, İzmir (43-51).

İzmir Valiliği İl Kültür Müdürlüğü, (2002). *İzmir Kültür Envanteri/Seferihisar*, İzmir, İl Özel İdaresi Kültür Yayınları Envanter Dizisi:6, İzmir. (51).

Izmir Governorship, 2019. *Management License numbered İR 2164 and organized in name of IZTEK for Gülbahçe Geothermal Site. Izmir Governorship*; Directorate of Investment, Monitoring and Coordination, Decision numbered E.21071 and dated 10.04.2019.

JMO, 2019. https://www.jmo.org.tr/mevzuat/mevzuat_detay.php?kod=75 accessed: 21.04.2019.

Karl von Scherzer, (2001). *İzmir 1873, Kent Kitaplığı dizisi: 14*, İzmir Yayıncılık, İzmir.

Kilerci, İ. (2003). *Kaplica Yapilarinin Mekan Özellikleri Balçova-Gönen-Yalova Örnekleri*, Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü Yüksek Lisans Tezi Mimarlık Bölümü Bina Bilgisi Ana Bilim Dalı Yüksek Lisans Tezi, İzmir, (8).

Koparal E., (2009). *“Border Forts of Klazomenai: Cinderesi Fortification”*, Zurück Zum Gegenstand, Beier & Beran, Germany, (501-508).

Kütükoğlu M.S, (2000). *XV.ve XVI. Asırlarda İzmir Kazasının Sosyal ve İktisadi Yapısı*, Kent Kitaplığı Dizisi:2, İzmir Yayıncılık, İzmir.

Kütükoğlu M.S., (2010). *XVI.Asırda Çeşme Kazasının Sosyal ve Istisadi Yapısı*, Türk Tarih Kurumu, Ankara.

Mater, B., (1982). *Urla Yarımadasında Arazinin Sınıflandırılması ile Kullanışı Arasındaki İlişkiler*, Edebiyat Fakültesi Matbaası, İstanbul.

Meriç, A.E., ÖZ A.K., Uhri A, (2012). *Urla Söğüt Kutsal Alanı Seramik Buluntularının Değerlendirilmesi*, Dokuz Eylül Üniversitesi Edebiyat Fakültesi Dergisi Cilt:1 Sayı:1, İzmir. (40-43).

Milioris, E.M., (2002). *1922 Öncesinde Urla*. Translated by Caymaz, T. Bilim Ofset Basım Yayın ve Tic. Ltd. Şti. Konak. İzmir.

Önge, Y. (1997). T*ürk Mimarisinde Selçuklu ve Osmanlı Dönemlerinde Su Yapıları*, Türk Tarih Kurumu Basımevi, Ankara.

Önge M.Y. (1995). *Anadolu’da XII-XIII. Yüzyıl Türk Hamamları*, Vakıflar Genel Müdürlüğü Yayınları, Ankara, (273).

Özkan A., (2004). *Yazılarıyla ve Rölöveleriyle Sedat Çetintaş*, Barın Cilt Evi, İstanbul, (68-70).

Pausanias, 1918. *Description of Greece*, Book VII, Jones, W. H. S. and Omerod, H. A. (trans.), Loeb Classical Library Volumes, Cambridge, MA, Harvard University Press; London, William Heinemann Ltd.: 5, (10-13). https://www.theoi.com/Text/Pausanias7A.html: 3.5, accessed: 02.11.2020.

Pekçetinöz B., Günay C., Eftelioğlu M., Özel E. (2007). *Jeofizik Yöntemlerle Gülbahçe Körfezindeki Jeotermal Potansiyelin Araştırılması*, 6.Ulusal Kıyı Mühendisliği Sempozyumu, İzmir.

Pekçetinöz, B. (2010). *İzmir ve Civar Körfezlerdeki Jeotermal Alanların Araştırılması* (Gülbahçe Körfezi Örneğinde), Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü, İzmir.

Pınar İ., (1998). *Gezginlerin Gözüyle İzmir XVII.Yüzyıl*, Akademi Kitabevi, İzmir.

Radt, W., 1988. *Pergamon Geschichte und Bauten, Funde und Erforschung Einer Antiken Metropole*, DuMont Buchverlag, Köln.

Reyhan, K. (2004). Construction Techniques and Materials of the Ottoman Period Baths in Seferihisar–Urla Region. (M.Sc. thesis). Izmir Institute of Technology, Izmir.

Reyhan, K. (2011). *Architectural Characteristics and Construction Techniques of Domes in a group of Ottoman Baths.* (PhD. Thesis), İzmir Institute of Technology, İzmir.

Reman R., (1942). *Balneoloji ve Şifalı Kaynaklarımız*, Cumhuriyet Matbaası, Istanbul.

RT, (1999). *Grouping, Maintenance and Repair of Immovable Cultural Assets, the Principle Decision Numbered 660 and Dated 5.11.1999. Republic of Turkey, Ministry of Culture, the Supreme Council for Preservation of Natural and Cultural Assets*, Ankara, https://teftis.ktb.gov.tr/TR-263743/660-nolu-ilke-karari-tasinmaz-kultur-varliklarinin-grup-.htm, accessed: 02.112020.

RT, (2012). *Revision of Conservation Aimed, 1/5000 Scale, Master Development Plan, Decision numbered 8292 and dated 17.10.2012*. Republic of Turkey, Ministry of Environment and Urbanization, Ankara.

Sanat Tarihi Araştırmaları Dergisi, Aralık 1990, sayı:9, İstanbul, (70-74).

Strabo, 7 BC. *The Géographica*. Translated by Hamilton, H.C. Geography of Strabo, Volume III. Book XVI. 1854-1857. (17-24).

Star Network, (2020). *Castellammare di Stabia*. https://www.coastsorrento.com/castellammare-di-stabia.htm, accessed: 10.11.2020.

Şahoğlu V., (2005). *The Anatolian Trade Network and the Izmir Region During The Early Bronze Age*, Oxford Journal of Archaeology, Blackwell publishing Ltd., Oxford. (339-340).

TC. Seferihisar Kaymakamlığı, (2004). *"Dünden Yarına Seferihisar" Sempozyumu Bildiriler*, Seferihisar Kaymakamlığı Çevre Kültür Ve Turizm Birliği Yayını:2, İzmir. (46-155).

T.C. Kültür ve Turizm Bakanlığı Kültür Varlıkları ve Müzeler Genel Müdürlüğü, Allame Press, İstanbul.

Texier, C. 2002. *Küçük Asya; Coğrafyası, Tarihi ve Arkeolojisi*. Ankara: Enformasyon ve Dokümantasyon Hizmetleri Vakfı, (247-249).

Teos Archaeology Project Website, 2010. About the history of Teos ion city access http://www.teosarkeoloji.com/multimedia/Yayınlar/Kazı_Raporlari

TINA Denizcilik Arkeoloji Dergisi sayı:2, Türkiye Sualtı Arkeolojisi Vakfı, 2014.

Title Deed-Cadaster, 2020. *General Directorate of Land Registry and Cadaster*. Accessed: 02.11.2020.

Turan H.M., Reyhan K., *Urla-Seferihisar Bölgesindeki Türk Dönemi Hamamları*, Arkitekt sayı: 501, 2005.

Turan H.M., Akbaylar I., *Documentation of Historic Structures for the Assessment of Heritage Characteristics, Journal of Architectural and Planning Research,* 28:2, Chicago,2011.

Tümöz, F. (1987). *Seferihisar Düzce Köyü Tarihi Çevre Araştırması, Anıtların Belgelenmesi ve Koruma Önerileri*, (M.Sc.Thesis), Dokuz Eylül Üniversitesi, İzmir.

T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü, 2021. *Osmanlı Arşiv Katalogları. (General Directorate of State Archives. Ottoman Archive Catalogues),* http://katalog.devletarsivleri.gov.tr/osmanli/arsiv.aspx, accessed January, 2021

Türkiye Diyanet Vakfı (1993), "Ceneviz", İslam Ansiklopedisi, İstanbul, (363-365). access: https://islamansiklopedisi.org.tr/ceneviz.

Turkish Republic Prime Ministry General Directorate of State Archives Department of Ottoman Archives Website. 2021. http://katalog.devletarsivleri.gov.tr/osmanli/arsiv.aspx., accessed February 10, 2021

Uğurlu, E., Şerifaki, K., Hamamcıoğlu-Turan, M., 2004. *Karaburun, Saip'te Tarihsel Zeytinyağı Değirmenleri*, Arredamento Mimarlık, No: 2004 / 12, (102-107).

Uğurlu, E. (2005). *Characterization of Horasan Plasters from Some Ottoman Baths in İzmir*. (M.Sc. Thesis). İzmir Institute of Technology, İzmir.

Ülgen, A. (1950). "Hamam" Maddesi. İslam Ansiklopedisi 5, İstanbul, (148-177).

Ülker, N.,1994. *XVII. ve XVIII. Yüzyıllarda İzmir Şehri Tarihi*, V.1, Akademi Kitabevi, İzmir.

Wulf, U., 1994. *Der Stadttplan von Petgamon" Istanbuler Mitteilungen, no: 44*, (135-177).

Yaman D. (1999). Gülbahçe (Urla) *Jeotermal Alanının Hidrojeolojik İncelenmesi*, Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü Yüksek Lisans Tezi Jeoloji Mühendisliği Bölümü Uygulamalı Jeoloji Anabilim Dalı, İzmir.

Yegül, F. (1995). *Baths and Bathing in Classical Antiquity. Architectural History Foundation*; Cambridge, Mass.: MIT Press, New York.

Yegül F., (2011). *Roma Dünyasında Yıkanma*, Koç Üniversitesi Yayınları, Istanbul.

Wood, R. Thomas, (2015). *The Preston Geothermal Resources; Renewed Interest in a Known Geothermal Resource Area*, Conference: Fortieth Workshop on Geothermal Reservoir Engineering, Stanford University, California. access: https://www.researchgate.net/publication/273060246_The_Preston_Geothermal_Resources_Renewed_Interest_in_a_Known_Geothermal_Resource_Area

APPENDIX A

ARCHIVE DOCUMENTS

(Source: İYTE, 2019)

Evrak Tarih ve Sayısı: 20/03/2019-3691

GÖBEKLİTEPE
TARİHİN SIFIR NOKTASI

T.C.
KÜLTÜR VE TURİZM BAKANLIĞI
Kültür Varlıkları ve Müzeler Genel Müdürlüğü
İzmir 1 Numaralı Kültür Varlıklarını Koruma Bölge Kurulu Müdürlüğü

Sayı : 66017023-165.99[165.99]-E.218002 12.03.2019

Konu : Urla Gülbahçe Enstitümüz Kampüs Sınırları
İçinde Yer Alan Tarihi Kaplıcanın Onarımı
35.18/356

İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜ REKTÖRLÜĞÜNE
Urla/İZMİR

İlgi : İzmir Yüksek Teknolojı Enstitüsü Rektörlüğü'nün 13.02.2019 tarihli ve 537 sayılı yazısı.

İzmir İli, Urla İlçesi, Gülbahçe mevkiinde yer alan ve tapuda 3386 parselde kayıtlı eski kaplıca yapısının tescil durumu ile rölöve, restitüsyon etüdü ve restorasyon projelerinin hazırlanması konusunu içeren ilgi yazı incelenmiştir.

Söz konusu eski kaplıca yapısı, İzmir I Numaralı Kültür Varlıklarını Koruma Bölge Kurulu'nun 06.11.2015 tarih ve 3814 sayılı kararı ile 1.grup kültür varlığı olarak tescil edilmiştir. Taşınmaza yönelik rölöve, restitüsyon etüdü ve restorasyon projesinin Koruma Bölge Kurulunda değerlendirilmek üzere Müdürlüğümüze iletilmesi hususunda bilgilerinizi ve gereğini arz ederim.

e-imzalıdır
Ulvi ÖZEL
Müdür

13 03 2019

Şükran YEŞİL
Bilgisayar İşletmeni

Not: 5070 sayılı Elektronik İmza kanunu gereği bu belge elektronik imza ile imzalanmıştır.

Evrak Doğrulama Kodu : WBAMQIAHZSDZVALVHSXX Evrak Takip Adresi: http://belgedogrulama.kultur.gov.tr/
Umurbey Mah. 1491 Sok.No:4/A KONAK/İZMİR
Tel: (0232) 489 00 81 / 489 38 44
Fax: (0232) 483 25 84

Bilgi için:Mehmet Vehbi TÜZÜNER
Müze Araştırmacısı

Türkiye

Figure A.1.Archive document of the Gülbahçe Thermal Spring Bath House
(Source: Archives of İzmir First Conservation Council of Cultural and Natural Assets)

Evrak Tarih ve Sayısı: 05/03/2020-2630

GÖBEKLİTEPE
TARİHİN SIFIR NOKTASI

MİLLİ MÜCADELE'NİN YÜZÜNCÜ YILI

T.C.
KÜLTÜR VE TURİZM BAKANLIĞI
Kültür Varlıkları ve Müzeler Genel Müdürlüğü
İzmir 1 Numaralı Kültür Varlıklarını Koruma Bölge Kurulu Müdürlüğü

Sayı : 66017023-165.02.03[165.02.03]-E.123514 07.02.2020

Konu : İzmir İli, Urla İlçesi, Gülbahçe
Mevkii, 3386 parselde kayıtlı ılıca
yapısı hak. 35.18/2670

İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜNE
(Rektörlük Sekreterliği)
Urla/İZMİR

Özü yukarıda belirtilen konu hakkında İzmir 1 Numaralı Kültür Varlıklarını Koruma Bölge Kurulu tarafından alınan **31.01.2020** tarih ve **10394** sayılı kurul kararı ekte gönderilmektedir.

Bilgilerinizi ve gereğini arz ve rica ederim.

e-imzalıdır
Ulvi ÖZEL
Müdür

Ek : Karar (1 sayfa)

Dağıtım:

Gereği:
Urla Belediye Başkanlığına
(İmar Ve Şehircilik Müdürlüğü)
Urla/İZMİR

Bilgi:
Kültür Varlıkları ve Müzeler Genel Müdürlüğüne
(Kurullar Dairesi Başkanlığı)
II.TBMM Binası Yanı 06110 Ulus Altındağ/
ANKARA
İzmir Valiliğine
(İl Kültür ve Turizm Müdürlüğü)
Akdeniz Mahallesi, 1344 Sokak, No: 2, 35210
Pasaport/Konak/İZMİR
Urla Kaymakamlığına
Urla/İZMİR

Bu Evrakın 5070 Sayılı Kanun
Gereğince E-İMZA ile imzalandığı
tasdik olunur. 07.02.2020
Şükran YEŞİL
Bilgisayar İşletmeni

Not: 5070 sayılı Elektronik İmza Kanunu gereği bu belge elektronik imza ile imzalanmıştır.

Evrak Doğrulama Kodu : GTEZOACAWDDTEPQLVOPI Evrak Takip Adresi: http://belgedogrulama.kultur.gov.tr/
Umurbey Mah. 1491 Sok.No:4/A KONAK/İZMİR
Tel: (0232) 489 00 81 / 489 38 44
Fax: (0232) 483 25 84

Bilgi için:Mehmet Vehbi TÜZÜNER
Müze Araştırmacısı

Türkiye

Figure A.2.Archive document of the Gülbahçe Thermal Spring Bath House

(Source: Archives of İzmir First Conservation Council of Cultural and Natural Assets)

T.C.
KÜLTÜR VE TURİZM BAKANLIĞI
İZMİR 1 NUMARALI KÜLTÜR VARLIKLARINI KORUMA BÖLGE KURULU
KARAR

TOPLANTI TARİHİ VE NO : **31.01.2020-350** **35.18/2670**

KARAR TARİHİ VE NO : **31.01.2020-10394**

Toplantı Yeri
İZMİR

İzmir İli, Urla İlçesi, Gülbahçe Mevkiinde yer alan ve tapuda 3386 parselde kayıtlı, mülkiyeti İzmir Yüksek Teknoloji Enstitüsüne ait ve İzmir I Numaralı Kültür Varlıklarını Koruma Bölge Kurulu'nun 06.11.2015 tarih ve 3814 sayılı kararı ile 1.grup kültür varlığı olarak tescil edilen eski ılıca yapısının restitüsyon ve restorasyon projelerinin değerlendirilerek uygun bulunduğu İzmir I Numaralı Kültür Varlıklarını Koruma Bölge Kurulu'nun 29.08.2019 tarih ve 9642 sayılı kararında, mevcut ilke kararı uyarınca ' uygulamanın müellif mimar denetiminde yapılması ' hükmünün ifade edilmediği, bu nedenle; denetim ve uygulama sorumluluğunun belirtilerek, konuya ilişkin kararın yeniden alınması ve ilgili yerlere dağıtımının yapılması istenen Kültür Varlıkları ve Müzeler Genel Müdürlüğü'nün 04.12.2019 tarih ve E.1003749 sayılı yazısı ile Müdürlük evrakına 23.01.2020 tarih ve 38763 sayı ile kayıtlı uzman raporu okundu, ekleri incelendi, yapılan görüşmeler sonucunda;

İzmir İli, Urla İlçesi, Gülbahçe Mevkiinde yer alan ve tapunun 3386 parselinde kayıtlı, eski ılıca yapısının restitüsyon ve restorasyon projelerinin uygun bulunduğu Koruma Bölge Kurulu'nun 29.08.2019 tarih ve 9642 sayılı karar metnine; 'uygulamanın müellif mimarı denetiminde ve sorumluluğunda yapılması' ifadesinin eklenmesine karar verildi.

ASLI GİBİDİR
ÜLVİ ÖZEL
Müdür

BAŞKAN
Ömer Faruk GÜLER
İMZA

BAŞKAN YARDIMCISI
Fatma YILMAZER
İMZA

ÜYE
Yusuf AKYAZICI
İMZA

ÜYE
Emre KARAHAN
İMZA

ÜYE
Büyükşehir Belediye Başkanlığı
BULUNMADI

ÜYE
Aysu KAHRAMAN
Urla Belediye Başkanlığı
İMZA

Figure A.3.Archive document of the Gülbahçe Thermal Spring Bath House

(Source: Archives of İzmir First Conservation Council of Cultural and Natural Assets)

T.C.
URLA BELEDİYE BAŞKANLIĞI
İmar ve Şehircilik Müdürlüğü

Sayı : 35308427-000-E.6723 02/03/2020
Konu : İMAR DURUMU

MİNE TURAN

İlgi : 25.02.2020 tarihli ve sayılı yazınız

İlgi dilekçenize konu ilçemizin Gülbahçe Mahallesinde kayıtlı 391 ada 11 nolu parselin, 1/1000 ölçekli Uygulama İmar Planı bulunmamaktadır. Bakanlık Makamının 17.10.2012 tarih ve 8292 sayılı Oluru ile 644 sayılı KHK'nin 13/A maddesi uyarınca onaylanan 1/5000 ölçekli Koruma Amaçlı Nazım İmar Planı Revizyonunda Kampüs Alanı olarak planlıdır. Ayrıca söz konusu taşınmaz Sürdürülebilir Koruma ve Kontrollü Kullanım Alanı olarak belirlenen alanda ve İzmir Valiliği Yatırım İzleme ve Koordinasyon Başkanlığı'nın 10.04.2019 tarih ve E.21071 sayılı yazısı ile tarafımıza iletilen, 5686 sayılı Jeotermal Kaynaklar ve Doğal Mineralli Sular Kanunu kapsamında alan bazında İZTEK İZMİR TEKNOLOJİ SAN. VE TİC. A.Ş. adına İ.R.2164 nolu işletme ruhsatı düzenlenen Gülbahçe Mevkii jeotermal sahası koruma alanı içerisinde kalmakta olduğu görülmektedir. İzmir Valiliği Yatırım İzleme ve Koordinasyon Başkanlığı'nın 10.04.2019 tarih ve E.21071 sayılı yazısı ile Jeotermal Sahası koruma alanı içerisinde kalan alanlarda, mevcut imar planları üzerine koruma alanı işlenmeden uygulamaya geçilemeyeceği belirtilmiştir.

Bilgilerinize rica ederim.

(e-İmzalıdır)
Yücel IŞIK
Belediye Bşk. V. a.
Belediye Başkan Yardımcısı

Hacıisa Mah. Bülent Baratalı Caddesi Cumhuriyet Meydanı No:3 Urla / İzmir
P.k.35430
Telefon No: (232)754 10 88 Faks No: (232)754 10 09
e-Posta: info@urla.bel.tr İnternet Adresi: http://www.urla.bel.tr/

Bilgi için: Pelin YILMAZ
Harita Kadastro Tek.
Telefon No:

Figure A.4.Archieve document of the Gülbahçe Thermal Spring Bath House

(Source: Archives of Urla Municipality,)

APPENDIX B

MEASURED DRAWINGS

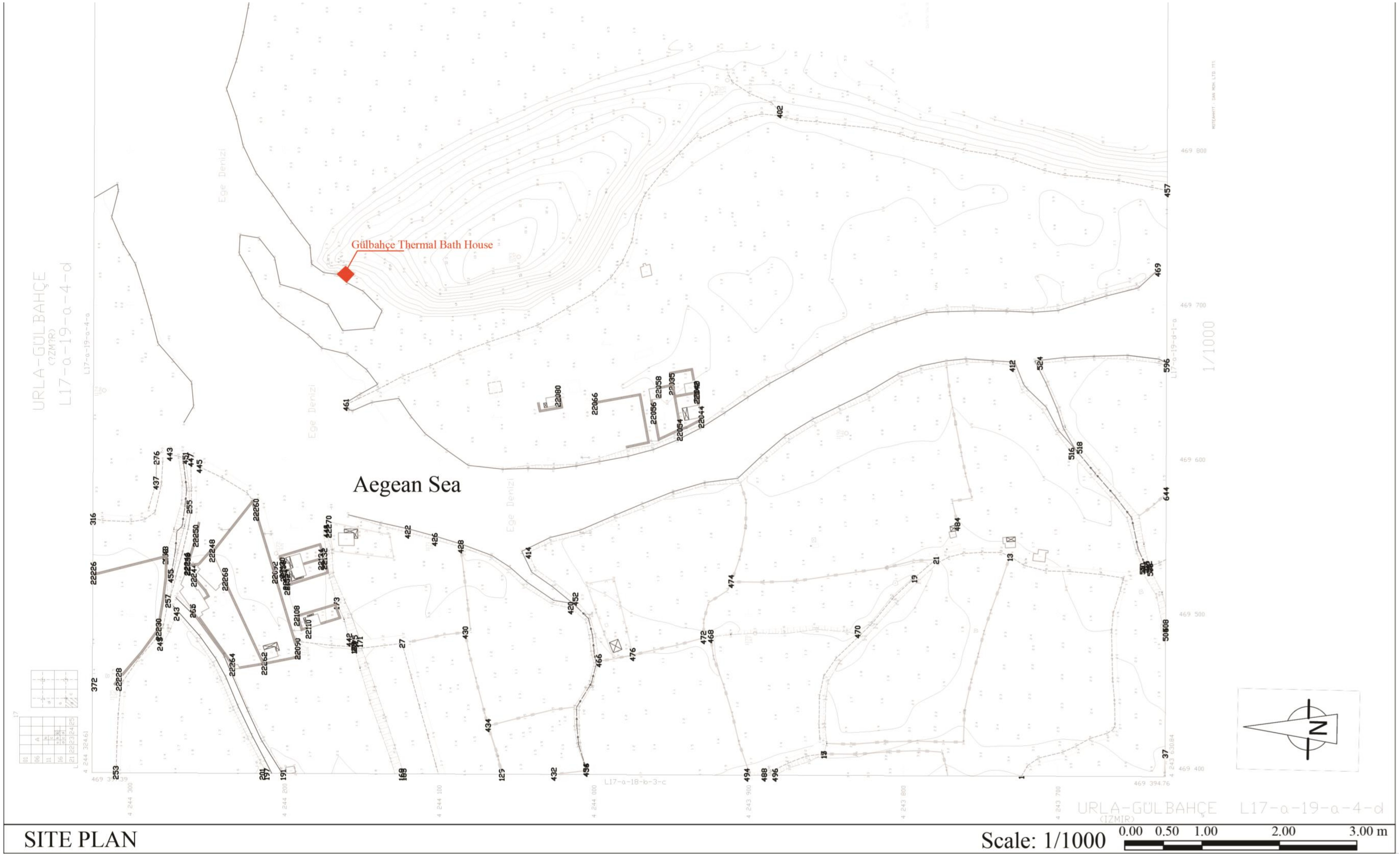


Figure B.1. Site Plan-Measured Drawing

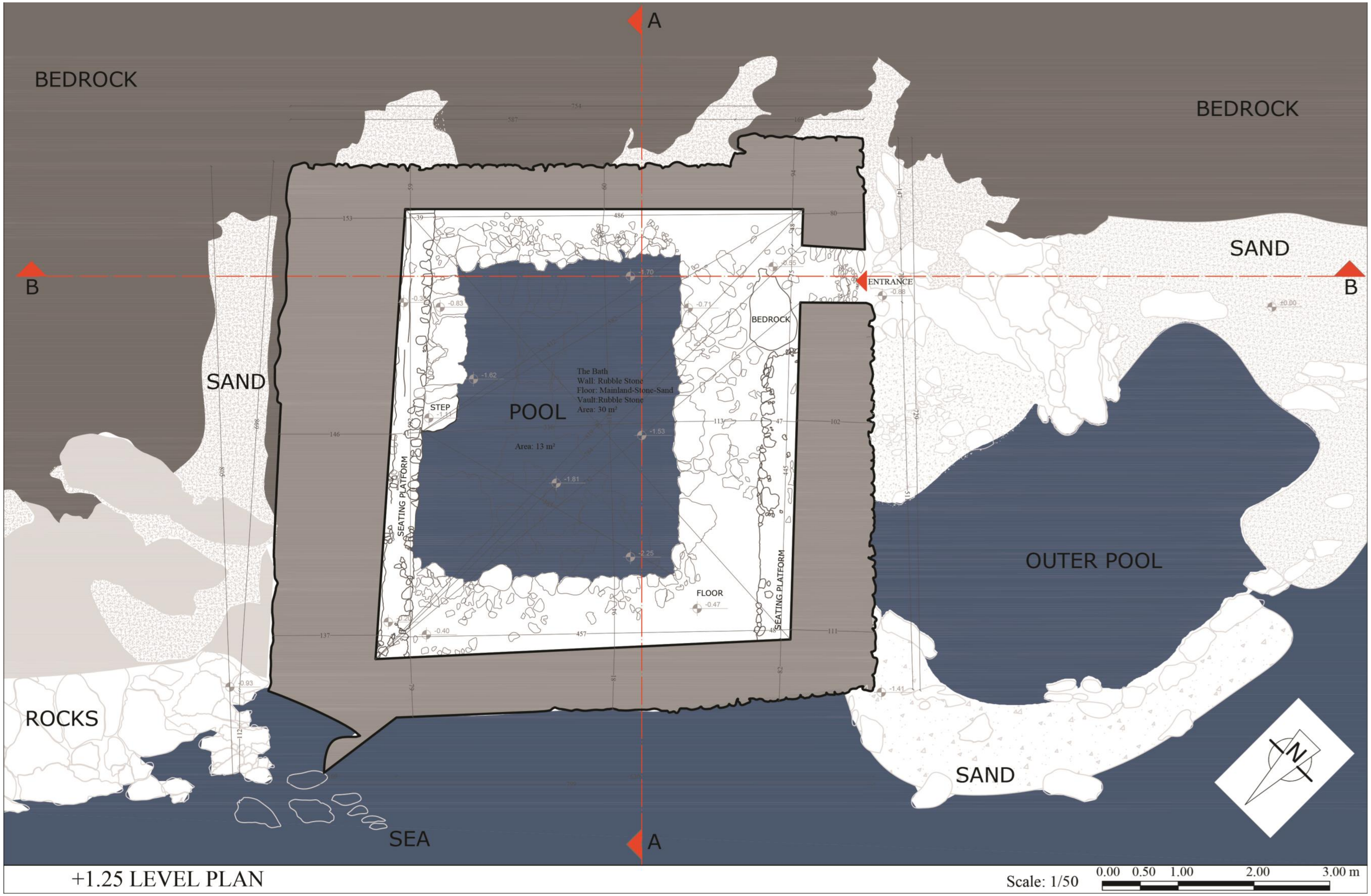


Figure B.2. +1.25 Level Plan-Measured Drawing

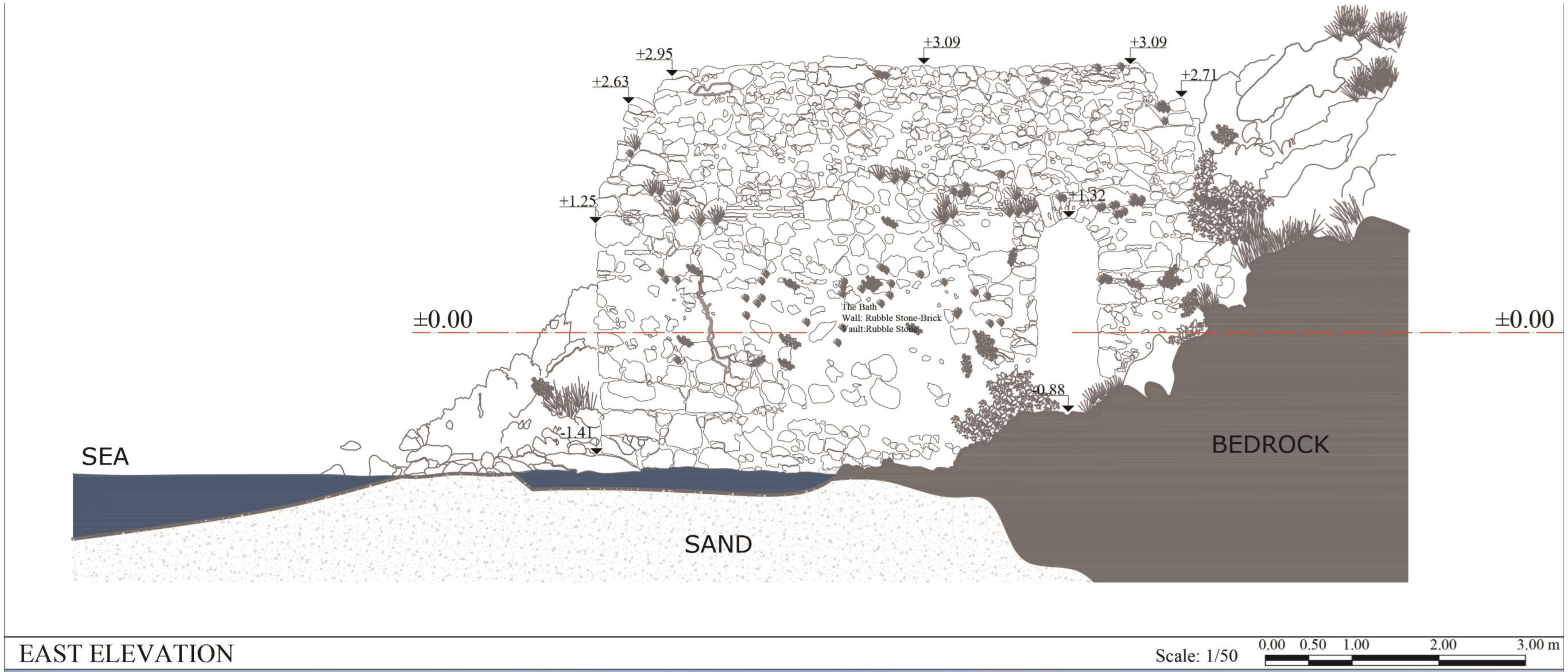


Figure B.3. East Elevation- Measured Drawing

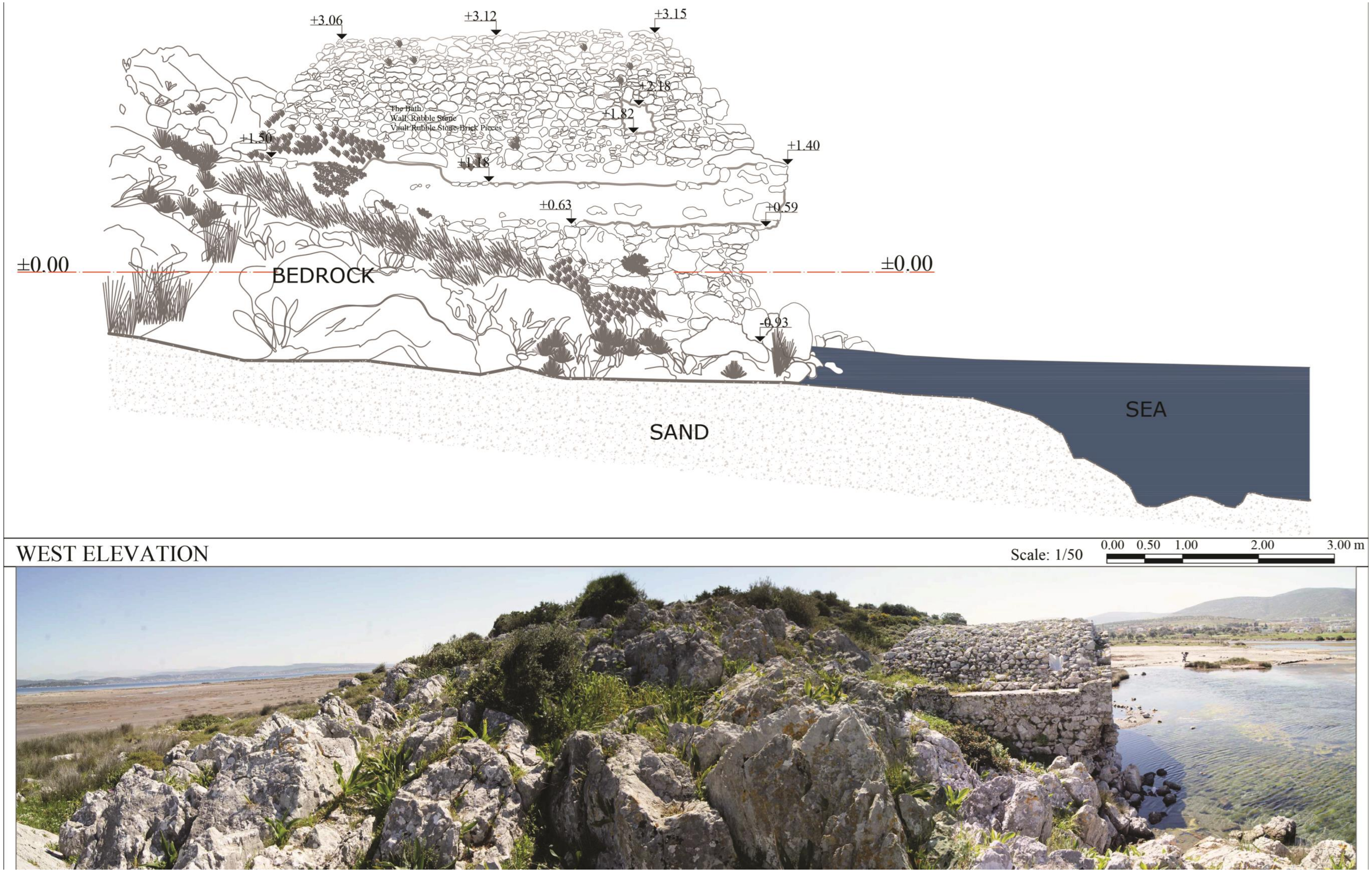
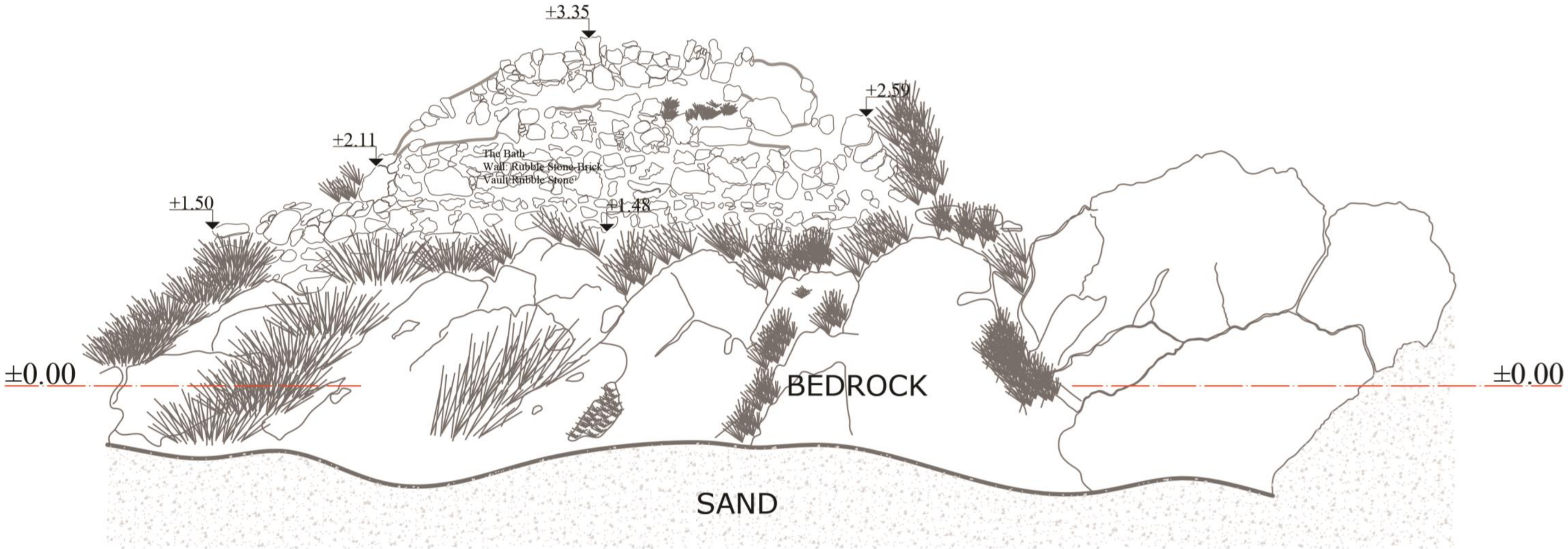


Figure B.4. West Elevation- Measured Drawing



SOUTH ELEVATION

Scale: 1/50 0.00 0.50 1.00 2.00 3.00 m

Figure B.5. South Elevation- Measured Drawing

Figure B.6. North Elevation- Measured Drawing

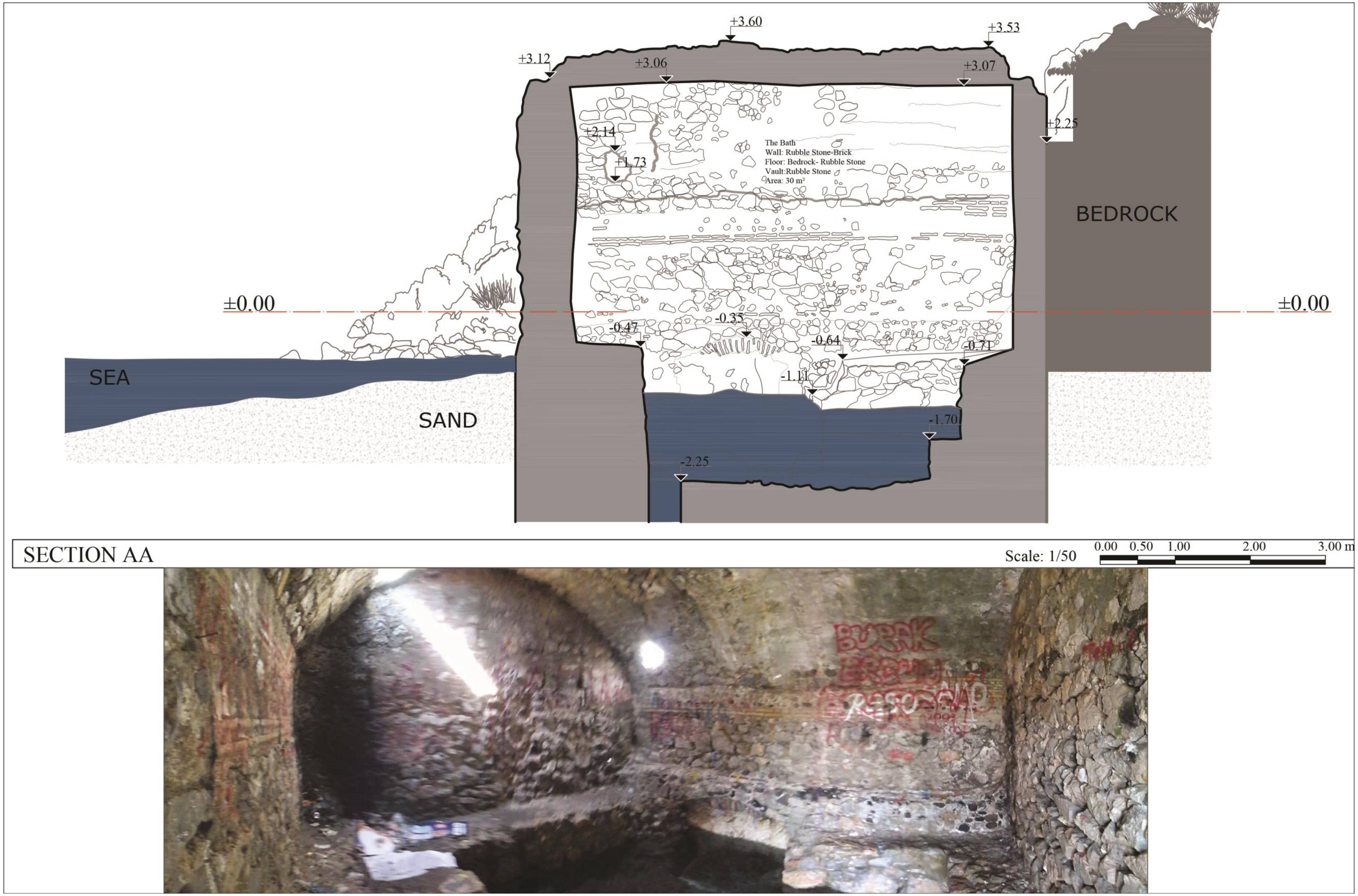


Figure B.7. Section A Measured Drawing

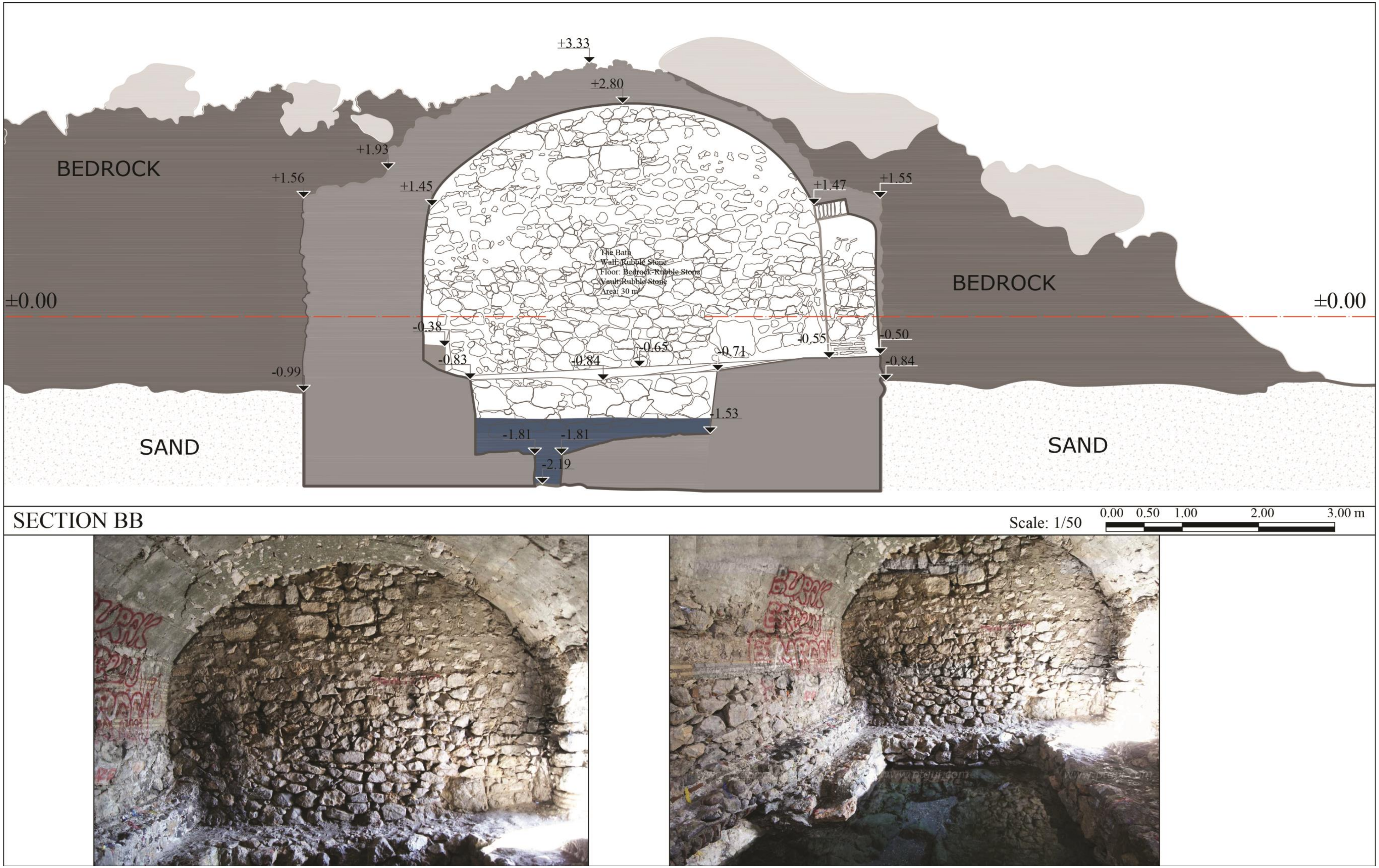


Figure B.8. Section B- Measured Drawing

APPENDIX C

ANALYTICAL DRAWINGS

C.1. Construction Technique and Material Usage

C.2. Structural Failures and Material Deterioration

C.3. Morphology Analysis

CONSTRUCTION TECHNIQUE AND MATERIAL USAGE

VAULT

Masonry Technique: Rubble stones and bricks put together with mortar.
Stone size: 10x8 - 40x30 cm,
Stone colors : gray,light gray and light brown,
Distance between stones:~2-8cm.
Mortar:~2-2.5cm thickness;
Color of the mortar : light gray,beige and gray;
Color of aggregates: dark brown,blackish;
Brick size:30x30cm ,16x8cm
Finishing: exterior exposed without plastering
interior partial plastering , single layer,2-2.5cm thickness,
color of the plaster :gray

WALL_1

Masonry technique: Rubble stones put together with mortar,
reinforced with horizontal brick rows at the interior
and rough cut stones at the corners.
Stone size: 8x5cm - 70x30 cm;
Stone color: beige and gray;
Distance between stones:~2-10cm.
Mortar:~2cm thickness
Color of aggregates: dark brown, blackish
Color of the mortar: beige and gray
Distance between stones:~2-10 cm.
Finishing : partial plastering at the exterior,
single layer, 2-2.5cm thickness,
color of the plaster:gray;very fine,gray aggregates
no plastering at the interior

WALL_2

Masonry Technique: Rubble stones and bricks put together with mortar
reinforced with horizontal brick rows at the interior.
Stone size: 15x8cm to - 50x20 cm;
Stone color : beige and gray.
Mortar :~3cm
Color of aggregates:dark brown and blackish;
Color of the mortar:light gray, beige and gray.
Brick size: 5x3cm-16x8cm
Finishing: partial plastering at the exterior,
single layer, 2-2.5cm thickness,
color of the plaster:gray;very fine,gray aggregates.

ARCH

Masonry Technique: Bricks and stones put together with mortar.
Stone size: 10x8cm - 16x9cm,
Stone color: beige and gray,
Mortar:~3cm thickness
Color of aggregates: dark brown blackish;
Color of the mortar: light gray
Distance between bricks:~1.5-3cm
Brick size: 16x16x9cm,30x22x3cm
Finishing: Plastering:single layer, color of the plaster:grayish white;
thickness of plaster:~2cm
color of aggregates:moderate-sized aggregates in dark brown,blackish color

FLOOR

1. bed rock , sand and thermal water
2. bed rock and sand
3. sand and sea water
4. sand
5. thermal water stream
6. bedrock
7. earth

Figure C.1.1. Analytical Drawing-Construction Technique and Material Usage

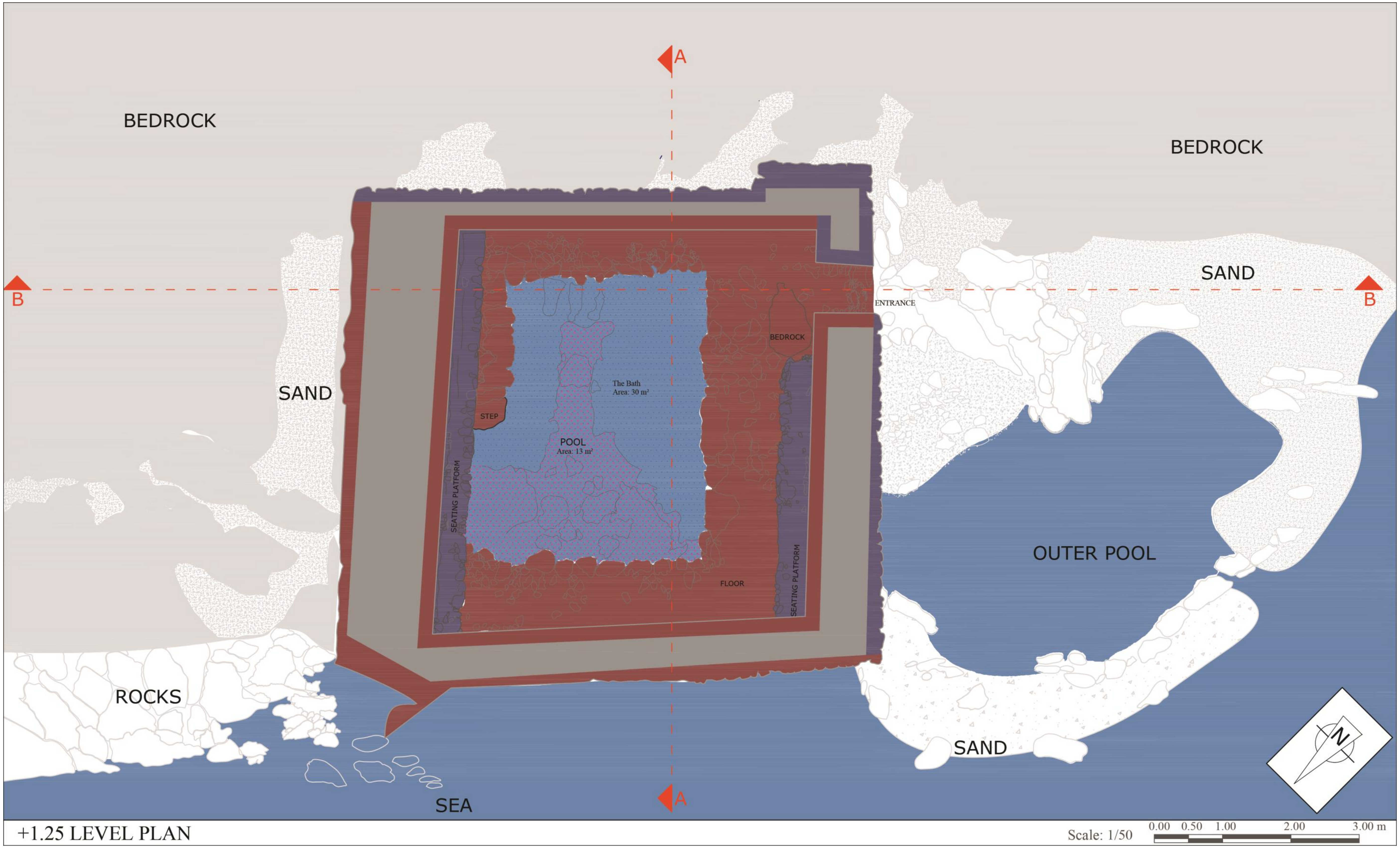


Figure C.1.2. Plan- Construction Technique and Material Usage

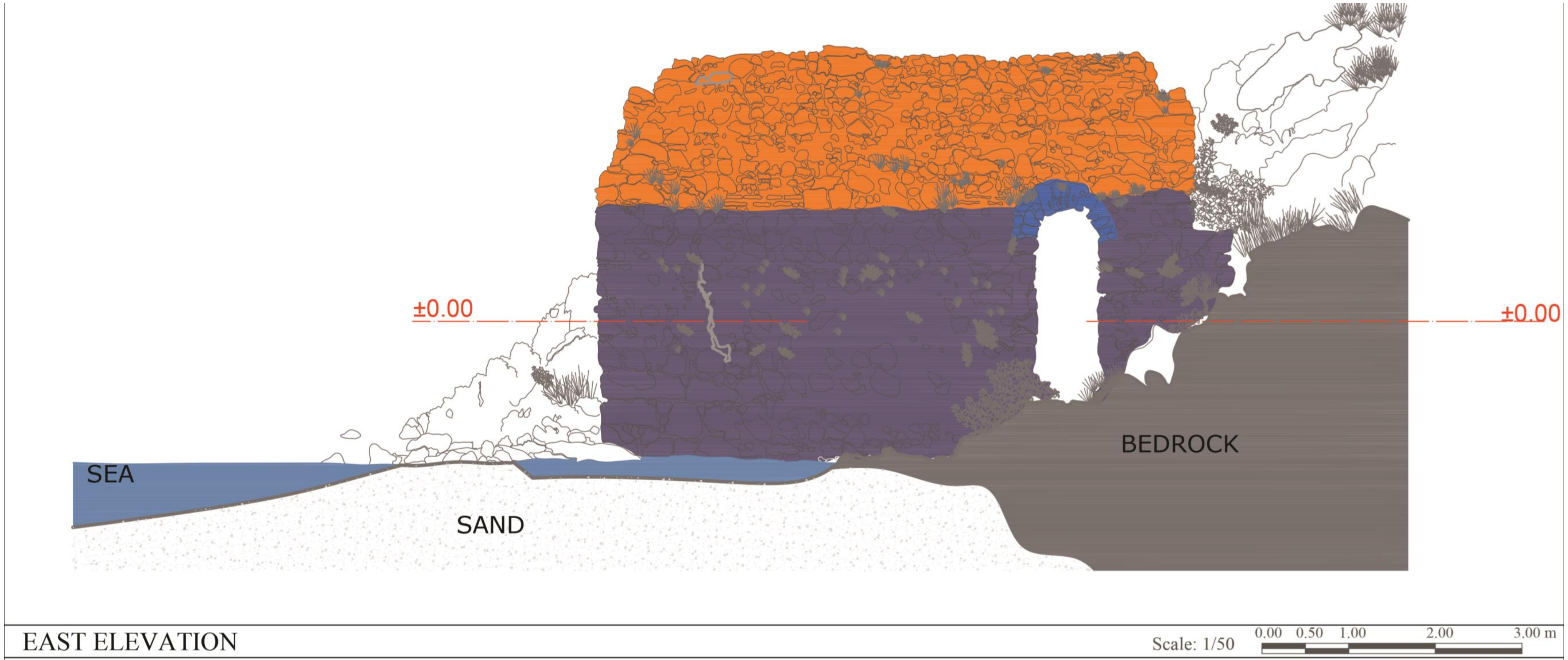


Figure C.1.3. East Elevation -Construction Technique and Material Usage

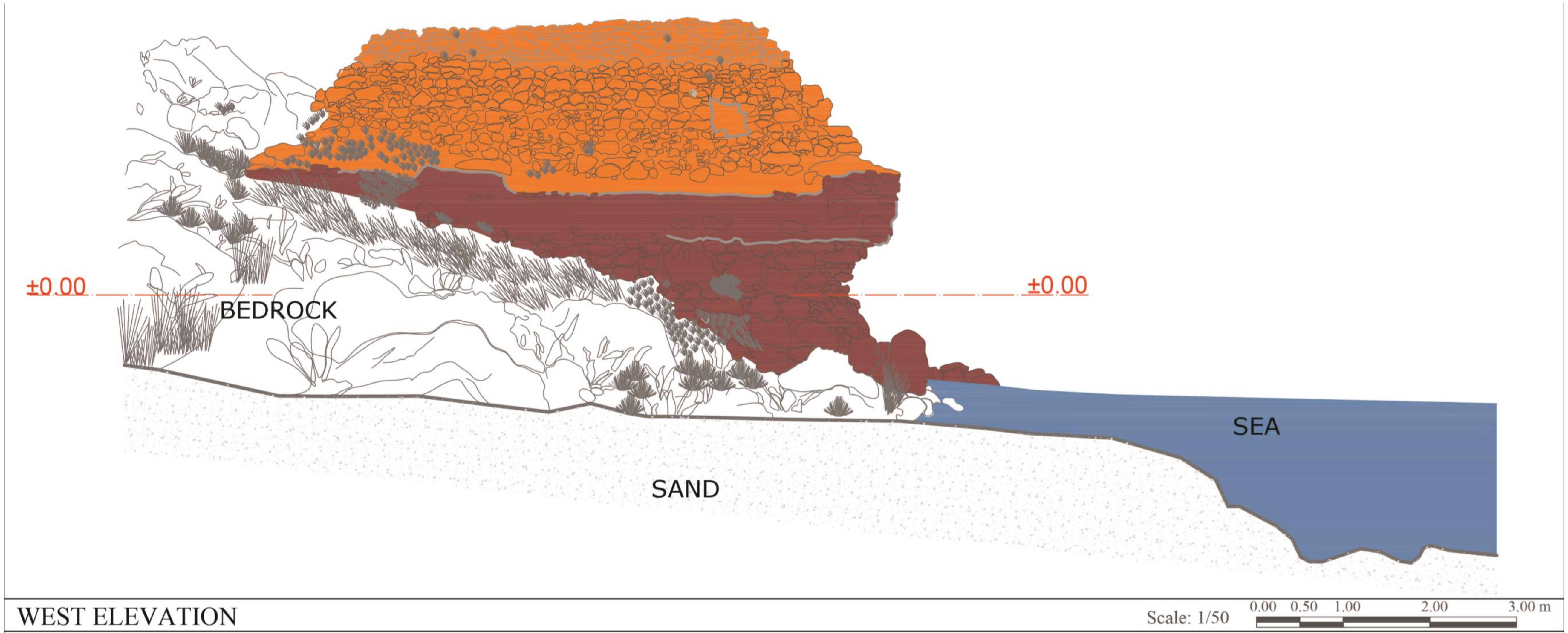
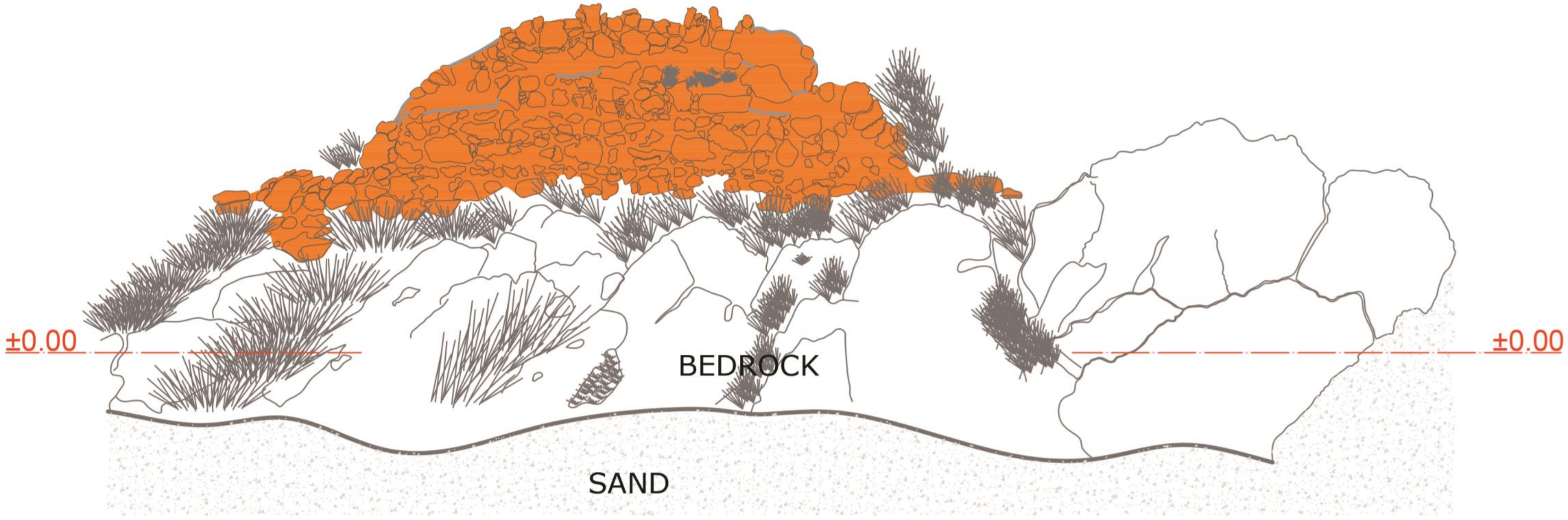


Figure C.1.4. West Elevation - Construction Technique and Material Usage



SOUTH ELEVATION

Scale: 1/50 0.00 0.50 1.00 2.00 3.00 m

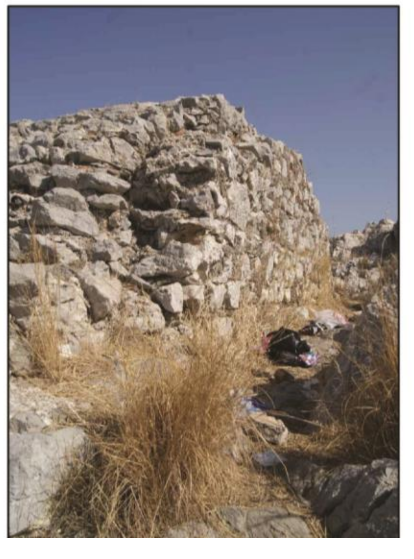


Figure C.1.5. South Elevation - Construction Technique and Material Usage

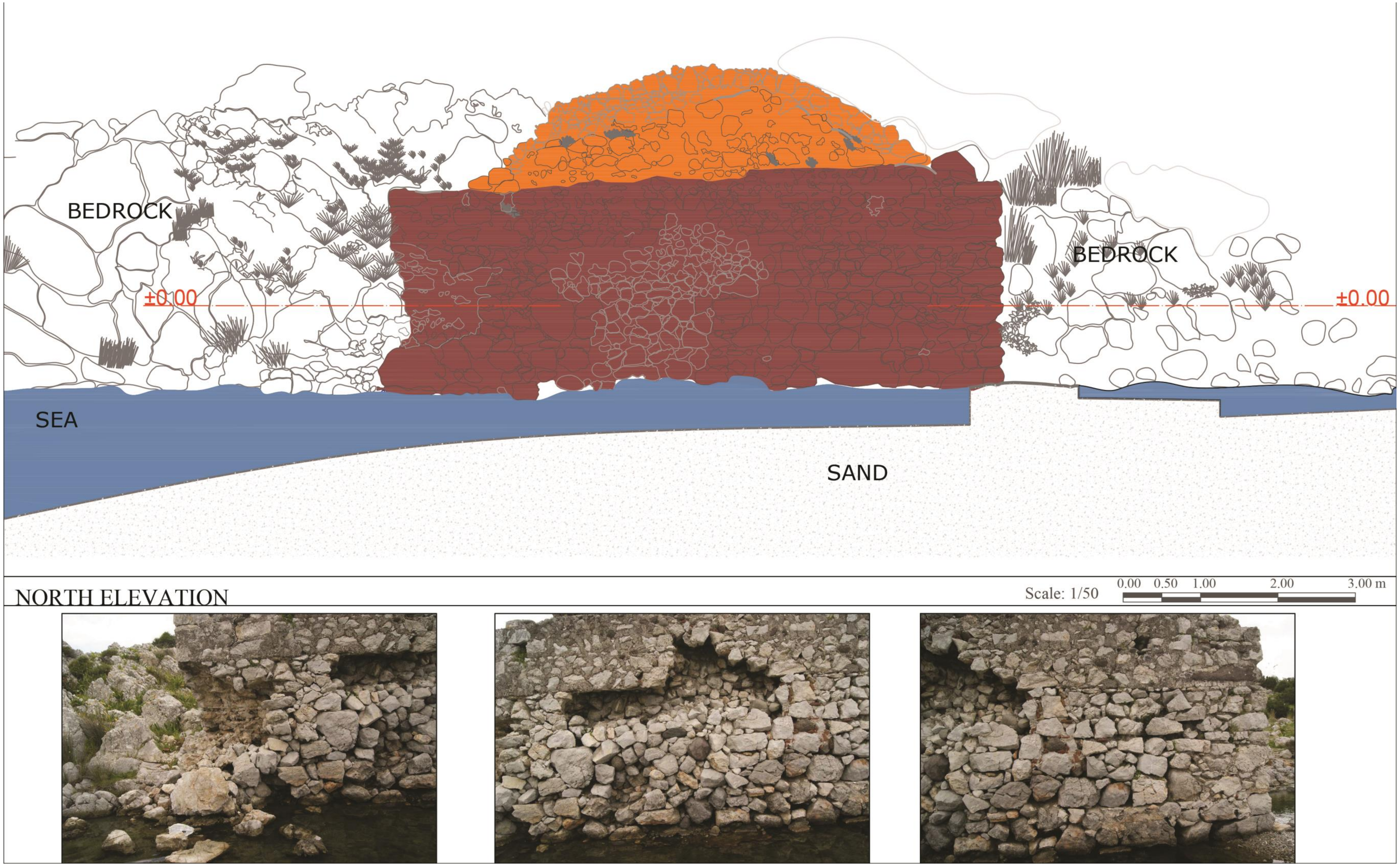


Figure C.1.6. North Elevation - Construction Technique and Material Usage

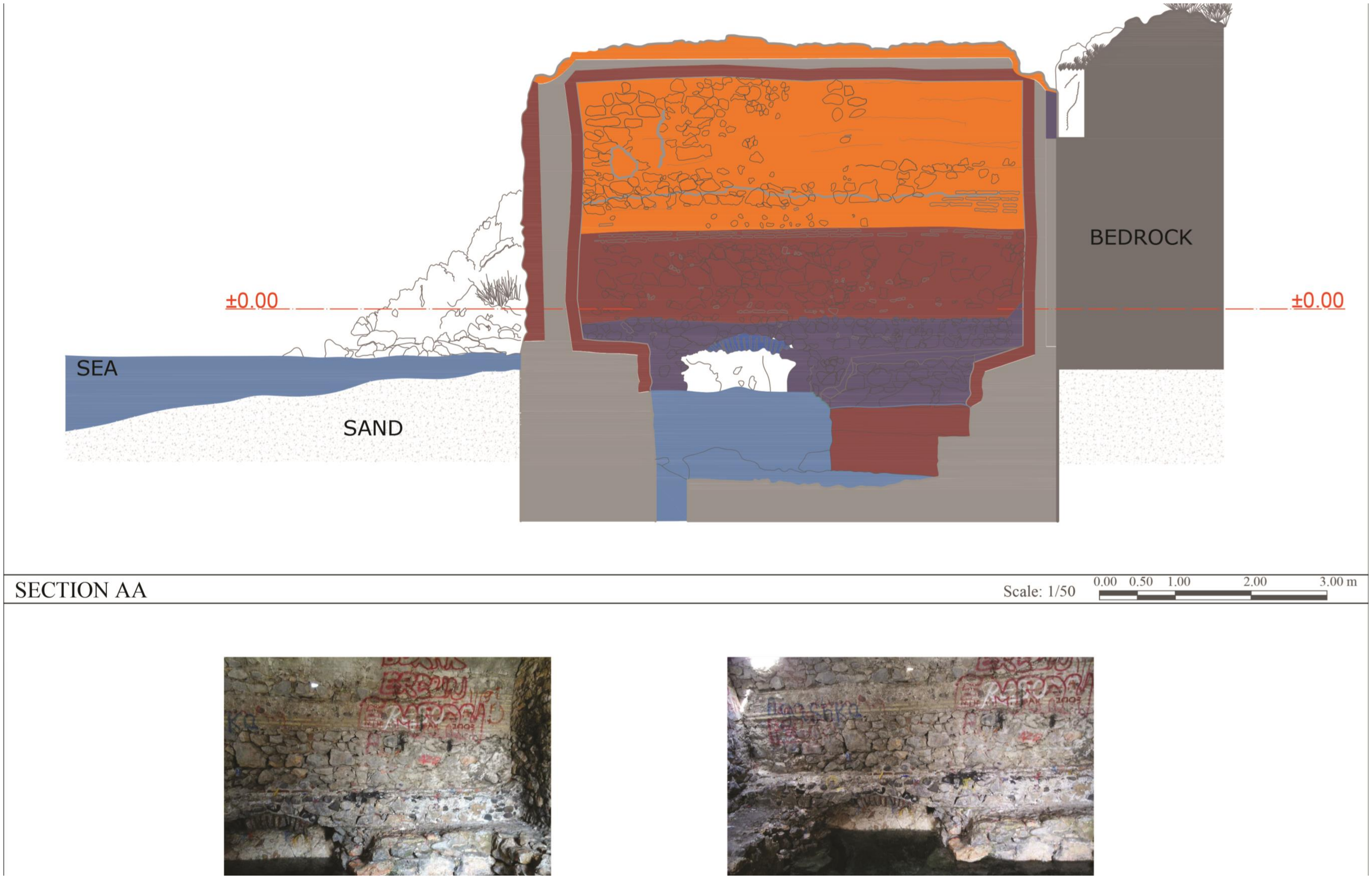
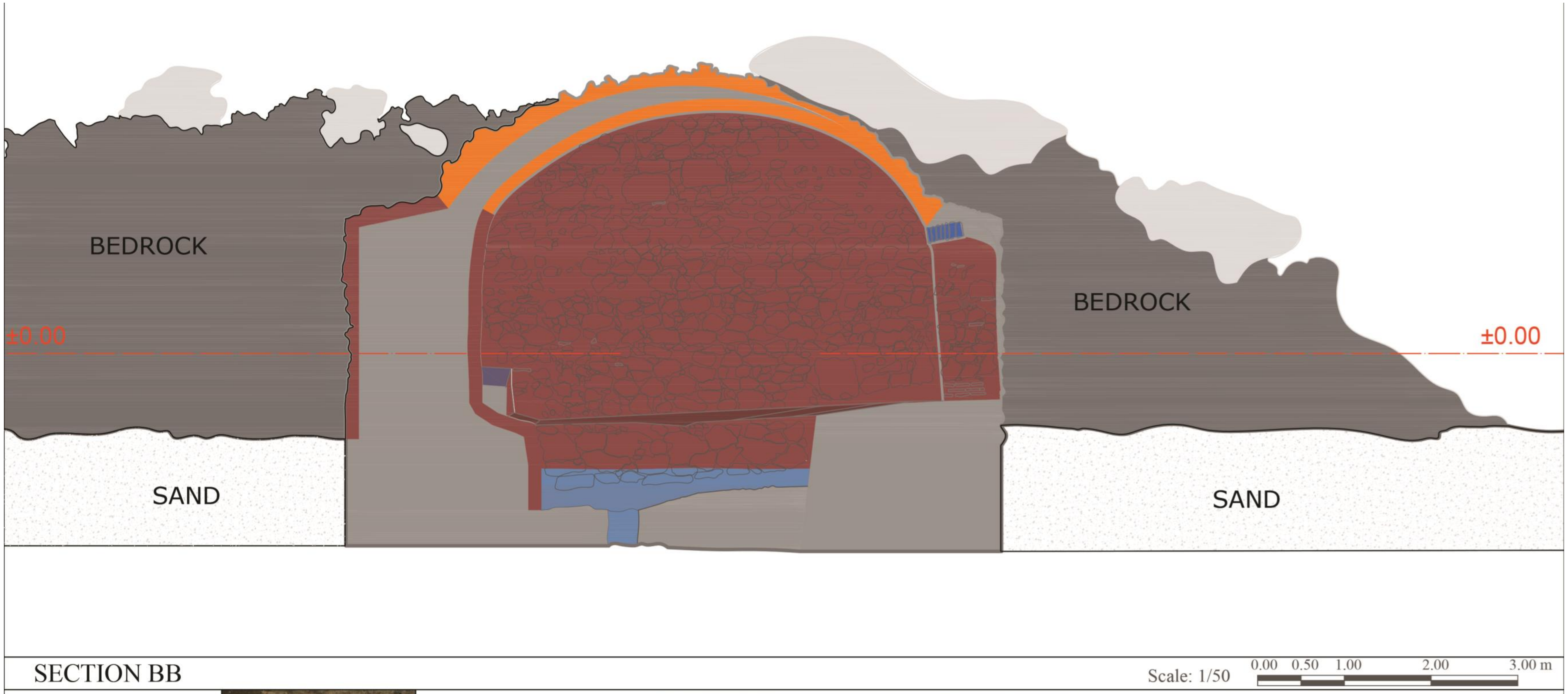


Figure C.1.7. Section A - Construction Technique and Material Usage



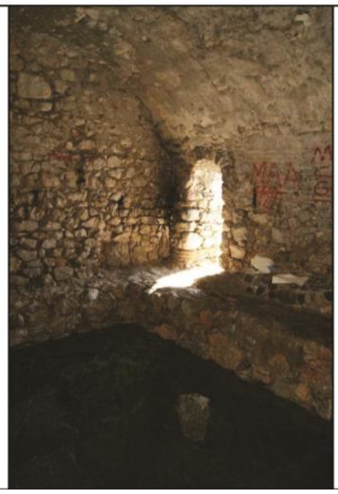


Figure C.1.8. Section B -Construction Technique and Material Usage

STRUCTURAL FAILURES and MATERIAL DETERIORATION

PROBLEM	PROBABLE CAUSE
1) PARTIAL LOSS OF STRUCTURAL ELEMENTS **Deformation of the load-bearing elements** ***Vault*** ***Wall*** ***Arch***	• **Weathering** • **Abrasion of sea water** • **Vandalism**
2) CRACK **The diagonal crack on load-bearing element** ***Wall***	• **Vandalism**
3) LOSS OF BUILDING MATERIALS **Surface deterioration** ***Stone*** ***Brick*** ***Mortar*** ***Plaster***	• **Weathering** • **Abrasion of sea water** • **Vandalism**
4) DISCOLORATION OF BUILDING MATERIALS **Partial surface deterioration** ***Stone*** ***Mortar*** ***Plaster***	• **Weathering** • **Abrasion of sea water** • **Vandalism**
5) VEGETATION **Surface deterioration and partial loss of material** ***Plaster***	• **Wheathering**

Figure C.2.1. Analytical Drawing -Structural Failures and Material Deterioration

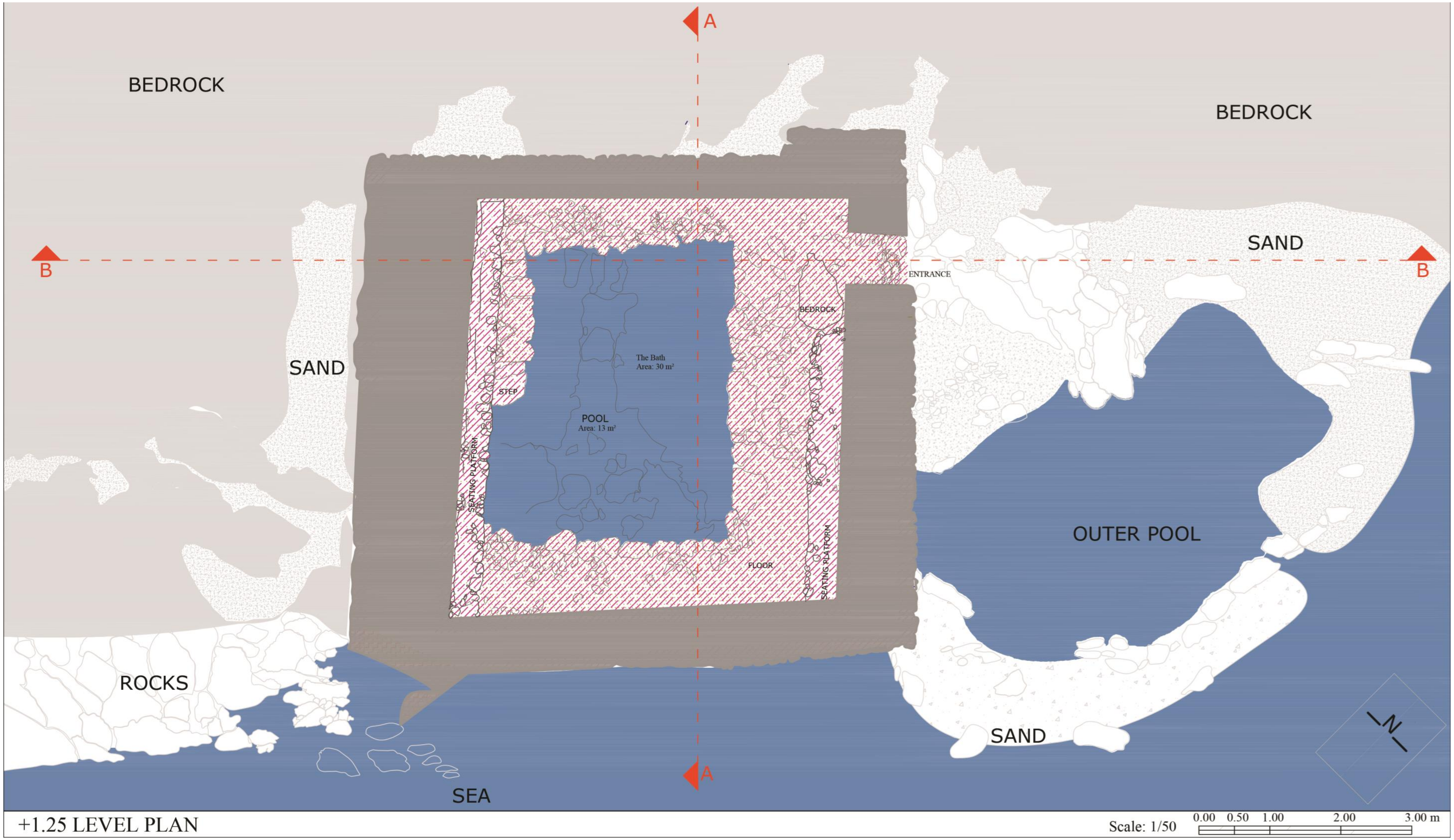
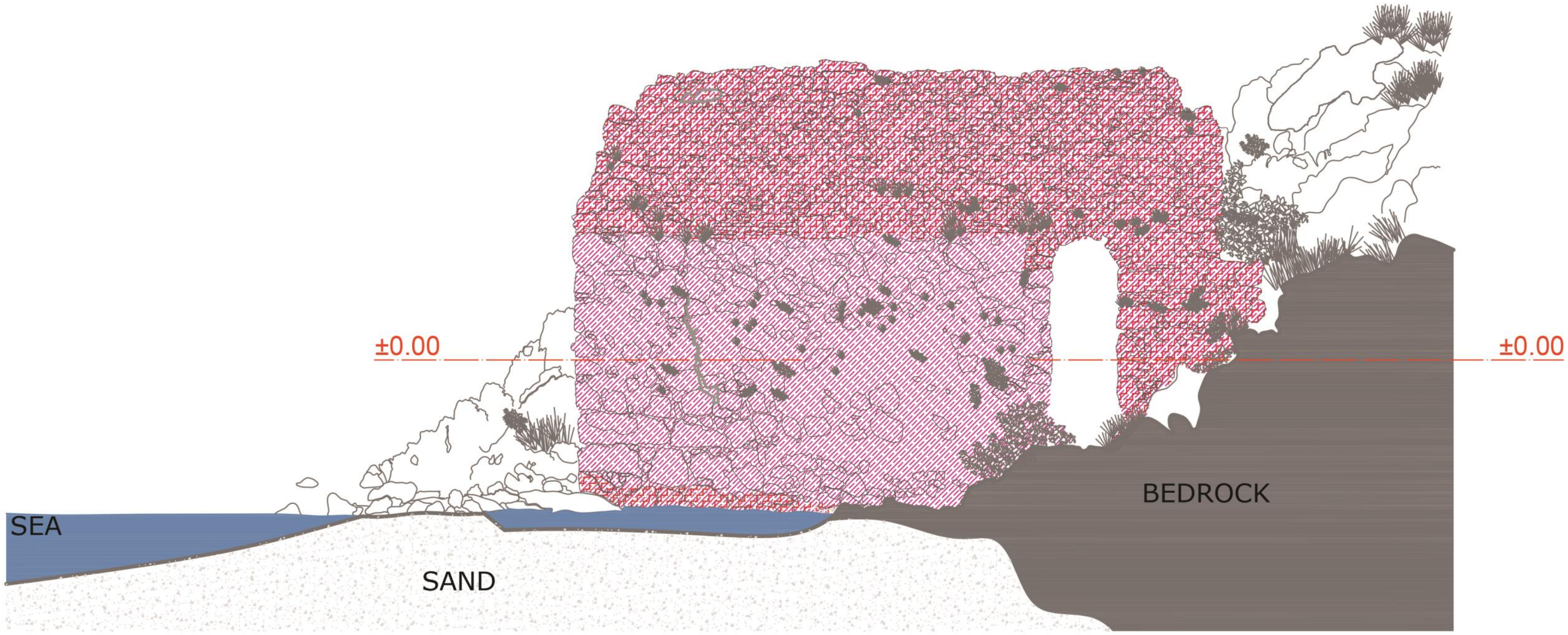


Figure C.2.2. Plan -Structural Failures and Material Deterioration



EAST ELEVATION

Scale: 1/50 0.00 0.50 1.00 2.00 3.00 m

Figure C.2.3. East Elevation - Structural Failures and Material Deterioration

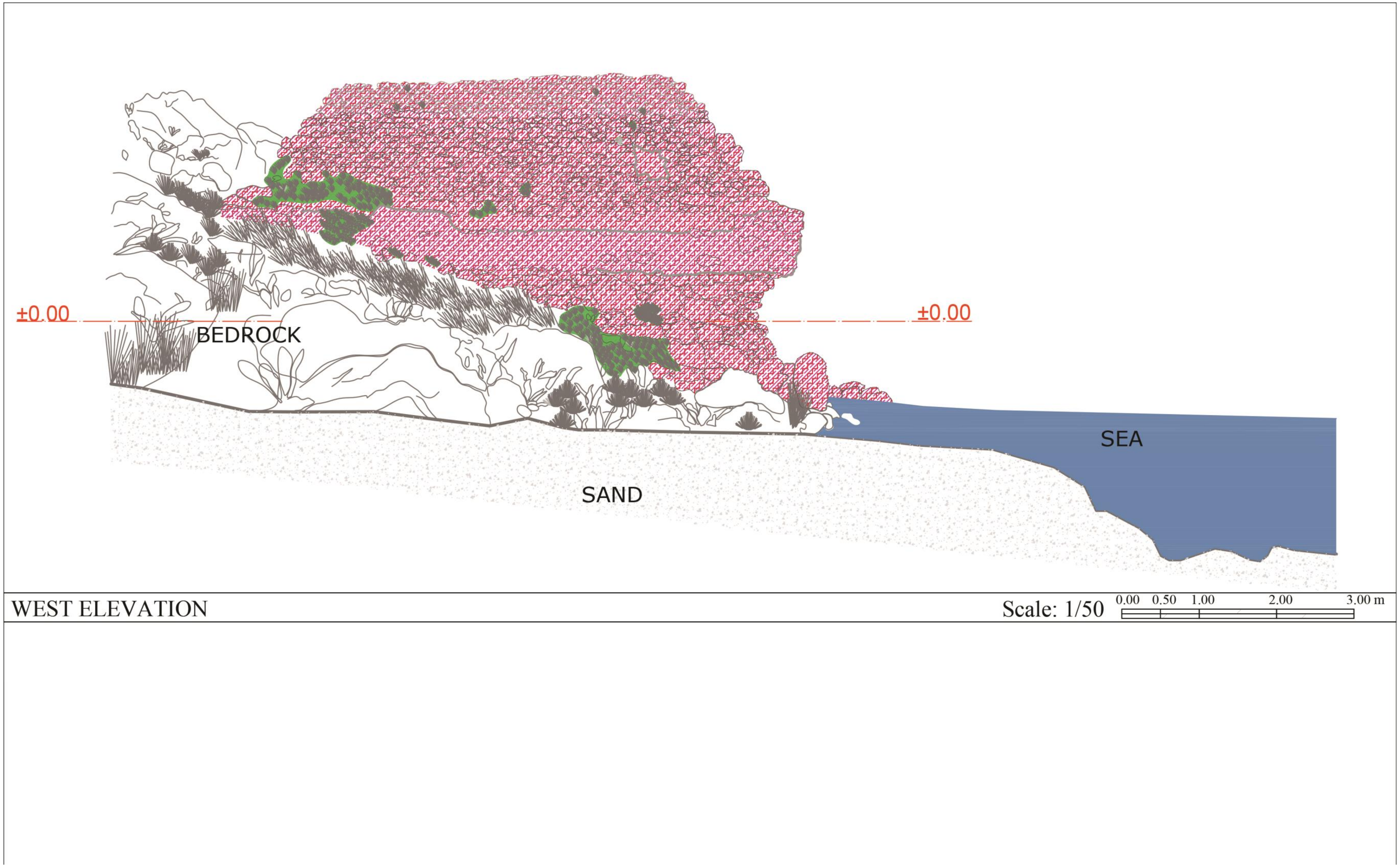


Figure C.2.4. West Elevation - Structural Failures and Material Deterioration

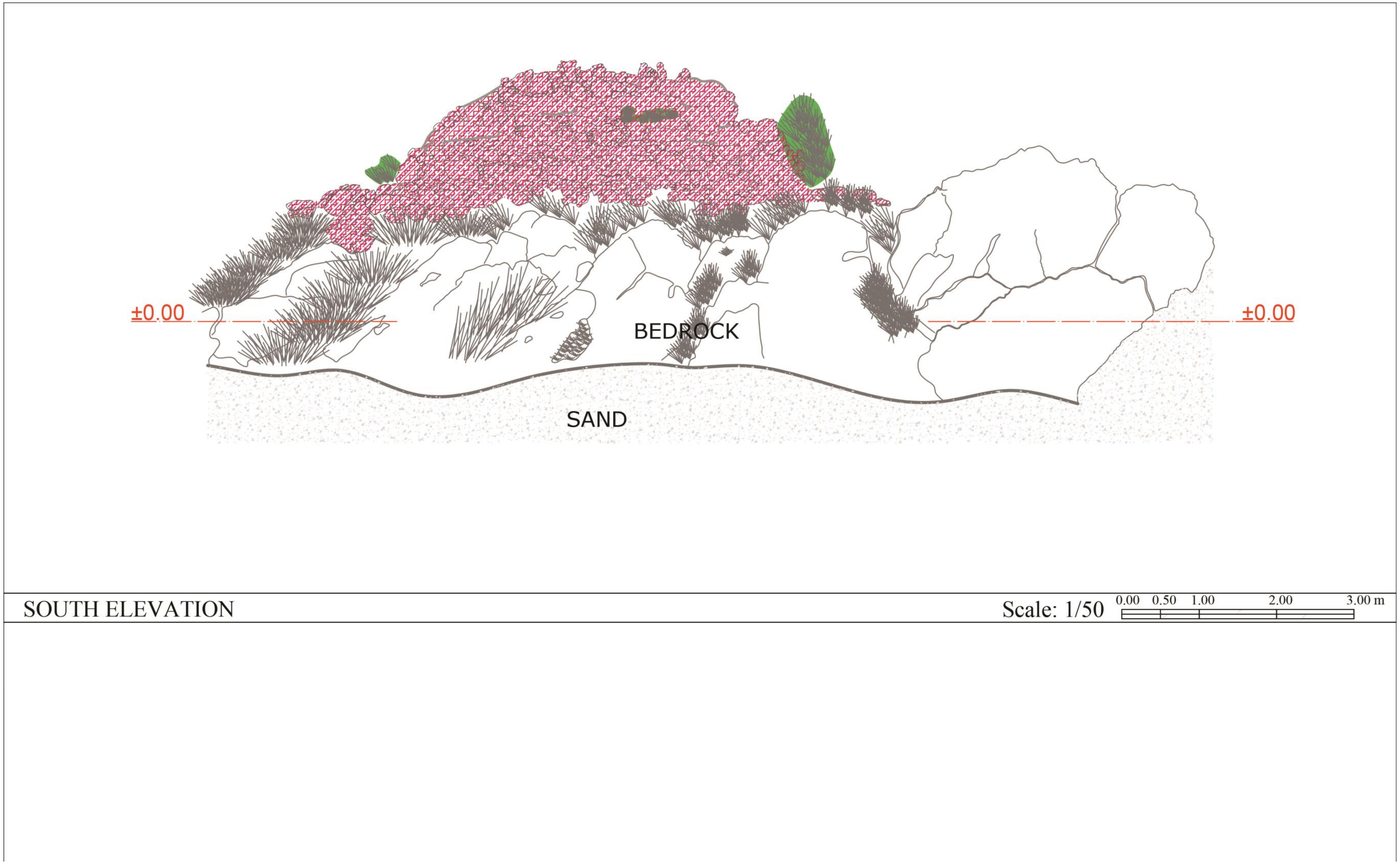


Figure C.2.5. South Elevation - Structural Failures and Material Deterioration

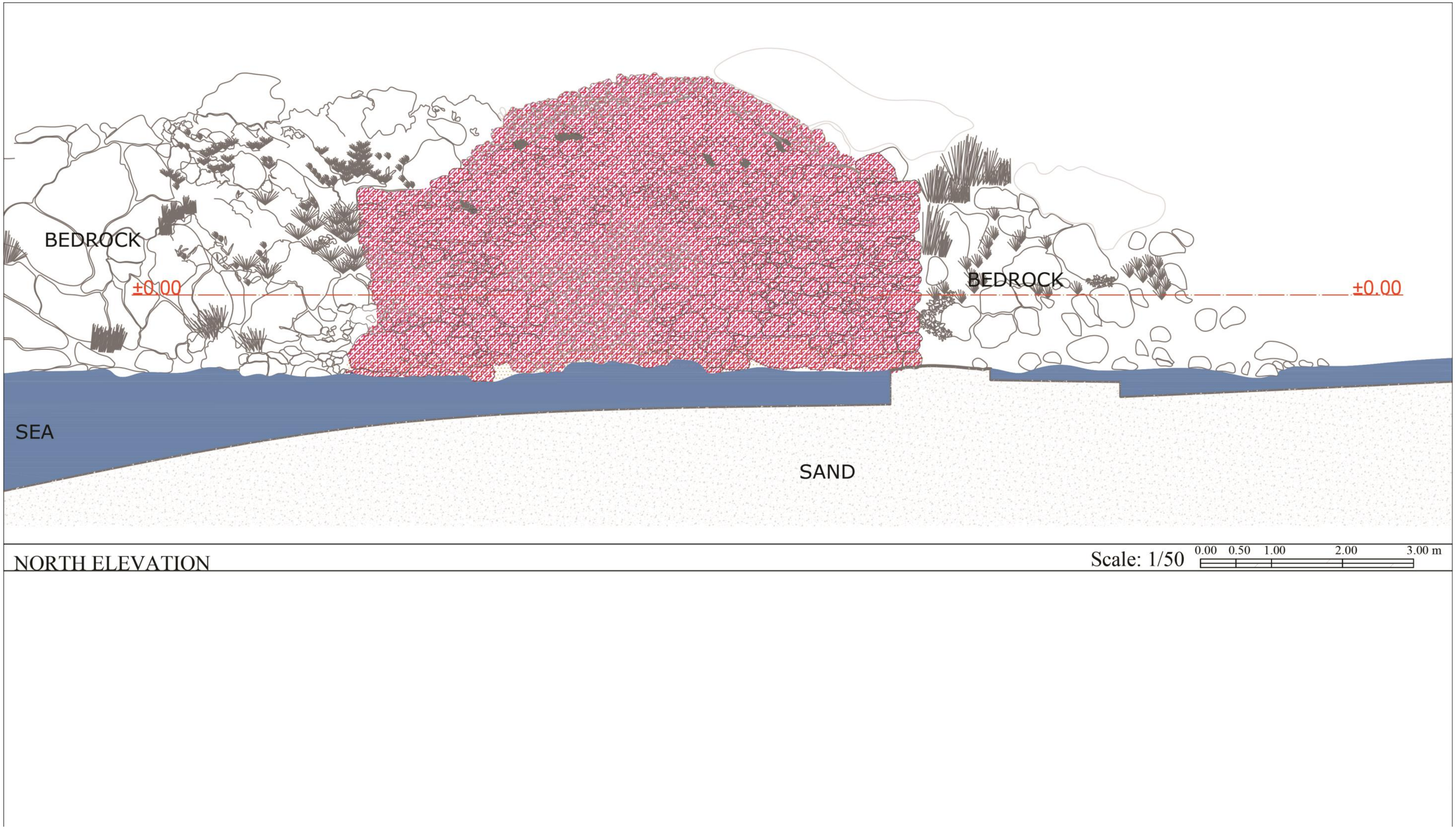


Figure C.2.6. North Elevation-Structural Failures and Material Deterioration

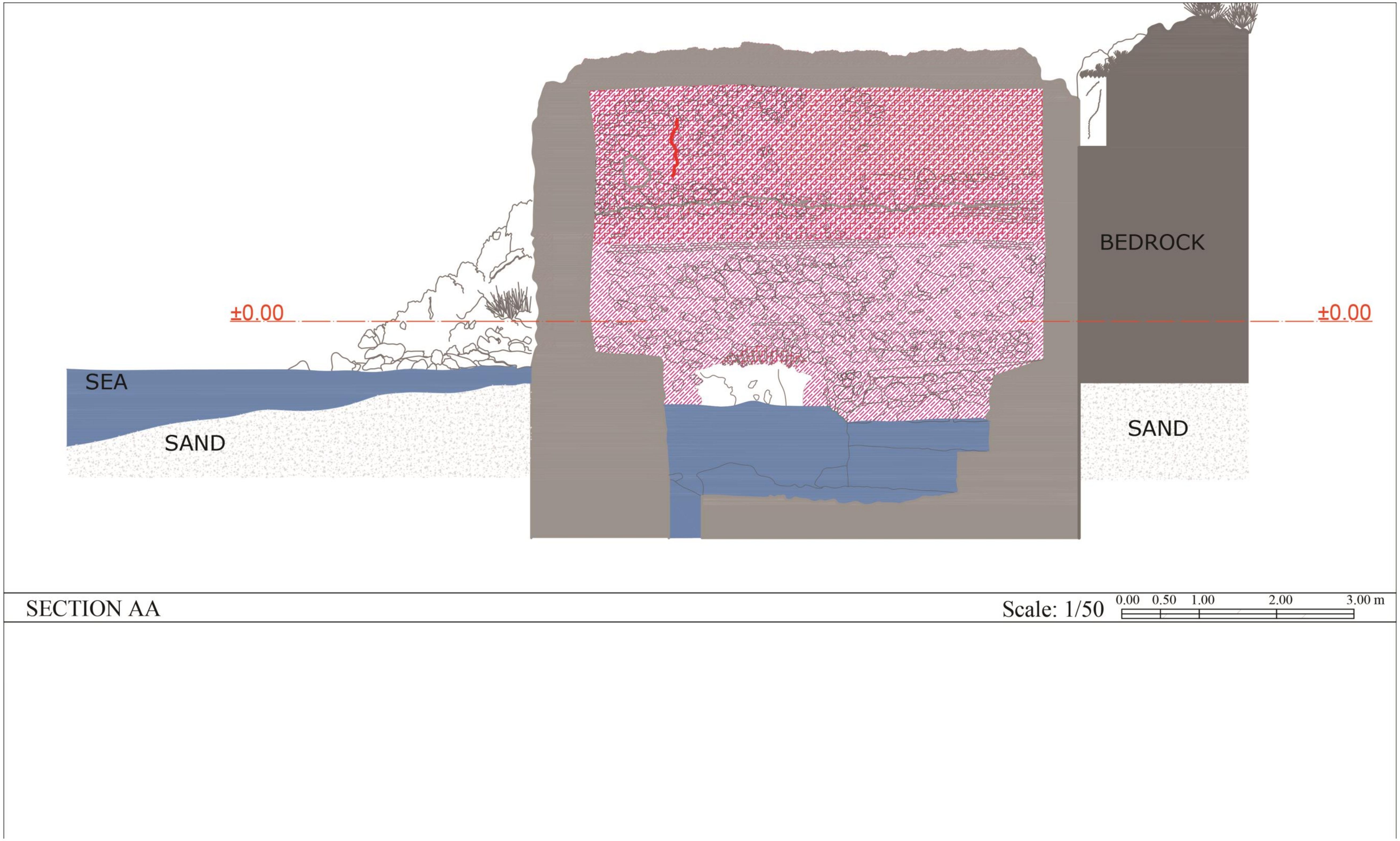


Figure C.2.7. Section A - Structural Failures and Material Deterioration

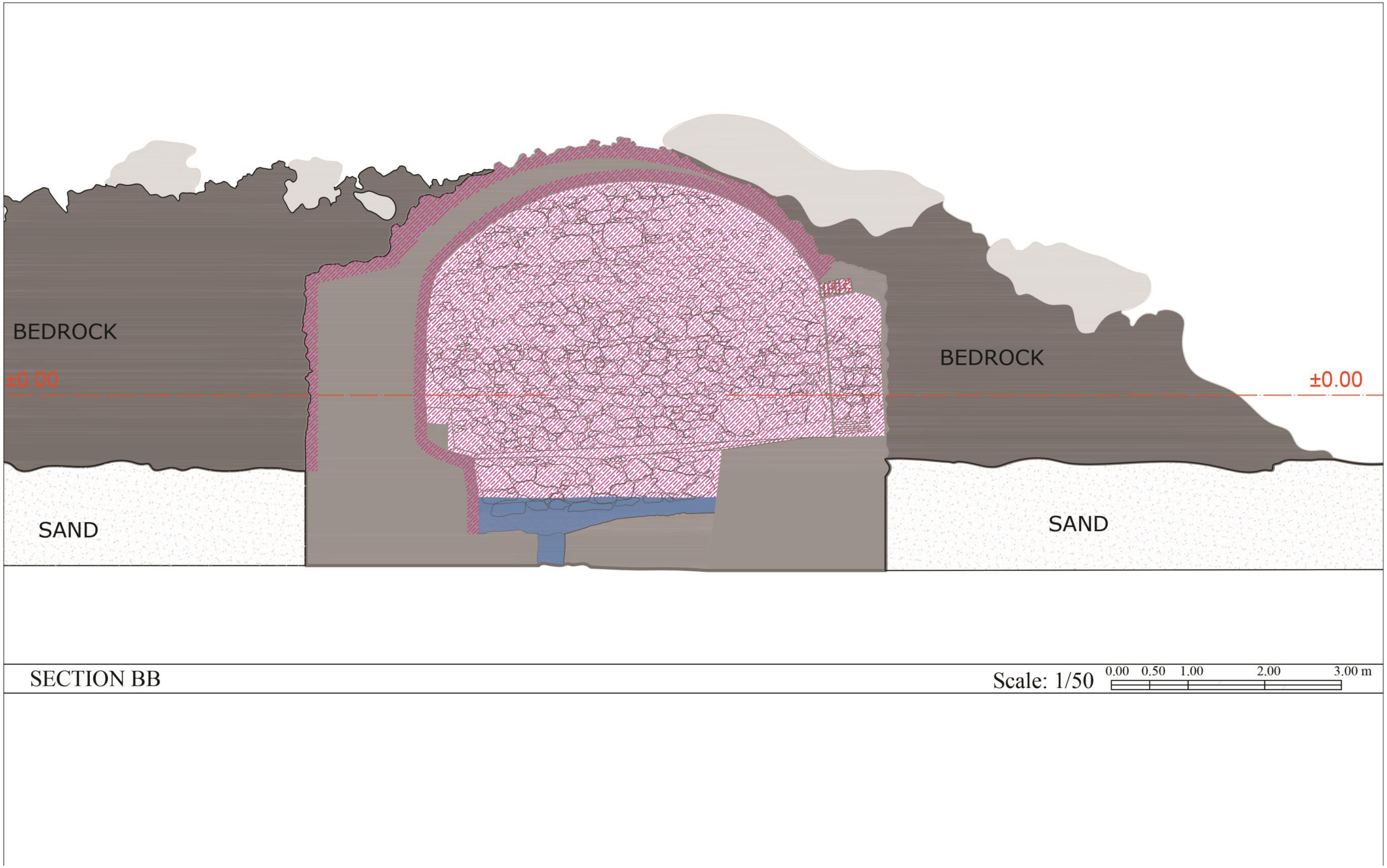


Figure C.2.8. Section B - Structural Failures and Material Deterioration

MORPHOLOGIC ANALYSIS

1) LANDSCAPE ELEMENTS

- ***Sea***
- ***Hot spring stream***
- ***Land***

Hill :scrub
rocks
earth

Beach :bushes
earth
sand

2) SPATIAL ELEMENTS

- ***Bath Building***
- ***Beach***

3) BUILDING ELEMENTS

- ***Platform***
  seating
  walking
- ***Door***
- ***Stair***
- ***Pool***
- ***Arch***

Figure C.3.1. Analytical Drawing -Morphology Analysis

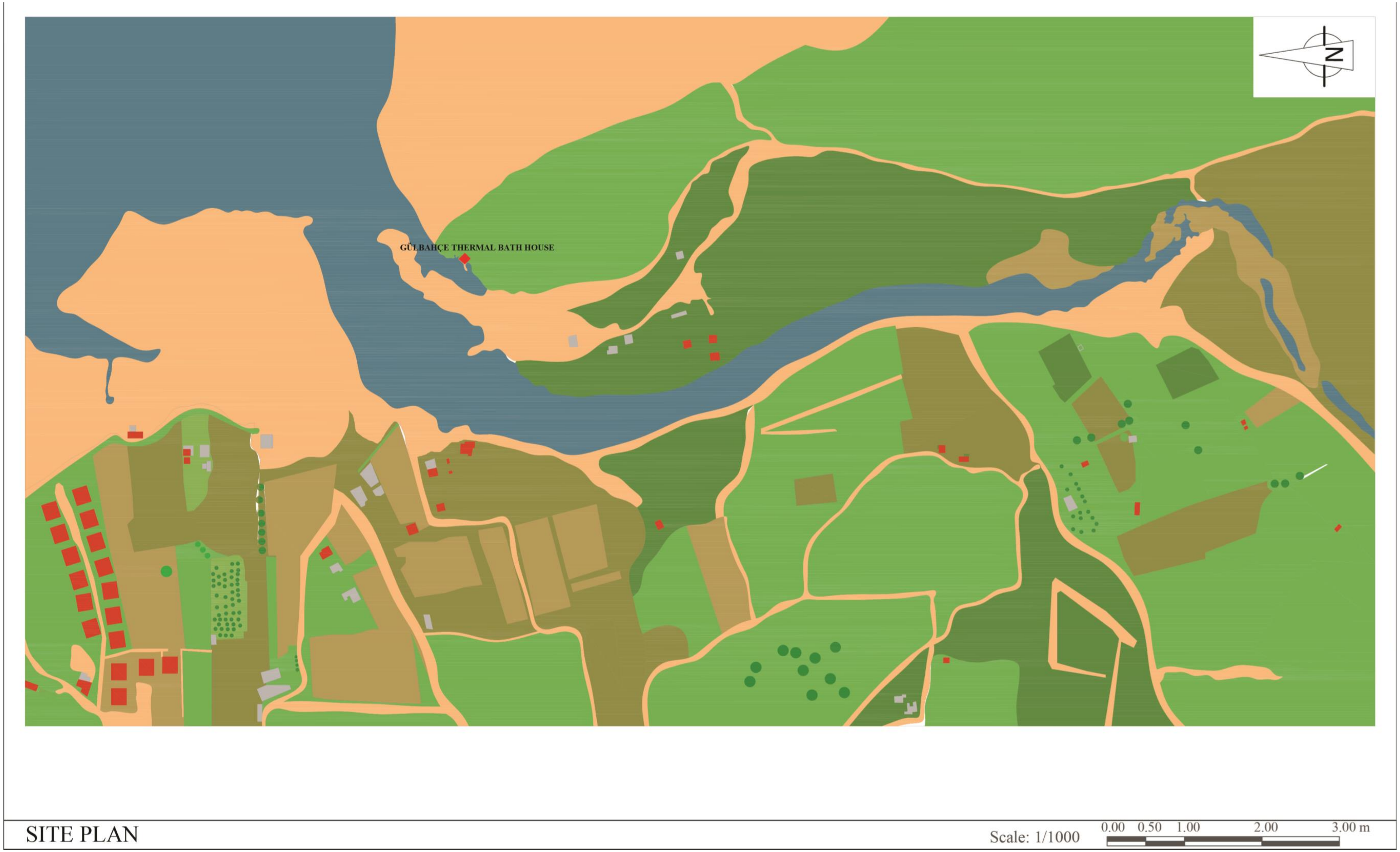


Figure C.3.2. Site Plan -Morphology Analysis

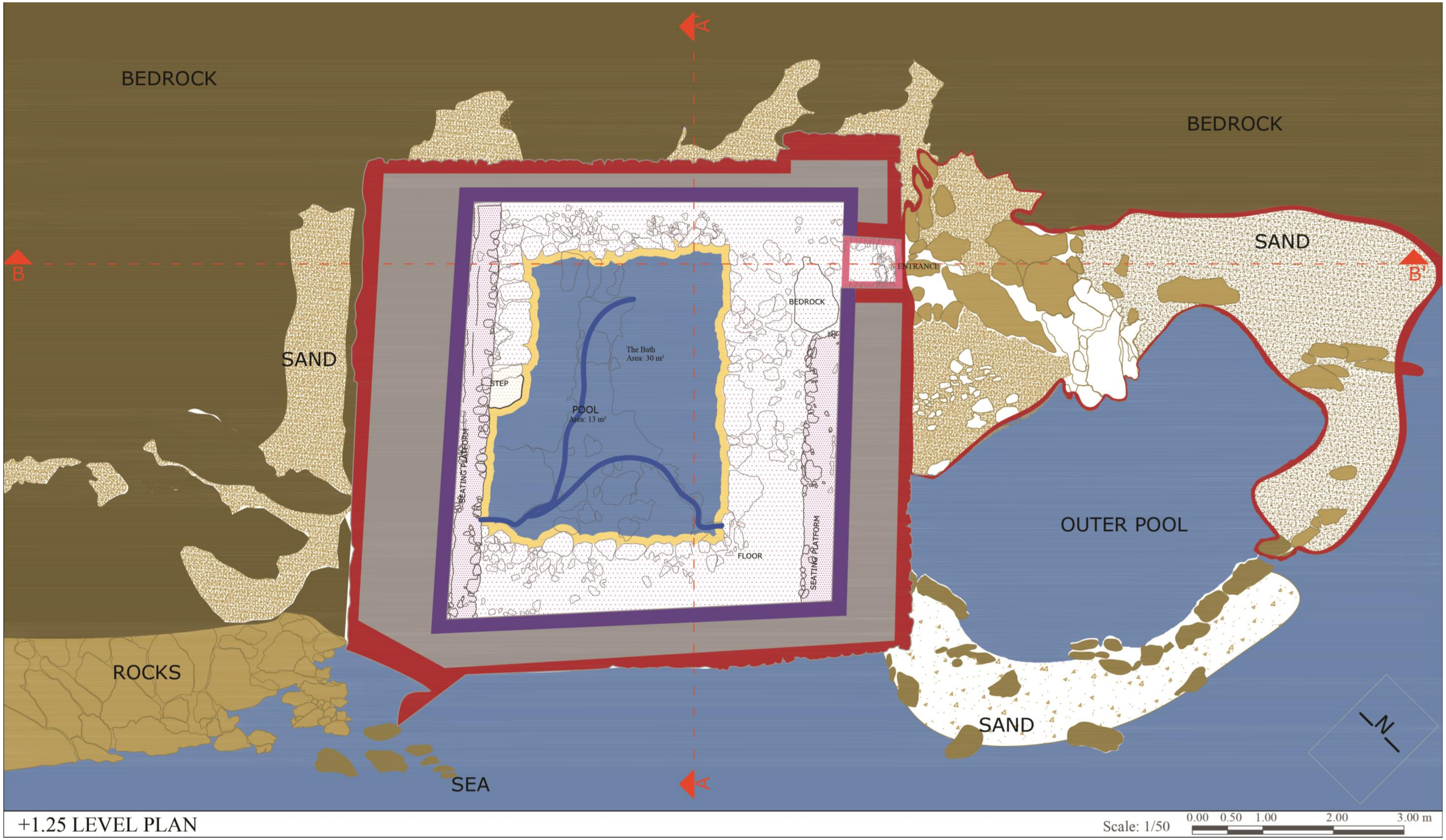


Figure C.3.3. Plan-Morphology Analysis

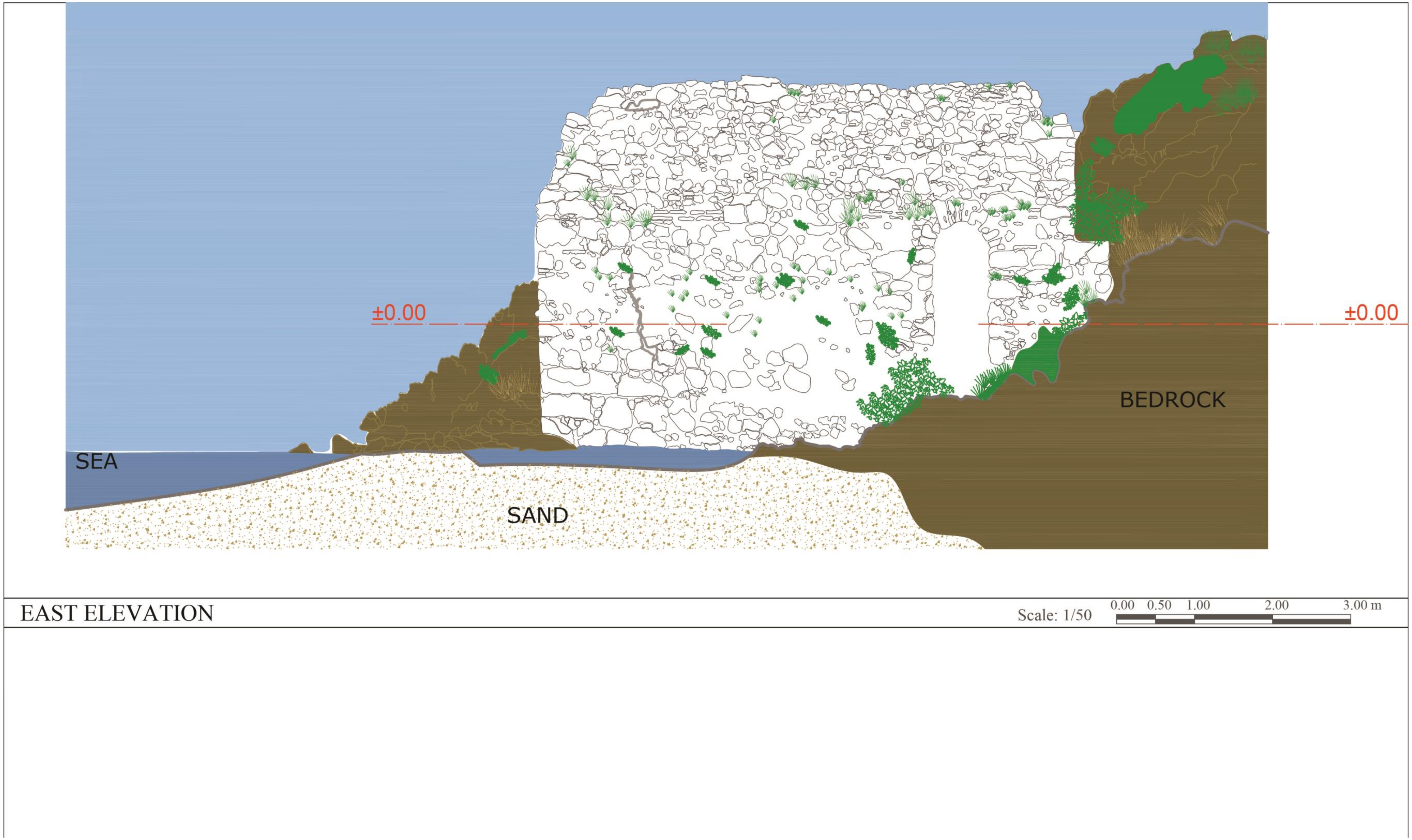


Figure C.3.4. East Elevation -Morphology Analysis

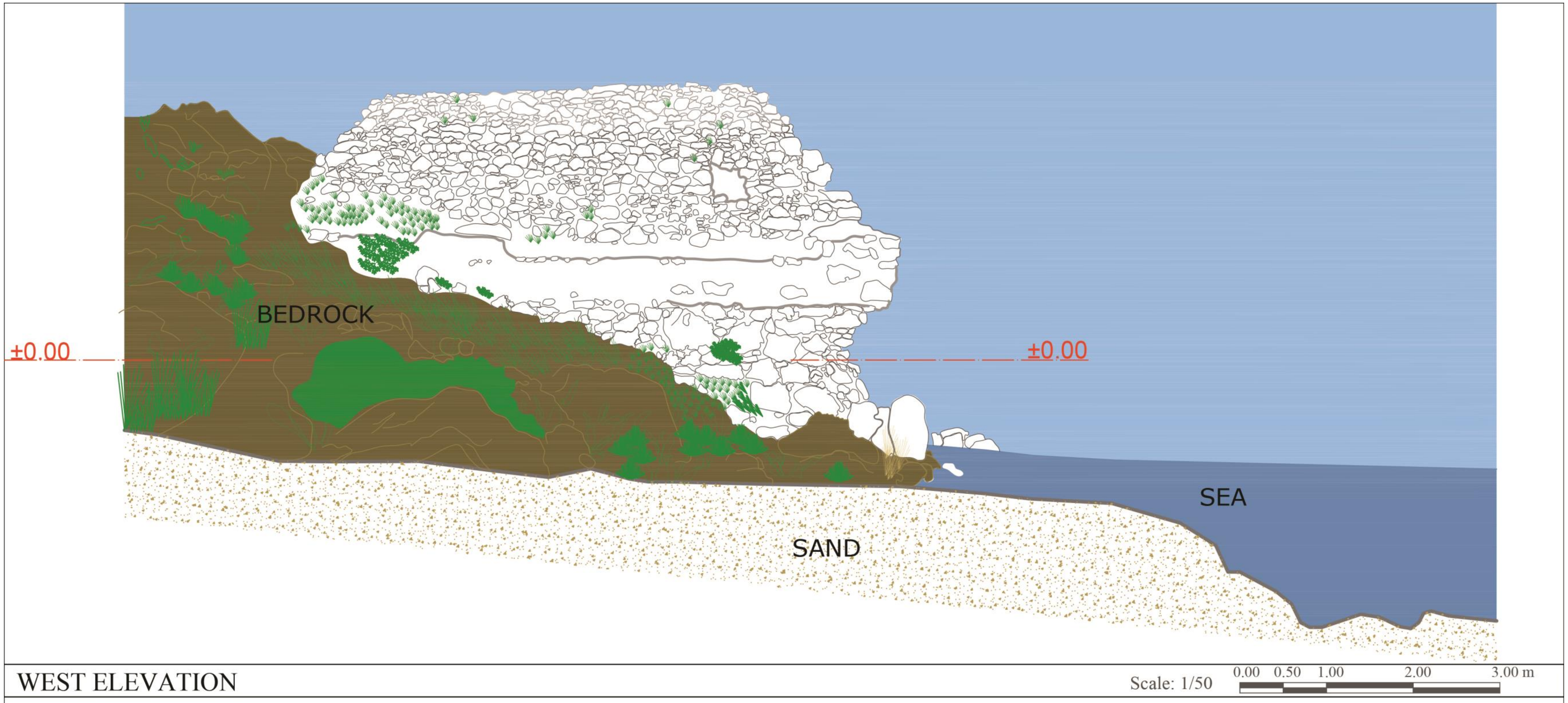


Figure C.3.5. West Elevation-Morphology Analysis

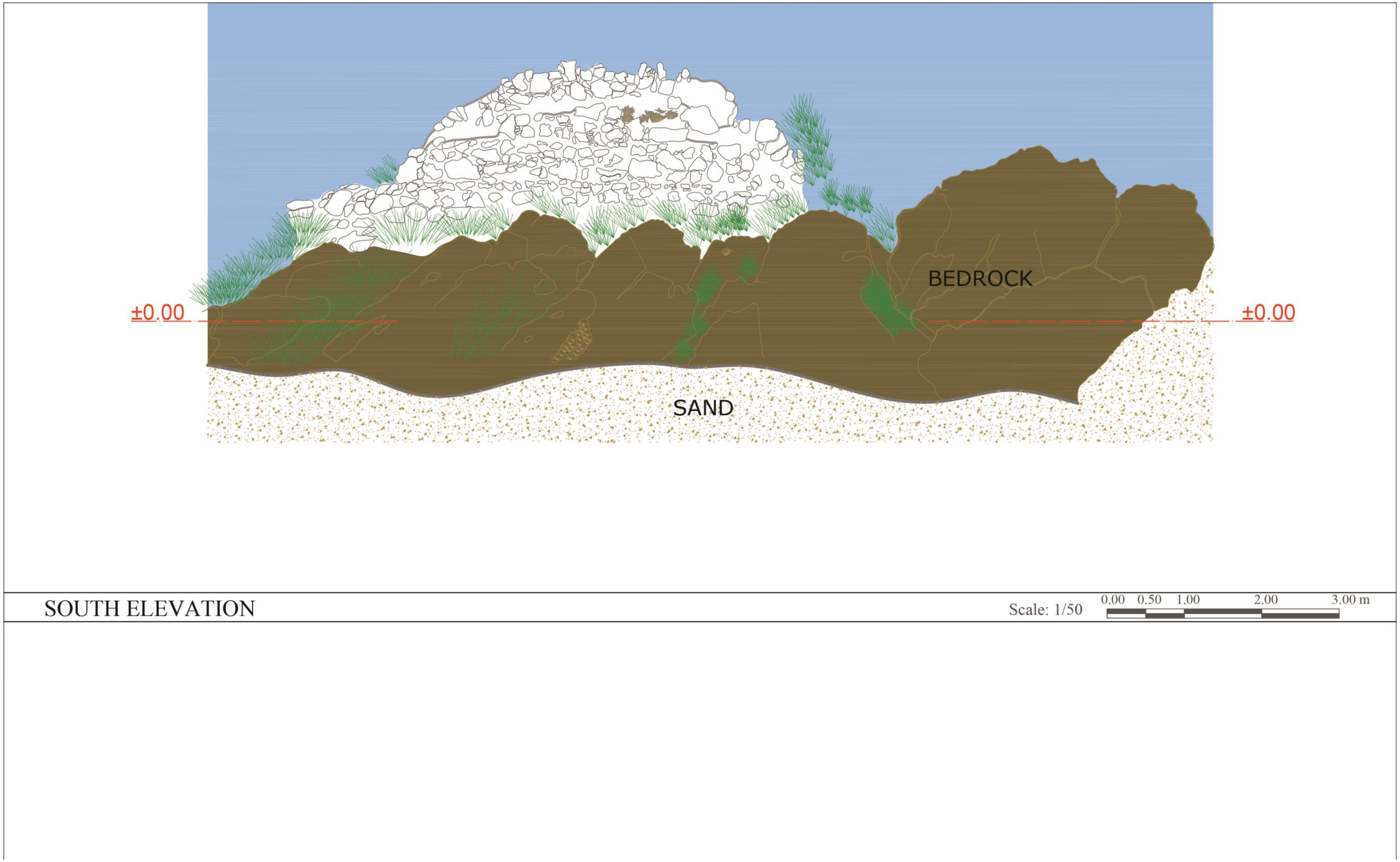


Figure C.3.6. South Elevation-Morphology Analysis

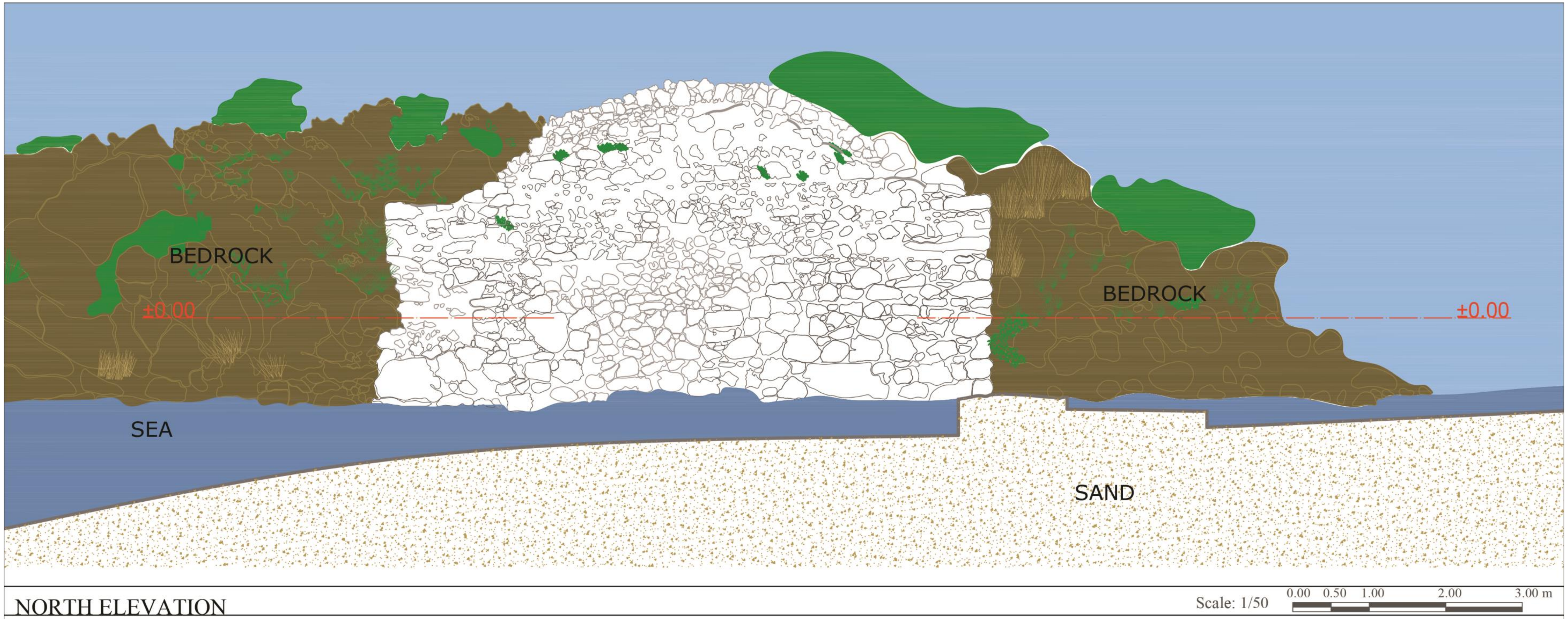


Figure C.3.7. North Elevation-Morphology Analysis

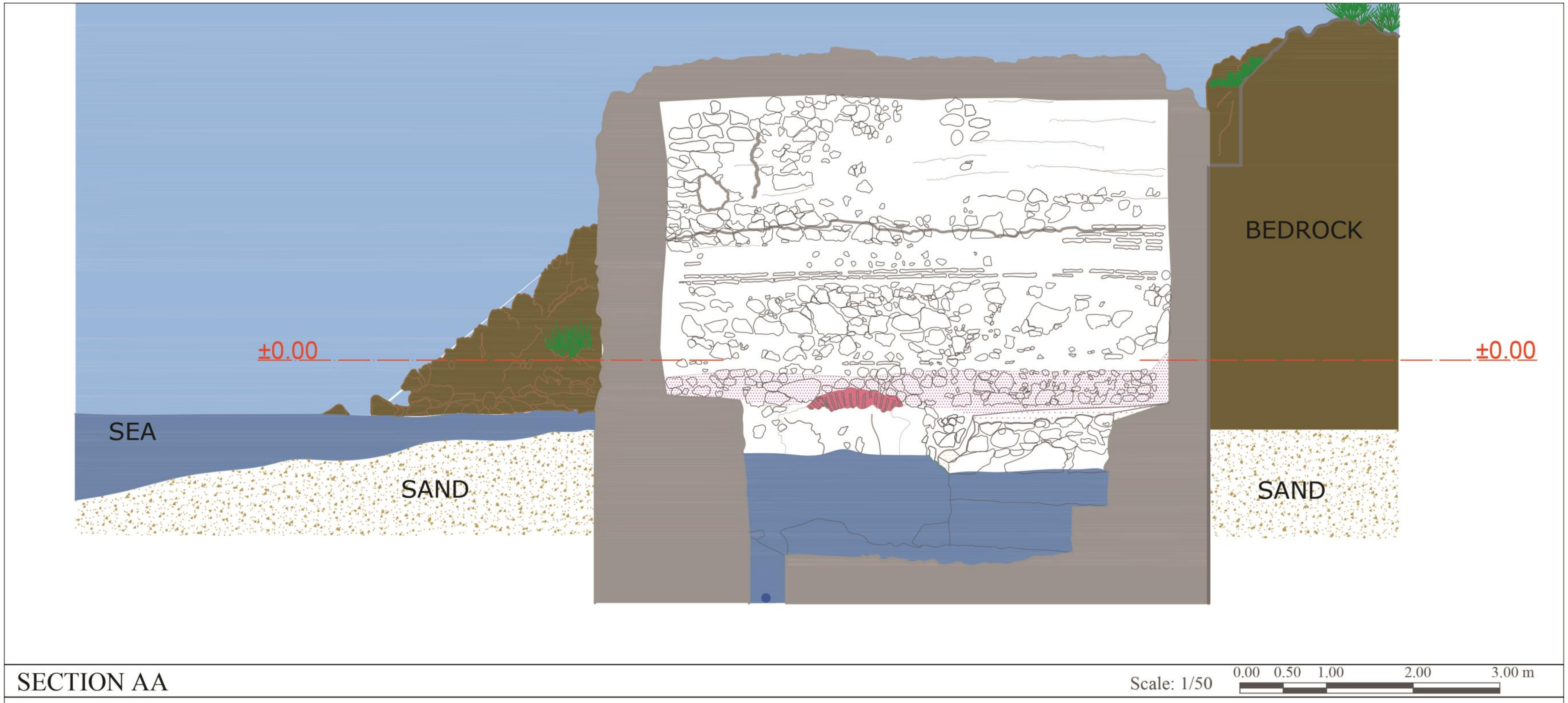


Figure C.3.8. Section A -Morphology Analysis

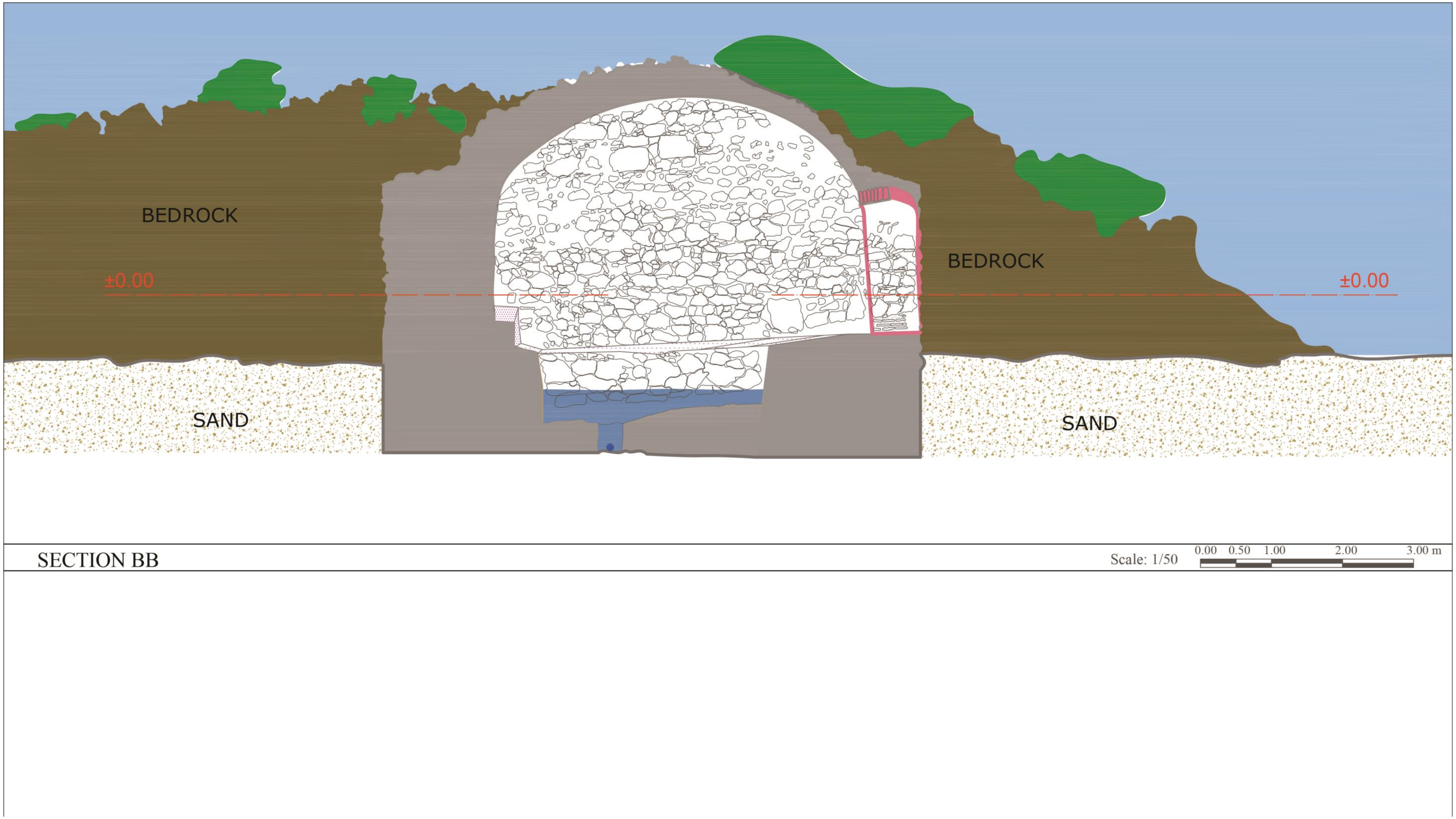


Figure C.3.9. Section B-Morphology Analysis

APPENDIX D

RESTITUTION DRAWINGS

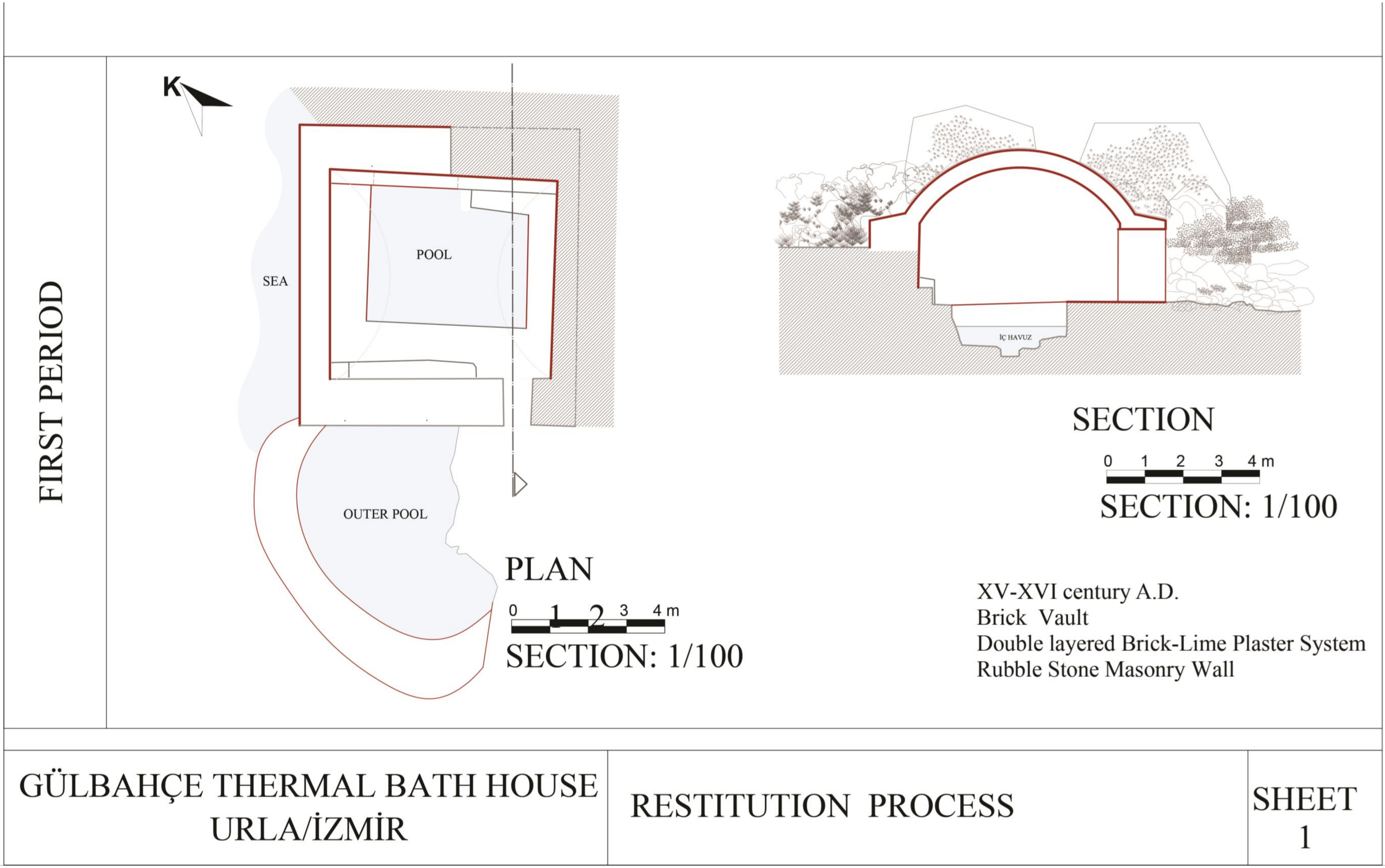


Figure D.1. Restitution Process -First Period, (Source: İYTE,2019)

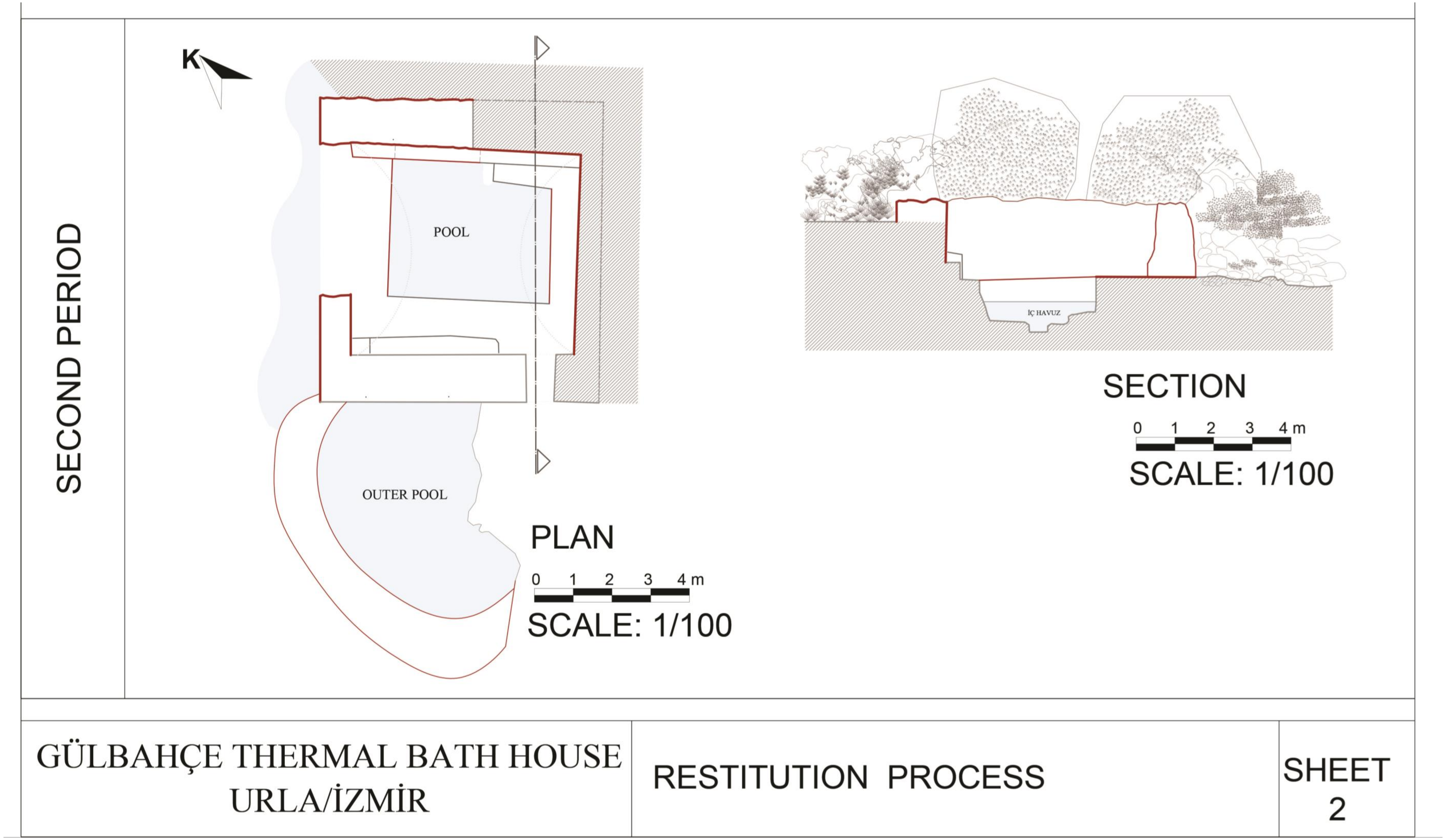


Figure D.2. Restitution Process -Second Period, (Source: İYTE,2019)

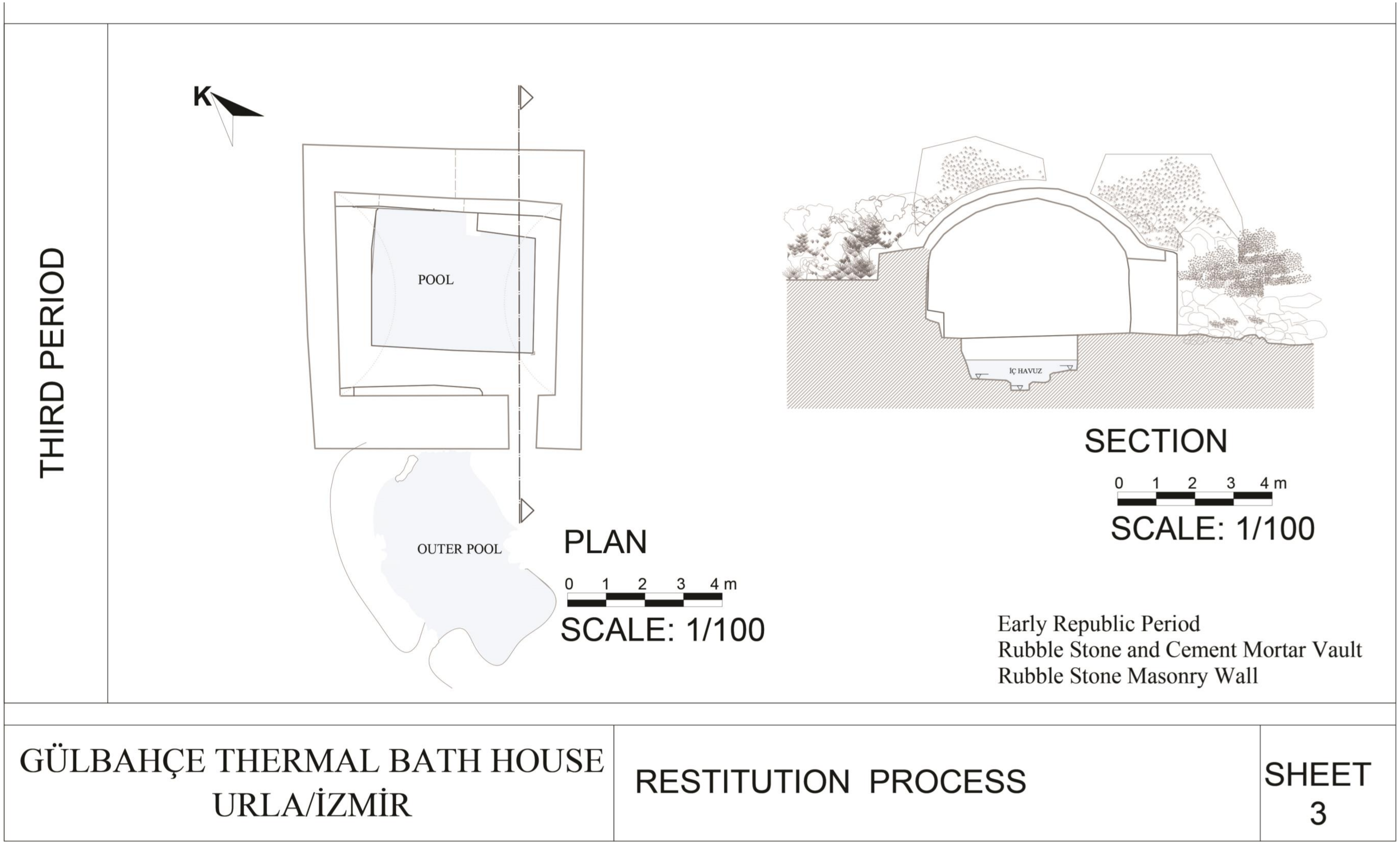
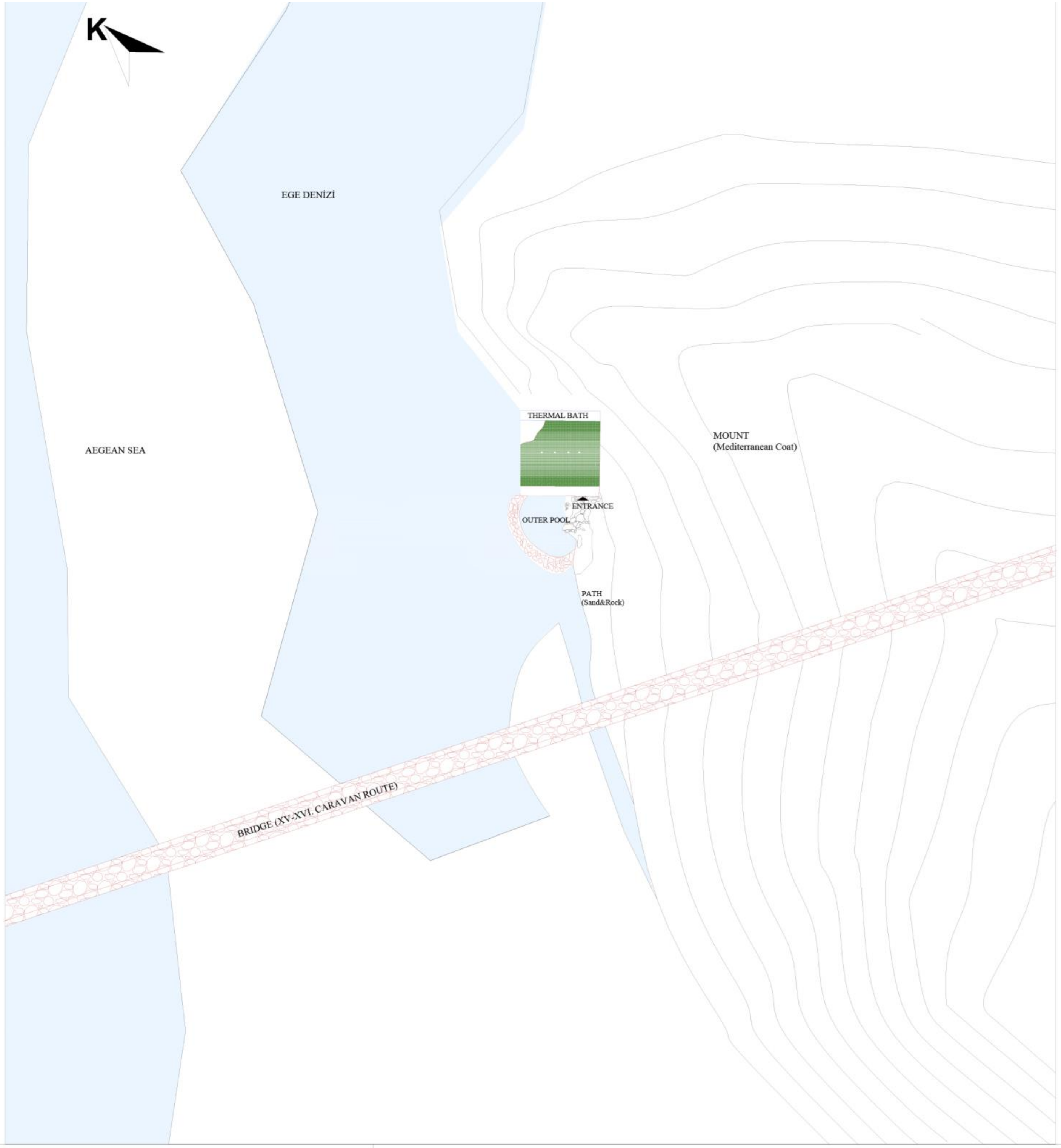


Figure D.3. Restitution Process -Third Period, (Source: İYTE,2019)



RESTITUION SOURCE & RELIABILITY

1. Degree Reliability
a.Traces coming from the building itself

2. Degree Reliability
b.Comparative study with the building itself

3. Degree Reliability
a.Comparative Study with historical baths

b. Comparative study with
Vernacular Construction Techniques

GÜLBAHÇE THERMAL BATH HOUSE
URLA/İZMİR

SITE PLANI

0 2 4 6 8 m
SCALE: 1/500

SHEET
4

Figure D.4., Site Plan -Restitution (Source: İYTE,2019)

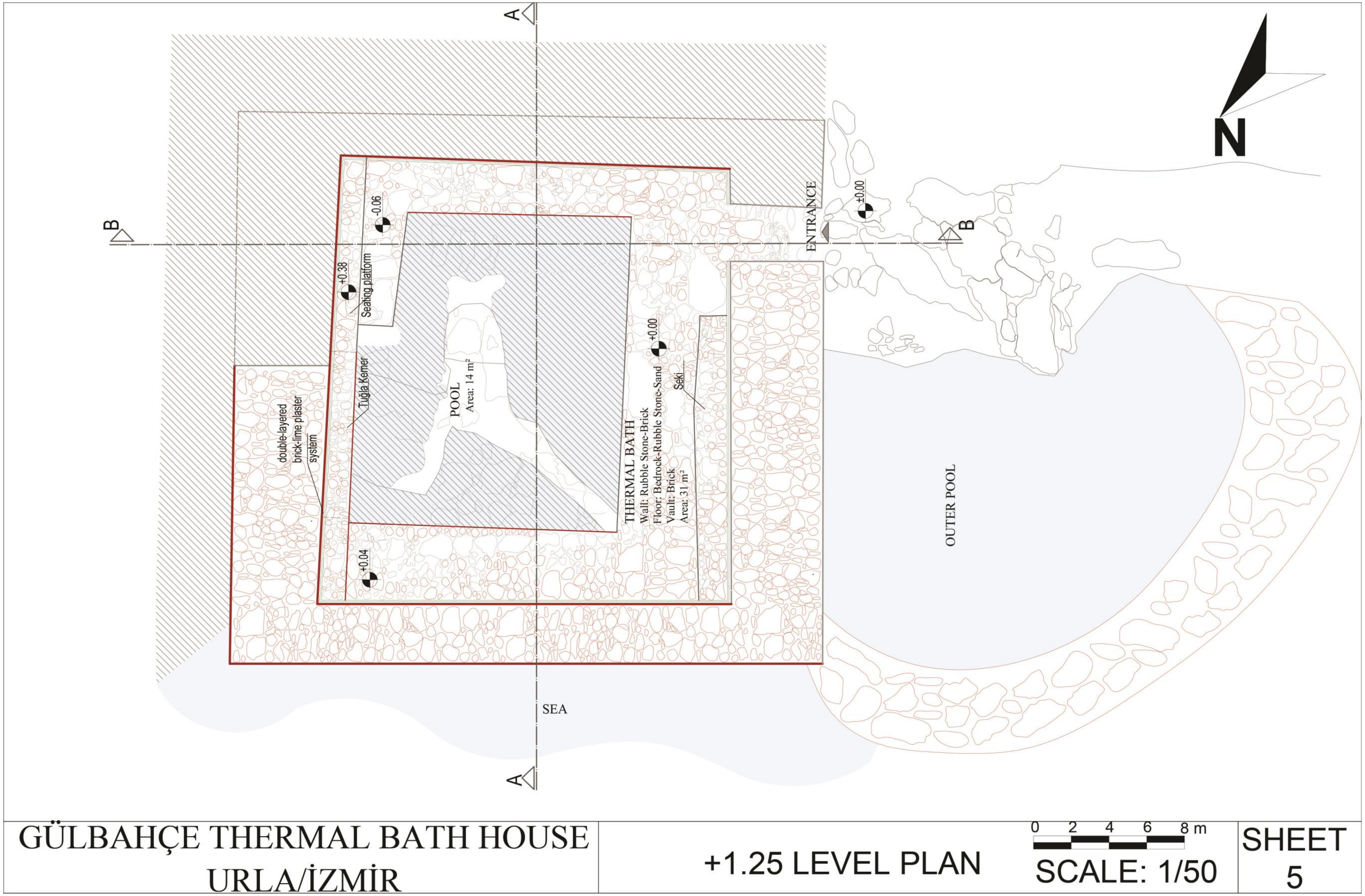


Figure D.5. Plan-Restitution (Source: İYTE,2019)

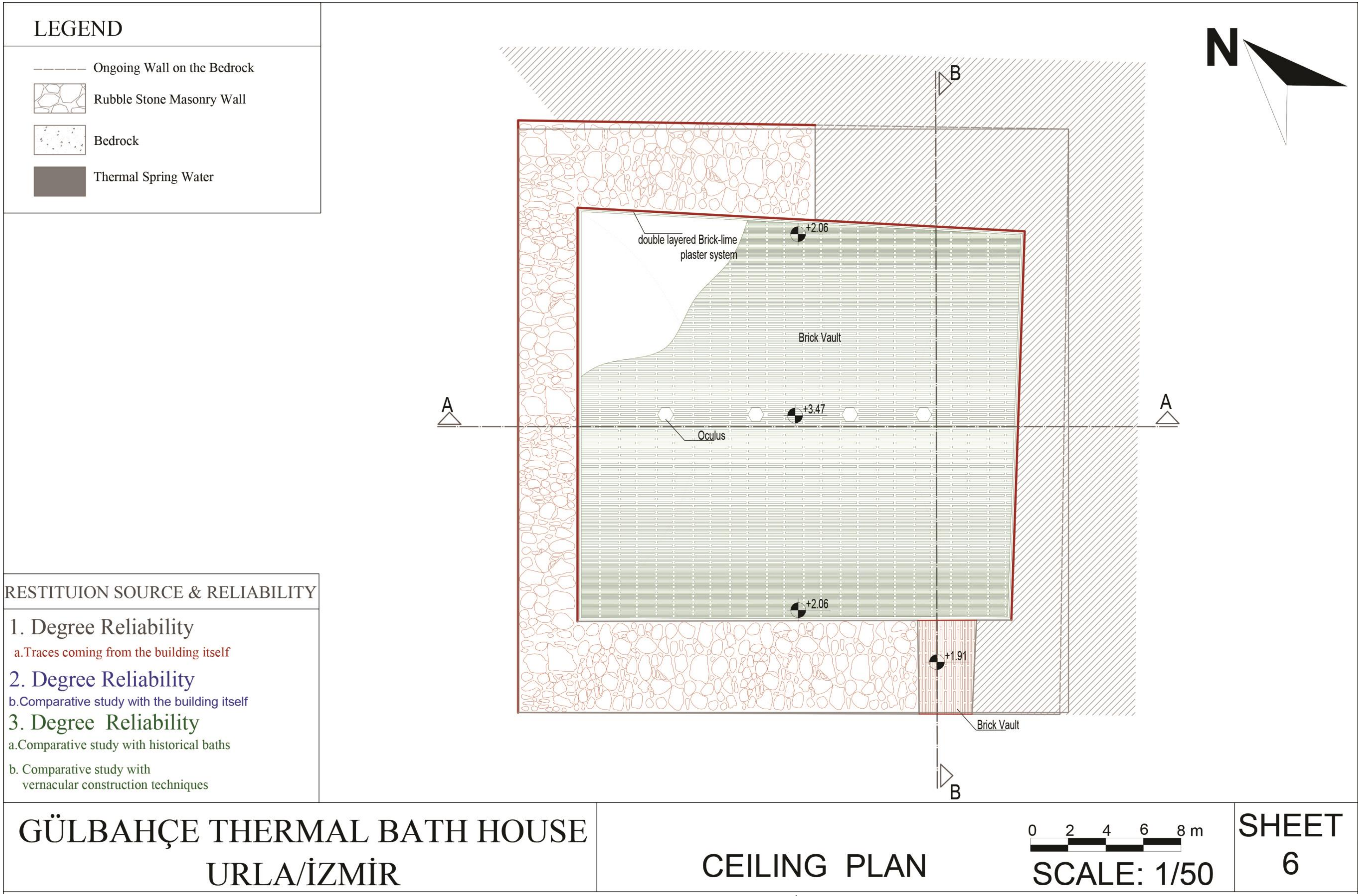


Figure D.6. Ceiling Plan-Restitution (Source: İYTE,2019)

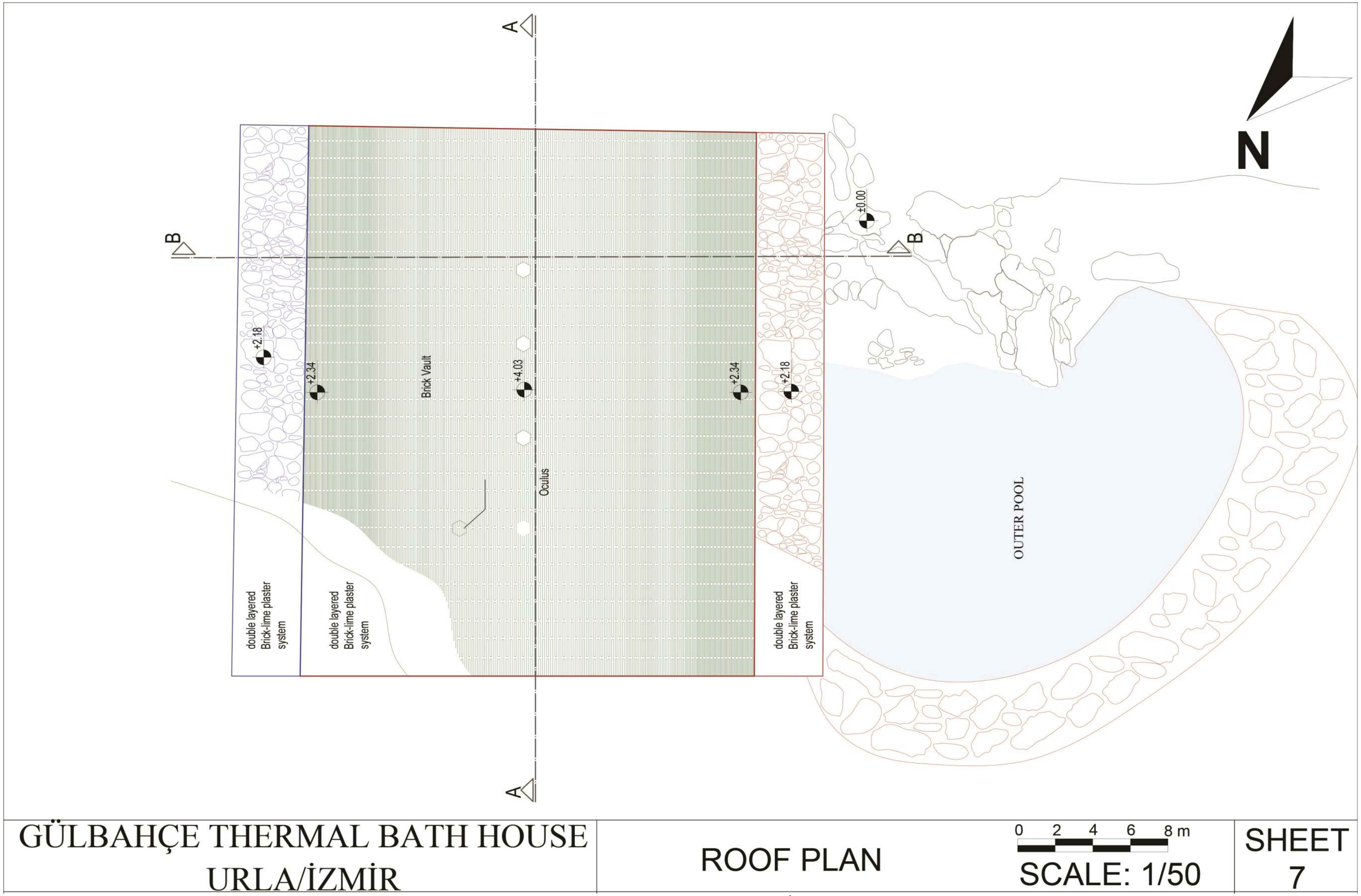


Figure D.7. Roof Plan -Restitution (Source: İYTE,2019)

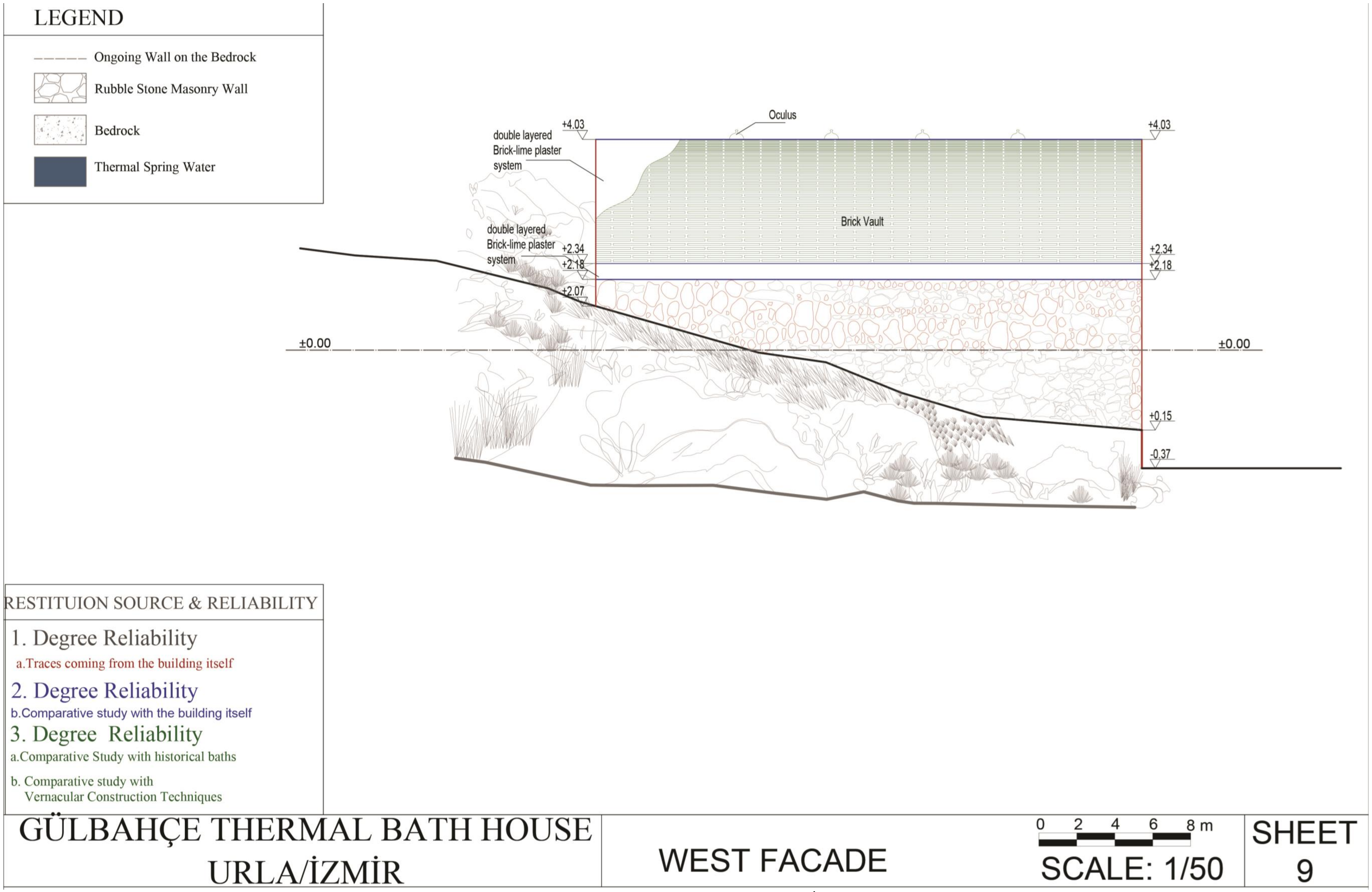


Figure D.9. West Elevation -Restitution (Source: İYTE,2019)

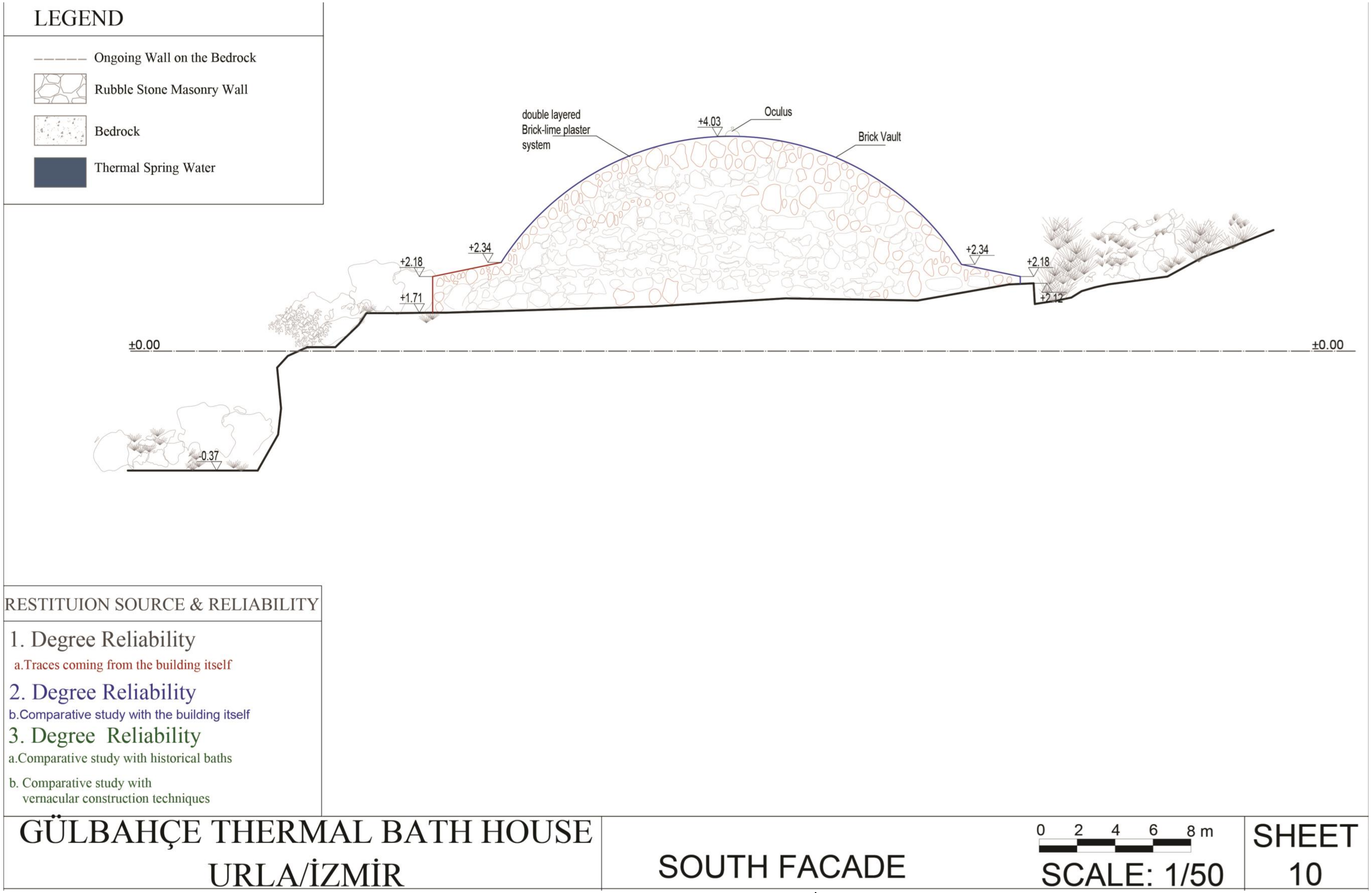


Figure D.10. East Elevation- Restitution (Source: İYTE,2019)

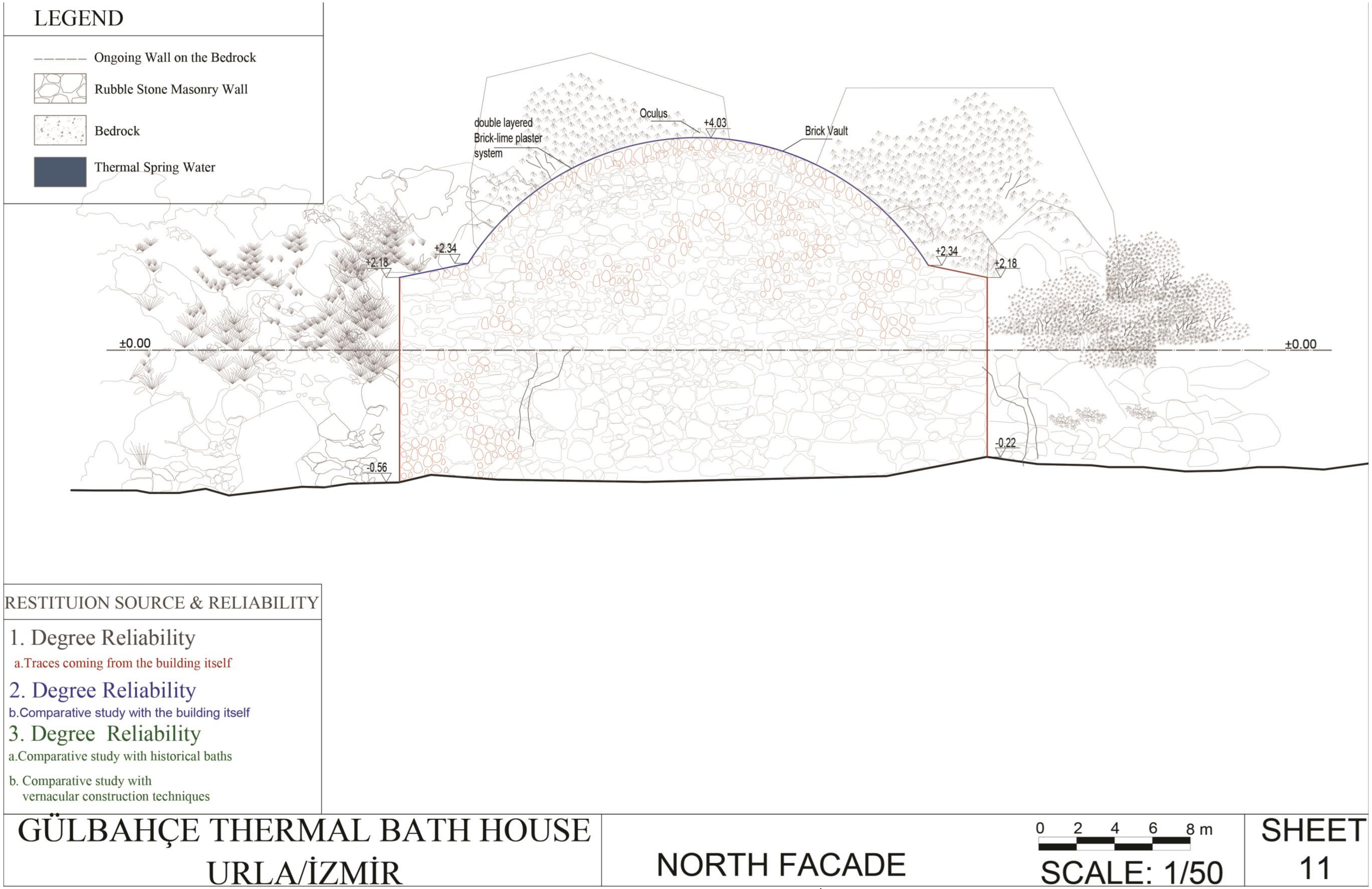


Figure D.11. North Elevation -Restitution (Source: İYTE,2019)

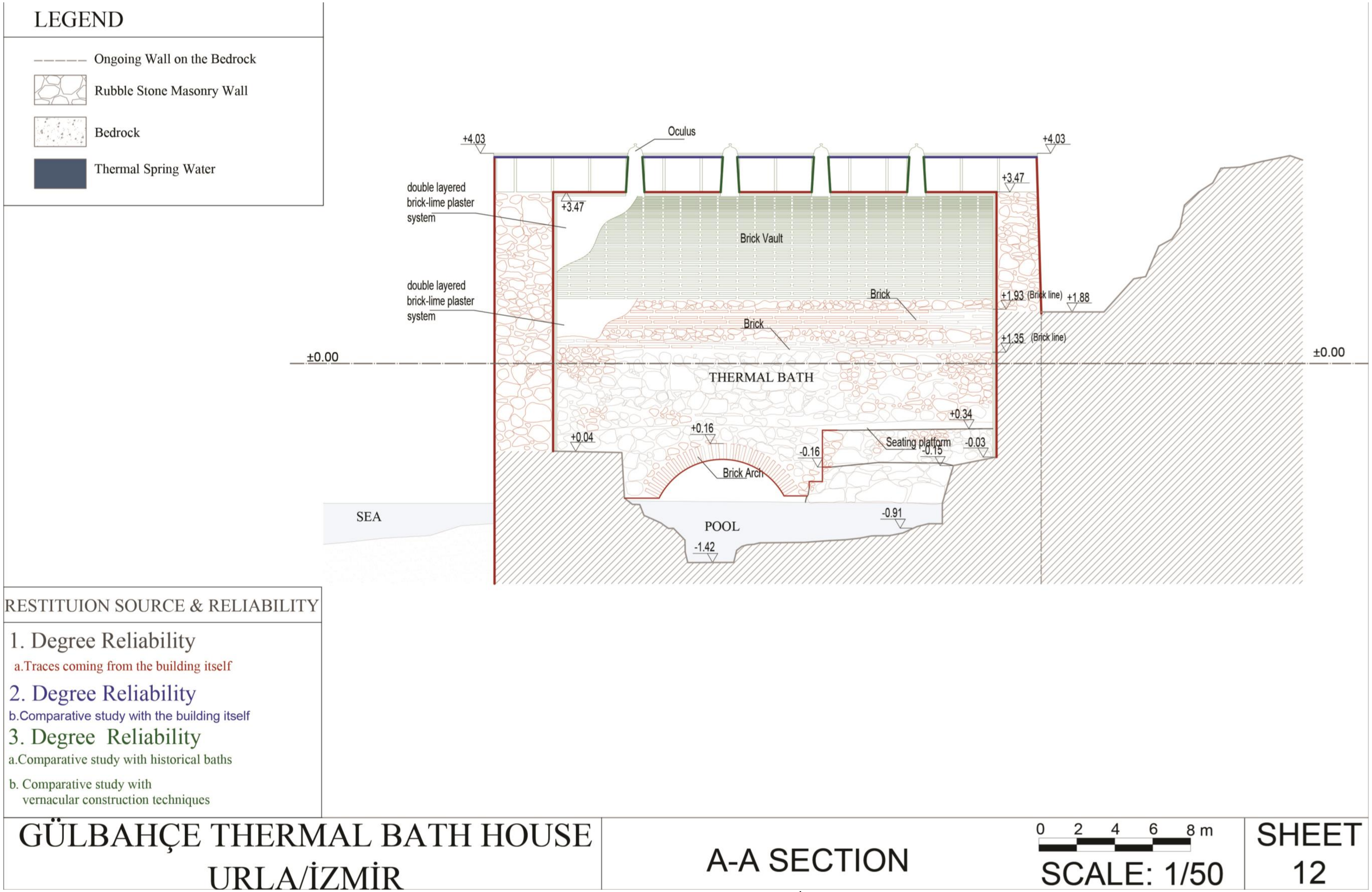


Figure D.12. Section A -Restitution (Source: İYTE,2019)

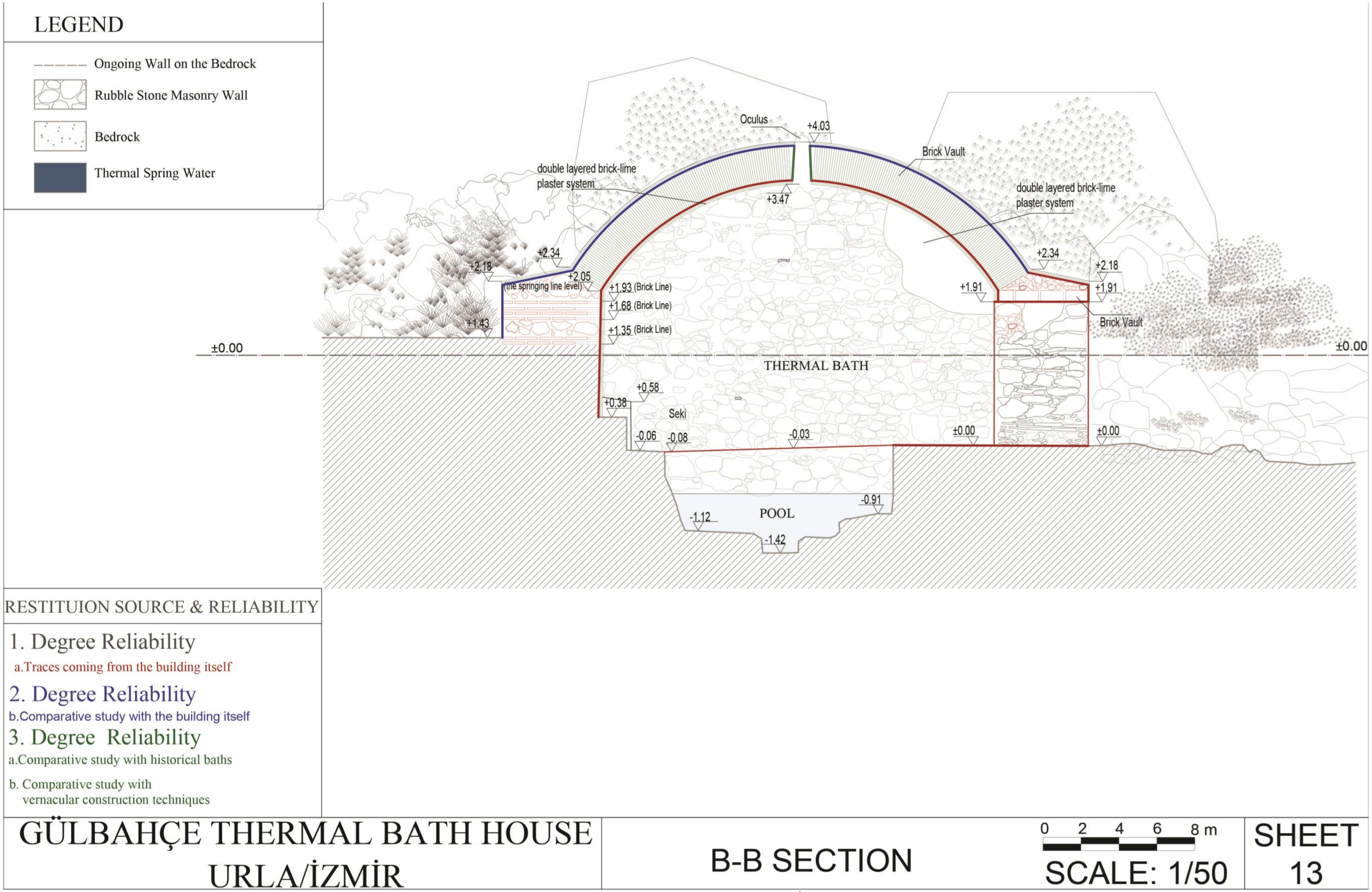


Figure D.13. Section B -Restitution (Source: İYTE,2019)

APPENDIX E

INTERVENTION DECISIONS

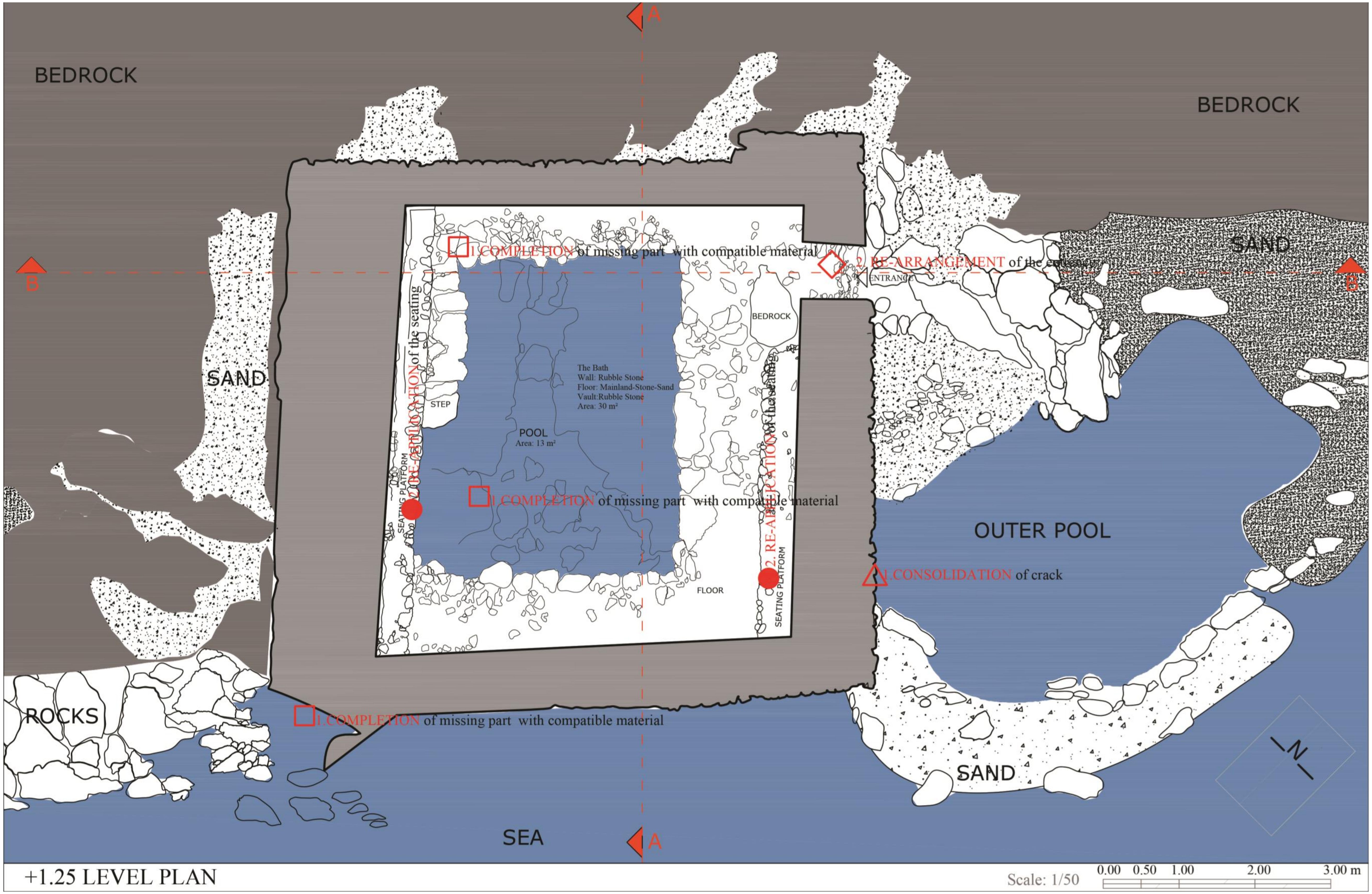


Figure E.1. Plan -Intervention Decisions

Plant formation is a threaten factor for structure that's why using physical method is an option that moves away from the building without harming but chemical intervention helps to prevent reproducing plants again.

Unqualified attachments made of reinforced concrete will be removed from the building with care and a conservative intervention will be made in its proper material and form.

On the walls there are cracks and material loss can be seen clearly for thar reason using proper material and construction technique for restoring the bath

Stone and joint cleaning will be done throughout the building. by blasting method

Grouting and mortar repair will be done in accordance with the original

The proper entrance door will be arranged for the thermal bath

Drainage system should be applied to the bath surrounding to prevent the mixing water and the sea water as well as to protect the structure from the sea water

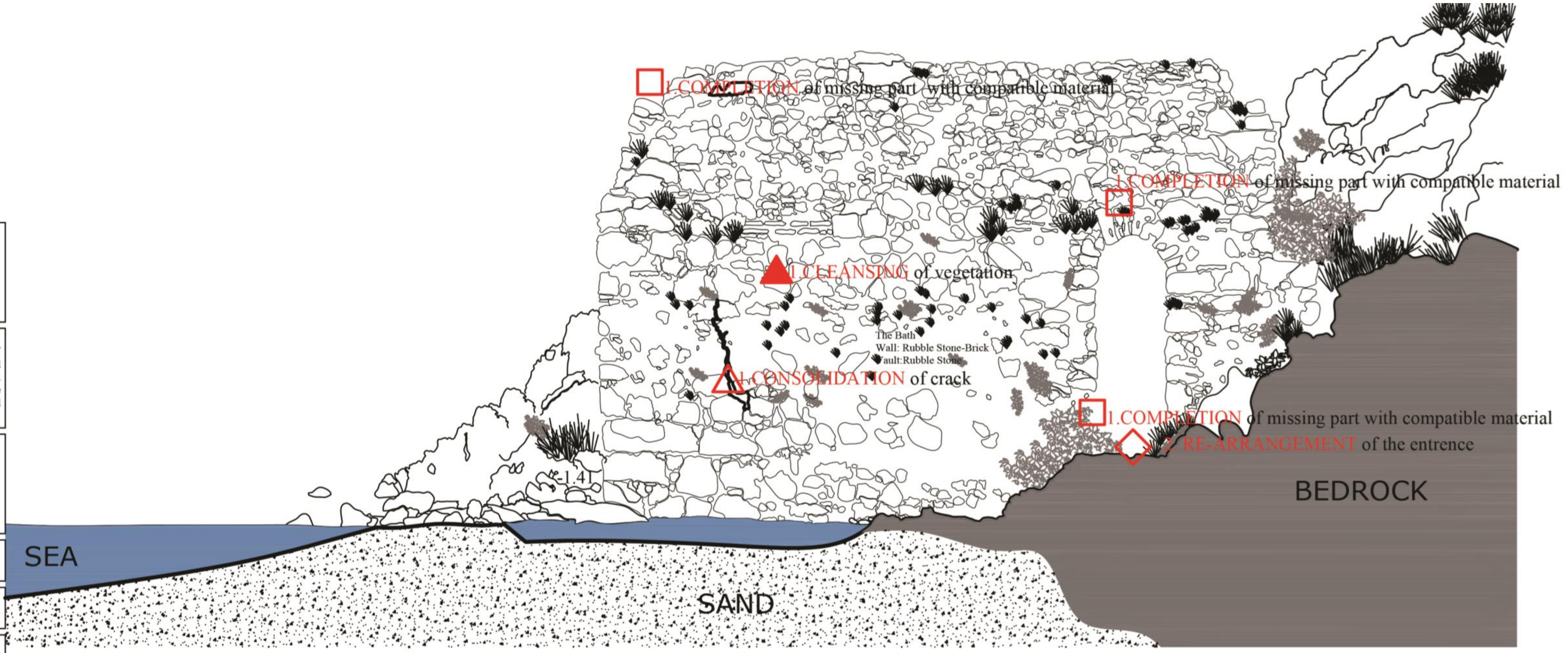
Structural and architectural elements will be completed in accordance with original

The vernacular rubble stone masonry vault will be consolidated

The opening for illumination of the vault must be covered with tempered glass

In order to be able became clean potable spring water , all the necessary application should be made.(fresh water comes from a depth of 400 m)

Damages caused by sea water, wind, joint drains, plaster spills, material losses will be completed and intervened in appropriate materials and techniques.



EAST ELEVATION

Scale: 1/50 0.00 0.50 1.00 2.00 3.00 m

INTERVENTION DECISION

- consolidation: structural causes (cracks, vault,wall)
- re-arragement: architectural necessities entrance,oculus
- re-application :lintel seating platform and plaster
- completion : missing parts of bath repairs with compatible material
- cleansing: vegetation and vandalisim(smoke and graffitti)

Figure E.2. East Elevation -Intervention Decisions

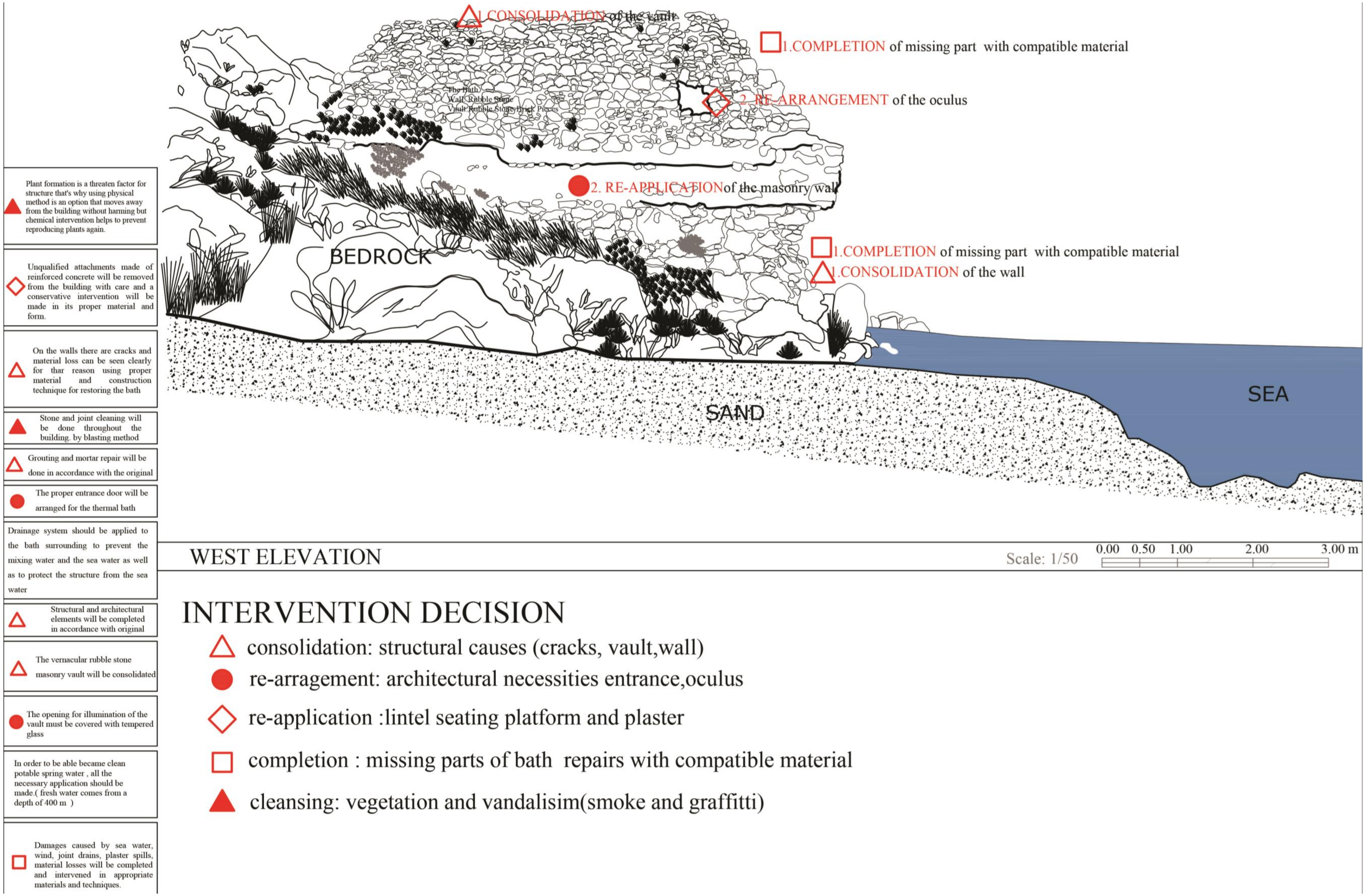


Figure E.3. West Elevation -Intervention Decisions

Plant formation is a threaten factor for structure that's why using physical method is an option that moves away from the building without harming but chemical intervention helps to prevent reproducing plants again.

Unqualified attachments made of reinforced concrete will be removed from the building with care and a conservative intervention will be made in its proper material and form.

On the walls there are cracks and material loss can be seen clearly for thar reason using proper material and construction technique for restoring the bath

Stone and joint cleaning will be done throughout the building. by blasting method

Grouting and mortar repair will be done in accordance with the original

The proper entrance door will be arranged for the thermal bath

Drainage system should be applied to the bath surrounding to prevent the mixing water and the sea water as well as to protect the structure from the sea water

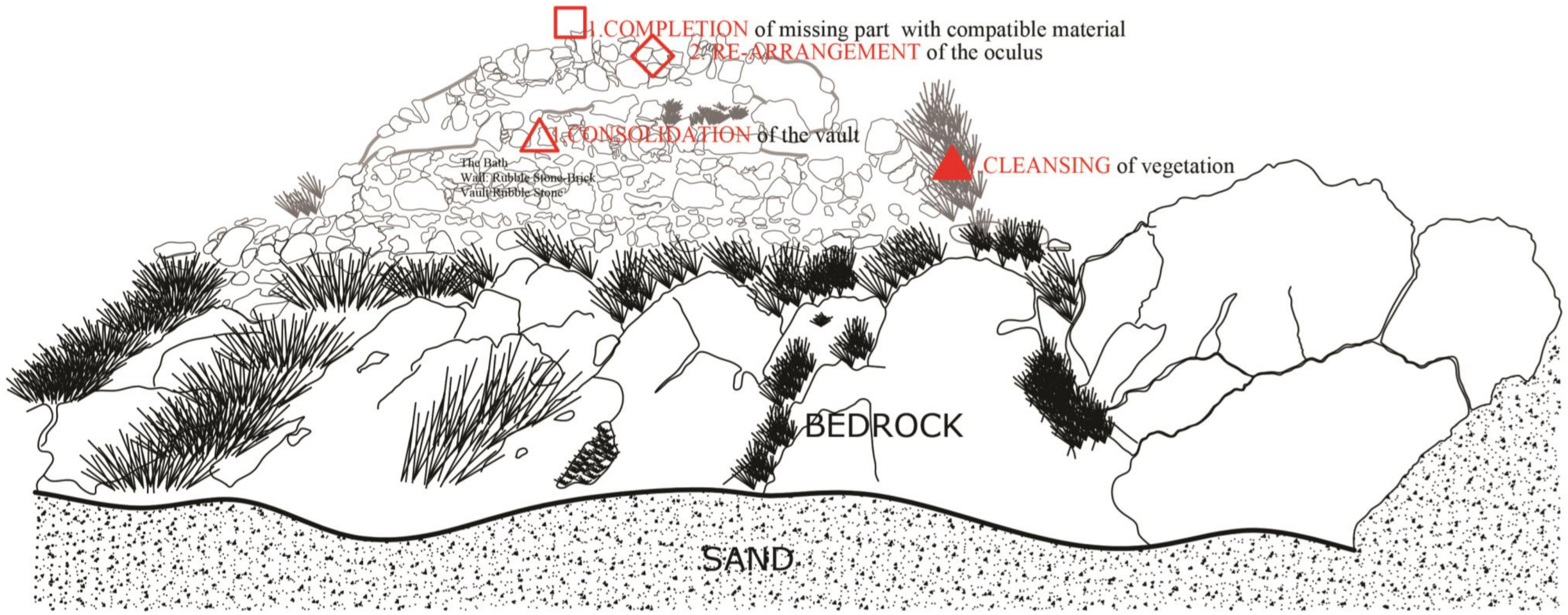
Structural and architectural elements will be completed in accordance with original

The vernacular rubble stone masonry vault will be consolidated

The opening for illumination of the vault must be covered with tempered glass

In order to be able became clean potable spring water , all the necessary application should be made.(fresh water comes from a depth of 400 m)

Damages caused by sea water, wind, joint drains, plaster spills, material losses will be completed and intervened in appropriate materials and techniques.



SOUTH ELEVATION

Scale: 1/50 0.00 0.50 1.00 2.00 3.00 m

INTERVENTION DECISION

- △ consolidation: structural causes (cracks, vault,wall)
- ● re-arragement: architectural necessities entrance,oculus
- ◇ re-application :lintel seating platform and plaster
- □ completion : missing parts of bath repairs with compatible material
- ▲ cleansing: vegetation and vandalisim(smoke and graffitti)

Figure E.4. South Elevation -Intervention Decisions

Plant formation is a threaten factor for structure that's why using physical method is an option that moves away from the building without harming but chemical intervention helps to prevent reproducing plants again.

Unqualified attachments made of reinforced concrete will be removed from the building with care and a conservative intervention will be made in its proper material and form.

On the walls there are cracks and material loss can be seen clearly for thar reason using proper material and construction technique for restoring the bath

Stone and joint cleaning will be done throughout the building. by blasting method

Grouting and mortar repair will be done in accordance with the original

The proper entrance door will be arranged for the thermal bath

Drainage system should be applied to the bath surrounding to prevent the mixing water and the sea water as well as to protect the structure from the sea water

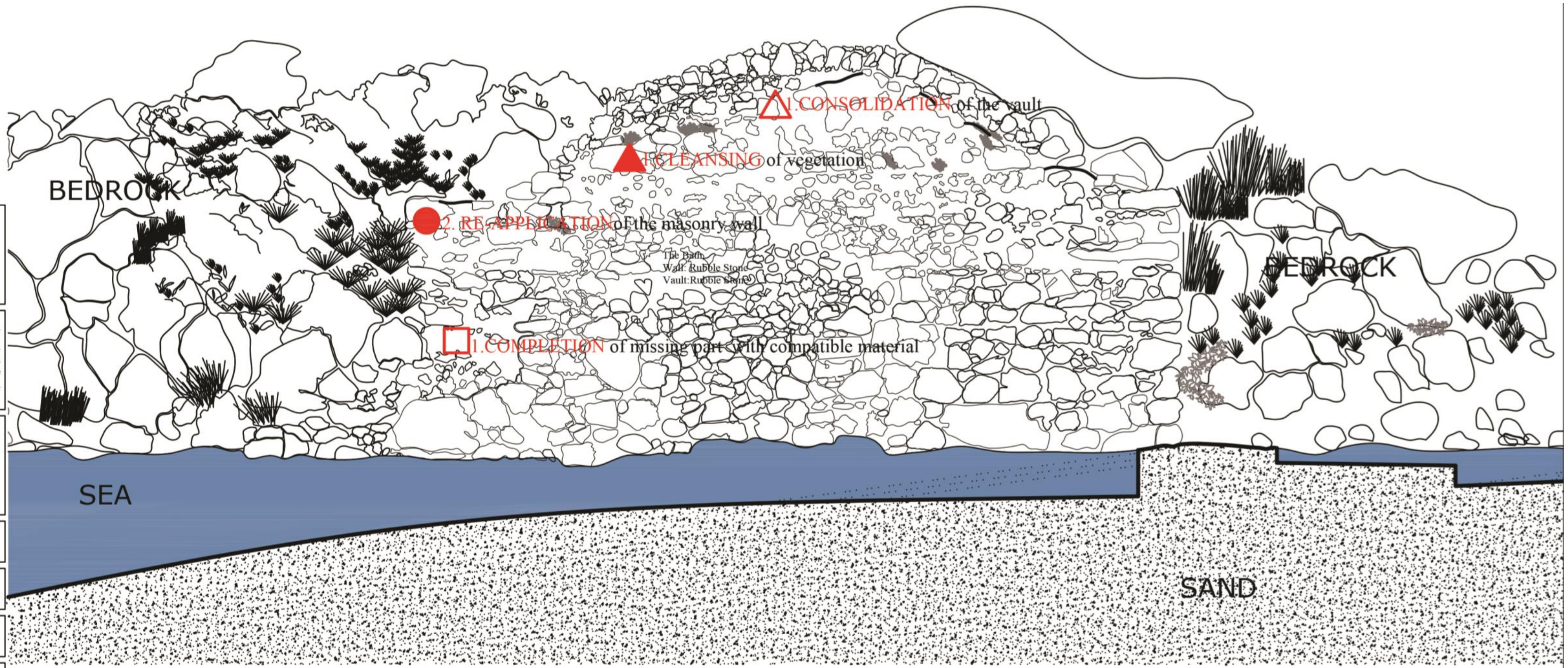
Structural and architectural elements will be completed in accordance with original

The vernacular rubble stone masonry vault will be consolidated

The opening for illumination of the vault must be covered with tempered glass

In order to be able became clean potable spring water , all the necessary application should be made.(fresh water comes from a depth of 400 m)

Damages caused by sea water, wind, joint drains, plaster spills, material losses will be completed and intervened in appropriate materials and techniques.



NORTH ELEVATION

Scale: 1/50 0.00 0.50 1.00 2.00 3.00 m

INTERVENTION DECISION

- consolidation: structural causes (cracks, vault,wall)
- re-arragement: architectural necessities entrance,oculus
- re-application :lintel seating platform and plaster
- completion : missing parts of bath repairs with compatible material
- cleansing: vegetation and vandalisim(smoke and graffitti)

Figure E.5. North Elevation -Intervention Decisions

Plant formation is a threaten factor for structure that's why using physical method is an option that moves away from the building without harming but chemical intervention helps to prevent reproducing plants again.

Unqualified attachments made of reinforced concrete will be removed from the building with care and a conservative intervention will be made in its proper material and form.

On the walls there are cracks and material loss can be seen clearly for thar reason using proper material and construction technique for restoring the bath

Stone and joint cleaning will be done throughout the building. by blasting method

Grouting and mortar repair will be done in accordance with the original

The proper entrance door will be arranged for the thermal bath

Drainage system should be applied to the bath surrounding to prevent the mixing water and the sea water as well as to protect the structure from the sea water

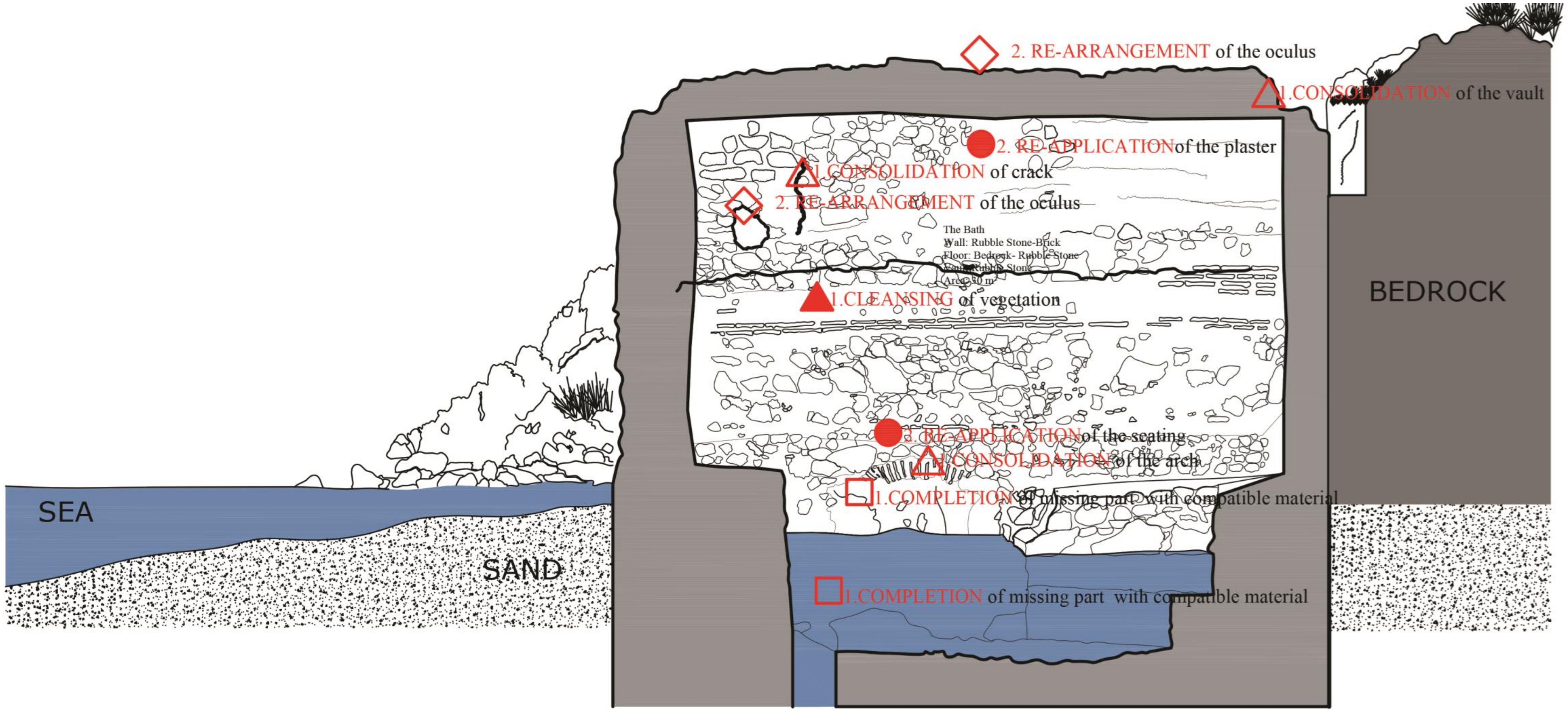
Structural and architectural elements will be completed in accordance with original

The vernacular rubble stone masonry vault will be consolidated

The opening for illumination of the vault must be covered with tempered glass

In order to be able became clean potable spring water , all the necessary application should be made.(fresh water comes from a depth of 400 m)

Damages caused by sea water, wind, joint drains, plaster spills, material losses will be completed and intervened in appropriate materials and techniques.



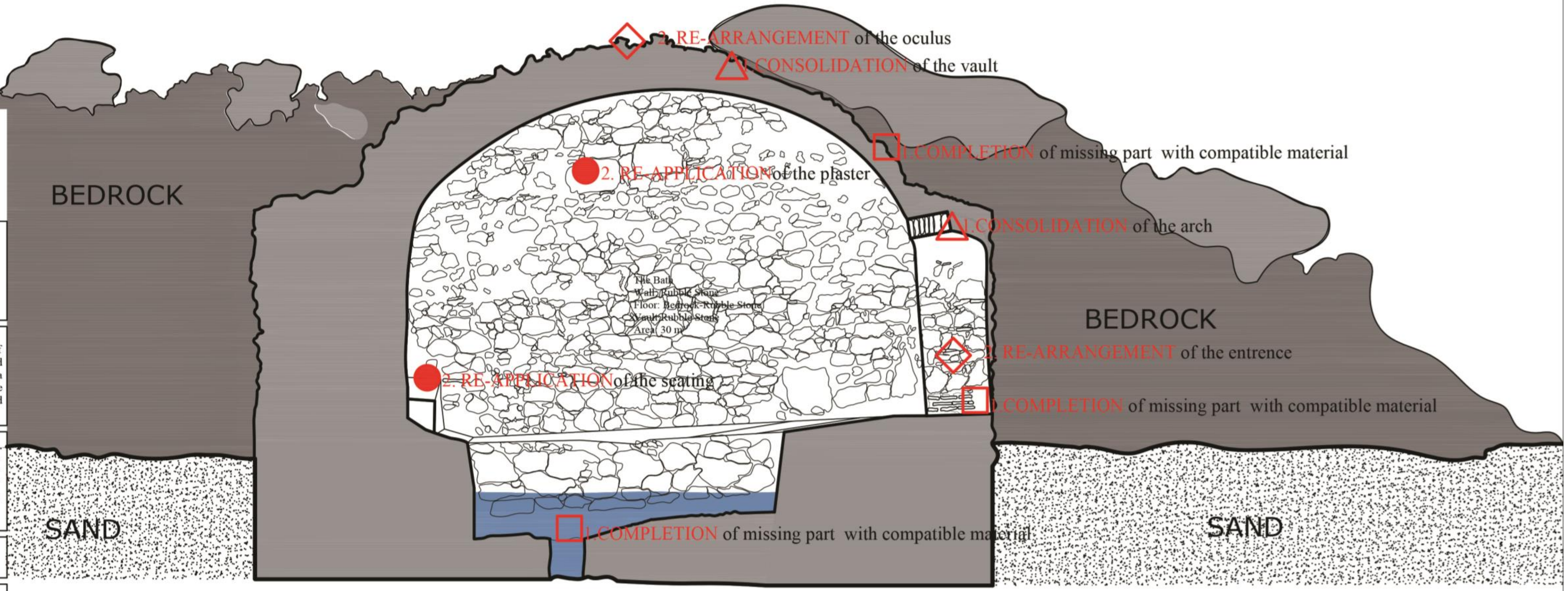
SECTION AA

Scale: 1/50 0.00 0.50 1.00 2.00 3.00 m

INTERVENTION DECISION

- consolidation: structural causes (cracks, vault,wall)
- re-arragement: architectural necessities entrance,oculus
- re-application :lintel seating platform and plaster
- completion : missing parts of bath repairs with compatible material
- cleansing: vegetation and vandalisim(smoke and graffitti)

Figure E.6. Section A -Intervention Decisions



- ▲ Plant formation is a threaten factor for structure that's why using physical method is an option that moves away from the building without harming but chemical intervention helps to prevent reproducing plants again.
- ◇ Unqualified attachments made of reinforced concrete will be removed from the building with care and a conservative intervention will be made in its proper material and form.
- △ On the walls there are cracks and material loss can be seen clearly for thar reason using proper material and construction technique for restoring the bath
- ▲ Stone and joint cleaning will be done throughout the building. by blasting method
- △ Grouting and mortar repair will be done in accordance with the original
- ● The proper entrance door will be arranged for the thermal bath
- Drainage system should be applied to the bath surrounding to prevent the mixing water and the sea water as well as to protect the structure from the sea water
- △ Structural and architectural elements will be completed in accordance with original
- △ The vernacular rubble stone masonry vault will be consolidated
- ● The opening for illumination of the vault must be covered with tempered glass
- In order to be able became clean potable spring water , all the necessary application should be made.(fresh water comes from a depth of 400 m)
- □ Damages caused by sea water, wind, joint drains, plaster spills, material losses will be completed and intervened in appropriate materials and techniques.

SECTION BB

Scale: 1/50 — 0.00 0.50 1.00 2.00 3.00 m

INTERVENTION DECISION

- △ consolidation: structural causes (cracks, vault,wall)
- ● re-arragement: architectural necessities entrance,oculus
- ◇ re-application :lintel seating platform and plaster
- □ completion : missing parts of bath repairs with compatible material
- ▲ cleansing: vegetation and vandalisim(smoke and graffitti)

Figure E.7. Section B -Intervention Decisions

APPENDIX F

RESTORATION PROPOSAL

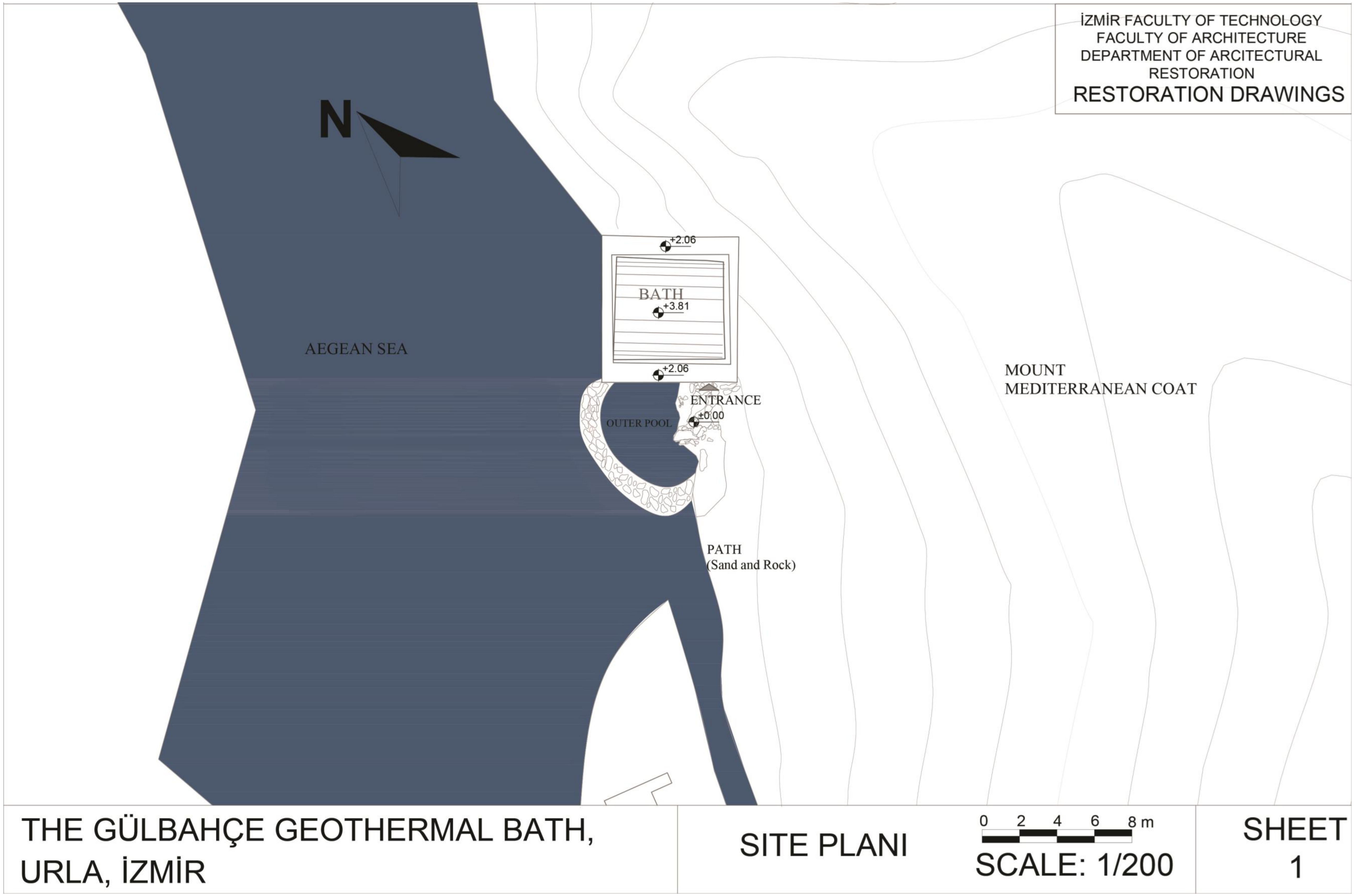


Figure F.1. Site Plan-Restoration

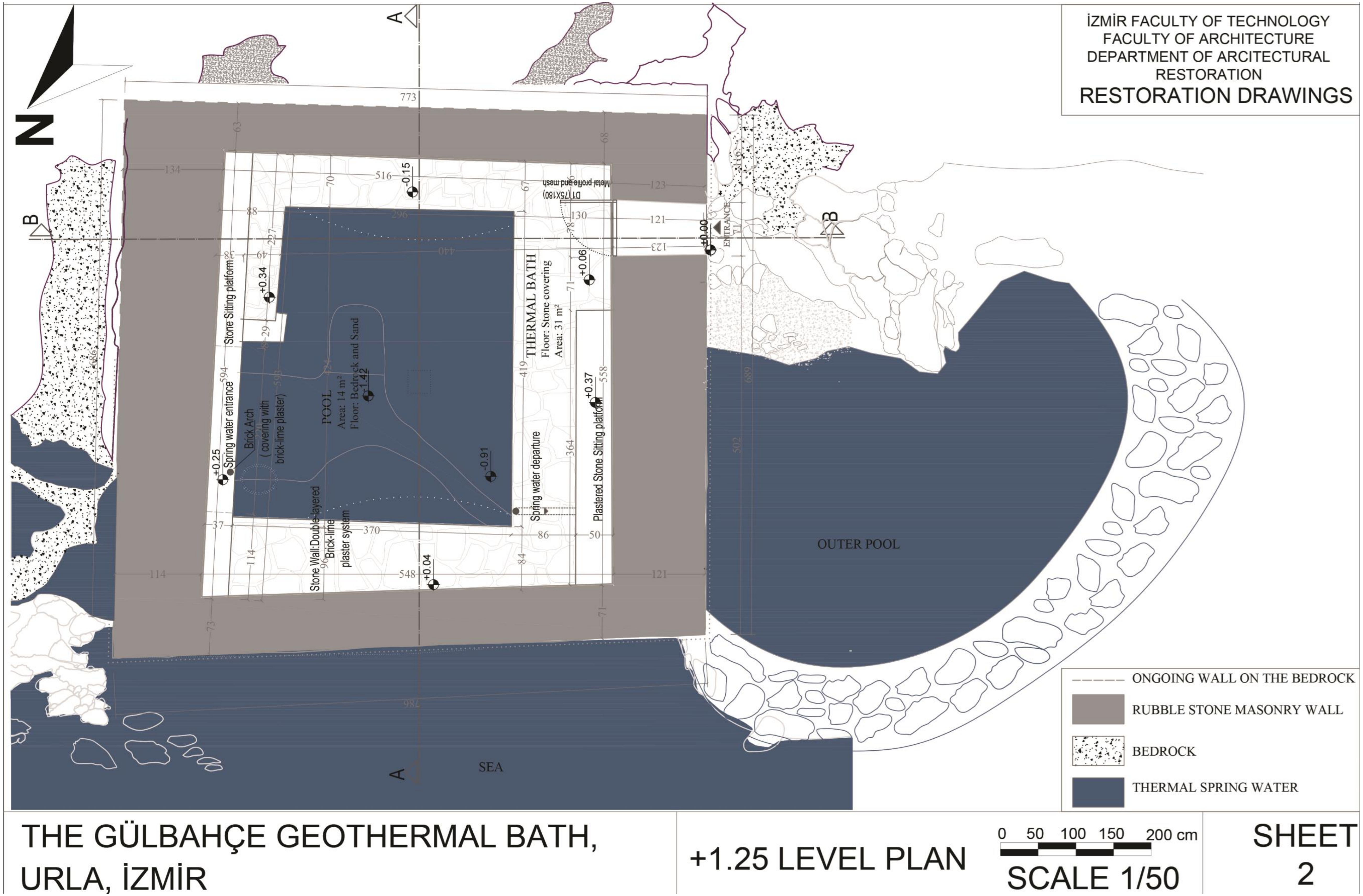


Figure F.2. Plan-Restoration

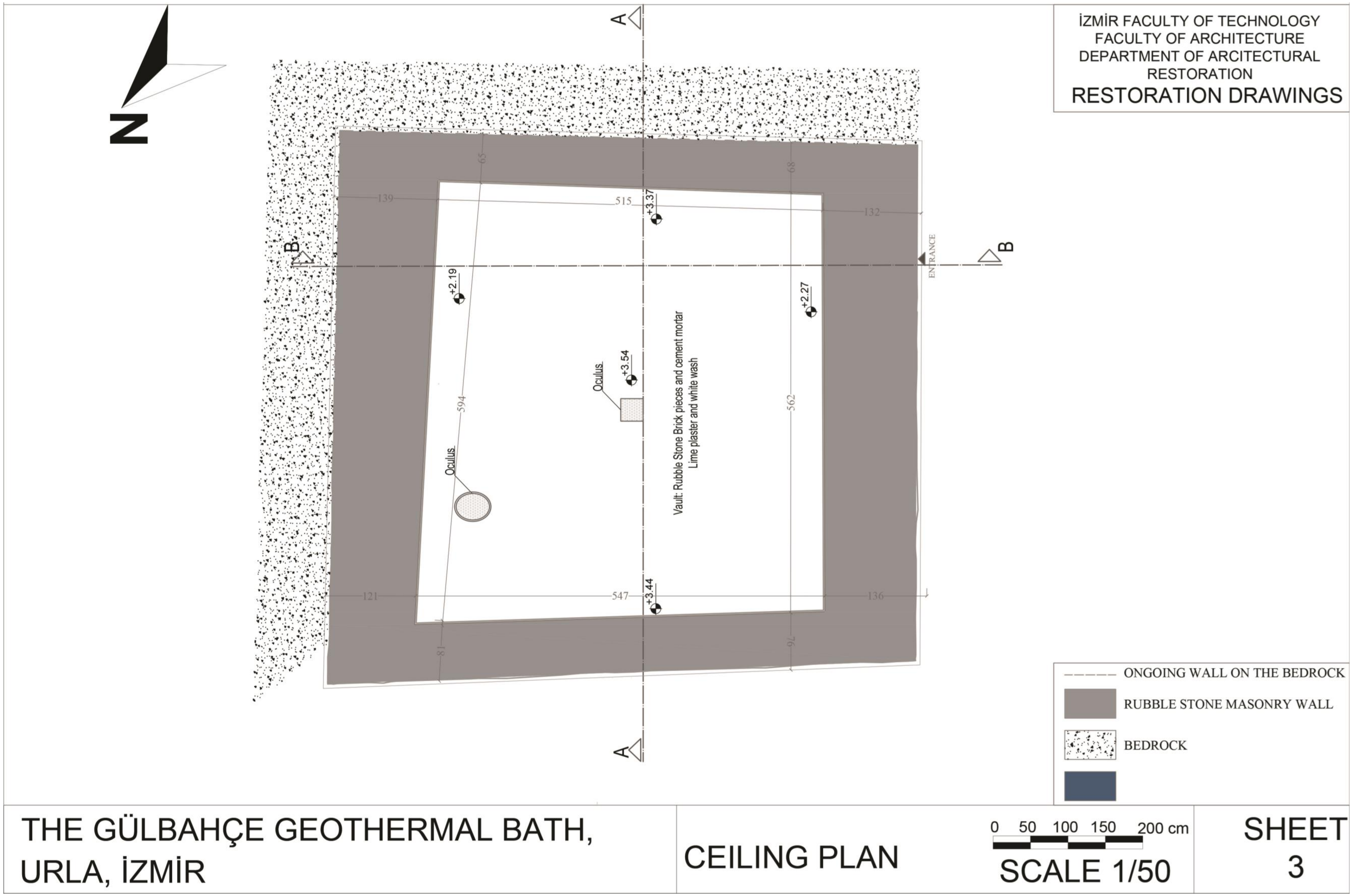


Figure F.3. Ceiling Plan-Restoration

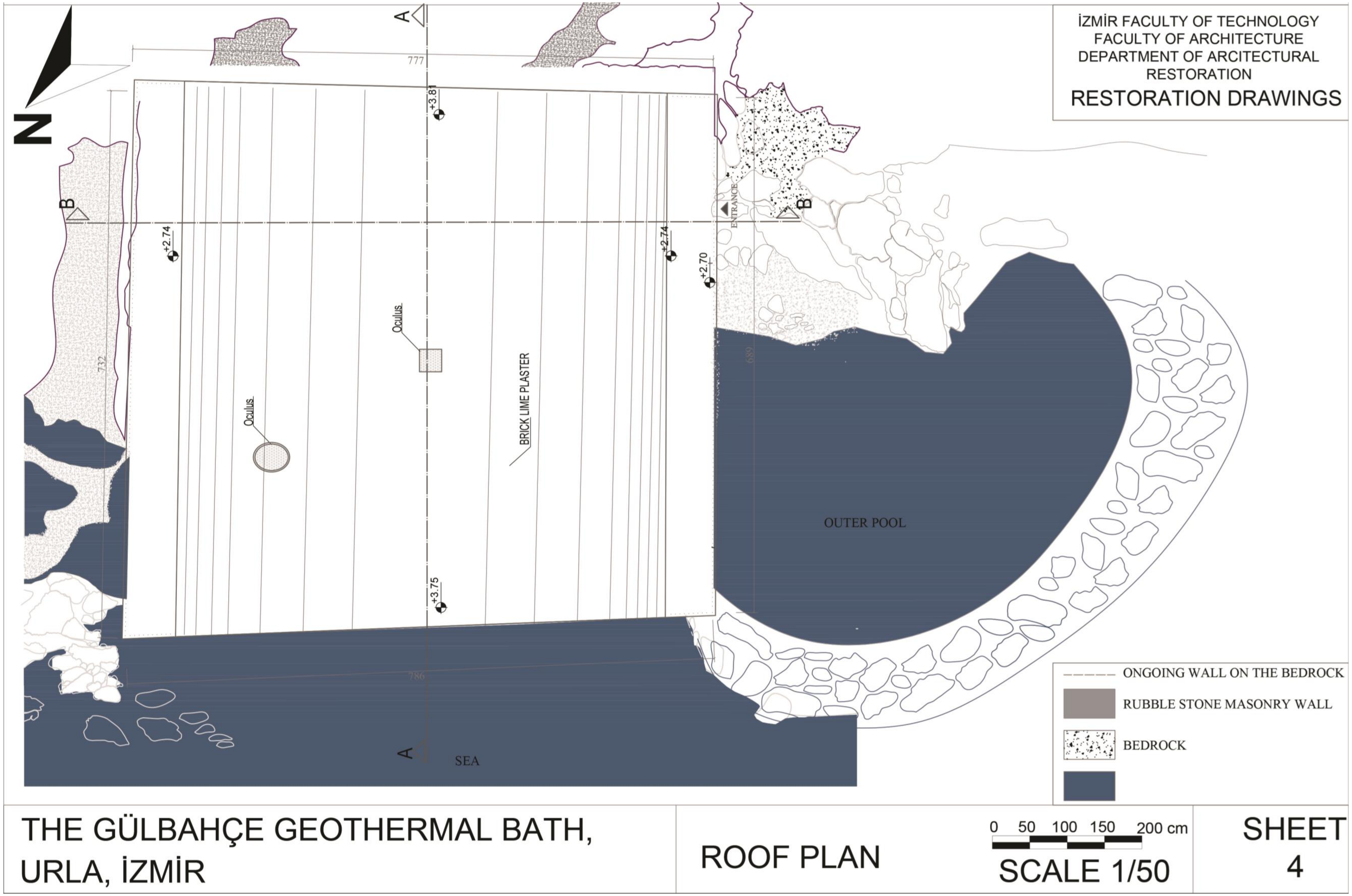


Figure F.4. Roof Plan-Restoration

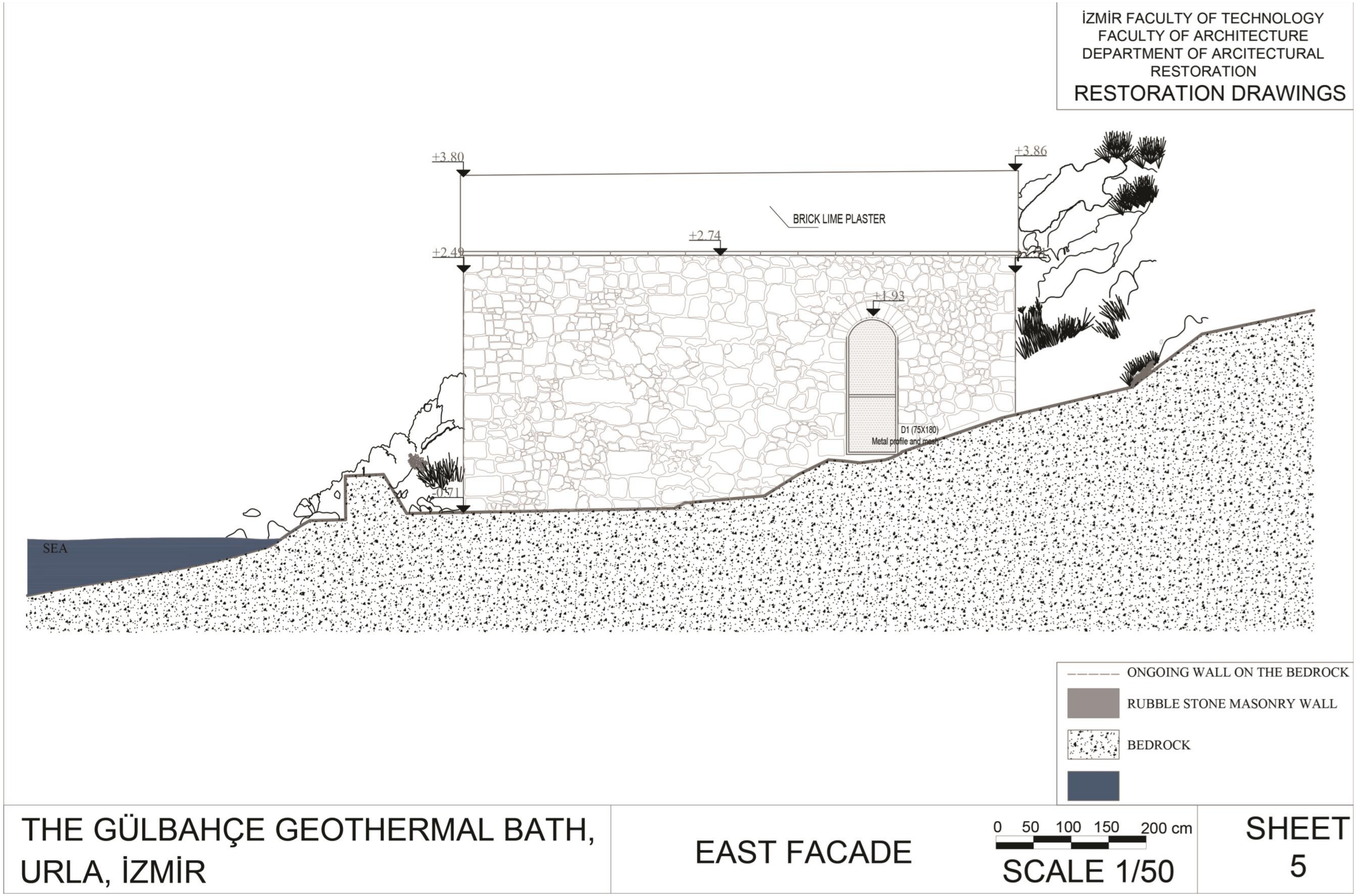


Figure F.5. East Facade-Restoration

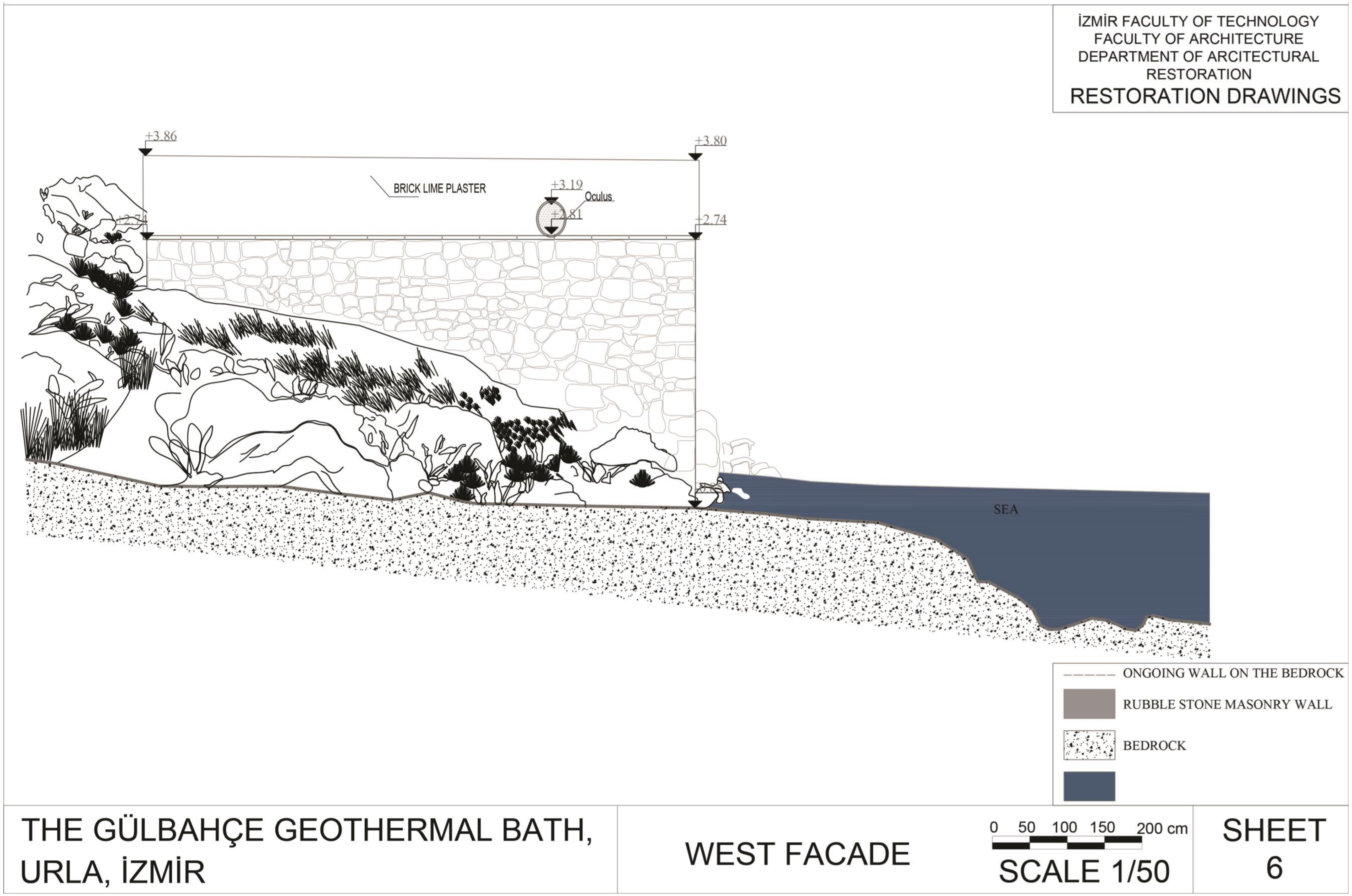


Figure F.6. West Facade-Restoration

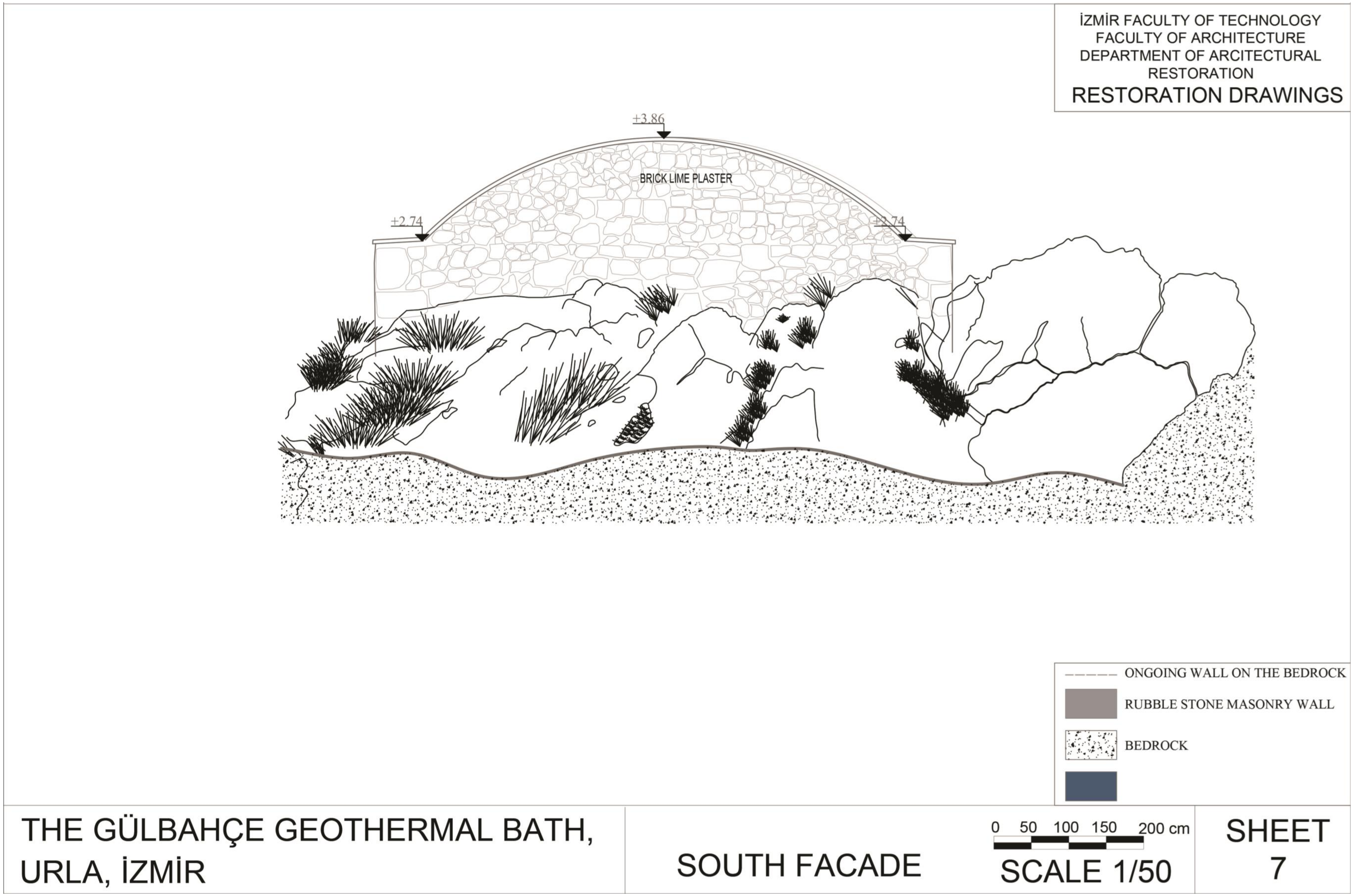


Figure F.7. South Facade-Restoration

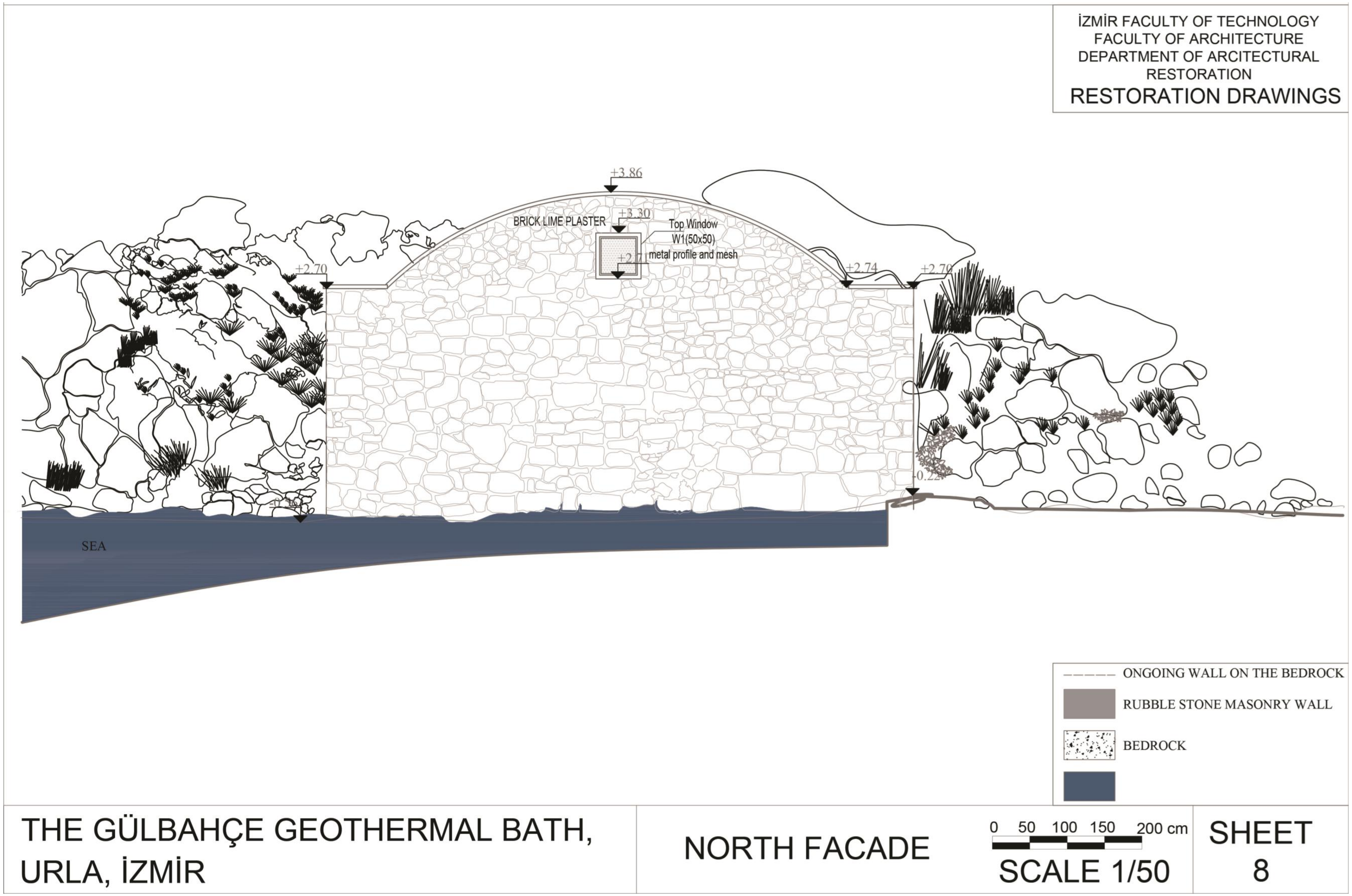


Figure F.8. North Facade-Restoration

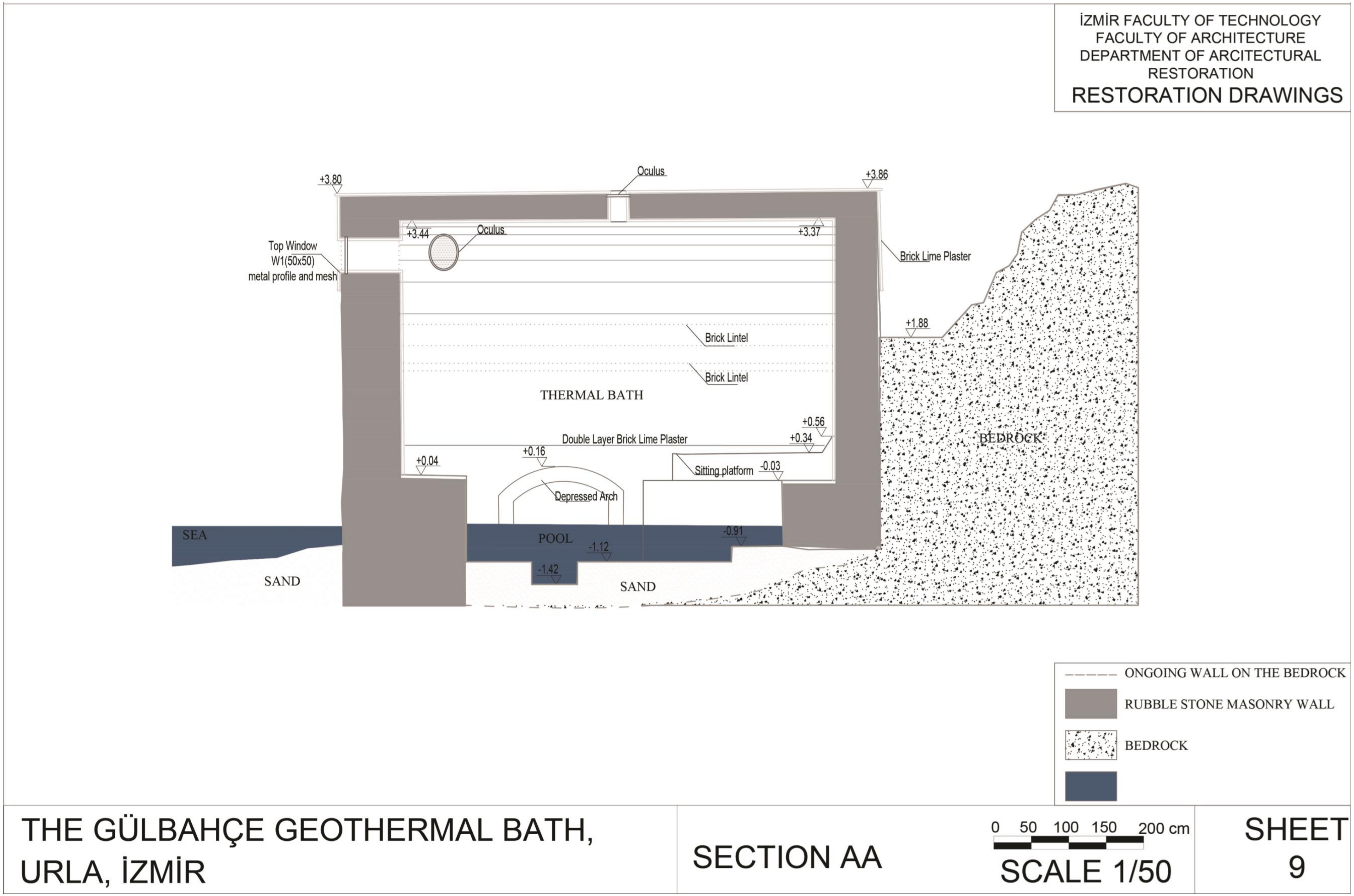
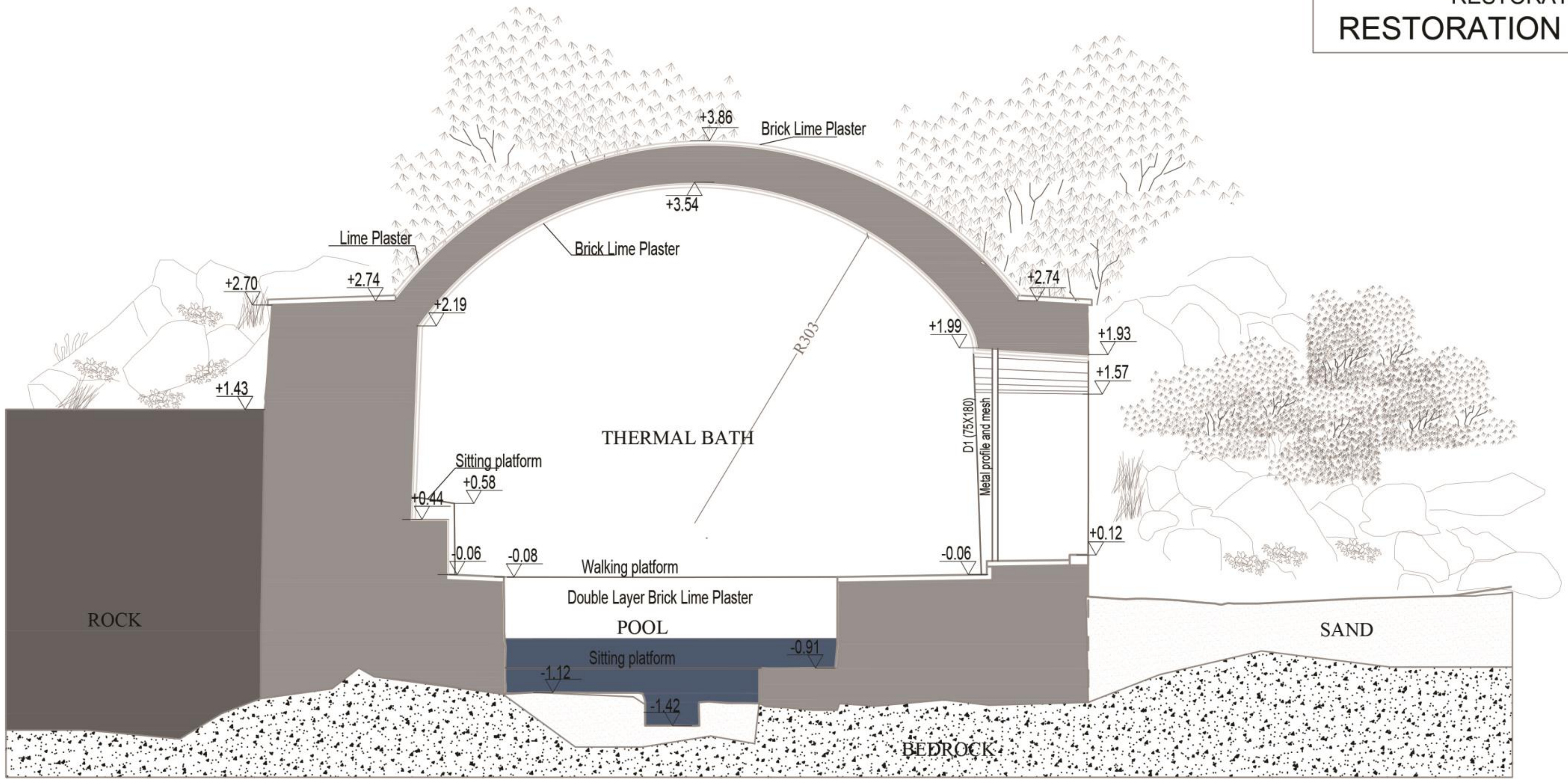


Figure F.9. Section A-Restoration

İZMİR FACULTY OF TECHNOLOGY
FACULTY OF ARCHITECTURE
DEPARTMENT OF ARCITECTURAL RESTORATION
RESTORATION DRAWINGS



ONGOING WALL ON THE BEDROCK
RUBBLE STONE MASONRY WALL
BEDROCK

THE GÜLBAHÇE GEOTHERMAL BATH, URLA, İZMİR	SECTION BB	0 50 100 150 200 cm SCALE 1/50	SHEET 10

Figure F.10. Section B-Restoration