

RESTORATION OF A HISTORIC OLIVE OIL MILL IN DİKİLİ

**A Thesis Submitted to the Graduate School of Engineering and Science
of İzmir Institute of Technology in Partial Fulfillment of the
Requirements for Degree of**

MASTER OF SCIENCE

in Architectural Restoration

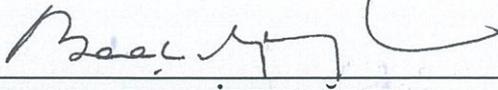
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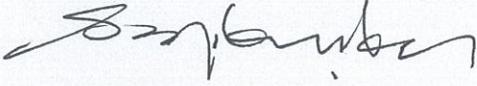
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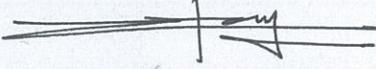
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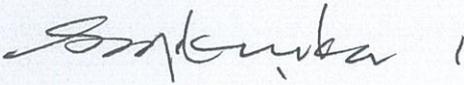


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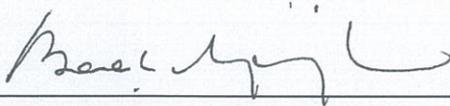


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ACKNOWLEDGMENTS

Firstly, I would like to express my sincere thanks to my supervisor, Assoc. Prof. Dr. Selim Sarp TUNÇOKU for his guidance, encouragement and patience throughout the study.

I would like to thank to committee members Prof. Dr. Başak İPEKOĞLU, Assoc. Prof. Dr. Mine HAMAMCIOĞLU-TURAN and Inst. Dr. Zeynep DURMUŞ-ARSAN for their valuable comments and suggestions.

Also, I am grateful to the head of Bademli Village Neslihan KUTLU-MARAŞ, owner of the mill Nadir ARASER and inhabitants of the village Hüseyin AYDINLI, Hasan İNAL and Ruhi ÖNCEL for their kind helps and beneficial information.

I am forever indebted to my parents Basri-Nurhan KINCI and my sister Sinem KINCI for their love, helps, supports, patience and encouragement during the study. And special thanks are due to my dear friend for his moral support.

ABSTRACT

RESTORATION OF A HISTORIC OLIVE OIL MILL IN DİKİLİ

Although many industrial heritage buildings, of which, the availability of the product they produced was lost and they were totally abandoned, the situation is different for olive oil mills which have been discussed as industrial heritage buildings since olive oil has never lost its vital importance. Some of them, which employed traditional extraction techniques, were converted to “continuous system” for faster production by changing their hardware equipment, while others persisted in using traditional techniques. But, many historic olive oil mills were abandoned since they could not compete with the new system. However, the taste obtained by traditional techniques has gained an increasing preference. This trend has attracted public attention not only in the taste of oil, but also in historic olive oil mills to conserve them as industrial heritage.

Araser mill, subject of the study, is located in Bademli Village, of Dikili District of İzmir Province, but abandoned following the donation of its hardware to Rahmi Koç Industry Museum in İstanbul in 1999. While reflecting architectural, neoclassical style and socioeconomic features of its period, it witnessed the population exchange in 1922 which was an important historic event.

Including architectural measurements, supplemented with photography, determination of structural and material problems documentation of the mill was done by observations during three-week survey period to define its historical, architectural and technological features as the values it possessed. The equipment donated to the museum was documented by a visit to the museum. In light of this information, a restoration proposal, which includes new function and interventions conforming to contemporary conservation principals, is presented.

ÖZET

DİKİLİ'DE TARİHİ BİR ZEYTİNYAĞI İŞLİĞİNİN RESTORASYONU

Endüstri yapıları teknolojik deęişmelerle beraber ürün deęerlilięini kaybeden ve genellikle terk edilen yapılar olmalarına karřın, zeytinyaęının hiçbir dönem önemini kaybetmemesi nedeni ile endüstri yapısı bařlıęı altında incelenen zeytinyaęı işliklerinde durum farklıdır. Geleneksel yollarla zeytinyaęı üretilen işliklerin bazıları teknik donanımlarında köklü deęişikliklerle kontinü sisteme geçmiş, bazıları geleneksel yöntemi kullanmaya devam etmiş, bir çoęu da kontinü sistemin hızına direnemeyerek üretimin durmasıyla terk edilmiştir. Fakat son yıllarda geleneksel yollarla elde edilen zeytinyaęının, gerek doęal tadı gerekse aroması ile raębet görmeye başlamıştır. Bu eğilim zeytinyaęı ile birlikte geleneksel yöntemlerle üretim yapmış işliklere de yansımıştır.

İzmir'in Dikili ilçesine baęlı Bademli Köyünde yer alan ve çalışma konusu Araser zeytinyaęı işlięi, üretim aksamının İstanbul Rahmi M. Koç Endüstri Müzesi'ne baęışlanması ile üretimini durdurmuş ve 1999 yılından bu yana terk edilmiştir. Döneminin mimari, neoklasik üslubu ve sosyoekonomik özelliklerini yansıtması yanında tarihi önemi olan 1922 yılındaki mübadale günlerine de tanıklık etmiştir.

Yapının mimari, yapısal ve teknolojik özelliklerinin tanımlanması için yapılan, fotoğraf destekli mimari ölçümleri ile yapısal ve malzeme sorunlarının tespitini içeren belgeleme çalışması üç haftalık bir alan çalışması ile tamamlanmıştır. İşlięin müzeye hibe edilen ekipmanları sergilendikleri müzede belgelenmiştir. Bu bilgiler ışığında, işlięin sahip olduęu tüm deęerleri ile yařatılmasına yönelik olarak, uluslararası koruma prensipleri ile uyumlu yeni bir işlev ve yapılacak müdahaleleri içeren bir restorasyon önerisi sunulmuştur.

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CHAPTER 1

INTRODUCTION

Together with their mechanical hardware and location in the settlements, industrial structures reflect the economic, social, and technological features of their ages. Due to the rapid growth of the settlements from The Second World War onwards, many of them, which were previously located at the outside zones of the settlements, have been trapped within the center of the cities. Numerous industrial buildings and industrial complexes fell out of use due to changes in production techniques. Some of their equipment was sold as junk, abandoned, or, partially or totally demolished in time. Now, some of them are about at a total loss if they are not preserved. In this regard, olive oil mills, forming a vital importance for the regions where olive cultivation was the primary livelihood for the locals, are also considered as industrial heritage.

The thesis aims to study and examine the Araser Olive Oil Mill in Dikili-Bademli village, a historic yet unlisted structure which, apart from reflecting the socio-economic, cultural, architectural and stylistic qualities of the age in which it was constructed, covers a substantial amount of land with its annexes, is considered a landmark in its environs with its tall chimney that can be seen afar and has a spatial layout that makes it possible to easily predict the traditional olive oil production scheme despite the fact that all its hardware equipment have been donated to an industrial museum. Among the other objectives of this study are an extensive documentation of this production facility, which has become a part of the rural industrial heritage and a restoration proposal.

1.1. Industrial Heritage

Following the emergence of the “brownfield concept” (Brownfields 2014) by the second half of the 20th century, the protection of such abandoned structures in abandoned industrial areas gained an increasing importance as they are considered to be cultural and architectural heritage (Cengizkan 2002, Köksal 2012). The awareness of industrial structures first arose in 1940’s in England, but the concept of “industrial archaeology” is first defined as: “the study of surviving elements of the industrial

revolution” (Industrial Archaeology 2014) by Michael Rix, British historian, in 1955 (Rix 1955) and widely spread from 1960’s onwards (Severcan 2012). Starting with the establishment of European Federation of Associations of Industrial and Technical Heritage (E-FAITH) which was established in 1949, some other establishments, such as The International Committee for the Conversation of Industrial Heritage (TICCIH) in 1978, Documentation and Conservation of Buildings, Sites and Neighborhood of the Modern Movement (DOCOMOMO) in 1988 and European Route of Industrial Heritage (ERIH) in 1999 are contemplated the protection of industrial heritage worldwide through international cooperation, in some cases, on voluntary (both professional and amateur) base, such as ERIH. In 2003, The International Committee for the Conservation of Industrial Heritage (TICCIH) made a wide clarification of this heritage under seven headings at Nizhny Tagil (Nizhny Tagil 2003) in Russia to be approved by UNESCO through ICOMOS. Those headings are: “Definition of Industrial Heritage,” “Values of Industrial Heritage,” “The Importance of Identification,” “Recording and Research,” “Legal Protection,” “Maintenance and Conservation,” “Education and Training,” and “Presentation and Interpretation.” Including the lands they cover and hardware with infrastructural installations, all industrial structures and areas, even galleries of mines, are considered as cultural and architectural heritage to be preserved with the spirit of Venice Charter declared in 1964.

In Turkey, the concept of the industrial heritage gained importance at the beginning of the 1990’s. Some researchers tried to draw public attention to derelict industrial buildings implying the urgent necessity for their protection without loss of their original features. When compared to other countries in the western world, the re-use of old industrial buildings in Turkey is relatively scarce. Mostly found in İstanbul; Bakırköy Gunpowder Factory (Bakırköy Baruthanesi) used as Yunus Emre Culture Center, Minting Facility (Darphane-i Amire) as İstanbul Museum, Cannon Factory (Tophane-i Amire) as Mimar Sinan University Center for Culture and Art (Figure 1.1. a), Hasköy Anchor Factory and Dockyard (Hasköy Lengerhane ve Şirket-i Hayriye Tersanesi) as Rahmi M. Koç Industry Museum (Figure 1.1. b), Defterdar Textile Factory (Defterdar Feshane-i Amire) as Feshane International Exhibition and Convention Center, Cibali Tobacco Factory (Cibali Tütün Fabrikası) as Kadir Has University Campus, Bakırköy Alcohol Factory (Bakırköy İspirtohanesi) as İstanbul Technical University İspirtohane Conservatory and Culture Center, and Sütlüce Slaughterhouse (Sütlüce Mezbahası) to Sütlüce Convention Center are the

implementations carried out in recent years. Besides implementations realized in İstanbul, İzmir Historic Coal Gas Factory (İzmir Tarihi Havagazı Fabrikası) which is used as a center for cultural and social activities in İzmir (Figure 1.1. c) and a wholesale vegetable market in Eskişehir (Eskişehir Toptancı Sebze Hali) (Figure 1.1. d) used as a youth center are the historic industrial buildings with new functions from other cities (Altınoluk 2000, Cengizkan 2002, Ahunbay 2002, Severcan 2012, Saner 2012, Köksal 2012, Cihanger 2012).



Figure 1.1. a) Cannon Factory (Source: Tophane-i Amire 2014), b) Hasköy Anchor Factory and Dockyard (Source: Rahmi Koç Museum 2014), c) İzmir Historic Coal Gas Factory (Source: İzmir Havagazı 2014) and d) interior view of Eskişehir Wholesale Vegetable Market (Source: Eskişehir Hal 2014)

1.2. Traditional Olive Oil Mills

Implementations focused on traditional olive oil mills and soap production facilities are concentrated in the districts of Ayvalık, Burhaniye, Altınoluk, Edremit of Balıkesir province and, Küçükkuyu and Ayvacık belong to Çanakkale province and

their villages, where olive cultivation is dominant in agriculture. Besides those still active but supplemented with contemporary machinery, many other historic mills are abandoned, used as depots, or given new functions such as; museums related to olive and olive oil culture of the region, exhibition galleries, boutique hotels and accommodation facilities serving cultural tourism (Figure 1.2. a, b, c and d).

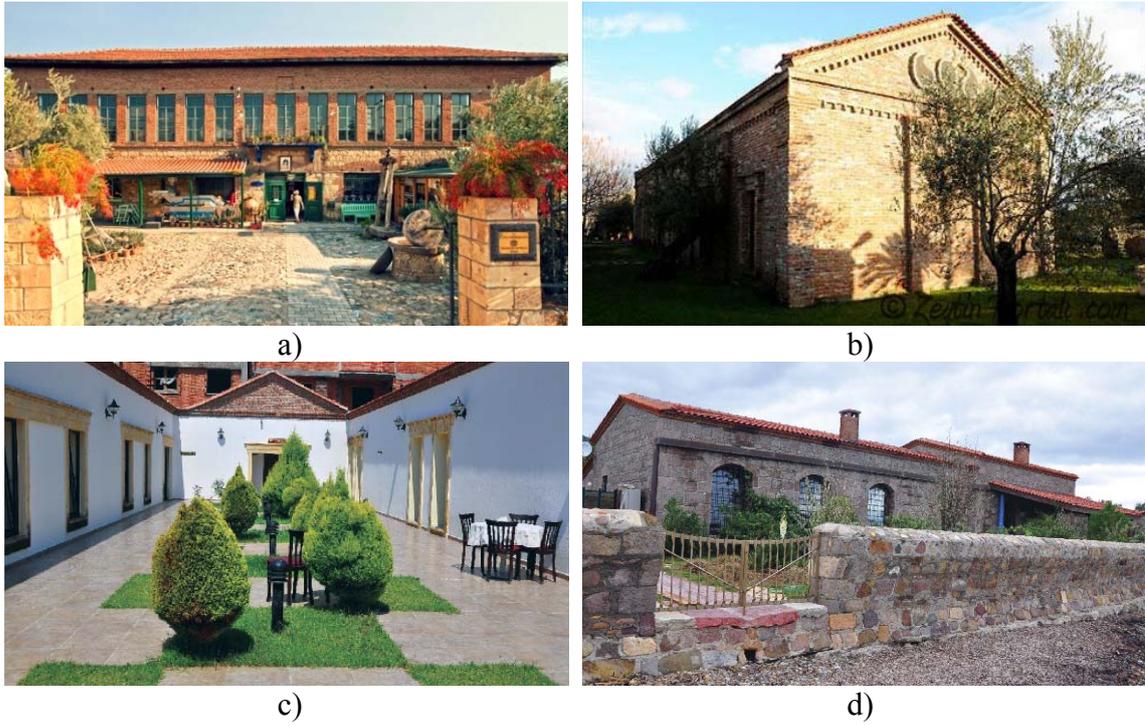


Figure 1.2. a) Adatepe, Burnaz Olive Oil Mill Soap Production Unit, (Source: Adatepe Zeytinyağı 2014), b) Edremit, Evren Ertür Oil Mill (Source: Evren Ertür 2014), c) Altınoluk, Asaf Edis Oil Mill (named “Baca Han” at present) (Source: Boynudelik 2007) and d) Ayvacık/Sazlı Village, Hasan Dirik Olive Oil Mill (Source: Boynudelik 2007)

As well as implementations, traditional olive oil mills were also the subjects of some academic studies of assessments done at the; town scale (Kabasakal 1987, Terzi 2007), or mill groups found in a certain geography (Uğurlu, *et al.* 2004, Hamamcıoğlu-Turan 2005) and single building scales (Lim 1997, Kibar 2008, Golmakani 2011). Besides documentation and assessments, they are concluded with proposals for their sustainability according to the scope and purpose.

Following the preliminary examination of existing mills in Bademli Village, Araser Olive Oil Mill was selected to be studied. Research and project works for the restoration of Araser Olive Oil Mill were initiated in April, 2013 by the field survey.

1.3. Aim of the Study

Araser Olive Oil Mill is a historic industrial building, which reflects social, economic, architectural and stylistic trends of its period, and witnessed the population exchange that involved Greeks of Turkish nationality and Turkish Muslims in Greece in 1922-23 which caused remarkable political and economic changes in the life of the communities on both sides. As will be explained in detail in the following chapters, the mill was actively operated by manpower through a traditional way, but was supplemented with a steam engine imported from Belgium in 1927 and was active until 1994. Following the donation of its machinery equipment to Rahmi M. Koç Industry Museum in İstanbul in 2000 the mill has been used as warehouse but without any maintenance.

The fundamental purpose of the study is to reveal historic, socioeconomic, architectural and technological values of the mill through a detailed documentation and assessment, and to provide a restoration project to sustain its existence by reflecting the values it possessed, thus rejoin the life of Bademli Village.

1.4. Limits of the study

Together with annexes, such as accommodations, semi-open and closed storage areas, the mill covers an area of more than 1500 m², except for its open storage areas. Although the entire site and all buildings were examined and measured, the main emphasis is given to the mill building since it included both, the initial construction stage and later attachments. As expressed by the last operator (also the proprietor at present) Nadir Araser and the interviewed inhabitants, the rest of the buildings on the site were built later.

1.5. Content and Method of the Study

As the nature of the study entails, a brief overviews concerning about olive and olive production techniques, evaluation of geographical and historical conditions of Dikili and Bademli Village respectively where the mill is located, socioeconomic, historic and architectural features of the mill and oil production techniques adopted, documentation of the current situation of the building and its problems, determination of the alterations it has undergone and the proposal which includes intervention decisions along with the new function determined for the mill form the content of the thesis.

Information about olive, olive cultivation, agricultural distribution over the world and in Anatolia, traditional and partially contemporary production techniques gathered from the relevant literary sources is given in Chapter 2.

Chapter 3 involves the information about geographical environment and a brief history of Dikili and Bademli. Together with brief information about other mills in Bademli, the chapter involves detailed information about historic background of Araser mill which was obtained partially from local sources, but especially by interviews through personal communications (in June-July, 2014) with; Nadir Araser proprietor of the mill at present (Interview 1), head of the village (Interview 2), aged local inhabitants (Interviews 3, 4) and a former employee, also inhabitant of Bademli (Interview 5). Since the mill was not listed, no information was available in the archives of official institutions such as the Regional Board of Pious Endowments or İzmir Regional Boards for the Preservation of Cultural and Natural Assets. Also, Dikili Municipality and Bademli Village Head Office could not provide specific record about Araser Mill.

Including its annexes documentation of the mill has been realized with field survey on 15th of April 2013 which took three weeks. Measurements of the mill and its annexes have been carried out using Sokkia 650RK total station and conventional techniques. Plans, sections, façades and details are produced in 1/1000, 1/200, 1/50, 1/20 and 1/5 scaled drawings obtained by using AutoCAD 2012 software as drawing medium and have been supplemented with dense photography by Canon Powershot SX110IS and Canon EOS600D. Mechanical equipment of the mill, which was donated to Rahmi M. Koç Industry Museum, has been documented by photography during a visit to the museum in the December, 2013 in İstanbul. Detailed definition of the site, the mill and annexes, structural system, material use, architectural elements, alterations, and current problems of structure and materials, mostly based on observations, have

been presented through verbal descriptions along with modified drawings and photographs as architectural analysis in Chapter 4. This information has also been given through separate sets of colored drawings and maps¹ (Appendixes A-E). Besides its overall evaluation, Araser mill is also compared with other mills located at Bademli Village and other villages and districts around.

In light of the information obtained through the fieldwork; the evaluation of the traces observed in the mill, consideration of the information obtained from the local sources and interviews with the owner, and inhabitants of the village two phases through which the mill has undergone have been determined and explained in Chapter 5. These phases are presented in restitution drawings that are colored according to the reliability degrees of the sources of information including the rearrangement of machinery equipment (Appendixes F and G).

The outcomes of the studies above provided a thorough definition of the mill. By considering of the current situation of the mill, the peculiar place in the social life of the village not only in the past but also at present in different way, a new function by which the mill may survive, was determined and explained in Chapter 6. Including the interventions to be carried in the mill and at the site, this proposal is separately presented in a restoration project (Appendix H).

Besides the consideration of the existing mills, overall evaluation of the mill, the proposal and its expected outcomes for the life of the Araser Mill and Bademli Village respectively have been presented in Chapter 7.

¹ Unless otherwise stated, all illustrative material belongs to the author of the thesis.

CHAPTER 2

OLIVE OIL PRODUCTION TECHNIQUES

As well as the idea of extraction of oil by pressing, olive was also mentioned first by Aristaeus from Athens as Plinius notes in his book 'The History of Nature.' Different extraction techniques were employed at Crete, Greece, Cyprus, Israel-Palestine and Anatolia during Antiquity. In his book, 'On Agriculture,' Columella notes that the spaces where production was carried out should be protected against north winds, dust and smoke because of their harmful effects.

2.1. The Olive Oil Production Techniques in the Past

Essentially, oil production is composed of; olive collection and crushing (or grinding) processes to extract oil (Boynudelik 2007, Ünsal 2012).

2.1.1. Collecting

It is stated that when their color started to change from green to black they should be collected, but the collection by hand is always advised (Figure 2.1. a). If the grains are too high to reach, the collection can be made by a soft stick or tree branches not to harm (Figure 2.1 b, c).

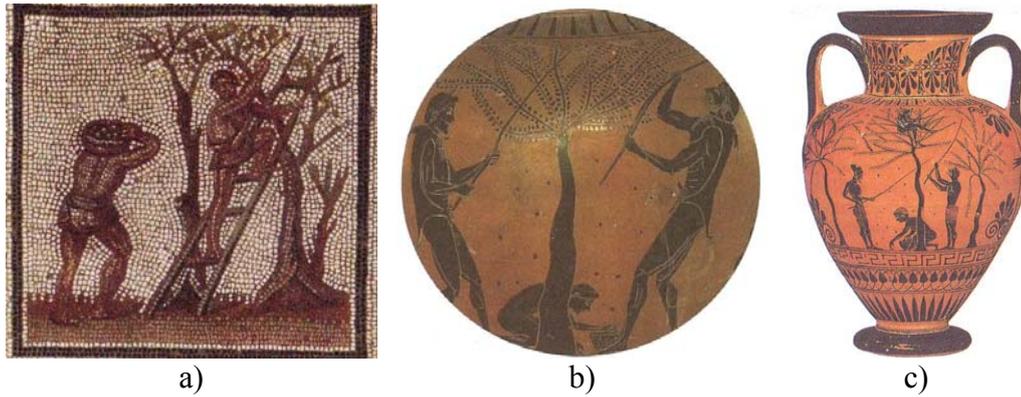


Figure 2.1. The olive harvest; a) by hand 2nd A.D. mosaic, National Archeology Museum, Saint- German (Source: Boynudelik 2007), Collection by sticks; b) Antimenes Painters, 6th B.C., Antikensammlung, Berlin (Source: Boynudelik, 2007), c) Attika vase, 530 B.C., British Museum (Source: Ünsal 2007)

2.1.2. Cleaning

Following collection, olives need to be cleaned from branches, leaves and other dirt. It is advised that cleaned olives should immediately be brought to extraction without delay to keep flavour.

2.1.3. Extraction of Olive Oil

Olive oil is obtained through the processes of; crushing, pressing and separation from wastewater.

2.1.3.1. Crushing

During antiquity crushing (or grinding) techniques were developed and classified into three categories,

Tudicula and Canalis et Solea: Around 2500 B.C. in Egypt, olives were placed in a bag made of strong textile material and twisted with wooden sticks to squeeze the bag to extract oil, which is called torture or *tudicula* system (Figure 2.2 a). Next method was using a stone or wood mortar (*yalak*) in which a heavy stone cylinder rotated by

means of a wooden rod connected to handle during the 5th and 4th centuries B.C. This method was called *canalis et solea* (Rojas-Sola 2011, Boynudelik 2007) (Figure 2.2 b).

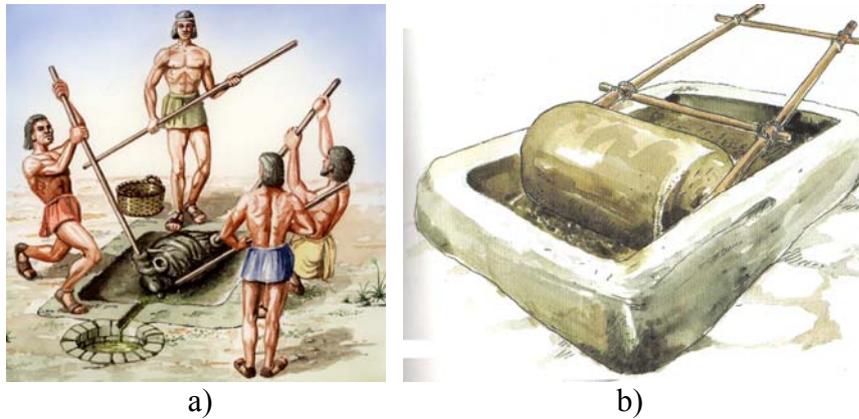


Figure 2.2. Olive crushing techniques; a) *tudicula* (Source: Artesano 2014), b) *canalis et solea* (Source: Boynudelik 2007)

***Mola Olearia*:** After 350 B.C., a cylindrical vertical stone is fixed vertically to a pivot in the center of the base stone, and the handle attached to the vertical stone is rotated and thus crushing is carried out. The difference from *canalis et solea* is that base stone is circular thus animal power was also used so the crushing capacity was increased by the force of animals and number of stones could be increased. This meant more power to move larger stones, which lead to a finer and faster production of olive paste (Ünsal 2012, Boynudelik 2007, Rojas-Sola 2011). There are three different types of *mola olearia*: one horizontal, double vertical cylindrical stones and three conic stones (Figure 2.3 a, b, c).

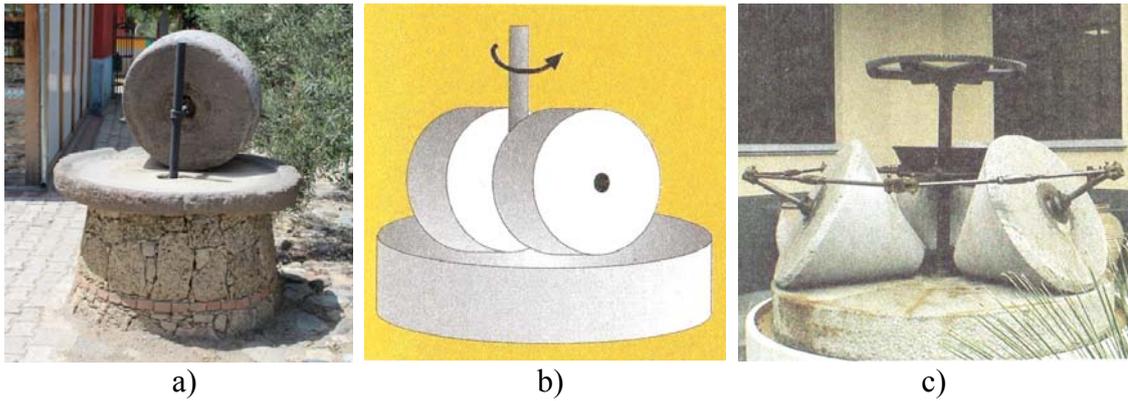


Figure 2.3. Types of *mola olearia*, crushers with; a) Single-stone, b) double-stone and c) conical-stone (Source: Boynudelik 2007)

Trapetum: Used around 2. B.C., the system consists of a stone mortar (*mortarium*), with a stone column (*milliarium*) at the center allowing axial rotation of two stone wheels (*orbis*) ‘flat inside and convex outside’ connected with a wooden handle (*modioli*) fixed to the center of the *milliarium* by an iron pivot (Figure 2.4 a, b).

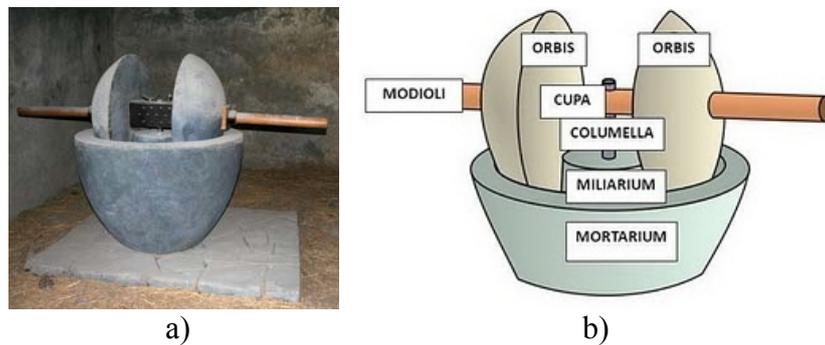


Figure 2.4. a) *Trapetum*, and b) its components
(Source: Artesano 2014)

The system was claimed to be an ideal tool with which stones of olives are not broken and the oil is not contaminated.

2.1.3.2. Pressing

Following the process of crushing olives, thus, making them paste, the second phase of the extraction of oil from the olive paste is to take out the mixture of oil and

wastewater (or black water) from the paste by squeezing it. Some different systems have been used for the process of pressing the olive paste within years.

Falanga (*falaka*): This method was used particularly in Ancient Egypt. The bag which is full of olive paste is attached to the poles at both ends. Then, the mixture of oil and water is obtained by rotating around its own axis. This method has been performed by rotating the bag in opposite directions by using only manpower without using poles (Ünsal, 2012).

The heel oil (*topuk yađi*): In this method, olive paste was put in bags. Then, the paste was pressed in tubs which were carved in wood or bedrock. Pressing process continues by pouring hot water until the olive oil to be extracted is removed. This method is still used in several different regions (Ünsal 2012, Boynudelik 2007) (Figure 2.5).

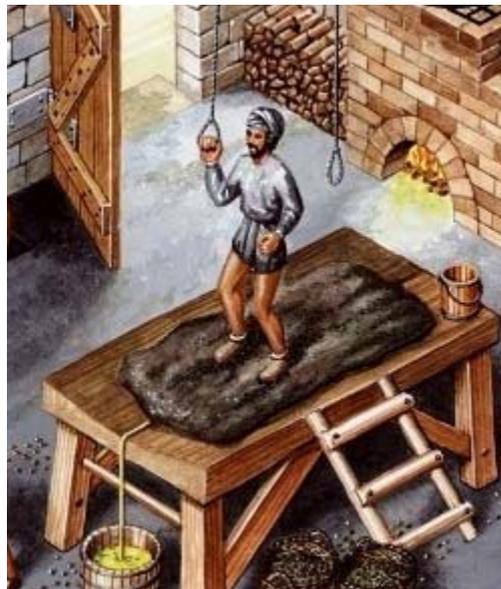


Figure 2.5. Heel oil
(Source: Artesano 2014)

The system with lever and weigh: First specimen of the system, which has been used since Iron Age, was found in Israel, and it is estimated that the history of the system dates back to 9th century B.C. In this method, a wooden beam, 10-15 m in length, is tamped into the hollow of a big rock or a wall. Then, olives inside the olive paste bags were pressed by the weight of 10-25 kg stones located at other side of the beam. After that, olive water was transferred to ponds which are carved in bedrock (Ünsal 2012, Boynudelik 2007) (Figure 2.6).

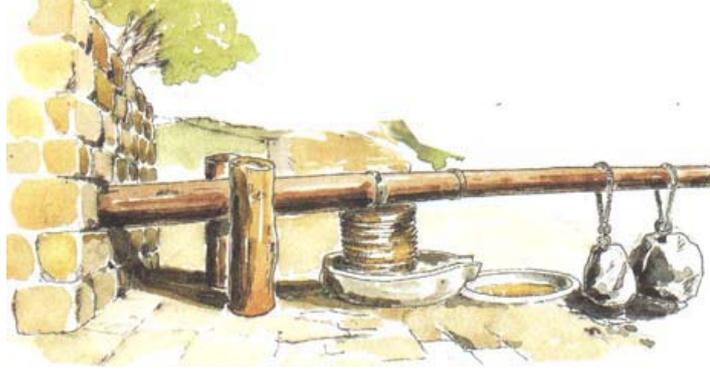


Figure 2.6. Lever and weighed system
(Source: Boynudelik 2007)

The system with lever and pulley: It is estimated that this system was used 2nd century B.C. by the Romans. In this system, one edge of a plank is situated inside a recess on the wall, and there is a winch which is linked to a pulley on the other side of the plank. When the pulley is rotated, the plank that is linked to crowbar goes downwards so that the extraction process could be performed by applying pressure on the olive paste. The system is also known as Cato Press (Boynudelik 2007) (Figure 2.7).



Figure 2.7. Lever and pulley system, Adatepe Mill, Küçükkuyu / Çanakkale

The system with lever and screw (*patlangaçlı mengene*): The system where a breech is placed at one side and a worm screw is placed in the other one has been a breakthrough in the controlled increment of power. In this system, a wooden-carved trough is placed on the middle. As the rod of the screw is rotated, weight of the plank functioning as a crowbar increases, which crushes the bags of the olive paste. In this

system the log, 10-13 m in length, used as lever, which is obtained from of pine tree with high content of resin, and the screw is from nettle tree (Figure 2.8).

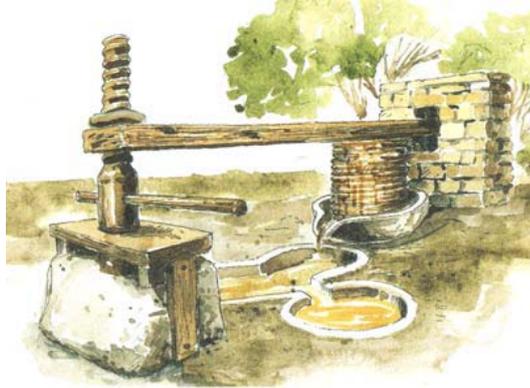


Figure 2.8. Lever and screw system
(Source: Boynudelik 2007)

Screwed fixed presses: This method, introduced in the 1st century B.C., was used in the late eras of the Roman Empire. In this system where crowbars are not used, the force is directly applied on the bags by using constant screw(s) (Oybak 2005, Mazotti 2004, Boynudelik 2007).

a) Single screwed fixed press (*cırcır mengene*) was common in northern Italy and Provence. They could vary greatly in size, source and structure (Mazotti 2004). Grooved floor board or stone is connected to the beam which is positioned in both sides in this system. A frame is generated by the system which is coupled with the top board. This top board includes a worm screw. The pressure is implemented onto the timber when the worm screw moves downwards. Thus, the paste is squeezed (Boynudelik 2007). The timber which was formerly used was replaced by iron screw presses by the end of 19th century and used until 1970's (Oybak 2005) (Figure 2.9 a, c).

b) Double screw press (*mahşere*) in which a wooden beam is forced downward by two fixed screws, was found all over southern Italy, along the Adriatic Coasts and some Greek Islands (Mazotti 2004). In Anatolia, it was called as *mahşere* in Antakya, Kilis and Nizip. In some models, there is a hole in the middle of the bags to assemble these bags around a shaft. Thus, the bags are prevented from slipping during the pressure process. It can be assumed as a pioneer of hydraulic presses (Boynudelik 2007) (Figure 2.9 b).

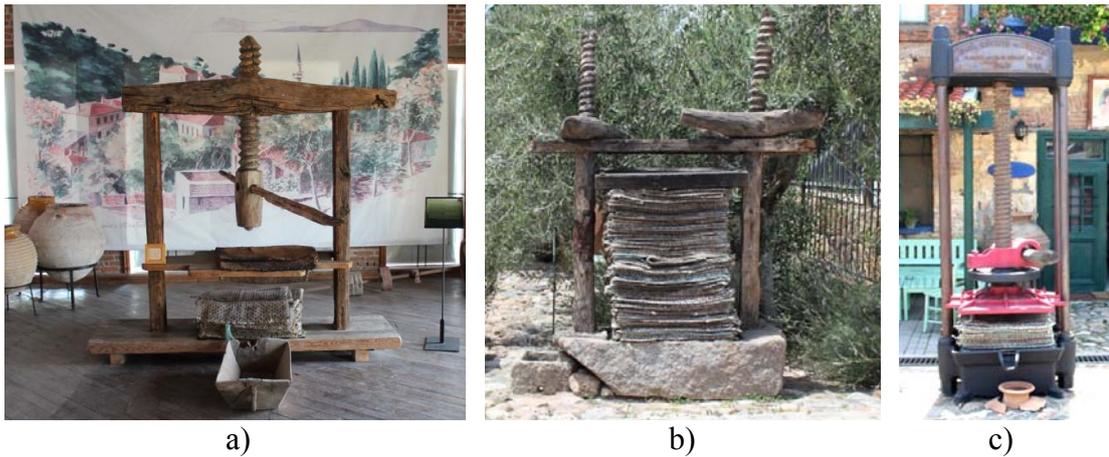


Figure 2.9. Screwed-fixed presses, Adatepe Mill, Küçükkuuyu / Çanakkale; a) single-screwed, b) double-screwed and c) metal single-screwed

Wedged Presses: The system was identified by mural paintings discovered in Pompeii and Herculaneum. Paste bags are squeezed via the driving power of the shelves, which are pushed downwards by the chocks nailed between the horizontal sections. A mixture which contains olive and water is created as a result of the pressure and it flows towards the collecting vessel (Oybak 2005, Boynudelik 2007) (Figure 2.10).

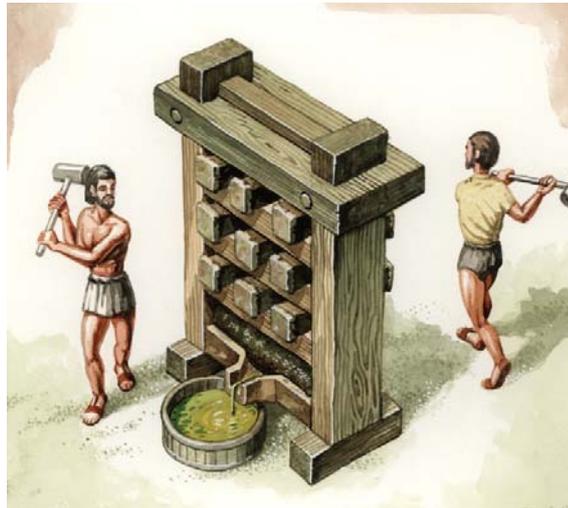


Figure 2.10. Wedge press
(Source: Artesano 2014)

2.1.3.3. Separation of Olive Oil and Wastewater

Mixture of olive oil that is obtained by pressing the paste and black water must be separated in a short time in order to procure high quality olive oil. Mixture of oil – black water is separated according to the difference between their densities in decantation ponds which is known as “*polima*” and “*dağar*.” Olive oil rises to the top because of its lower density and it is collected to another cup by using scoops. Then, black water and the pulp are separated by using a drainer. This process is repeated several times (Oktar 1983, Ünsal 2012).

The system based on ‘communicating vessels’ principle was started to be used in the ancient times. In decantation ponds, since the olive oil is lower in density compared to black water, it is accumulated on the top while black water and sediments were transferred into the following pond by underneath connections. Clazomenae, which is located in İzmir Urla, is the most developed example for this system. It is estimated that it was used in the 6th century B.C. (Ünsal 2012, Boynudelik 2007) (Figure 2.11 a, b).



Figure 2.11. Findings in Clazomenae (Source: Klazomenai, 2014); a) aerial view of ancient mill, b) symbolic expression of communicating vessel system

There were 3 *polimas* in total in Clazomenae. Two of them connected to each other from the bottom. Mixture of olive oil – black water was drained to pond which is placed in the middle. Olive oil remained at the top side because of its low density and the black water was collected in other pond by means of a bottom canal. Then, the oil that had been collected from the top is transferred to the empty pond (Koparal 2002) (Figure 2.11 a, b).

2.2. Contemporary Olive Oil Production Techniques

Utilization of water power with the developing technology provides progress on the production of olive oil as well. Since their invention, hydraulic presses have been one of the best innovations of the industrial revolution. On the other hand, in Anatolia industrial revolution come into effect by the utilization of steam power in machines. Hydraulic presses have been used since 19th century in Western Anatolia (Boynudelik 2007).

2.2.1. Stages before Grinding

Since ancient ages to present, there has been no significant change in the collection and cleaning phase before pressing. However, mechanical devices are used at present.

2.2.1.1. Collecting

Olives are collected in two methods. One of them is traditional method which is manual harvest, and the other method is mechanical harvest which is more advanced (Fedeli 1997).

Picking the olives up by hand without damaging the trees is the best method for collection. However, this is the most expensive and the most difficult job. Harvesting with sticks or clipping is also very common method in Turkey; nevertheless, this method must be implemented without damaging the trees by competent labors (Ünsal 2012) (Figure 2.1. a).

Shaking machines are used in order to collect the olives in the mechanical harvest. Olive trees must be truncated properly in order to perform this method. Collected olives are accumulated in bags, of 100 kg in weight, and in order to press the olives properly, they are carried to facilities in a short time before being fermented (Ünsal 2012, Boynudelik 2007, Oktar 1983) (Figure 2.12 b).



Figure 2.12. a) Harvesting olive with rods (Source: Başlangıç 2010), b) harvesting machine (Source: Efe 2013)

2.2.1.2. Cleaning/Washing

There could be several undesirable materials such as leaf, stone, oil *etc.*, inside the bags when harvested olives arrive at the factory. Cleaning of these impurities is very important for the overall quality of oil. Undesirable material could be separated by using mechanic tools. Either pressurized or normal-flow water are used for washing (Göğüş 2009).

2.2.2. Oil Extraction

Currently, there are two methods for the production of olive oil. The first one is the production by conventional methods, and the second is continuous system.

2.2.2.1. Traditional Method

Although mentioned in ancient techniques above, traditional olive oil production techniques still available are same in principle, but with some changes: collecting, crushing pressing, decantation. Olives coming to factory are stacked by porters (*hamals*) and given a number by caretaker (*meydancı*) responsible for receiving the bags in a certain order. After weighing the bags, they are recorded in the notebooks. Olives that will be processed are taken to the mills in order.

2.2.2.1.1. Crushing (grinding)

Olives are generally crushed with two or rarely three-stone mills (Figure 2.13 a, b), made of granite, 140 cm in diameter and 40 cm in thickness. This grinder is similar to *trapetum* which was used in antique age, but animal and human power in this age replaced with electrical power. The staff (*taşçı*), who is responsible for the stone mill, pours olives into grinder. Grinder revolves 12-13 revs per minute and crushes 400 kg olives in 12-20 minutes. When the paste (*çirkef*) becomes a homogeneous mixture, pressing process starts (Oktar 1983, Boynudelik 2007).



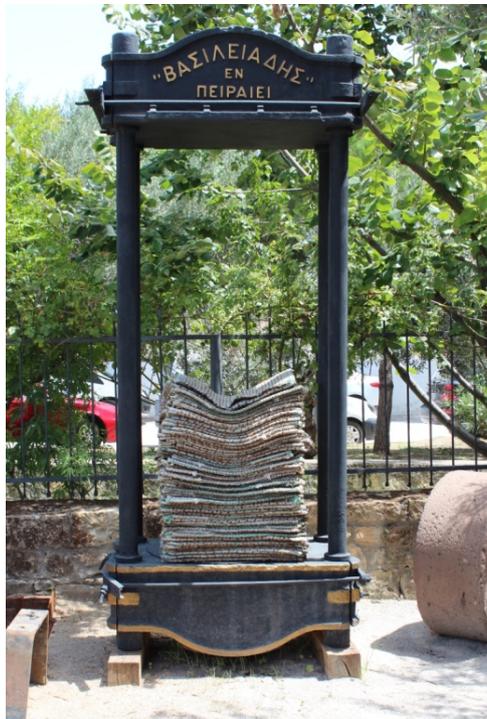
Figure 2.13. Views of grinders; a) grinder with double-stone, in Adatepe Museum, Küçükkuyu / Çanakkale, b) grinder with triple-stone in Agricola Mascio in Umbria / Italy (Source: Artesano 2014).

2.2.2.1.2. Pressing

For the olive oil produced in traditional system, olives are grinded in stone mills, and the extracted paste is laid over olive mats by the workers called '*torbacı*' so that 2-3 cm thickness is ensured. In order that the applied pressure is homogeneously distributed, metal plates or rags are placed between each 3-4 bags. Olive mats are porous disks made of vegetable fibers, but today, they are generally made of plastic. In order to squeeze olive mats, also known as '*tesir*' bags, two methods are utilized: hydraulic press and super (steel) press (Göğüş 2009).

Hydraulic press: After placing the bags in the press, pressure that is worked with hydraulic pump is applied to the lower part, pushing the olive bags against to the upper. Hydraulic presses are pressed with one dry-one aqueous press method or one dry-two aqueous press method. The first oil which is obtained with dry method is the most valuable one. In the second press, water at 35-40 °C is added to bags, and rest of oil is obtained. The first press extracts 85% of the oil, 7% in the second press and 3% in the third press. Five percent of the oil remains in the bagasse (Boynudelik 2007, Ünsal 2012) (Figure 2.14 a).

Super (Steel) Press: Olive pastes are laid on hollow bags by batchers. By a tandem system composed of one disk without paste a metal disc, every three disc is placed into the pressure cars, which have three wheels and a hollow shaft on the middle. As the pistons move by the water force, pressure bags are pushed upwards so that the pressing process is performed within 15-20 minutes. Besides, since the super press applies 300 kg pressure per cm², pressure process is completed at once. The system provides good quality of olive oil, because water is not used (Oktar 1983, Boynudelik 2007) (Figure 2.14 b).



a)



b)

Figure 2.14. a) Hydraulic press, in Adatepe Museum, Küçükkuuyu / Çanakkale, b) super (steel) press in Adatepe, Küçükkuuyu (Source: Efe 2013)

2.2.2.1.3. Separation of Olive Oil and Wastewater

The mixture of oil, black water and residues obtained from pressed olive paste have to be rapidly separated for a good quality oil. For this process, decantation ponds, called '*polima*' are used. From the collected mixture of oil and wastewater in ponds, because of their differences in density, oil is obtained from the surface via special cups by the workers called '*yağcı*' (oiler). Separating the pure oil without any black water is a difficult job requiring skill, and this process has to be done very carefully. Remaining black water is drained by opening the valves beneath the ponds to the holes called "hell pit" or "burglar pit". This oil is also controlled by the oilers, and remaining oil is used for refining (Boynudelik 2007) (Figure 2.15 a, b).



Figure 2.15. Decantation ponds; a) in Z Taş Baskı Olive Oil Mill, in Bademli Village, Dikili / İzmir b) '*yağcı*' pours olive oil into ponds (Source: Ünsal 2007)

2.2.2.2. Continue System

This is most common technique which is uninterrupted to obtain olive oil extraction, as the name denotes. Continue system olive oil is composed of five phases:

Cleaning, crushing-milling, malaxation, 'paste centrifugation-solid-liquid phase separation' and separation (Efe 2013).

Washed olives are pressed, and they are crushed along with their seeds (or stones) by metal breakers in the malaxator section. Then, the mixture of oil and black water inside the olive paste, which is transferred to the horizontal centrifuge section called decanter and separated from each other. At the next stage, residual black water in oil is separated by vertical separators (Boynudelik 2007, Ünsal 2012). Because of its olive processing capacity, higher efficiency of oil, requiring less work, and separating waste-water in filter tanks, continuous system is the most popular method in the recent years (Ünsal 2012) (Figures 2.16 and 2.17).

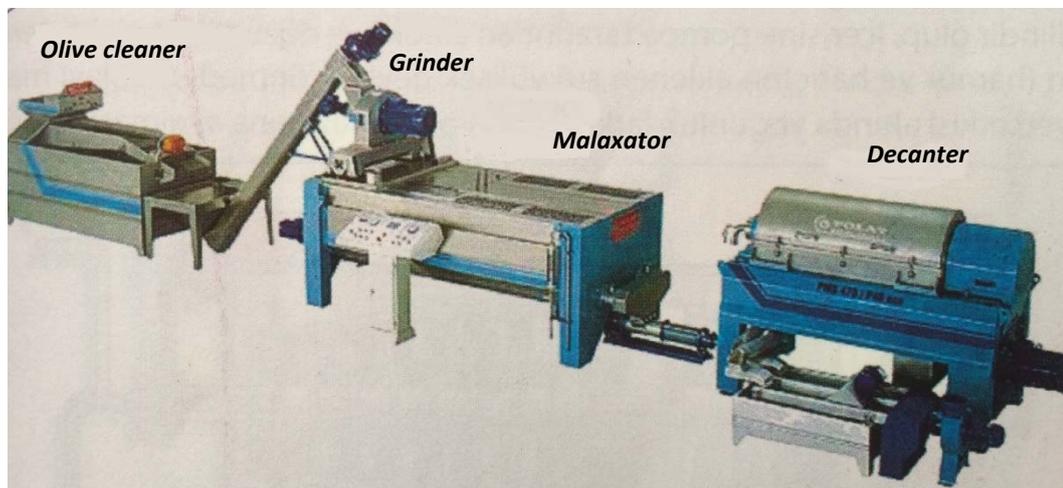


Figure 2.16. The view of the continuous system
(Source: Göğüş 2009)

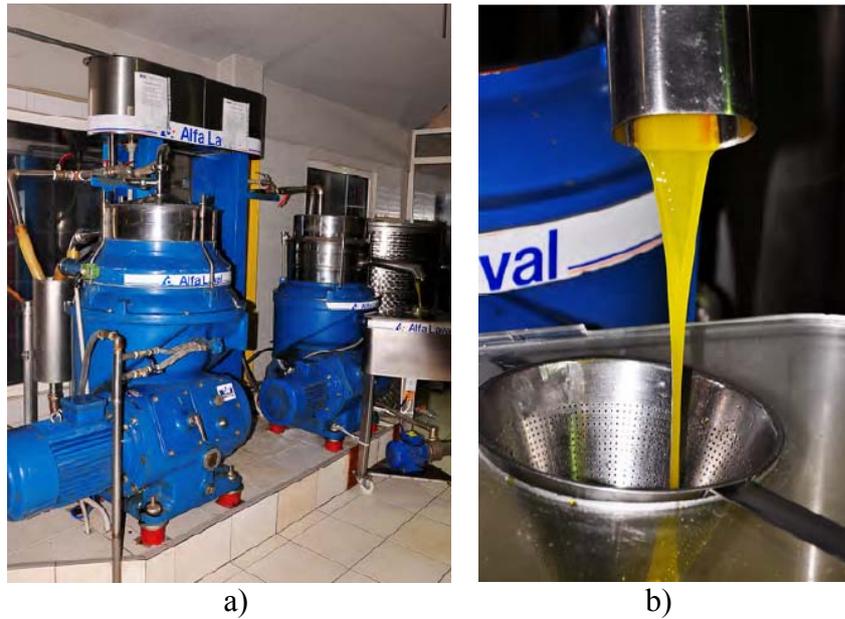


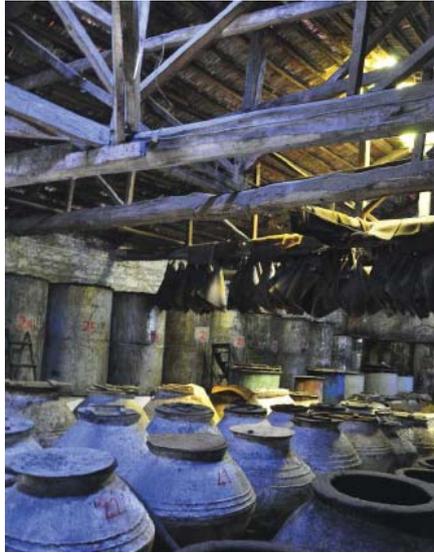
Figure 2.17. a, b) Views from separator
(Source: Efe 2013)

2.3. Filtering

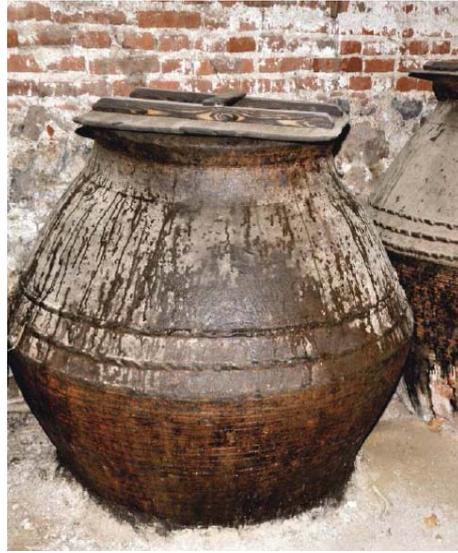
Olive oil contains residual materials after production. So filters are used. There are two methods that can be used in filtering: double olive oil filter with cotton, and centrifuge filter. It is believed that oil filtered with double-filter oil has better flavor and aroma. Another method is filtering the oil through soil alloys or filtering paper (Efe 2012, Boynudelik 2007).

2.4. Oil Storage and Bottling

Produced oil is stored during a year, and it is sold out in accordance with customer demands. For this process, storage spaces called ‘*mağaza*’ which are cool and have low light are used. Olive oil is kept in baked clay jars and metal tanks called ‘*lanca*’ (Boynudelik 2007) (Figure 2.18 a, b).



a)



b)

Figure 2.18. Views of storage spaces (Source: Efe 2012); a) A view of the storage unit in factory that is in Edremit, b) baked clay jar in Evliyazadeler olive Oil Mill, in Edremit

CHAPTER 3

GEOGRAPHICAL POSITION AND HISTORY OF DİKİLİ, BADEMLİ AND ARASER MILL

This section involves information about, location, climate, topography, flora and historical background of Dikili, Bademli Village. In addition to information about Araser mill, other mills in Bademli are also introduced. Other than archival sources or official records detailed information about historic background of Araser mill obtained by interviews (in June-July, 2014) with the proprietor of the mill at present, head of the village and aged local inhabitants. Information about other mills is obtained by the interviews of their owners and inhabitants.

3.1. Geographical Position of Dikili and Bademli Village

Dikili is situated on the eastern shores of Aegean Sea in the north of İzmir province. It is surrounded by Madra Mountain in the northeast and Çandarlı Gulf in the south, Bergama, district of İzmir, to the east side, and Ayvalık, district of Balıkesir, on the north side are the borders of Dikili.

Greek Island of Lesbos which is 18 miles off the coast of Turkey is one of the closest foreign neighbors of Dikili. It also shares Çandarlı Gulf with Aliğa, another district of İzmir, which is located to the south of Dikili (Figure 3.1 a).

Located at 9 km to the southwest of Dikili, Bademli is a coastal village which includes Kalem and Garip islands. Besides its natural beauties, its closeness to the Ida and Madra mountains makes it one of the prominent villages who is rich in oxygen as many Aegean villages.

Neighbor villages of Bademli are; Yahşibey and Katıralanı in the east, Merdivenli and Denizköy in the southeast south (Figure 3.1 b).

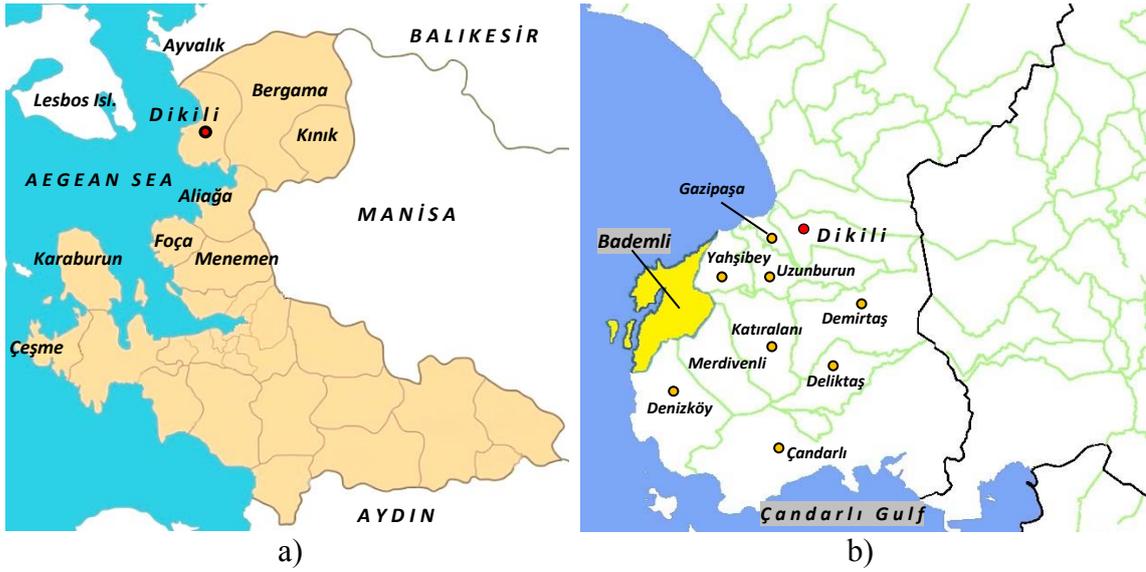


Figure 3.1. a) The location of Dikili and nearby districts (Source: İzmir Harita 2014), and b) Location of Bademli and nearby villages (Source: İzmir Belediye 2014)

Borders of Dikili reach the altitudes of the western parts of Kozak-Madra massif along with Madra River. By the inclusion of Plateaus of Büverler, Kemente and Kartal, the border reaches to Geyikli Mountain in the northeast where it turns towards south, and to the shores of Çandarlı Gulf after passing through Bakırçay Plain.

Geyikli Mountain which surrounds Dikili from the northeast forms a rugged terrain. The highest points are Yelgedik, Kılınç, and Geyikli Hill with the altitude of 1062 m (Baykal *et al.* 2013).

Most part of Dikili covers the delta section of Bakırçay plain which was formed by alluvial mass deposited by Bakırçay River. During the formation of the delta, the direction of Bakırçay has changed a few times. Former riverbed of Bakırçay and its backside-marshland deposits, disconnected meanders, swamps, small puddles are the main characteristics that shape the physical geography of this region (Sertkaya 2005).

In general, the coastal morphology between Dikili-Çandarlı consists of low-high shores and islands. With indentations, the shore extends through forelands, peninsulas, bays and beaches that follow each other. The length of the coast of Dikili is 42 km. Dikili is one of the exceptional locations in Aegean and Mediterranean shores with its uninterrupted beaches extending 36 km (Kaplan 2008).

There are six islands located close to Dikili. These islands are very close to each other as doublet archipelagos. They are: Kara Island, Kızkulesi Island, Güvercin Island, İkiz Kız Kardeşler Island, Garip Island and Kalem Islands. Their altitudes are very low. The highest altitude is 147 m above sea level, at Kızkulesi Island. Dikili is located within the “First-Degree Seismic Zone” (Baykal *et al.* 2013).

3.2. Climate of Dikili

Dikili has a typical Mediterranean climate which is characterized by warm to hot, “dry summers” and mild to cool, wet winters. According to data which has been collected by Dikili Meteorological Station covering the years between 1940 and 2000, the annual average temperature is 16.4°C. Annual precipitation amount in Dikili is 636.6 mm (M.G.M. 2000). Dikili is subjected to a typical Mediterranean precipitation regime which is optimum for the conditions of olive cultivation.

3.3. Soil and Vegetation in Dikili

General soil characteristics of Dikili are affected by the alluvial and colluvial conglomeration zones. Agricultural activities in the region are well developed thanks to productivity capability rendered by the deposited soils.

The soil around Dikili is classified as “Mediterranean Soil” according to the classification based on climate types. The soil minerals are grown very well under circumstances of these climatic conditions, where high temperature and sufficient precipitation prevail (Baykal *et al.* 2013).

Olive trees show a remarkable preference for calcareous soils and coastal climate conditions. They grow in any light soil, even on clay if well drained. Olives like hot weather and sunny positions without any shade while temperatures below –10 °C cause serious damage. They tolerate drought well, owing to their strong and extensive root system. Olive trees can live for several centuries and can remain productive for years if they are truncated and maintained regularly

The vegetation cover of Dikili consists of coniferous forests and maquis which are very suitable for Mediterranean vegetation. Moreover, one of the characteristics of Mediterranean forests, red pine is the dominant tree type in Dikili. In addition, other coniferous trees such as black pine, fir tree and spruce tree could be encountered in the

region. There are also oaks, acorns, heaths and abundant amounts of olive trees all that cover an area of 25,000 hectares in Dikili (Baykal *et al.* 2013).

3.4. History of Dikili

The ancient name given to the area which extends from the Gulf of Çandarlı to the northwest Aegean region was Mysia in the antiquity. The archaeological findings show that Dikili and surroundings settlements dates back to 4000-5000 years ago, Ağıltepe and Kalepe being the oldest places, and the Achaeans the first settlers. Therefore, the region was known as Aternaus (Merter 2007).

Elaia (Kazıkbağları / Zeytinbağı), which is one of the city-states in the Aeolian Union, was established in the 8th century B.C. near Elaitkos Kolpos / Çandarlı Gulf by the Aeolians. They settled in the area located to the north of İzmir Bay, Bakırçay (Kaikos) shores as well as in Lesbos and Tenedos by the “Aegean migration” starting from the 13th century B.C. It is also known that Aeolians had also established city-states, such as Aternaus, Pytani, Astria, and Teutronia in Dikili. The region was dominated by the Lydians and Persians afterwards (Eriş 2003). Dikili was established in its current location by the citizens of Lesbos and Ayvalık in 1846.

The establishment of Dikmeli Farm in 1850, which expands from Bademli to shoreline which passed through the central area and graveyard, played an important role on the development layout of Dikili. The Greek owner of Aleko from Chios Island brought many of his relatives and friends in order to meet the needs for workforce. A pier had been installed on the farm. Warehouses and buildings were built later near this pier.

In 1880, Carl Human, a German road engineer, connected Dikili to Bergama by a 28 km road, which was an important center of that period. Thus, a remarkable increase occurred in the population, reaching 1000 households in Dikili in 1910. In order to provide a balance between Greek and Turkish populations, a new Turkish district which was called Bahriyun was established near the Greek district. Turkish and Greek people lived together in 1910.

On June 13, 1919, Dikili was occupied by Greek army following the Balkan War in 1912 and the First World War in 1914. By the end of Turkish independence war in September 14, 1922, Greeks who lived in Aegean region migrated to Greece following the withdrawal of Greek army from Dikili.

3.5. History of Bademli Village and its Olive Oil Mills

Kalem and Garip islands, named as Arginnsai in antique age, were the places for the largest naval battle in the ancient history between Athens and Spartans in 460 B.C. The Killik Bay was used as the harbor where the Roman Navy was positioned in 191 B.C. The first name of the village, which was inhabited by the Greeks in Ancelos period, is thought to be derived from the word (Angel) was Ancanos. The Turks started to live in this village with the arrival of the Ottomans in Anatolia. The Greek and Turkish inhabitants lived in peace for many years and worked together on olive growing, livestock and fishery. By the bilateral “Greek-Turkish Population Exchange” in 1922, approximately 800 Greeks who lived in Bademli village migrated mostly to Lesbos, and the Turks who used to live in Greece settled in this area. Villager’s mainstay here was based on olive cultivation and olive oil production and almond from which the name of the village is derived due to abundance of almond trees.

With its two cinemas, butcher and four olive oil mills, Bademli was a modern village in the past. However, it has faced a considerable migration to other cities in search of jobs in the last decades. Compared to the olden days, the village is experiencing a calm life, and the average age is quite high. Except for two months in winter, the rest of the year is mild and the village attracts retired people from other cities. The existence of a spa is a significant possession for Bademli Village. It welcomes many people for curing rheumatic disease and skin allergies (Kutlu-Maraş 2014).

There are four olive oil mills in Bademli Village. The first one, which is known as “Bademli Z” Olive Oil Mill, which belongs to Başar Öztürk (the mill was established in 1950 by his father Mustafa Öztürk) is, active at present and sells its own products under the name of “Bademli Z *Taş Baskı Naturel Sızma Zeytinyağı* (Stone-press Natural Virgin Oil)” and sold at a separate shop at the center of the village (Figure 3.2 a, b, and c) (Öztürk 2014).



Figure 3.2. Bařar Öztürk Olive Oil Mill; a) Front view, b) selling shop in the village, and c) the label of the production: *Bademli Z Tař Baskı Naturel Sızma Zeytinyađı*

The second of the three abandoned mills in the village is Nihal-Yurdaer Tunay Olive Oil Mill. Situated on a large courtyard, the mill has some annexes such as olive stock bays, oil storage depots and dorms for workers. It is relatively larger than Bařar Öztürk Mill. Whole machinery equipment of the mill was sold. It was informed that the mill was operated by the use of electrical power, but has been abandoned for more than five years (Figure 3.3 a and b) (Sezer 2014).



Figure 3.3. Nihal-Yurdaer Tunay Olive Oil Mill; a) A view from the courtyard (oil extraction unit on the right, oil storage on the left), and b) interior view of the platforms of; crashing machine (on the right and press in the middle), and decantation ponds in the left

The third one belongs to Ercüment Tosun (Figure 3.4 a). The mill was built later than Araser Olive Oil Mill, but exact construction date is unknown. It was abandoned in 1979 (Tosun 2014). Except for the chimney, and some of the equipment, the area occupied by the mill is the garden of a house at present. The chimney of this mill is relatively short and hard to recognize in the general panorama of the village (Figure 3.4 b, c). The label of the oil produced in the past was İtimat Oils.



Figure 3.4. a) Tosun Family, b, c and d) views of the remnants and equipment of Ercüment Tosun Olive Oil Mill stored in the garden

And the last Araser Olive Oil Mill, which belongs to Nadir Araser, located at a relatively closer distance to the center of Bademli when compared the other three (Figure 3.5 a, b and c).

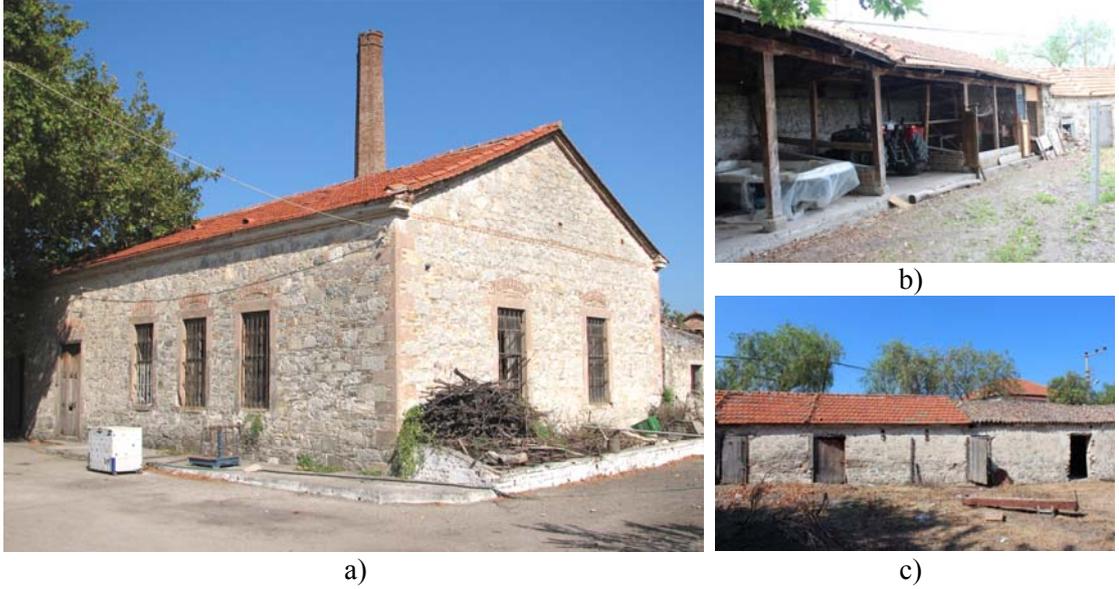


Figure 3.5. Araser Olive Oil Mill; a) Front view of production unit, b) semi-open olive stock units before extraction process, and c) some of the worker dorms

Similar to Nihal-Yurdaer Tunay Olive Oil Mill, it was also abandoned, but, instead of being sold out, the machinery equipment was donated to Rahmi M. Koç Industry Museum in 2000 to be exhibited there. Despite the similarities with Nihal-Yurdaer Tunay mill in their overall layout, Araser Mill is the largest and had the highest production capacity in the past.

3.6. History of Araser Mill

Information about the historic background of the mill was obtained from the head of the village Neslihan Kutlu-Maraş (Figure 3.6 a), and the older locals; Hüseyin Aydınlı, Hasan İnal, and Ruhi Öncel (Figure 3.6 b, c, d), who know the history of the mill and Nadir Araser (Figure 3.7 a) who is the owner of the property at present, by interviews in July 2014 (Araser 2014, Kutlu-Maraş 2014, Aydınlı 2014, İnal 2014, Öncel, 2014).



Figure 3.6. Interviewed people; a) Neslihan Kutlu-Maraş (head of the village), b) Hüseyin Aydın, c) Hasan İnal, and d) Ruhi Öncel

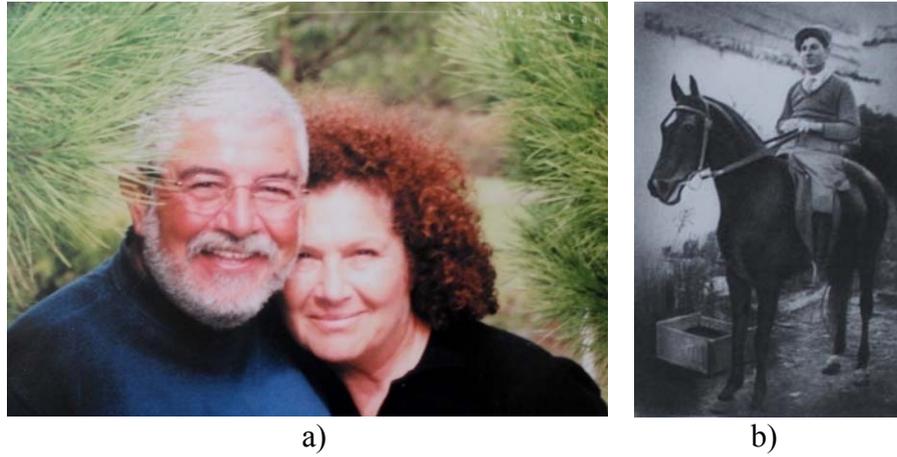


Figure 3.7. Proprietors of the mill (Sources: Merter 2007); a) Nadir-Özen Araser, and b) Nail Araser

Except for the name of the first owner, who was a Greek citizen, Yannis (Yurttaş 2014), there is no information about the precise construction date, but they all knew that the mill was built and operated by the Greeks who lived in the village until 1920's (Araser 2014, Kutlu-Maraş 2014, Aydın 2014, İnal 2014, Öncel 2014).

Haydar Bey, who lost his wife, migrated from Thessaloniki Serres to Bursa through the bilateral “Greek-Turkish Population Exchange” in 1922 with his son, Nail (Figure 3.7 b). After a short stay there, they moved to Bergama. Since he possessed, but left a great deal of property in Greece, he was donated with the oil mill in Bademli Village, land of 1000 decare in Kabakum village and a house in Bergama as “emigrant

share – *göçmen hakkı*.” Following the adoption of “Surname Law” in 1934, they took the surname of Araser (Merter 2007, Araser 2014).

According to the statements of inhabitants, and the last owner, Nadir Araser, the mill was initially composed of the main production unit (at present G-01) and an area, both grounds of which were of compacted earth originally. Olive sacks were piled in front of the mill and taken inside to be processed. It was enlarged by the addition of decantation area, administrative units, and lodging units for workers and storage facilities around by the new owner Haydar Araser. Following the death of Haydar Araser, the management was undertaken by his son Nail Araser and it was operated by manpower. But, the system was supplemented with a steam engine imported from Belgium in 1927. It was considered as a great change in terms of olive oil production in those days (Araser 2014). Nadir Araser, the son of Nail Araser resumed oil production in the mill upon the death of his father. The mill was actively operated until 1994. After a five years break in oil production, all equipment was donated to Rahmi Koç Industry Museum in İstanbul in 1999 (Araser 2014). The equipment of the mill is exhibited in the museum as ‘Araser Olive Oil Factory’ when the museum was visited and documented by the author of the thesis.

CHAPTER 4

DEFINITION OF THE OIL MILL

This chapter contains the description of Araser Mill including its subsidiary annexes. The main emphasis is given on the main production unit deemed as the fundamental unit. In terms of olive oil production, it was a well-known mill with the highest production capacity in the past. The mill employed the highest number of workers in its time not only in Bademli but also in the region. Drawings and visual analyses have been presented with separate sets of projects prepared in 1/50 scale for production unit and 1/200 scale for ‘closed, semi-open and open’ annexes spaces. Besides, definition of architectural and constructional features an overall evaluation of the Araser mill is also done by the comparison with the characteristics of other mills located at the nearby villages and districts.

4.1. Location and Close by Surroundings of the Mill

Araser Mill is located at the Number 15 Parcel and on street Number 1, which starts from the village access, passes through the center and extends until the coast (Figure 4.1.). Coffee-shops, groceries and houses of single and double story are lined up on both sides of the street. The mill is very close to the center, where; the shops which sell olive oil and especially *Koruk Suyu* (raw grape juice) popular in Bademli, other foods stores, small restaurants, the mosque (*Bademli Mosque*), a taxi stand, repair shops and the Mukhtar’s office and library are found. The health center (serves once a week on the ‘family-physician’ system), bakery, social club (Bademli Nature Protection and Aquatic Sports Association – *Bademli Dođayı Koruma ve Su Sporları Derneđi*) are also very close to the center. Primary School of the village is located to the southwest of the mill. As mentioned in the first chapter of the thesis, there are three more mills in the village. The mills belonging to Bařar Öztürk and Yurdaer Tunay are located in the northeast of Araser Mill. The third one, that belonging to Ercüment Tosun is located to the southwest and very close to Araser Mill (Figure 4.1).

The area of the mill is surrounded by Street No: 1 in the south and east, and the big gardens (covered with olive trees and orchards) of single or double-story houses in the north and west (Figure 4.1).

4.2. Layout of the Site

The site is accessed from street No. 1 through an iron framed door with double wings in the south. The entire site is surrounded with stone masonry walls, the thickness of which varies from 45 to 60 cm. Rear walls of most of the annexes of the mill lean on this periphery wall (Figure 4.2).

With the approximate dimensions of 60 x 70 m, the mill covers an area of 4200 m² with its annexes and courtyards on the north / south direction. The area includes; oil production unit (including administrative units 377 m²), two closed-oil storage depots (439 m²), one semi-open olive storage unit (136 m²), three groups of open olive-storage bays (*dökek* – 107 m² in total), worker-accommodations with toilet and bath units (345 m²), accommodation facilities composed of single and double-story buildings for staffs (a floor area of 196 m² in total), a well and open areas (a courtyard in the south and a storage area in the north, 2385 m² in total) for storing olive sacks (Figure 4.2).



Figure 4.1. Site plan of Bademli Village and Location of Araser Olive Oil Mill

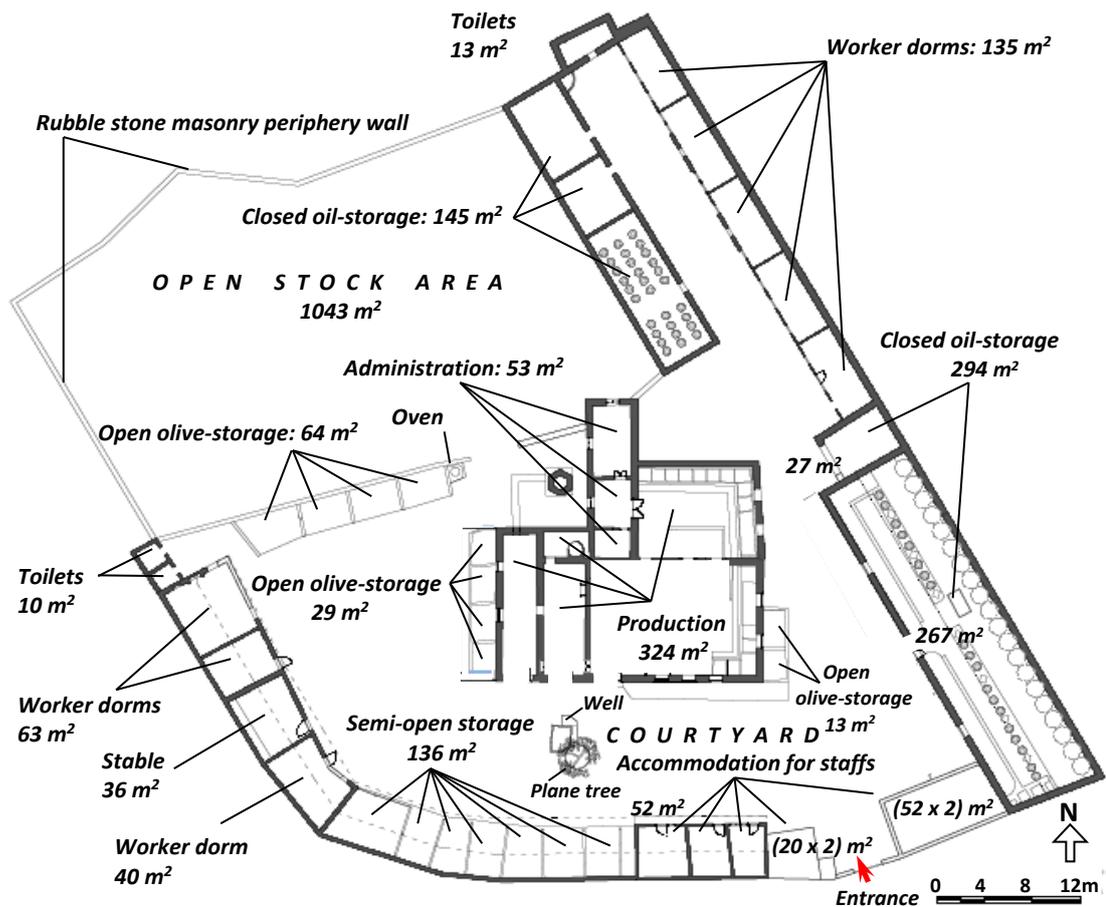


Figure 4.2. General layout plan of Araser Mill

Except for the main production unit, there are different kinds of buildings such as storage spaces for olive and olive oil, accommodations for staff, accommodations for seasonal workers, stables and toilets in the courtyard (Appendixes A.1 and A.2). Two of the accommodations take place at both sides of the entrance in the south. The one in the east of the entrance, which is built of reinforced concrete, is a double-story house with a bay-window at the second floor. The staff, responsible for the security of the site, still lives in the lodgment. The floor area is around 52 m² (Figure 4.3 a, b). The second one in the west is also a double-story building and built of reinforced concrete. It was assigned to the accountant of the mill. The second floor is accessed by the stairs from the courtyard. The floor area is 20 m² (Figure 4.3 c).

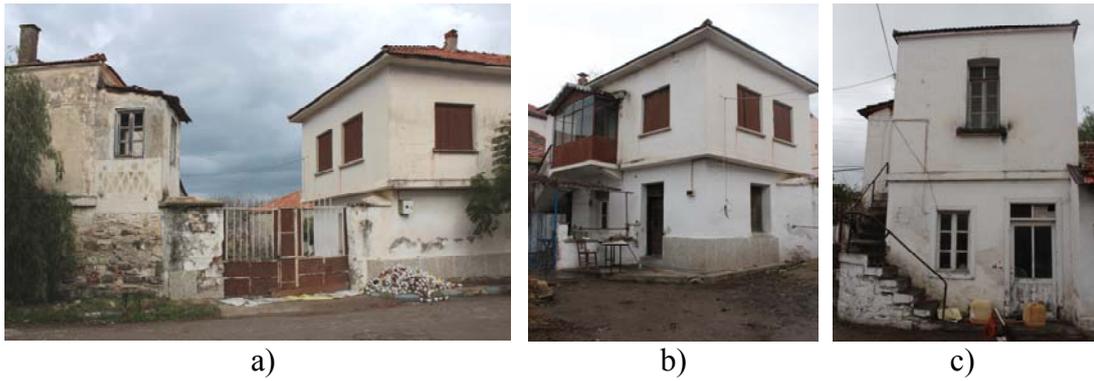


Figure 4.3. a) Entrance to the complex from the street No: 1, b) accommodation for the permanent staff, and c) lodgment for accountant

Adjacent to the second one to the west, there are three more accommodation units for the chief employees. Built of reinforced concrete, they are directly accessed from the courtyard. The total area of these three units is 52 m² (Figure 4.4).



Figure 4.4. Accommodation unit for chief employees

There are semi-open storage spaces, totally 136 m², adjacent to these accommodation units in a clockwise direction. It is composed of eight units and surmounted with timber gable roof supported with seven timber posts which hold the timber frames. This semi-open space is used for storing olive sacks. Separation of the units is provided by brick walls, the heights of which are not more than 1.00 m, slightly incline towards the courtyard (Figure 4.5 a).



a)



b)

Figure 4.5. a) Semi-open olive storage units, b) accommodations for workers and stable

The stone masonry accommodation buildings and a stable are on the western side of the courtyard and they cover an area of 169 m² in total. Except for the worker accommodations at the eastern end, all roofs of are composed of timber frames and covered with interlocking (*Marseilles*) type of roof tile. The roof of at the eastern end is covered with round (Turkish, or *a'la Turca*) tiles. Toilets, the roof of which is missing at present, are placed at the western end of these buildings (Figure 4.5 a, b).

Rubble stone masonry closed-oil-storage spaces are located at the northwest/southeast side of the site. The one in the northwest (Figure 4.6 a, b), which cover an area of 145 m², is composed of three parts. The space in the south is used for the storage of baked-clay jars (0.70 m in diameter) slightly embedded in the ground (Figure 4.6 b). The other two are empty at present (Figure 4.2). The spaces are surmounted with a single gable roof which is composed of timber frames and covered with interlocking type roof tiles on planks nailed on battens (Figure 4.6 b).



Figure 4.6. a) Closed olive oil storage in the northwest, b) view of its interior

The second olive oil storage space which is built of rubble stone masonry and covers an area of 267 m² is placed at the eastern side of the courtyard. The space is entered through a double-wing metal door (1.60 / 2.47 m) placed in the western wall (Figure 4.7 a). The same wall also includes two windows on both sides of the door with same dimensions (1.15 / 1.80 m each). They have iron grills at their exterior edges and iron shutters inside. The space is surmounted with arched-floor system on ceiling (*volta* in Turkish), composed of steel “I” beams and brick vaults (with a low-segmented profile) which is supported by seven brick masonry columns diagonally lined up on the central axis of the space. Protrusions of the steel beams are visible on the front façade (Figure 4.8 a, b).



Figure 4.7. a) The view of the storage building in the northeast side of the courtyard, b) The interior view of storage spaces

Similar to the previous one, the gable roof is covered with interlocking roof tiles and gable walls are of brick. On the eastern side of the space, twenty metal tanks (*lanca*) for keeping olive oil are located on concrete bases that are approximately 0.80 m high and 1.00 m wide. Between the brick columns, there are nineteen baked clay jars also slightly embedded in ground same as the previous ones (Figure 4.7 b).

Opposite the storage space in the north, five accommodation units (135 m² in total) used as accommodation for seasonal workers, are leaned to the northeast ‘stone masonry-periphery wall’ across the storage space. Front and partition walls are built of brick. The roof, inclined towards the courtyard, is missing at present (Figure 4.8 a). A semi-open stone masonry olive storage space, which is surmounted with a timber roof with interlocking tiles, is located adjacent to the accommodation unit covers an area of 27 m². It is used as hen coop at present (Figure 4.8 b).



Figure 4.8. a) Accommodations for workers in the northeast, b) a semi-open olive storage space

Besides the courtyard, which is occupied by the mill and annexes, another open-air space (1043 m² in total) to the northwest that is enclosed with rubble stone masonry walls is empty.

Besides the closed or semi-open spaces above, there are some other elements in the courtyard where oil production unit is located. Open olive-storage bays made of slightly inclined separators made of brick are found adjacent to the northern periphery wall of the courtyard and adjacent to the eastern and western walls of the production unit (Figure 4.2). They were used for olive stocks for immediate use to process (Figure 4.2, 4.9 a, b). A brick-built oven is also found in the courtyard to make bread *etc.*, in busiest times when the number of workers increase and work twenty four hours in three

successive shifts in harvest season (Figure 4.2, 4.9 c). The empty area in the north is reserved for urgent olive stock in sacks when the harvest is extremely high in fertile seasons (Interview 1). The toilets are located at the east and northern ends of the courtyard (Figure 4.2).

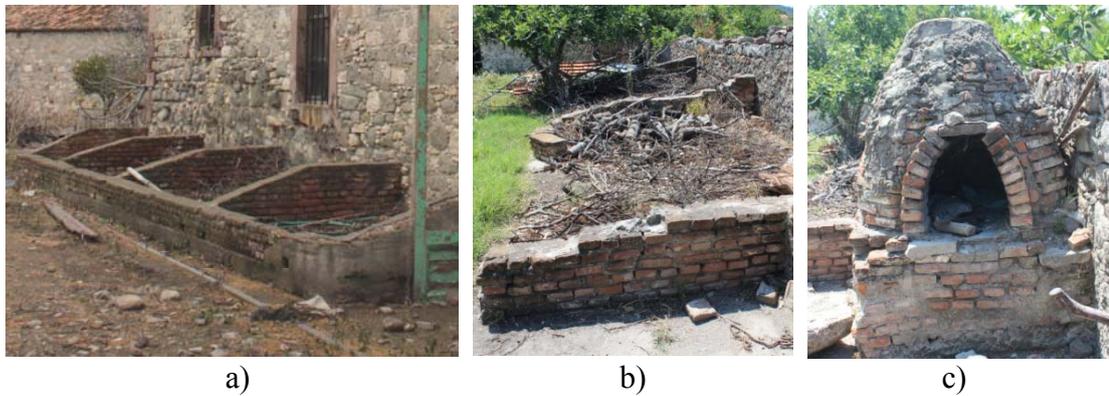


Figure 4.9. Open-olive storage bays adjacent to; a) the eastern wall of the production unit, and b) the perimeter wall in the north, c) a brick-built oven in the courtyard

4.3. Spatial Characteristics of the Mill

The mill is composed of oil production unit (G-01), decantation area (G-02), administrative units (G-03, G-04 and G-05), space for water tank G-06, machinery unit for steam engine and a hydraulic pump (G-07) and boiler unit (G-08). Except for administration, decantation ponds and water tank unit, all spaces possess independent doors from courtyard in the south. Administration unit is accessed through decantation area (G-02) and water tank unit (G-06) is entered through machinery unit (G-08) (Figure 4.10, Appendix A.3).

G-01 (Production Unit): The space G-01, 13.8 / 9.2 m in dimensions, is entered through a double-wing wooden panel door with approximate dimensions of 1.47 / 2.64 m from the courtyard (Figure 4.11 a, Appendix A.9). It includes two platforms; the round one, 0.95 in diameter, for the grinder (crasher) at the northwestern corner rests on a brick base, and the other, for two hydraulic presses in front of the northern wall of this space is built of a reinforced concrete slab rested on reinforced concrete base. Decantation ponds, each of which approximately measures 1.10 / 1.10 m in plan and

1.00 m in depth, are aligned in front of the eastern and partially southern walls. A simple office box, of 1.26 / 2.08 m and 2.39 m in dimensions and made of wood panels, and a concrete platform for hydraulic pump device are placed in front of the southern wall of G-01.

The passage from G-01 to G-02 is provided by an opening of 1.00 / 1.92 m between the two platforms and another one from G-01 to G-07 is provided by a wooden door of 0.94 / 1.86 m. These two door openings are spanned with brick segmental arches.

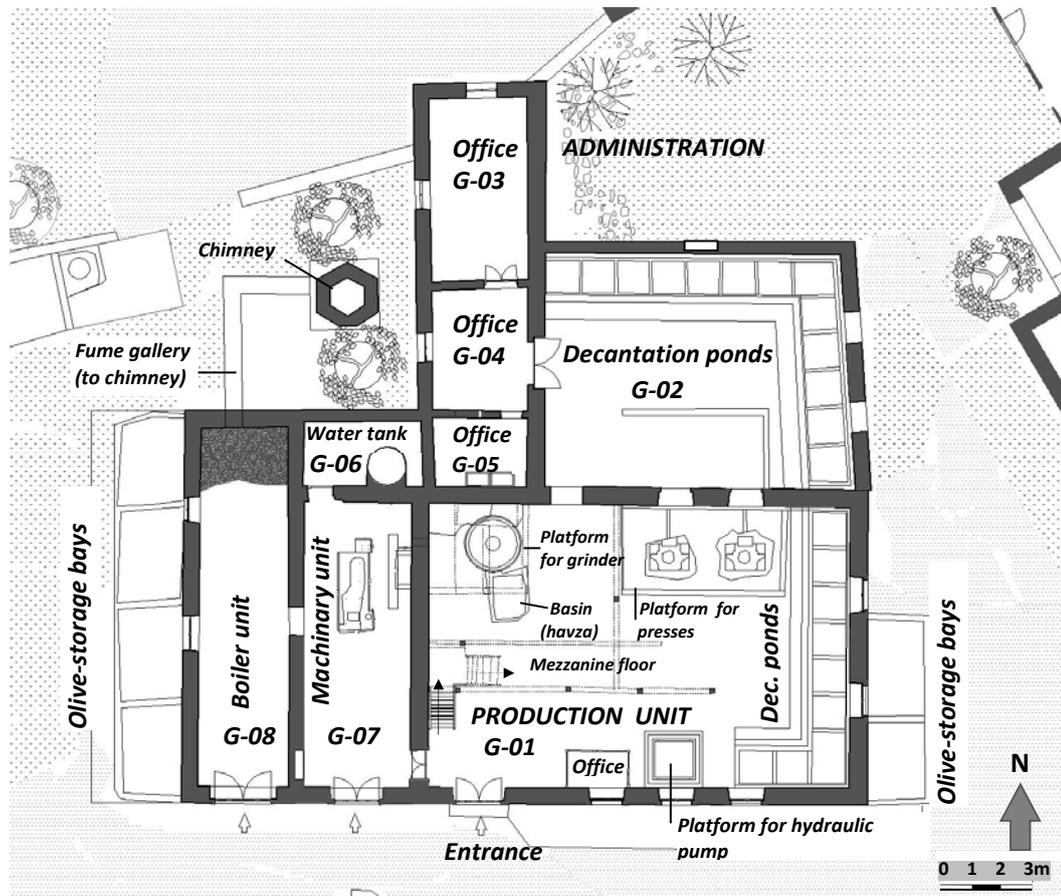


Figure 4.10. Plan layout of mill building

With approximate dimensions, there are three wood-framed window openings, of 1.00 / 2.00 m on the southern wall (Figure 4.11, Appendix A.6), two, of 1.00 / 2.00 m on the eastern wall (Figure 4.11 b, Appendix A.7) and another two, of 1.00 / 1.93 m on the northern wall (Figure 4.11 c, Appendix A.6). All these openings are spanned by brick segmental arches.

The window openings of various dimensions at different levels, which are formed with rectangular frames and spanned with wooden lintels, are located on the western wall. Of these openings, the first one which measures 0.30 / 0.30 m, the second one measures 0.58 / 0.70 m with iron bars, and the last one, which provides access for the belt installed to steam engine to activate the gear wheels of the grinder system, is approximately 0.56 / 0.60 m in dimension (Appendix A.7).

At the northwestern corner of G-01, there are brick masonry platforms, of 0.95 m in diameter and approximately 3.13 / 0.97 m for grinder. It is covered with screed. In front of this platform, there is rectangular basin (*havza*) to collect olive-paste coming from grinder during grinding process, approximately 0.97 / 1.39 m in dimension. The floor covering is covered with screed.

The surmounting system of G-01 is timber roof composed of five timber frames, battens and planks on which roof tiles are placed. The entire roof structure is supported by four timber posts and the beams of frames (Figure 4.11 d, Appendix A.4).



Figure 4.11. a) Southern, b) eastern, c) northern, and d) western sides of the production unit G-01

A timber-frame **mezzanine floor**, designed for pouring olives into the crusher (grinder) through a conically cut-wooden prism (called *ambar*), is reached through a wooden staircase which is adjacent to the western wall in front of the entrance. It is supported by five wooden posts 0.17 x 0.17 m, and the beams approximately 0.17 x 0.20 m in their cross sections. Covered with a layer of stain, only a small portion of the planks on this floor remain (Figure 4.12 a, b, Appendix A.3).



Figure 4.12. a) plan, and b) a view of mezzanine floor

G-02 (Decantation unit): The rectangular hall, which approximately measures 9.65 / 7.84 m, is decantation unit where the mixture of wastewater and oil is decomposed in decantation ponds (Figure 4.10, Appendix A.3). The southern wall of this space has a door opening which provides access from production unit G-01 and two window openings spanned with brick segmental arches (Figure 4.13 a, Appendix A.6).

There are five decantation ponds of approximately 1.14 / 1.19 m and 1.00 m deep along the eastern wall. Same wall includes two window openings of 1.03 / 0.90 m and 1.00 / 0.95 m dimension with iron bar (Figure 4.13 b, Appendix A.7). There are eight decantation ponds in front of the northern wall with similar dimensions in plan: 1.11 / 1.08 m, 1.06 / 1.08 m, 1.03 / 1.08 m, 1.07 / 1.08 m, 1.04 / 1.08 m, 1.09 / 1.08 m and 1.29 / 1.08 m. The depth of each pond is 1.00 m. A window space with iron bar which measures 1.00 / 1.80 m is placed at the center of the northern wall (Figure 4.13 c, Appendix A.10). Passage from G-02 to G-04 is provided by an iron door of 1.73 / 1.80 m with a brick segmental arch. There is an infilled door opening, to the administration office G-05, approximately 0.90 / 2.14 m in dimension (Figure 4.13 d, Appendix A.7).

The roof of decantation unit (G-02) totally collapsed. On the northern side of the hall, there is a gable wall which gives information about the type of the roof (Figure 4.13 c).

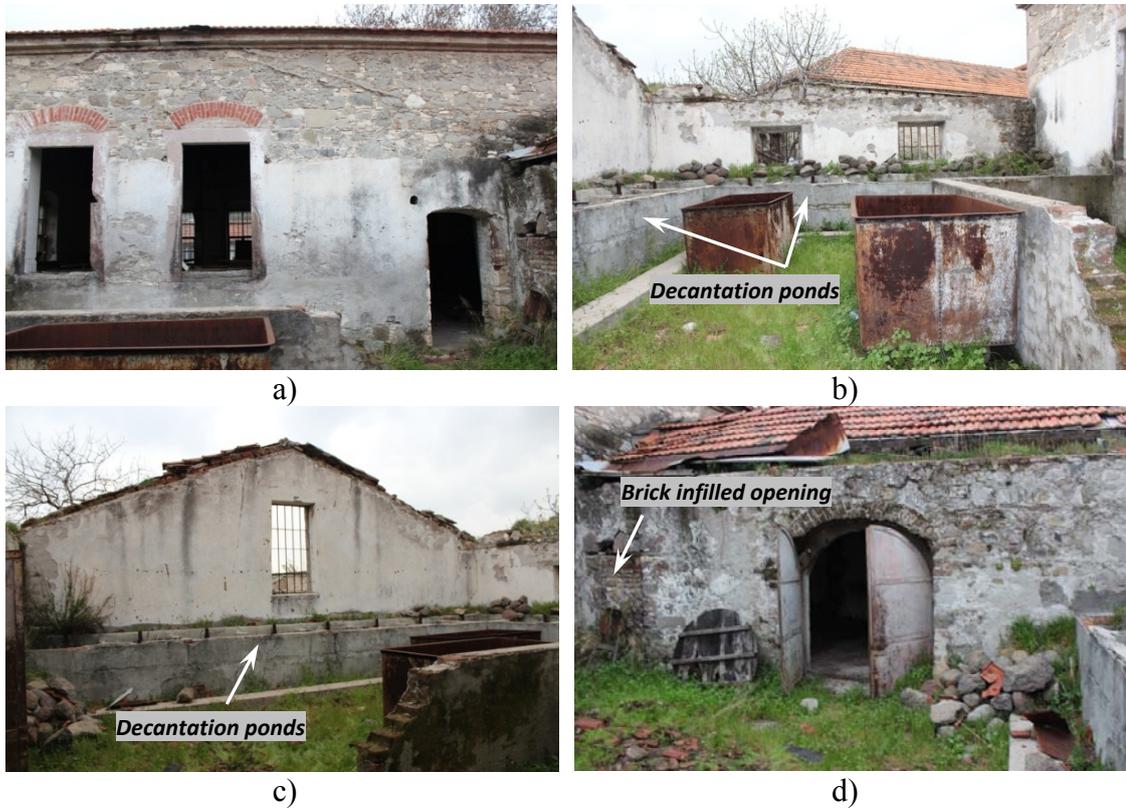


Figure 4.13. a) South, b) east, c) north, and d) western walls of office space G-02

G-03 (Administration office): The rectangular office space, which is accessed through space G-04 and measures 3.22 / 6.08 m, is entered through a double-wing wooden door, 1.12 m in width and 1.77 m in height placed in the southern wall (Figure 4.14 a, Appendix A.3). It is spanned with wood lintel. There are two wooden sash windows, each of which measures 1.00 / 0.90 m, on the north and western walls. Both windows have iron grills (Figure 4.14 b, c). The space is surmounted with a roof composed of three timber frames which hold battens and planks on them (Figure 4.14 b).

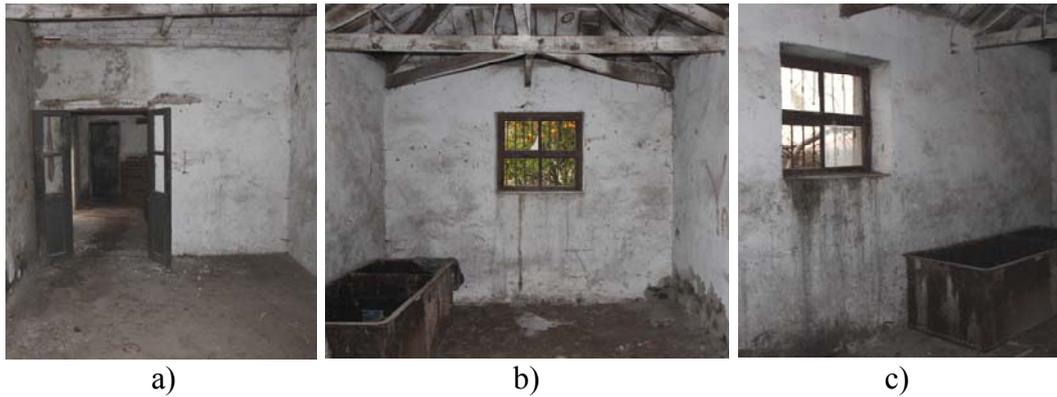


Figure 4.14. a) South, b) north, and c) western walls of office space G-03

G-04 (Administration office): The rectangular plan of this office measures 3.11 / 2.30 m. The entrance from G-02 to G-04 is provided by a metal door of 1.73 / 1.80 m with a brick segmental arch above in the eastern wall. As noted above the passage from the G-04 to G-03 is provided by double-wing wooden door in the northern wall (Figure 4.15 a, Appendix A.8).



Figure 4.15. Views from; a) northern, and b) southern walls of the office (G-04)

A double-wing wooden window of 0.94 / 0.95 m in dimension is placed in the western wall. An opening with wooden door frame on the southern wall is approximately 0.72 / 1.65 m in dimension. On the same wall, there is a window opening (Figure 4.15 a, b).

G-05 (Administration office): The plan of this space, rectangular in plan, measures 3.13 / 4.10 m. It is entered from the space G-04 sharing the door and the neighbor window (Figure 4.16 a, b) on the north wall.



Figure 4.16. a) Concrete basin on the southern wall of G05, b) infilled door on eastern wall of G05

A cast-in concrete basin, which rested on brick supports, and a steel pipe are on the southern wall (Figure 4.16 a). Eastern wall contains an infilled door opening, that provided access to decantation unit G-02 in the past. It measures 0.90 / 2.14 m (Figure 4.16 b).

G-06 (Water-tank unit): The space G-06, which measures 3.61 / 2.14 m, houses a steel water tank, 1.30 m in diameter and has 4.55 m height. Water distribution pipes are fixed on to the southern wall of this space.

G-07 (Machinery Unit): The machinery unit, rectangular in plan, which measures 3.53 / 9.45 m, was the place for steam engine and pump systems (Figure 4.17 a, Appendix A.4). The connection between machinery and production units is provided by a door (Figure 4.17 b).

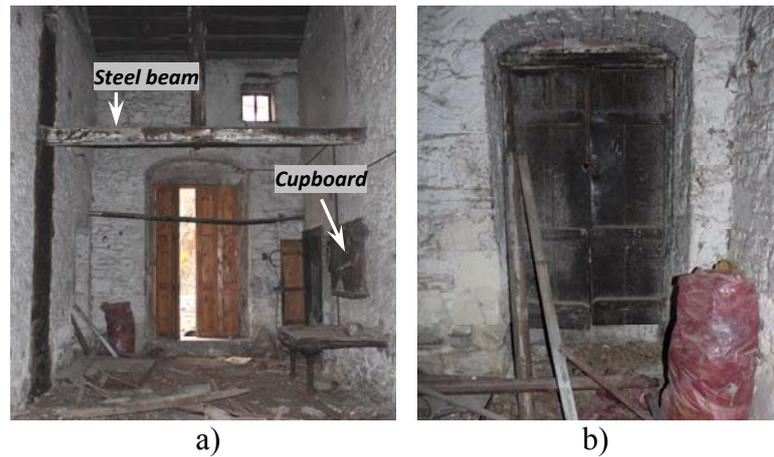


Figure 4.17. a) Southern wall of machinery unit, and b) the door connecting G-07 to G-01

While accessed directly from the courtyard, it has also connection with the production unit G01. The door which provides courtyard-access is a double-wing wooden folding door, of 1.47 / 2.70 m in dimensions, framed with stone casing and spanned with a stone lintel beneath a brick segmental arch at its exterior face (Figure 4.17 a, Appendix A.6).

The passage from G-07 to oil production unit G-01 is provided by a double-wing wooden batten door, of 0.94 / 1.86 m, which is framed with wooden lintel placed under a brick segmental arch (Figure 4.17 b, Appendix A.7).

The window openings with various dimensions at different levels are located in the eastern wall of G-07. Of these rectangular openings, the first one is 0.30 / 0.30 m in dimension. The second one which measures 0.58 / 0.70 m has iron bars, and the last one which gives way for triggering belt to grinder is approximately 0.56 / 0.60 m in dimension.

Three concrete platforms with iron fixing elements, such as anchor bolts and plates, for steam engine and their pulley systems have been placed in G-07. (Figure 4.18 a, Appendix A.3).

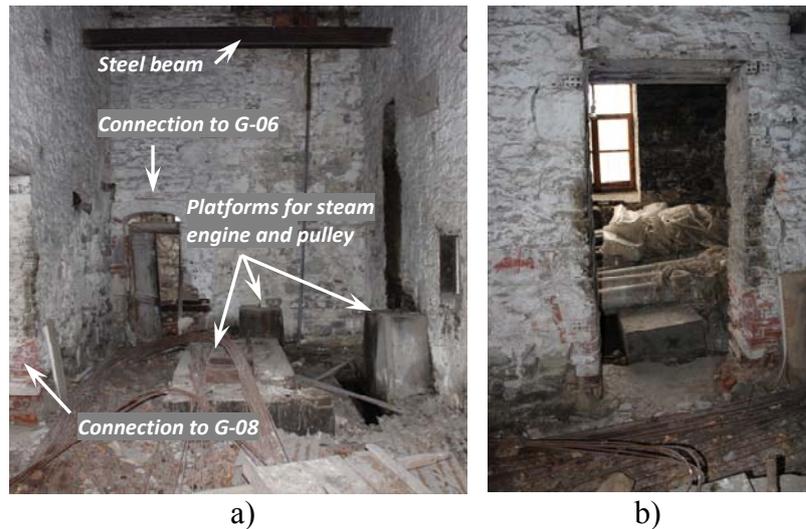


Figure 4.18. a) A view towards the northern wall of machinery unit G-07,
 b) connection to boiler unit G-08

Passage from the G-07 to G-06 is provided by a wooden door with brick segmental arch (Figure 4.18 a, Appendix A.6). The passage from G-07 to G-08 is provided by an opening, which measures 0.9 / 1.95 m on the western wall (Figure 4.18 b). A wooden cupboard is placed close to the courtyard entrance is located in the same wall (Figure 4.18 a).

The upper covering of the G-07 is a roof which is supported by wooden studs, rafters and battens. The floor covering is screed.

G-08 (Boiler Unit): The rectangular hall G-08, which measures 2.85 / 11.95 m, is for boiler vessel. It is entered through a double-wing wooden folding door, of 1.85 / 2.71 m in dimensions. Similar to that of machinery unit G-07, it is also framed with stone casing and spanned with a stone lintel beneath a brick segmental arch. Above the entrance door on the southern wall, there is a brick-infilled top-window, 0.80 / 0.95 m in dimension framed with brick segmental arch (Figure 4.20. a, Appendix A.6).

As noted above, connection between G-8 and G-07 is provided through a rectangular opening with the dimensions of 0.95 / 1.95 m in the eastern wall (Figure 4.18 b and 4.19 b). A brick-infilled opening, which corresponds to the cupboard in G-07, is spanned with a segmental arch in the common wall between G-07 and G-08 (Figure 4.19 b). There is another opening, which is framed with segmental arch (a small portion is visible) is placed in the northern wall of the space. It provides connection

with boiler and the fume gallery, but it is infilled with earth at present (Figure 4. 19 b, c, Appendix A.6).

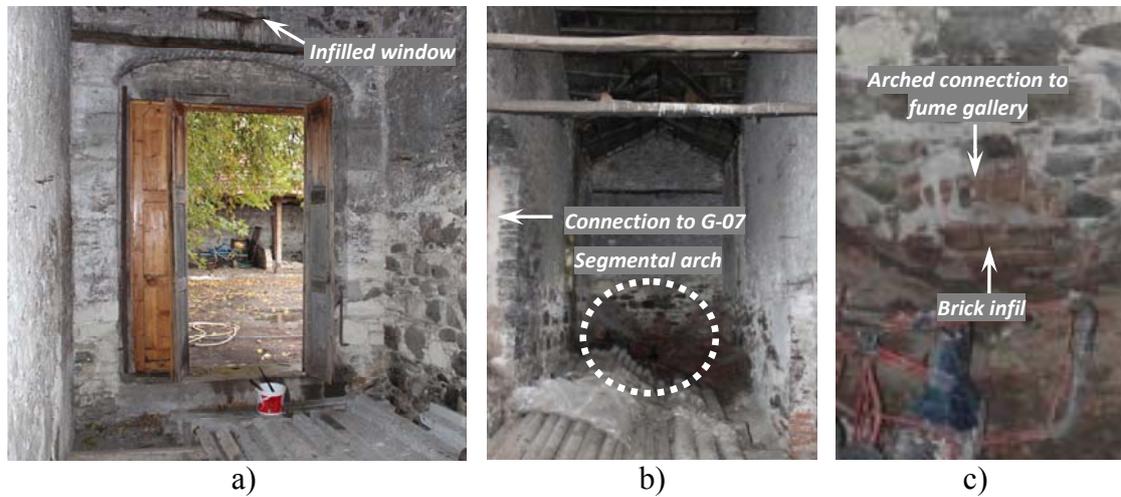
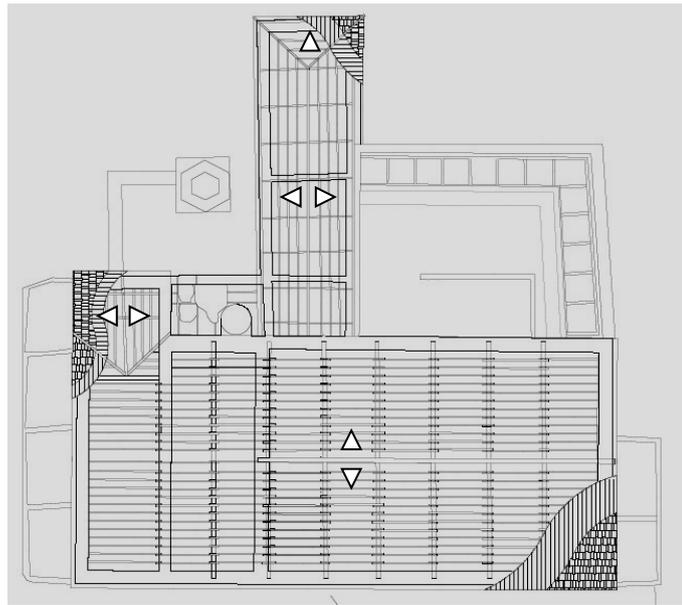


Figure 4.19. a) Folding door of entrance, and b) northern wall of G08, c) close view of the arch

Two wooden windows with brick segmental arches are located at the upper levels of the western wall of G-08. One of them measures 0.88 / 1.25 m, the other one is 1.20 / 1.90 m in dimension (Appendix A.9).

4.4. Roofs

In its current situation, the roof of the mill is composed of three major parts; the gable roof of the production unit (Figure 4.20 a, b, Appendix A.5), the hip-finished roof of the crossing mass of administration unit leaned to the northern wall of production unit at its rear side, and the gable roof of decantation unit. Except the gable wall in the northern side, the roof of the decantation unit is totally missing today (Figure 4.20 a, c, Appendix A.5). The slope of the roofs of production and administrative units is approximately 43 percent. The covering material of the roofs is interlocking tile. The roof structures of all spaces are naked. As mentioned before, the gable roof construction of the oil production unit is composed of frames (including; tie beams, studs, brackets), battens and planks on which tiles are laid out. Detailed information will be given in section: ‘4.6. *Construction Techniques and Material Use.*’ (Appendix C).



a)



b)



c)

Figure 4.20. a) Roof plan, b) western view of the mill, c) a view from the northeastern corner of decantation unit

4.5. Façades

In this part; south, east, north and western façades have been described with the features of the architectural elements which form the layout of the façades. The walls of the mill (with the approximate thicknesses of 55-60 cm) are built of rubble stone in general. Within this dominant wall pattern, the walls end up with cut stone quoins

(mostly andesite) at the corners. Besides stone, brick is also used in some vertical joints of cut stone, eaves and decantation ponds.

4.5.1. Southern Façade

Southern façade, 22.44 m long and 4.60 m high to the level of the eave, which makes three-stepped protrusion, composed of two rows of solid brick units and a slate (*kayrak*) row in between. Although detachments are observed in some parts, the eaves are plastered in general (Figure 4.21 a, b, c, Appendix A.9).



Figure 4.21. a) Southern elevation of the production unit, b) view from the northeast, and c) northwestern corners of the mill

Three double-wing wooden windows (with glazing) framed with stone casings are placed below brick segmental arches. Located with almost-equal intervals, their dimensions are also close (approximately 1.00 / 2.00 m).

Apart from these three, there are two relatively smaller window openings. The first one is located over the door of boiler unit, and the second is located over the door of machinery unit. The first one (0.80 / 1.00 m), which is infilled with brick, is framed with brick casings and a brick segmental arch above. The second one (0.75 / 0.85 m) is a double-wing wooden window with glazing.

4.5.2. Western Façade

Western view of the mill covers the western wall of the mill building (including northward extension of boiler unit) in front, fume gallery with the chimney and the western wall of administration unit at the back (Figure 4.22 a, b, c, Appendix A.9). The total length of the façade is 23.88 m.

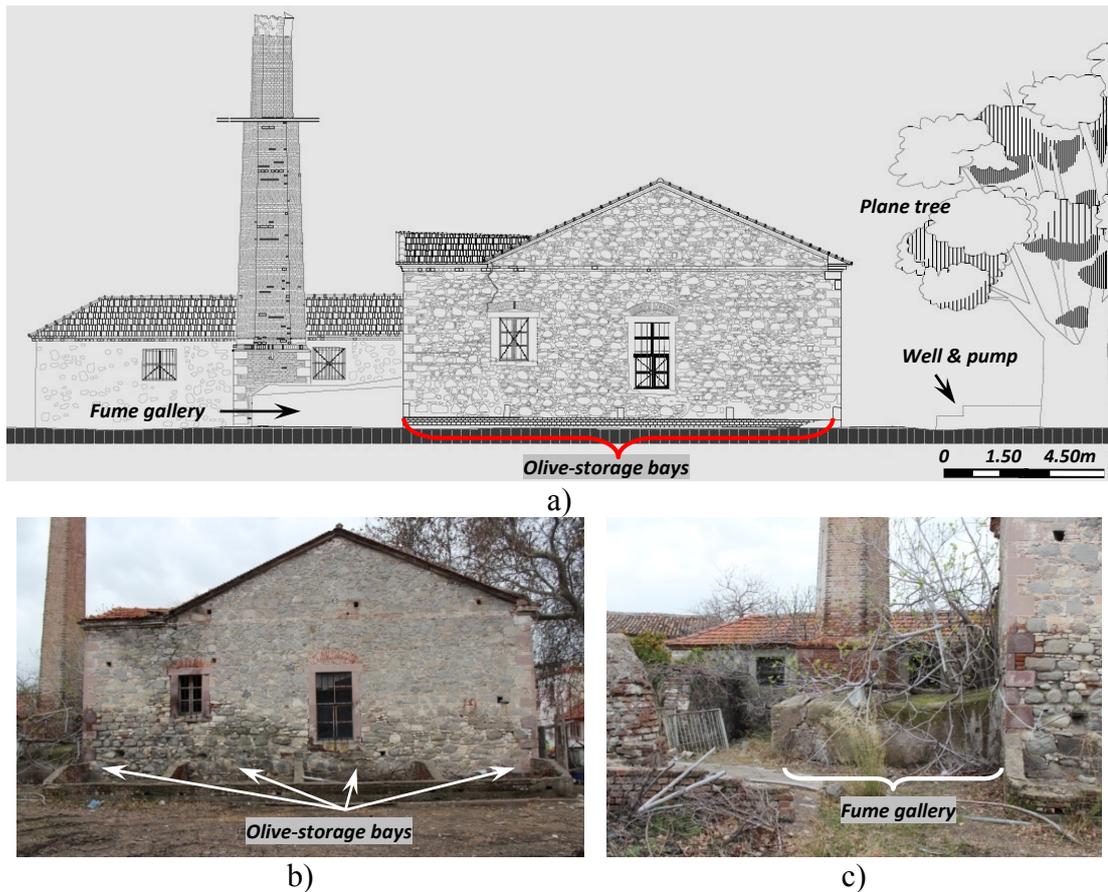


Figure 4.22. a) Western elevation, and views from; b) western façade of the mill, and c) western side of the administrative unit, fume gallery and the chimney of the mill

The eave protrusion, which frames the southern (and northern) façade, ends after turning the corner to the north. Thereafter, the two transversal-brick rows without slate and without protrusion proceed at the same level on this (and eastern) façade. Together with the other brick rows, but with protrusion, beneath the inclined edges of the roof, they underline the boundaries of the gable wall of the roof on the western (and eastern) façade. In the north side of this gabled portion of the roof, eave makes protrusion again and proceeds horizontally, where the inclined edge of gable roof ends (Appendix A.9).

In the middle of the façade, there is a double-wing wooden window with glazing (1.40 / 2.34 m in dimensions) which is framed with stone casing and a brick segmental arch above. It has an iron grill fixed to the stone casing. There is another window to the north of the first window that is similar in layout and material but smaller in dimensions (1.38 / 1.62 m) (Figure 4.22 a, b, c, Appendix A.9). The western face of administrative unit behind the chimney includes two wooden windows with iron grills. One of these in

the north is single-hung and the other in the south is double-wing window with the same material and dimensions (1.00 / 0.94 m).

4.5.3. Northern Façade

Northern façade, which measures 22.50 m in total, contains the northern faces of; production unit at the back, decantation ponds unit, administration unit, the chimney with the fume gallery and boiler unit (Figures; 4.23 and 4.24 a, b, Appendix A.9).

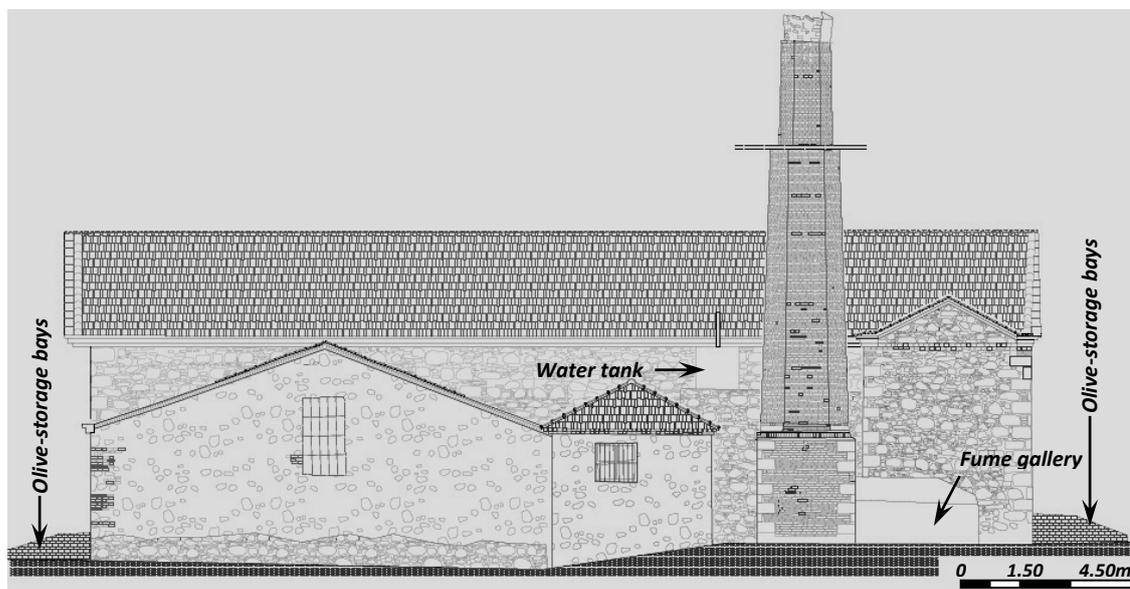


Figure 4.23. Northern elevation of the mill

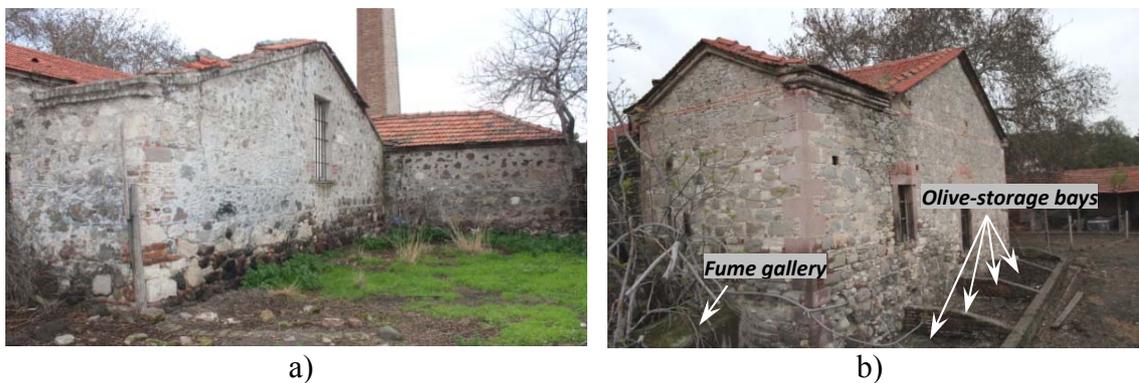


Figure 4.24. a) A view from the northeast, and c) northwestern corner of boiler unit

4.5.4. Eastern Façade

The façade is composed of the eastern walls of the units of; production, decantation ponds adjacent to it and administration unit far back. The façade-outline of production unit is same as that of the west façade. Similar to those located in the southern façade, two double-wing wooden windows (1.42 / 2.34 m in dimension) framed with stone casings are placed below brick segmental arches. Two open-olive storage bays, made of brick, are placed in front of the east wall of the production unit (Figures; 4.25 and 4.26, Appendix A.10).



Figure 4.25. Eastern elevation



Figure 4.26. A view from the northeastern corner of decantation unit

The eastern wall of decantation ponds space, approximately 2.50 m in height, is placed adjacent to the production unit. This wall includes two window openings (1.05 m in width, 0.90 m in height) framed with wooden frames and iron grills. Roof of this place collapsed, only a small portion of horizontal eaves, similar to the eaves of the southern façade, exists. The eastern wall of administration unit intersects with the northern wall of this unit at the back (Appendix A.10).

4.6. Architectural Elements

Architectural elements of the mill are; chimney being the most prominent and representative element of any olive oil mill, accentuated gable walls and eaves of the roofs, doors and window openings, openings without doors providing passages between different spaces, staircase and its wood railing, cupboards used for utensils, and concrete bases for fixing necessary equipment used for oil production which make them identical to an olive oil mill as an industrial building (Appendix B).

Chimney: Chimney is the symbol of the mill which is visible, even from farthest points around the village. The shaft of the chimney, total height of which is around 18.60 m (including the base-height – 2.40 m) from the ground (Appendix B.5) and hexagonal in plan (Appendix B.1), is built of solid brick units and tapers off upwards. Upper half of the chimney is slightly damaged and some brick losses are observed at the uppermost part besides a slight bend towards south east (Figure 4.27 a, b, Appendix E.6).

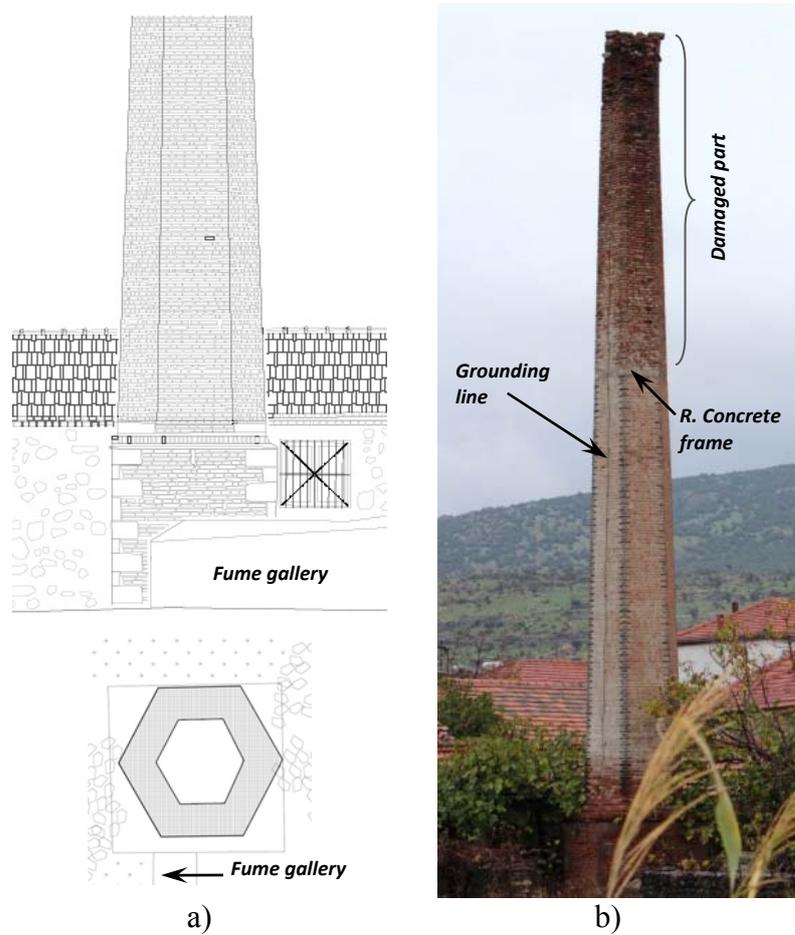


Figure 4.27. a) Plan and eastern façade of chimney, b) the view from the same direction

It is said that upper half of the chimney faced some damages (the reason is not known, but likely by the stroke of lightning as the inhabitants implied) and repaired by the placement of a reinforced concrete frame and completed to the original height. Some mortar losses and irregularities in brick courses visible at present indicate that workmanship was not good as in the lower parts. A grounding line visible on the northern part of the chimney is thought to be fixed during the time of repair (Figure 4.27 b, Appendix B.6).

The chimney rests on a prismatic base, square in plan (2.30 x 2.30 m) and 2.40 m high from the ground, is also made of brick but used with large blocks of cut stone (of andesite) in similar to the quoins of the masonry walls of the mill. It is enframed with an iron strip as a protection against the forces of thrust to be occurred around the base due to the weight of the chimney shaft above (Figure 4.28 a, b).



Figure 4.28. a) The base of the chimney and fume gallery, b) view of cut stone-quoin of the base and view of damaged vault of fume gallery with semicircular profile

Fume gallery, which connects boiler unit to the chimney-base, is built of brick walls (approximately; 0.58 – 0.60 m in its exterior width and 1.10 – 1.25 m in height) surmounted with brick vault with semicircular profile (visible in the partially collapsed part of the gallery) and cement-plastered at its exterior (Figure 4.28 a, b, Appendix B.5).

Gable walls: Like the chimneys, gable walls of roofs of the oil mills in the region are purposely emphasized which makes them identical to the fame of their owners. They are especially visible from public areas, like streets. They were also framed with brick moldings and embellished with reliefs representing the drops of olive oil. However, gable wall of Araser Mill is relatively plain when compared to others (Figure 4.29. a, b).



Figure 4.29. a) Altınoluk-İbrahim Erdim Oil Mill (Kibar 2008), b) Edremit-Evren Ertür Oil Mill

The gable wall of the mill is simply accentuated like a pediment by the horizontal courses of brick, embedded in the wall instead of protrusions, and two inclined edges of the roof composed of protruded slate plates on which longitudinally lined up and slightly protruded brick courses of two rows are placed. Three holes (on both gable walls of opposite sides of the) formed of brick on both edges are also found providing ventilation for the roof of the mill (Figure 4.30 Appendixes B.5 and B.6).

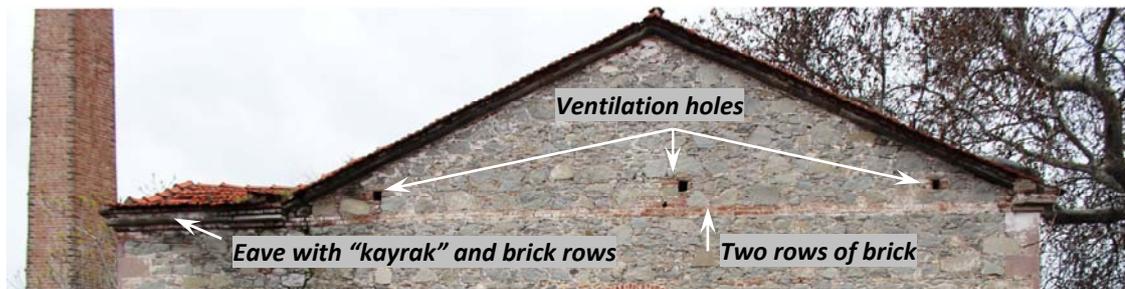


Figure 4.30. Gable wall of the roof Araser Oil Mill

Except for eaves, there are no ornamentation elements e.g. molding, cornice or alike in Araser Mill like those seen in other mills (Figure 4.29 a, b). As mentioned previously, the bottom of the gable wall is underlined by two rows of brick which runs from one corner to the opposite one without protrusion.

Eaves: Other than having cornices and/or moldings, the mill possesses roof eaves as briefly mentioned in the description of façades of the mill. Composite pattern of the eave is formed of a single row of brick undermost which protrudes about 5 cm from façade face, rises with; a single row of slate plate with 8 cm protrusion on it and two rows of brick, the upper course of which protrudes around 5 cm again. The continuation of this pattern on the inclined edges of the gable wall becomes a single row of slate with 10-12 cm protrusion and a single row of brick with 5 cm protrusion above. Roof tiles are placed on the last courses of brick with a protrusion of 10-12 cm (Figure 4.31 a, b, c, Appendixes B.5 and B.6).

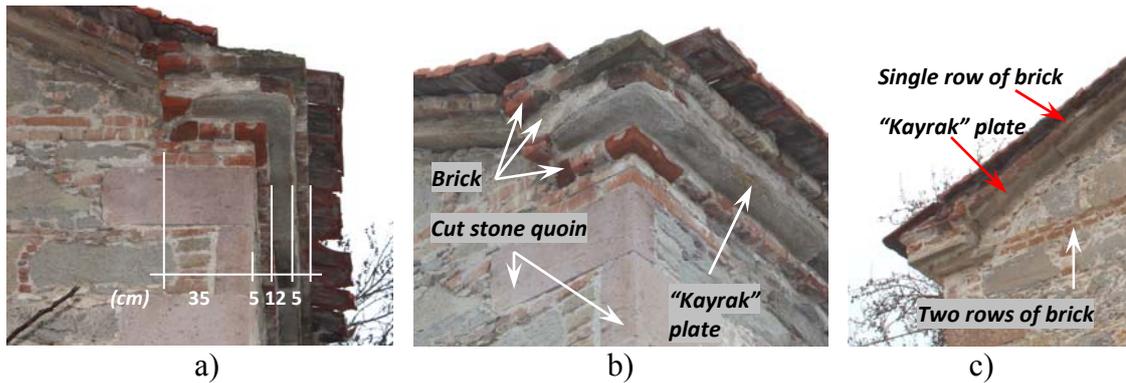


Figure 4.31. a) A view of the eave and the quoin (eastern corner of the south façade), b) a diagonal view of eave and placement of cut stones in the quoin, c) brick courses embedded in the eastern wall

Doors: There are three types of doors in the mill; double-wing wooden-paneled doors located in the brick arched openings with segmental profile and framed with stone jambs and stone lintels on their exteriors, single and double-wing wooden batten doors, and a double-wing iron door are the types of doors in the mill.

Each wings of the first type of doors fold into two. These type of doors provide access from courtyard to the; production unit (G-01), machinery unit (G-07) and boiler unit (G-08). These doors are also framed with a wood casing (15 cm in width and 2 cm in thickness) besides cut stone jambs and lintels (of andesite) at their exterior sides (Appendix B.5).

The dimensions and the layout of the openings of production unit and machinery units are same; 150 cm wide and 260 cm high. Although the height is same, but the width of the boiler unit door is 1.80 m, which makes the only difference between the other two.

In all these doors, brick segmental arches cover the entire thickness of the masonry wall, and the gap between lintel and arch is filled with brick at their exterior face. The thresholds are composed of a screed layer poured on stone plates (Figure 4.32 a, b, Appendix B.5).

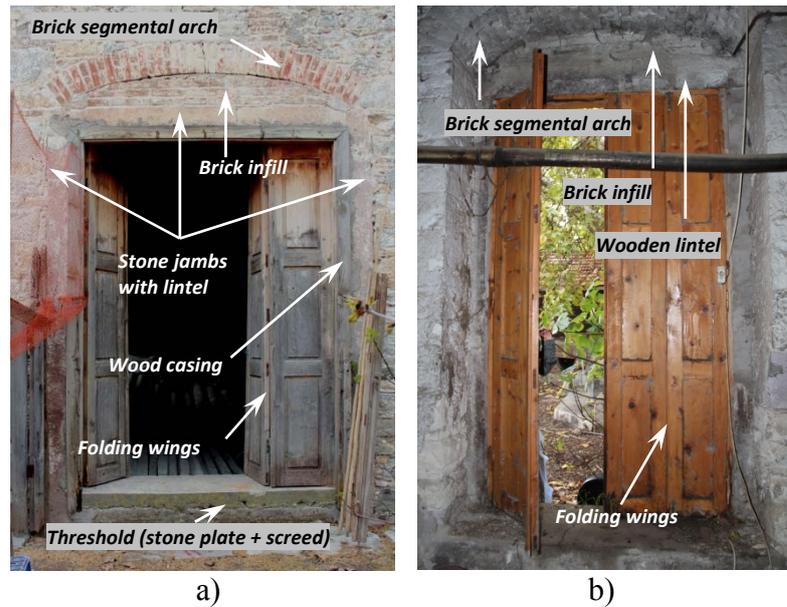


Figure 4.32. a) The outer view of double-wing wooden-paneled door with brick segmental arch and stone jambs with lintel, b) The inner view of the same door opening

Double-wing batten doors provide connection between; production unit (G-01) and machinery unit (G-07), machinery unit and water tank unit (G-06), and administration offices of G04 and G03. The door which provides access from production unit to machinery unit is of double-wing, 0.95 m in width and 1.72 m high from the floor of production unit G-01 (Figure 4.33 a, b, Appendix B.3).

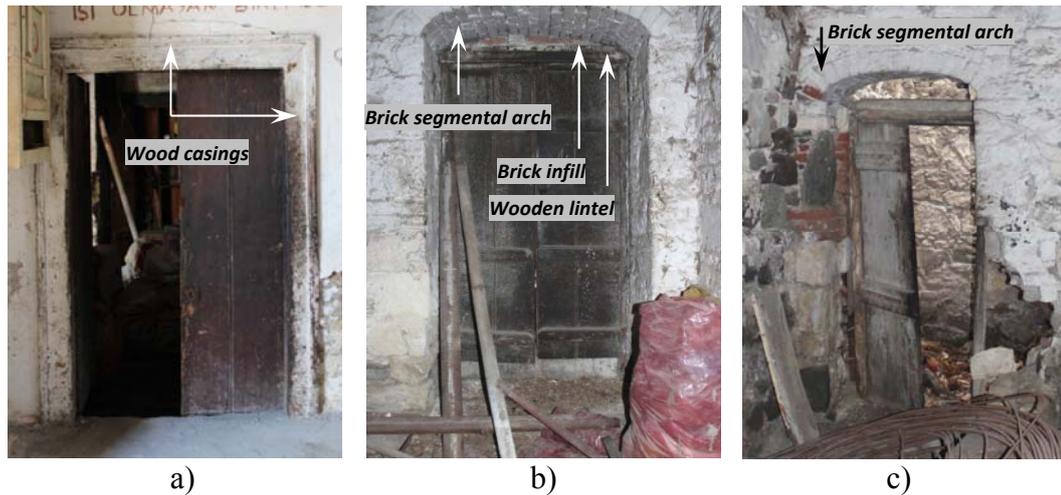


Figure 4.33. a) The front view of wooden batten door (G-01), b) the rear view of the same door, c) batten door between machinery room (G-07) and water tank space (G-06)

The second batten door is located in an opening spanned also with a brick segmental arch which provides access from machinery unit (G-07) to the water tank unit (G-06). It has same dimensions with the previous one. The gap between segmental arch and wood lintel is empty (Figure 4.33 c, Appendix B.2).

In these doors, each wing is composed of two vertical boards (25 cm wide 2.5 cm) nailed on three ledgers without brackets at the back side. Casing which frames the opening at three edges only in the production unit-side is 11 cm. The gap between timber lintel and arch is filled with brick (Figure 4.33 a, b). Other doors of this type are; the door in the northern wall of the machinery unit (G-07) which provides access to water tank unit (82 cm wide and 166 cm high), and the one in in the southern wall of the office G-03 (1.00 m in wide and 1.77 m high without arch) providing connection with the office G-04. The wings of the door between the offices G-04 and G-05 are missing.

Access from decantation ponds (G-02) to the administration unit (G-04) is provided by double-wing iron door in an opening, which is framed with a brick segmental arch measuring 1.40 m in width and 1.98 m in height from interior floor level to the highest point at the intrados of the arch. It is fixed to the edges by means of two iron posts anchored to stone masonry (Figure 4.34, Appendix B.3).



Figure 4.34. The outer view of double-wing iron door with segmental arch

Passages: There are two types of passage-openings in the mill: the opening spanned with brick segmental arch and the other one spanned with timber lintels set within the thickness of the masonry wall. The first one is placed on the northern wall of the production unit and provides access to decantation ponds area G-02. The width of the passage is 1.00 m. The height at the highest at the intrados of the arch is 1.95 m. (Figure 4.35 a, Appendix B.2). The second passage spanned with timber lintel(s) is located in the western wall of machinery unit (G-07). It provides connection between machinery unit and boiler unit (G-08). This passage is 95 cm wide and 1.96 m high (Figure 4.35 b).



Figure. 4.35. a) Passage spanned with segmental arch, b) passage with wooden lintel

Windows: There are four types of windows. Among them, “the wooden windows with double-wings located in the segmental-arched openings and framed with cut stone jambs and cut stone lintels” is the prominent type of window identical to the

mill. They possessed iron grilles, composed of vertical and horizontal bars, anchored to stone jambs and lintel) at their exterior sides (Figure 4.36 a, b, c, Appendixes B.2, B.3, B.6 and B.6).

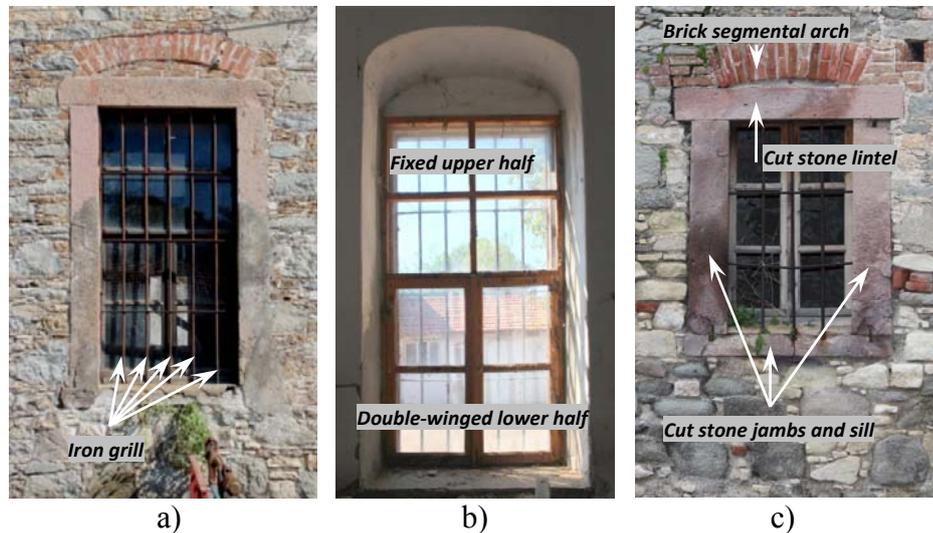


Figure 4.36. a) The outer view of double-wing wooden window with iron grill, b) the inner view of the same window (G-01 southern wall), c) the view of the window (G-08 eastern wall to the north)

The windows of this type are located on the south, north and eastern façades of the production unit (G-01) and western façade of the boiler unit (G-08) with the same layout but different dimensions (Appendixes B.5 and B.6).

These windows are slightly trapezoidal in their plan. Their heights (from sill up to the wooden lintels; 1.97 ~ 2.00 m) and their widths (at the order of exterior and interior dimensions; 1.00 ~ 1.13 – 1.19 ~ 1.20 m) are close for the windows located in the east, north and southern walls of production unit and boiler unit (G-01, G-08). However, the dimensions of the one located in the western wall of boiler unit to the north is relatively smaller than the others, 0.73 – 0.90 m in exterior and interior width and 1.25 m in height, although it has the same layout (Figure 4.36 c). The wings of the windows located in the northern wall of production unit are missing as can be seen in Figure 4.11 c (Appendix B.2).

The other windows that are located in rectangular openings spanned with lintels (*reinforced concrete lintels and sills* in decantation ponds-area and administration offices, and *wooden lintels* in the rest) can be classified as; “single-hung wooden sash

windows,” “wooden windows with double-wings,” and metal windows without wing(s).”

Single-hung wooden-sash windows are located in the north and western walls of the administration office (G-03, G-04) which measure 100 cm in widths and, 93 cm in their heights. These windows also have iron grilles with iron frames, composed of eight vertical and a single horizontal-iron bars at their exterior sides (Figure 4.37 a, Appendix B.4).

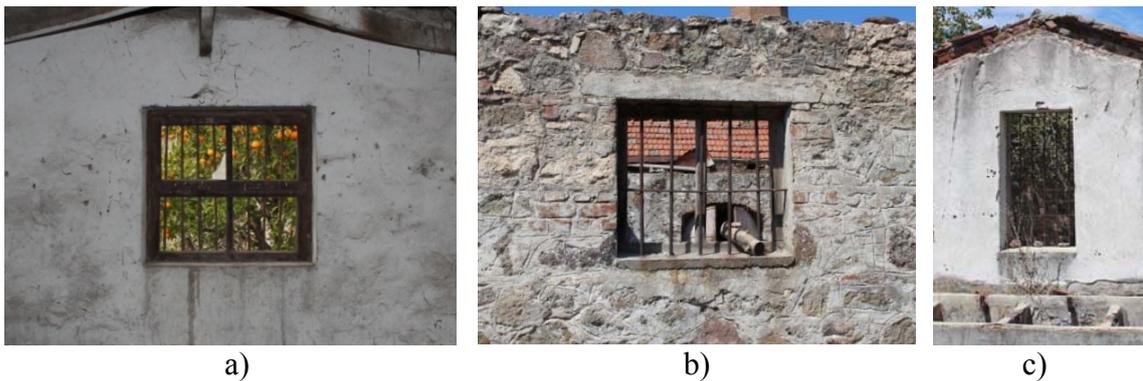


Figure 4.37. a) A single-hung sash window of an administration office (G-03), b) double-wing wooden window in the eastern wall of decantation unit (G-02), c) a window opening in the northern wall of decantation area (G-02) with iron grilles (wings are missing)

A wooden window with double-wings located in the western wall of administrative unit G-04 measures 0.95 x 0.95 m in width and height, and two located in the eastern wall of decantation area measure 1.05 m in width and 0.90 m in their heights (Figure 4.38. b). There is another window in the northern wall of the same space. It measures 0.95 m in width and 1.82 m in its height. But the wing(s) of this window are missing. As those in administration offices (G-03, G-04) these windows also have iron grilles at their exterior sides (Figure 4.37 b, c, Appendixes B.3 and B.4).

Windows with metal frames without wings: Located in the wall between the machinery room (G-07) and mezzanine floor in production unit (G-01), the metal-framed window (0.55 x 0.60 m in dimensions), which provides connection for the trigger-belt to transmit power from steam engine to the gear wheels of the grinder in the production unit G-01. The second window with metal frame and iron bars in the same wall measures 0.70 x 0.70 m in dimension. It is used for exchanging utensils, tools,

ropes, chains *etc.* Both of their profiles are 3cm in thickness (Figure 4.38 a, b, c, Appendix B.3).

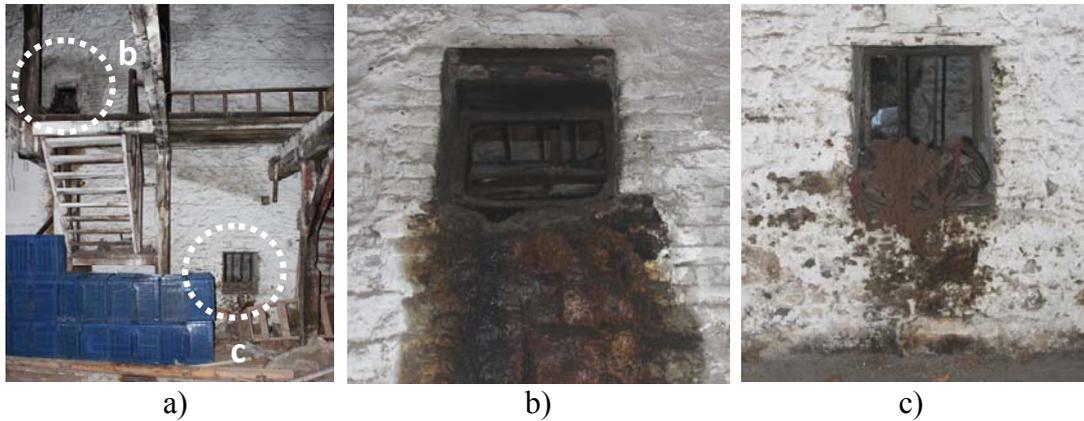


Figure 4.38. The placement of windows; b) for belt connection, c) for exchanging utensils

Wooden Staircase: The staircase, quarter-turn type with a single landing, in the production unit provides access to mezzanine floor. The width of the stairway is 0.87 m. It consists of 18 risers varied between 14 and 17 cm. (Figure. 4.39 a, b, Appendixes B.2 and B.3.).



Figure 4.39. a) Wooden stairs ascending to the mezzanine floor, b) its balustrade and railing surrounding the staircase

The width of treads, fixed on two stringers, is around 15 cm. It has a simple handrail, which consists of wooden studs and railing, 5 cm in thickness. It surrounds the staircase-opening and the mezzanine floor (Figure. 4.39 a, b, Appendixes B.2 and B.3).

Wooden Cupboard: Containing drawer and shelves, the wooden cupboard is placed in the infilled-door opening, which was spanned with a segmental arch, in the western wall of the machinery unit (G-07) (Figure 4.40. a, b).

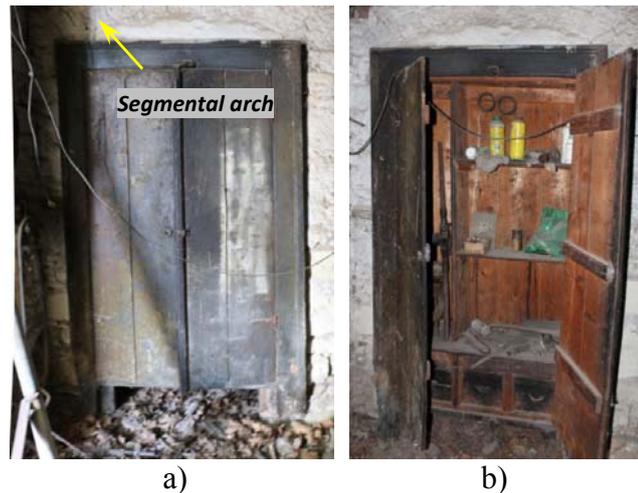


Figure 4.40. a) The outer, and b) inside the cupboard with batten wings

The cupboard 0.97 m in width, 1.80 m in height 0.30 m in depth, has two batten wings. It is framed with wooden casing, 10 cm in width. The drawers are placed at the bottom. Two shelves are fixed to the upper part (Figure 4.40. a, b).

Bases and platforms for oil production equipment: Although not directly related to architectural features, however, the bases and platforms, that once supported the machinery equipment, are also taken into consideration due to their importance in the production of olive oil which makes the building “an industrial heritage.”

As noted in the beginning, processing equipment such as; boiler, steam engine, hydraulic pump, grinder with double vertical stones, and two hydraulic presses were donated to Rahmi Koç Industrial Museum by the owner of the mill Nadir Araser in 1999. The remains are evaluated below.

The first (1) is the steam engine and it measures 1.12 x 2.58 m in plan and has 0.45 m height. The second (2) is next to it supports the pulley. It measures 0.40 x 0.43 m in plan and has 0.98 m in height. And the third (3) is, adjacent to the eastern wall is 0.45 x 1.26 m in plan and possesses 1.01 m height from the ground, supports the pulley

of steam engine activating the gear wheels of the grinder in production unit. The anchor bolts and steel fixing elements embedded in concrete still exist (Figure 4.41 a, Appendixes B.1 and B.2.).

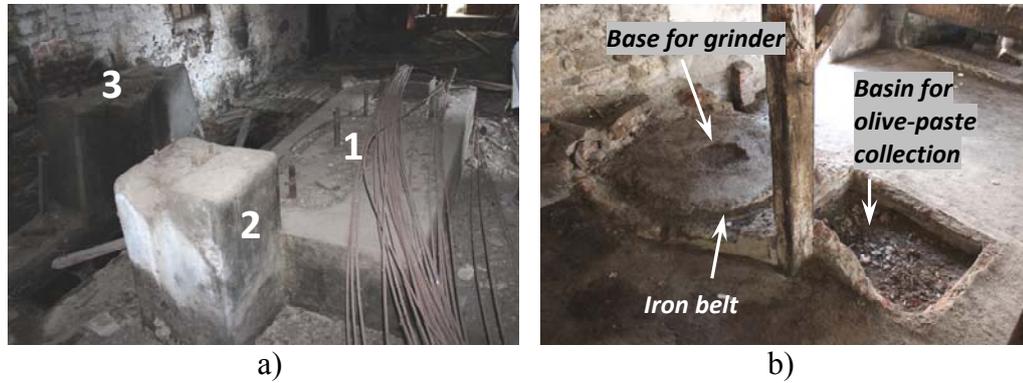


Figure 4.41. a) Reinforced concrete bases in the machinery unit (G-07), b) brick base for grinder and basin (*havza*) to collect olive-paste in the production unit (G-01)

The base for grinder: Located in the northwestern corner of the production unit (G-01) supports grinding mill which is composed of double vertical cylindrical stone-wheels which rotate in an iron mortar. Its exterior diameter is 1.94 m and raised 0.40 m from ground floor of production unit. The base is built of brick and encircled with an iron belt 5 cm in width and 0.5 cm in thickness. A basin for olive-paste collection placed in front of the platform (Figure 4.41 b, Appendixes B.1 and B.2).

Related to the grinder, another element, almost identical to every olive oil mill is the *ambar*. It is a conical wooden prism which serves for pouring olives into the grinder mortar from mezzanine floor (Figure 4.42 a, b, Appendixes B.1 and B.2.).

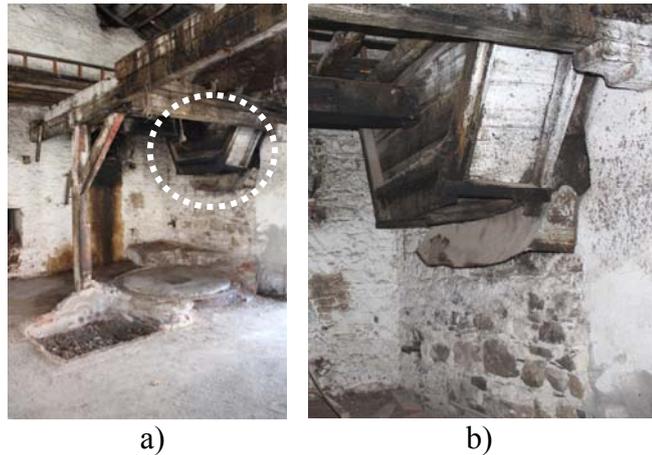


Figure 4.42. a) The location of *ambar* above grinder base b) a close view of *ambar*

Platform for two hydraulic presses: 5.35 x 2.98 m in plan, 1.17 m high from the floor and 0.25 m in thickness, the platform is a reinforced concrete slab rests on reinforced concrete frame which is supported by six reinforced concrete piles, each of which measures 0.25 x 0.30 m in cross section (Figure 4.43 a, b, Appendixes B.1, B.2 and B.3).

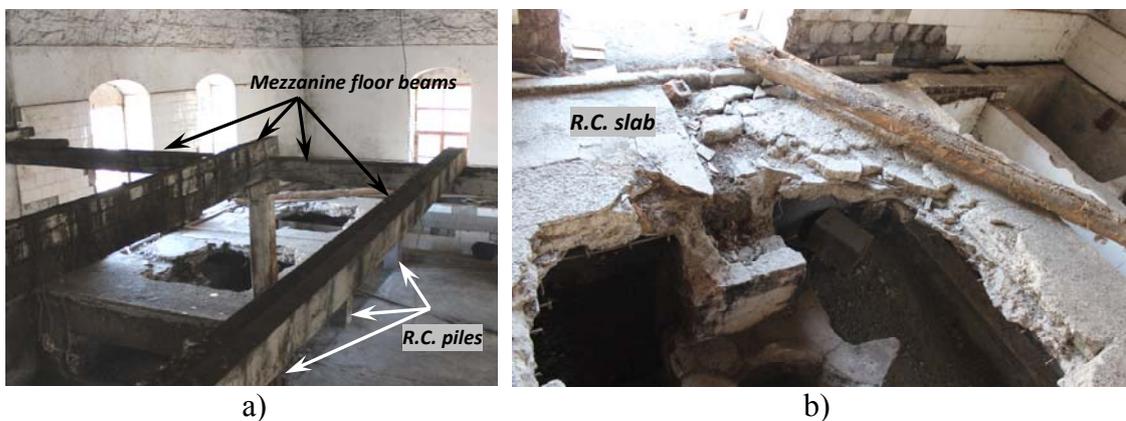


Figure 4.43. a) An overview reinforced concrete platform for two hydraulic presses from mezzanine floor, b) a close view of the reinforced concrete slab and a supporting brick pile

Water tank: The tank is located on the northern side of the mill, in space G-06. It is an important element which provides water for boiler to be converted to steam used as power for grinder and water for oil separation process in decantation ponds. Water supply is provided from the well in the courtyard. It is made of steel and measures 1.30

m in diameter and 4.55 m in height. Due to the extreme narrowness of space (G-06) where it is placed a good photograph could not be taken.

Decantation ponds: Located at the eastern and southern side of the production unit and northern and eastern walls of the decantation area, they cover the largest area in the closed parts of the mill (Figure 4.44 a, b, Appendixes B.1 and B.3.).



Figure 4.44. a) Decantation ponds in production unit (G-01), b) the ponds in decantation area (G-02)

They are used for the separation of water from olive oil. There are nine compartments in production unit and fourteen compartments in decantation ponds area. They are 1.10 x 1.10 m in plan and 0.90 m in height. They are built of brick and plastered with cement inside. There are two kinds of conduits enclosing the ponds: One which is connected to the hydraulic presses and brings pressed oil mixed with water to the ponds by means of iron valves (can rotate up and down) connected to the conduit, and the second, encloses the ponds at their bottom level to collect precipitated wastewater separated from olive oil (Figure 4.44 a, b). Each pond is connected to this conduit by means of outlet pipes. Exterior faces of the ponds are covered with ceramic tiles.

4.7. Construction Techniques and Material usage

The structural components of the mill, as the walls, floors and the roof are defined together with the materials that are made of. Finishing materials are also included in the related components instead of separate headings (Appendix C).

Walls: All exterior walls of the mill building are built of stone masonry, average thickness of which is 65 cm, is consisting of; rubble stone, which is used with brick in some parts, and the masonry by the sole use of brick in the construction of partition walls of administration units (Appendix C.1). The interviewed inhabitants and the last owner Nadir Araser stated that the lime mortar was used in the construction of all masonry walls. This information matches with the observation on the masonry parts. The white color of the mortar between stone and brick bonds clearly distinguished from the grey colored cement-based applications.

Cut stones with approximate dimensions of 0.25 m in height, 0.50 m in length and 0.15-0.20 m in thickness are used in the quoins and at the base of chimney (Figures; 4.45 a, and 4.28 a, Appendixes C.6 and C.7).

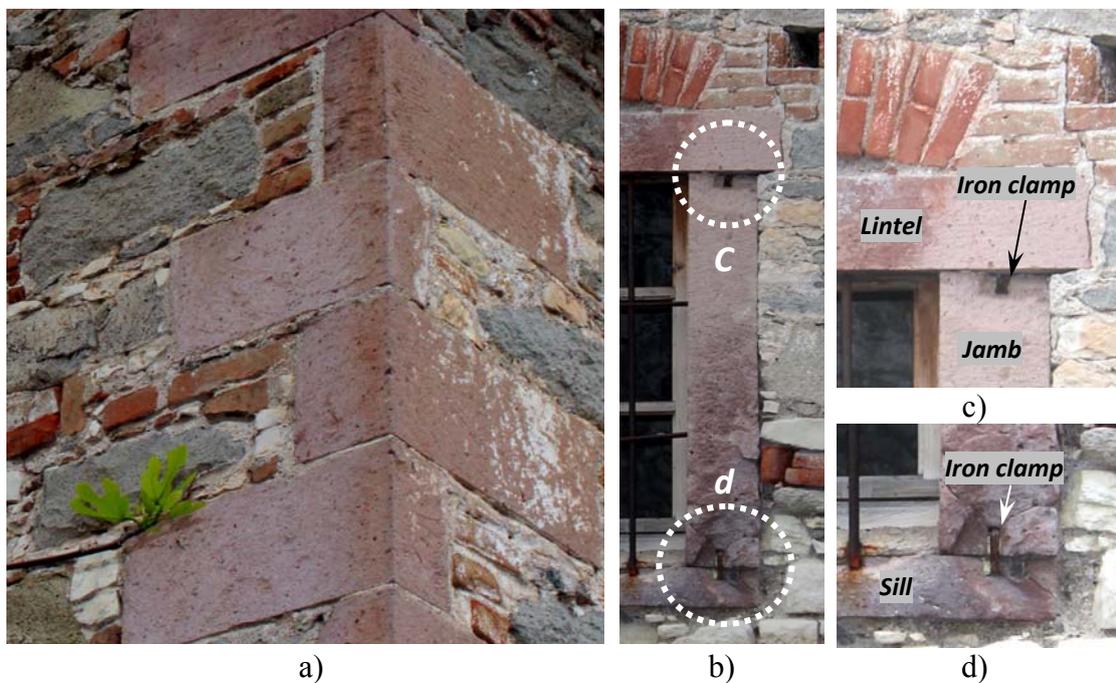


Figure 4.45. a) Detail of a quoin and masonry pattern, b) the edge of a typical window, c) the connection of lintel and jamb, d) jamb and sill

Relatively larger blocks of cut stone are also used as the exterior casings and lintels of some door and window openings. They are connected with iron clamps (Figure 4.45 b, c, d).

As noted above, brick is used in; the separation walls of administrative units (G-03, G-04, G-05), decantation ponds in decantation unit (G-02) and production unit (G-

01), open olive-storage bays adjacent to the east and western exterior sides of the mill, the platform behind the grinder's bases on the northwestern corner of the production unit, and the arches above the openings of doors and windows, moldings of eaves which surrounds the roof, fume gallery and chimney (Appendix C.1).

The dimensions of the mostly used brick are; 24 x 11 x 5 cm. It is red in color and possesses Greek letters (Figure 4.46 a). As the typical bonding, they are laid out with constant lengthwise and transvers placements alternated in each successive course seen in the original parts of the mill besides the base and the shaft of the minaret (Figure 4.46 b). The quoins of the chimney are composed of different bricks square in plan, 24 x 24 x 5 cm and half of it, 11 x 11 x 5 cm, and dark grey in color. This type gives the impression that it is specifically produced for the purpose (Figures; 4.28 b, and 4.46 c).

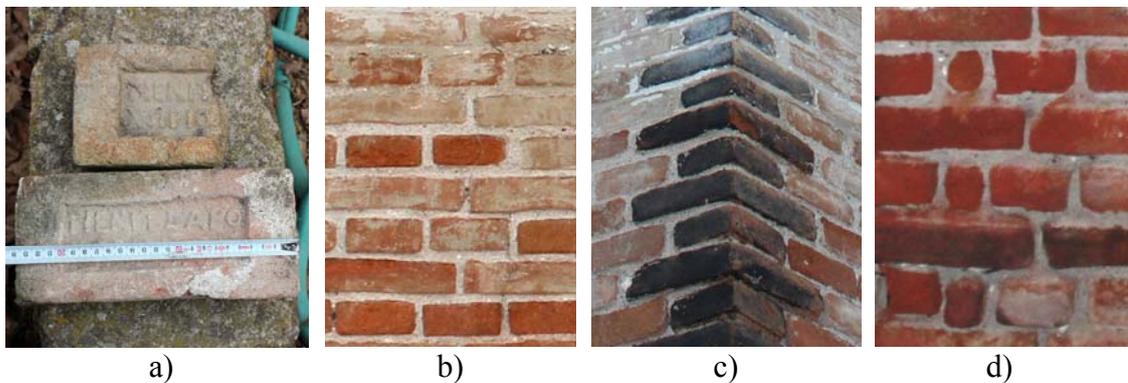


Figure 4.46. a) Original brick with the label in Greek, b) bricks in the original parts of the mill, c) specifically produced bricks used in the quoins of chimney, d) new bricks

Brick, production of later periods, 19 x 9 x 5.5 cm in dimensions (Figure 4.46 d), is also used in the partition walls of administration unit, as infill material in; the door opening at the eastern wall of the administrative unit, a part of the door opening once existed in the eastern wall of boiler unit but converted to a cupboard, and in the window opening above the door in the southern wall of machinery.

As finishing material, cement plaster was applied on all interior faces of the walls of production unit (except for its northwestern corner) and decantation ponds area unit until the level 0.50-0.60 m below the wall plates on which roof frames are rested (Figure 4.47 a, Appendixes C.3 and C.4). The rest above this level and other walls without plaster are lime-washed directly applied on the surfaces in the production,

machinery and boiler units. Cement plaster is also applied on the faces of the walls of administrative unit (Appendix C.5) covering the entire surface decantation ponds (Appendix C.4), olive storage bays and exterior of fume gallery (Appendixes C.6 and C.7). Interior faces of all other walls are covered with lime-wash directly applied on rubble and brick masonry surfaces. Ceramic tiles cover the walls behind decantation ponds in the production unit (Figure 4.47 b, c, Appendixes C.3 and C.4).

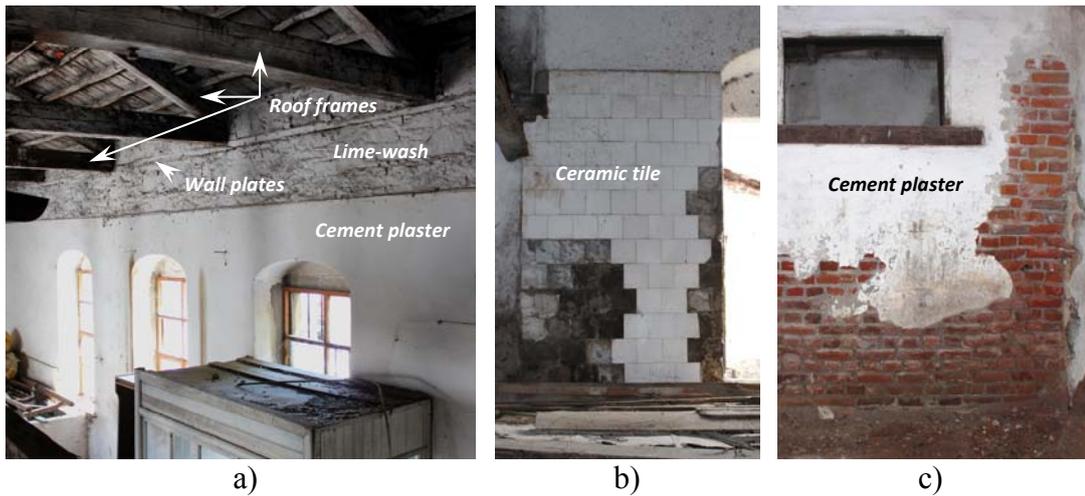


Figure 4.47. a) Plastered surfaces of the production unit (G0-1), b) ceramic-tile cover on the walls behind decantation ponds, c) Plastered brick-wall surface of an administration office (G-04)

Floors: Except for the floors of the northern side of boiler unit and tank space which are compacted earth at present, the lean concrete border (covered with cement plaster) along with sewage drainage adjacent to the decantation ponds at the ground level, all ground surface of the mill building is covered with screed (Appendix C.1).

Roof: Except for the collapsed-roof over decantation area, the major portion of the roof is of gable type which covers the main mass containing production unit (G-01), machinery unit (G-07) and boiler unit (G-08). The roof of administration leaning to the main mass in the south is also gable, but hipped in its northern end. Approximate slopes of the roof surfaces are % 43. All roof surfaces are covered with interlocking type roof tile laid out on roof deck composed of planks nailed on battens in east-west direction (5 x 6 cm in cross section) that are supported by the roof frames (Appendix C.2).

Production unit is spanned with five timber roof-frames, each of which is composed of; two rafters, a stud, brackets (in two directions) and collar ties. Each frame

rests on the wall plates placed in the south and northern walls (Figure 4.48 a, b, Appendixes C.3 and C.4).

Besides timber elements, iron tension-straps (5 cm wide, 0.5 cm thick) are also used as tension members stretched between two rafters (17 cm x 20 cm) of the frame (Figure 4.48 a). Another iron strap is used to connect the stud and tie beam, 17 cm in width and 20 cm height in its cross section with a gap around 10 cm in between (Figure 4.48 b, Appendixes C.3 and C.4).

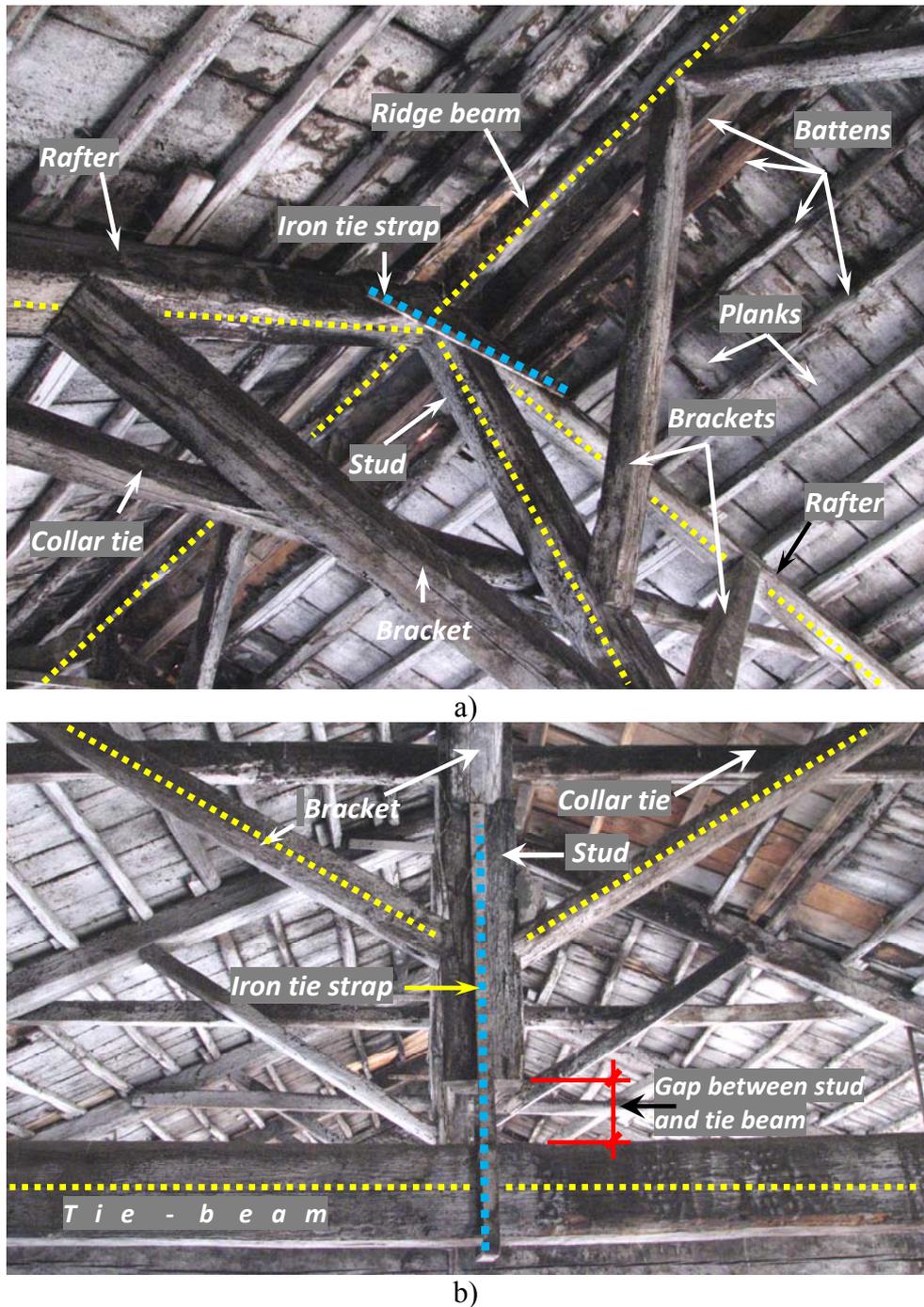


Figure 4.48. a) An axonometric view of the upper part of a roof frame and its components, b) front view of the components of lower part

While resting on the walls, the frames are also supported by four posts (17 x 17 cm in cross section) by means of two pieces of wooden heads fixed to the timber tie beams (Figure 4.49 a, b). The roof continues in east-west direction till end of the machinery unit G-08 (Figure 4.49 c, Appendix C.3) except its intersection with the

gable part of the roof of the northern side of G-08 (highlighted with white dotted line) (Figure 4.50 a).

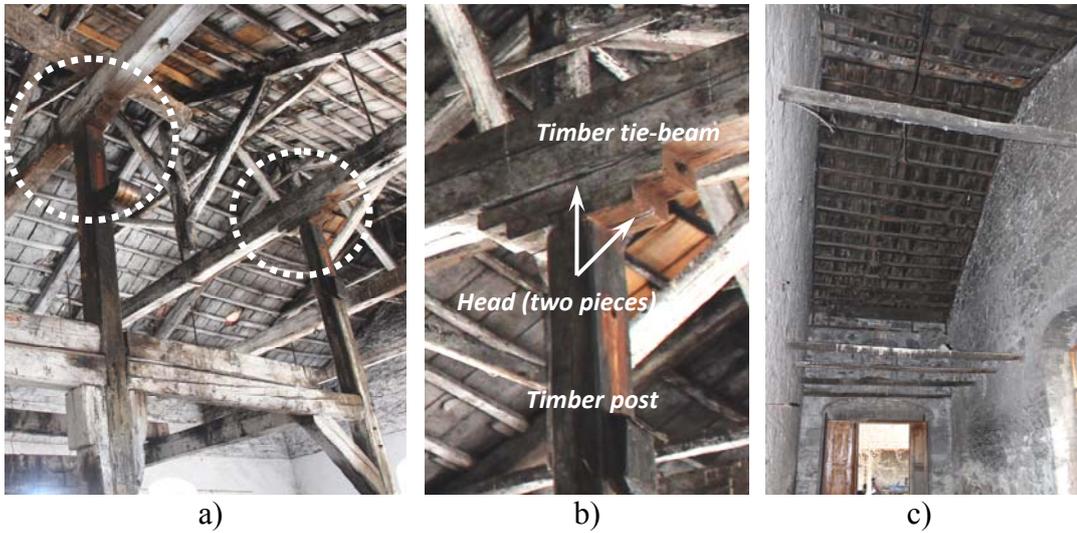


Figure 4.49. a) Frames of the gable roof of G-01 supported by timber posts, b) wooden head of the posts, c) gable roof extension of G-01 over boiler unit G-08 through wooden battens

The hipped roof which covers administration unit (composed of the offices; G-03, G-04, G-05) is constructed of timber frames, battens and planks (Figure 4.22 b, Appendix C.5).



Figure 4.50. a) Intersection of the extensions of G-01 and G-08 gable roofs above boiler unit G-08 (dotted lines in white), b) frames of the hipped-end of the roof above the northern part of administration office G-03

The half of the roof of water-tank unit G-06 is covered with sheets of galvanized steel. The other half is almost open and water tank extends over the walls. A considerable portion of the galvanized sheets that are nailed on wooden battens simply fixed to the walls is missing (Figure 4.51).



Figure 4.51. The roof of water tank unit G-06

4.8. Alterations

Except for the mill building in its current state, the most prominent alteration in the overall site scale is the additions of all closed storage and accommodation units.

In the light of the analyses based on the observations carried out in the mill and the statements by the last owner Nadir Araser, aged inhabitants who remember the mill and worked there in its active days, the alterations that the mill building has undergone are classified on spatial, elemental and material base as; additions, renewals, conversions and missing parts (Appendix D).

4.8.1. Additions

There are three types of additions in the building: mass, element and material additions.

Mass additions: Due to the increase in demand and necessity of increasing oil production capacity respectively, new spaces such as; decantation ponds space (G-02), water tank space (G-06), extended part of boiler unit in the north (G08) and administrative unit (composed of the offices; G-03, G-04 and G-05) were the mass additions carried out because of the change in oil production by the import of steam

engine (in 1927), which yielded in increase both in oil-production and business capacity respectively during Araser Period. The chimney and fume gallery which connects chimney to the boiler unit are the other added masses having importance related to the change in oil production system (Appendix D.1).

Timber floor deck (with its stairs, posts, beams and planks) which covers a quarter of the production unit and named as mezzanine floor in this study, and the wooden office box (assigned for an employee to control the work) with glazing are considered as added-partitions in an existing space (production unit, G0-1) and included in the heading of mass additions (Appendix D.1).

Element additions: In the current state of the mill, elemental additions are examined in two groups, those related to the bases and platforms on which the new equipment were fixed, and others related to construction consequent results of the same change.

The additional elements of the first group are the bases and platforms for; the machinery equipment as steam engine and hydraulic pump, grinder and presses that are made of reinforced concrete besides brick supports (Figures; 4.41 a, b and 4.43 a, b, Appendixes D.1, D.3 and D.4).

One of the two passageways was opened in the northern wall of production unit to access decantation ponds area (G-02) (Appendixes D.1 and D.3). The second passage was opened between machinery unit (G-07) and boiler unit (G-08) (Figure 4.35 a, b, Appendix D.1).

Material additions: As partially noted in the above analyses, of spaces and elements, mostly applied material is the cement plaster and screed in the mill other than those included in the additional masses and elements. Ceramic tiles are used to cover decantation ponds and a certain parts of the walls behind them (Figure 4.47 a, b, Appendixes D.3, D.4 and D.5).

4.8.2. Renewals

Covering material of the roof, which was round tile before, was changed with the interlocking type roof tiles (Marseilles type) in the mill building and other annexes, except for the roof of an accommodation unit by the end of southwestern side of the site (Appendixes D.6 and D.7).

4.8.3. Missing Elements

The roof of decantation ponds unit (G-02) is the most prominent constructional loss in the mill building (Appendixes D.4 and D.7.). Wooden windows in the northern wall of the production unit (G01) (Appendix D.3), the wooden door of the office (G05) in the administrative unit, and glasses of some window panes can be considered as other elemental losses. Although not constructional, but production equipment, such as; steam engine, grinder, boiler, hydraulic pump and hydraulic presses are considered as missing elements which have importance in terms of industrial hardware of the mill.

4.8.4. Conversions

In the western wall of the machine unit, the door which is infilled with brick but with an inclusion of a wooden cupboard is the only converted element in the mill.

Alterations occurred in the mill are also presented in the separate colored drawings (Appendix D.1, D.3 and D.6).

4.9. Structural and Material Problems

Structural problems: Based on observation, there are three problems having potential to cause further hazards in the structure (Appendix E). The first apparent problem is the missing roof of decantation unit (G-02). It seemed that following its collapse, all fallen material of the roof have been taken away likely to be used in another construction since there are no remains on the ground. As well as the ground, which is filled with water in rainy seasons – being a source of raising damp, all walls of the decantation unit are open to the natural conditions at present (Figure 4.52, Appendixes E.1 and E.2.).



Figure 4.52. Gable and side walls of decantation unit remained standing after roof-collapse

The second problem is the damages on brick bonds, and a slight deflection towards the southeast at the top. Both problems visible at present are due to the loosened joints between brick courses above the reinforced concrete frame. As noted previously (*in section 4.5.*), the reinforced concrete frame was included to secure the repair work carried out for this damaged part. As mortar discharges at the previously-repaired portion indicate, improper workmanship caused chimney to be problematic. During this repair, a grounding line for lightning was also installed to the chimney (Figures; 4.27 b and 4.53 a, Appendix E.6).

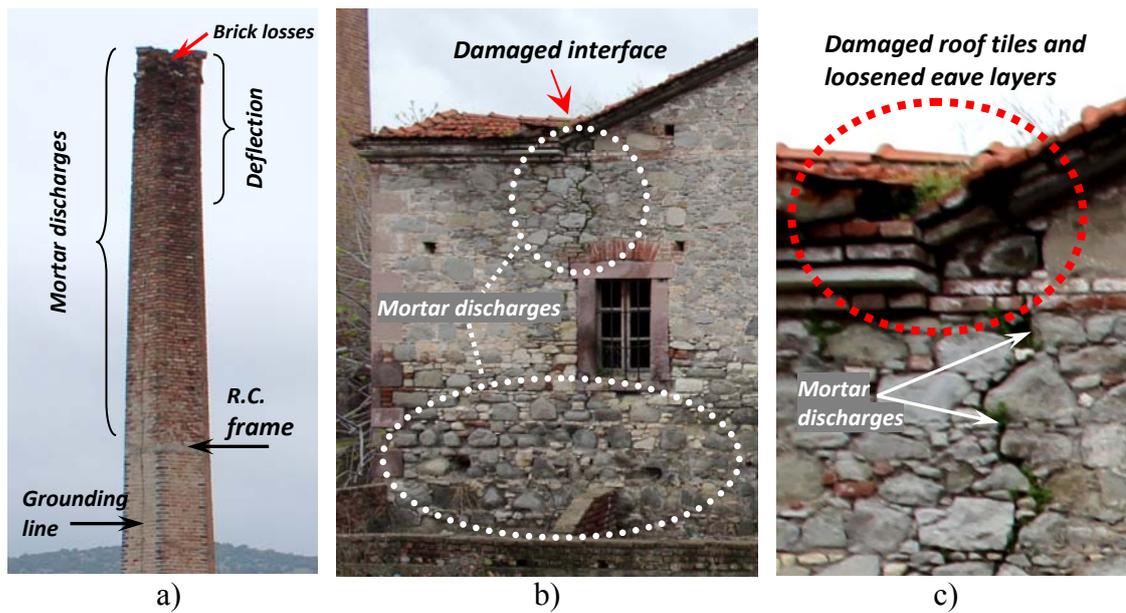


Figure 4.53. a) Mortar discharges and deflection in the upper parts of the chimney, b) mortar discharges in the upper and lower parts of the northern part of the western façade, and c) a view from the loosened interface of the roof edge and inclined eave of the gable roof (Figure 4.50. a)

Seen on the northern part of the west façade, remarkable mortar discharges in the joints of brick / *kayrak* courses in the eaves of the gable roof part and the roof of northern extension of boiler unit G-08, which displays the appearance of crack, and, mortar discharges at the lower parts of the same wall (likely due to the raising damp from the storage bays adjacent to the wall) are considered as the third problem (Figure 4.54. b, c, Appendix E.6). By the observation on the interface of this wall, it is understood that the problem initiated first from the damaged-roof tiles which gave way for water penetration downwards the eaves and the wall structure respectively (dotted line in red in Figure 4.50 a). Comparison of the situations of both faces of the wall indicates that mortar discharges are limited to the exterior leaf of the wall at present, but does not ensure that the problem will not go further, therefore needs intervention.

Material Problems: Detection of the problems that are related to materials are also based on the observation of stone and brick masonry parts, timber components, and the rendering materials such as; mortar, plaster, screed and ceramic tiles, and metal assemblages. The definitions of the material problems observed are described by the

losses, detachments, rusting, discoloration/stain and biological growths (Appendix Appendix E).

As partially noted in structural problems, the major problem is the loss of mortar in the joints of stone and brick masonry since they give way for further serious problems. **Loss of stone** are observed in the eastern walls of the decantation ponds area (Figures; 4.25 and 4.26, Appendixes E.4 and E.7) and administrative units, and in the southern wall of the tank space (Appendix E.3). The **loss of brick** units are seen in the regions where mortar discharges, e.g. top of the chimney, certain portion of fume gallery vault where it joins to the base of chimney (Figure 4.53 a, b, Appendix E.6), and decantation ponds in decantation unit. Regarding loss of material, destruction on the **reinforced concrete platform** of hydraulic presses, which occurred during dismantling of the pressing equipment, is remarkable (Figure 4.43 a, b). As partially noted in the structural problems, mortar discharges in the brick bonds of chimney, northern end of the western wall of boiler unit (defined as **crack** in the wall) olive storage bays (*dökeks*), lower parts of exterior faces of stone walls can be mentioned as material losses in masonry (Appendixes E.6 and E.7). Besides partial losses in stone, brick masonry, reinforced concrete slab and wood components, **abrasion**, another form of material loss, is observed on the cut stone jambs, lintels and sills of the windows (Figure 4.45 b, c, d, Appendixes E.6 and E.7), exterior face of the northern walls of boiler and water tank units. Missing planks on the mezzanine floor deck are the **losses** observed in **wooden materials** (Appendix E.1). Partial loss of the galvanized sheets on the roof of tank unit is also considered as partial loss of materials (Figure 4.51)

Detachments of plasters observed on the walls of; administration unit (G-04) and decantation ponds unit (G-02) (Figures; 4.47 c, 4.54 a, b, c, Appendixes E.4 and E.5). It is due to that the plaster is of cement base. Some losses in the courses of ceramic tiles are also observed on exterior and interior faces of decantation ponds and on the walls behind them in the main production unit (G-01) are considered as detached materials (Figure 4.48. b, Appendixes E.3 and E.4).

Entering the production unit, major problem in terms of appearance is **extensive stain** seen almost every surfaces of enclosing walls (plastered, lime-washed or naked) and timber elements. On the interior surfaces of boiler and especially on both surfaces of the wall between machinery unit and production unit are covered with a thick layer of lubricating oil dark grey in color. Including the surfaces of timber elements of roof and mezzanine floor, similar appearance is due to the oil particles in the air combined with

dust particles over the years (Figures; 4.38 b, 4.39 a, b, 4.48 a, b, 4.42 a, b, 4.49 a, b, Appendixes E.3 and E.4).

Another change in color (mentioned as **discoloration** together with **stain**), which is observed on the lower parts of the exterior faces of walls, is due to the rising damp. Rising damp also gave way for mortar discharges and **biological growths** especially dense in the regions – usually the northern faces which do not get sunlight – of these parts of the walls (Figure 4.54 d, e, Appendixes E.3, E.4 and E.6).

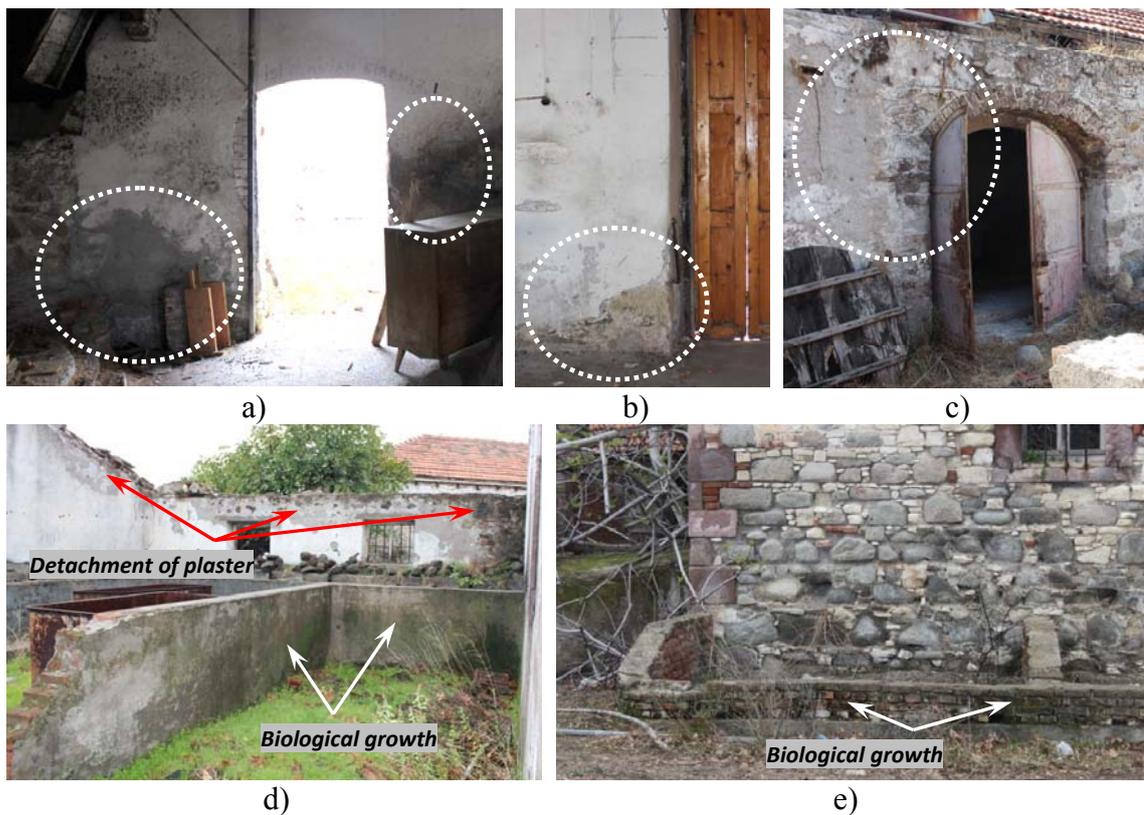


Figure 4.54. a, b, c) Plaster detachments in production and decantation units,
d) biological growth on the damped-surfaces of decantation ponds,
e) mortar discharges and biologic growth on the damped-stone walls of
boiler unit and brick bonds of storage bays (*dökeks*)

The problem of **rusting** is seen at the iron frame which enclose the chimney base (Figure 4.28 a), iron entrance door of administration unit (Figure 4.34), water tank (Figure 4.51) and iron grills in the window openings (Appendixes E.4 and E.7).

4.10. Evaluation of the Mill

The mill always kept its prominence with its socioeconomic and architectural values from the time of its establishment and operation by the Greek and Turkish inhabitants of Bademli. Covering the largest in the village, the current situation of the mill reveals that it functioned well without interference together with the closed and open-air storage facilities and accommodations for workers and staff that were added over time, until the end of its production in 1994. It was a remarkable enterprise for oil production, not only in the village but also in the region in its time.

Besides the well-organized production process and spatial organization respectively, from the layout of the façades (*such as the masonry walls, arrangements of gable walls and eaves of the roofs, doors and windows*) to the construction of timber roof with talented details all of which reflect the neoclassical trends and the achievements of Greek builders of the period, the structure of the mill displays fastidious workmanship in stone, brick, wood and iron assemblages.

In this regard, the high chimney, with its form of conical prism but with hexagonal plan rarely met in the region and elaborate brick bonds makes it a representative industrial-landmark visible from far distances.

Similar to the main building for oil production, attentive workmanship can also be seen in the additional buildings which were built during Araser period by the reason of increase in production capacity.

Despite its abandonment since 1994, the mill survived until today owing to its successful structural layout, sensitive inhabitants of the village and the limited repairs done only when needed. The collapse of the roof of decantation ponds unit, mortar discharges at the upper parts of the chimney and on the exterior face of the boiler unit-western wall can be mentioned as major problems. Mortar discharges in the joints and plaster losses in stone and brick masonry parts, missing windows and doors including their frames and glazing, plant growths, corrosion on iron elements and layer of stain on the surfaces of walls and timber elements are the following problems observed in the mill.

4.11. Comparison with other Mills

For a better understanding of its values and definition of its place among other olive oil mills, Araser mill is compared with nine different mills around Dikili, Bergama, Ayvacık and Birgi. Comparison is done by their site layout, plan and sections supplemented with photographs, number of floors, construction techniques and materials, present situation of production equipment, usage and registration statute (Table 4.1). The outcomes of comparison are as follows;

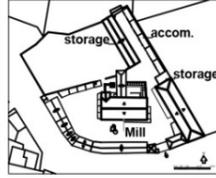
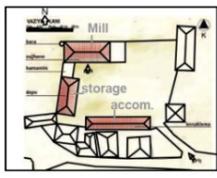
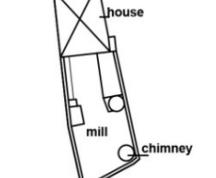
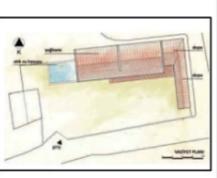
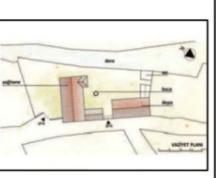
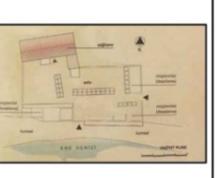
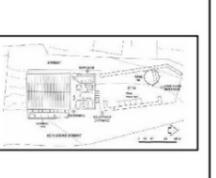
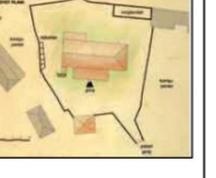
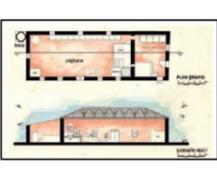
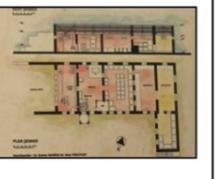
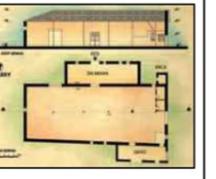
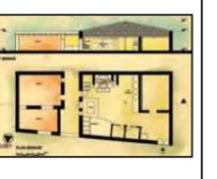
- Besides those, equipment of which is missing, most of the traditional olive oil mills in the region are abandoned and left without protection.
- While the mills around Dikili and Bergama are usually located within the village settlements, others like those around Ayvacık-Küçükkuyu villages are located out of the settlements.
- The mills with high production capacity usually possess courtyards. Their annexes, like closed and open storage facilities, accommodation units, baths and toilets are arranged in the courtyards around production units. Such layouts are observed in the mills around Dikili and Bergama.
- Production and machinery units of the mills with high production capacity are adjacent, but arranged in separate spaces to prevent contamination.
- Majority of the mills in Dikili and Bergama are of single story and built of stone masonry. However, some mills also include mezzanine floors, constructed for the purpose of pouring olives into grinders. Some of the mills in Ayvacık, Küçükkuyu and Altınoluk districts are of double story and built of stone and brick. The mills in Birgi District are of single story and built of stone masonry system.
- Being architectural elements of symbolic value, the chimneys of the mills within the settlements as those in Dikili and Bergama districts are relatively tall not to cause pollution in their neighborhood. They usually have circular cross section. However, the chimney of Araser mill is distinguished from those of others with its 18.60 meters height and hexagonal cross section.
- Except for a few, which have hipped roofs, most of the mills with plain rectangular plan possess gable roofs.

- In general, hardware equipment of only a few traditional mills exists. While some of them are missing, many of them were sold and oil production scheme is predicted only by the traces left behind.

All these inferences reveal that Araser Mill is distinguished from other mills with its;

- central position in a largest area in the village,
- highest production capacity in its active days,
- tallest chimney which makes it a landmark,
- well-preserved spatial layout which gives way to figure out the complete oil production scheme despite the absence of hardware equipment, and,
- well-preserved constructional, architectural and stylistic features which make the mill an important industrial heritage building.

Table.4.1. Comparative study with nearby olive oil mills

OLIVE OIL MILLS	ARASER OLIVE OIL MILL IN BADEMLI VILLAGE, DIKILI, İZMİR	YURDAER TUNAY OLIVE OIL MILL IN BADEMLI VILLAGE, DIKILI, İZMİR	ERCUMENT TOSUN OLIVE OIL MILL IN BADEMLI VILLAGE, DIKILI, İZMİR	OLIVE OIL MILL IN ZEYTİDAĞ VILLAGE, BERGAMA, İZMİR	OLIVE OIL MILL IN SAĞANCI VILLAGE, BERGAMA, İZMİR	OLIVE OIL MILL IN NUSRATLI VILLAGE, AYVACIK, ÇANAĞKALE	OLIVE OIL MILL IN ALTINLUK, EDREMIT, BALIKESİR	ADATEPE OLIVE OIL MILL IN ALTINLUK, EDREMIT, BALIKESİR	OLIVE OIL MILL IN BIRGI, ÖDEMiŞ, İZMİR	OLIVE OIL MILL IN BIRGI, ÖDEMiŞ, İZMİR
SITE PLAN										
PLAN AND SECTION										
PHOTOS										
NUMBER OF FLOORS	SINGLE STOREY	SINGLE STOREY	SINGLE STOREY	SINGLE STOREY	SINGLE STOREY	SINGLE STOREY	DOUBLE STOREY	DOUBLE STOREY	SINGLE STOREY	DOUBLE STOREY
CONSTRUCTION TECHNIQUE AND MATERIALS	STONE MASONRY	STONE MASONRY	STONE MASONRY	STONE MASONRY	STONE MASONRY	STONE MASONRY	STONE MASONRY and BRICK MASONRY	STONE MASONRY and BRICK MASONRY	STONE MASONRY	STONE MASONRY
PRESENT STATEMENT OF EQUIPMENTS	DOES NOT EXIST	DOES NOT EXIST	SOME OF THEM EXIST	SOME OF THEM EXIST	SOME OF THEM EXIST	EXIST	EXIST	EXIST	DOES NOT EXIST	EXIST
USAGE	STORAGE	EMPTY	GARDEN OF HOUSE	OLIVE OIL MILL	OLIVE OIL MILL	EMPTY	EMPTY	MUSEUM and MILL	EMPTY	EMPTY
REGISTERED	NOT	NOT	NOT	LISTING	LISTING	LISTING	LISTING	LISTING	LISTING	LISTING
SOURCE	AUTHOR	Manisa, Kunter and Yerilyurt Bora, 2013	AUTHOR	Manisa, K. and Yerilyurt B., 2013	Manisa, K. and Yerilyurt B., 2013	Manisa, K. 2013	Kibar, A. 2008	AUTHOR	Manisa, K. and Yerilyurt B., 2014	Manisa, K. and Yerilyurt B., 2014

CHAPTER 5

RESTITUTION OF THE MILL

In the light of the information obtained from the mill, interviews with aged inhabitants and the proprietor of the mill Nadir Araser, evidences such as platforms, holes, ponds, pipes of hot / cool water and steam, wastewater discharge conduits *etc.*, that are related to the oil production and to the original mechanical equipment found and documented by the author in Rahmi M. Koç Industry Museum;

- flow-path diagram of olive oil extraction process in the mill is described first,
- relations between the units (where the machinery equipment were placed and run in the past) related to the production process are established, as the ‘industrial heritage’ feature of the mill afterwards.

Other constructional items to be restituted in mass, element and material scales are questioned according to the indicators of their; ‘existence,’ ‘location,’ ‘form,’ ‘material,’ ‘dimension’ and ‘detail.’

The reliability degree for each parameter has been determined by the evaluation of information sources (five in total) descending from high to lower degrees, as; ‘photos – 5,’ ‘the traces in the building – 4,’ ‘oral sources – 3 (accepted as first-hand information),’ ‘comparison within the building – 2,’ and ‘architectural necessity – 1.’ Finally, each item to be restituted is rated according to the total grade they reached, and three reliability grade span, as; ‘1st degree reliable,’ ‘2nd degree reliable,’ and ‘3rd degree reliable.’ Since there was no official record, archival or written information about the mill, historic or written sources are not included in the evaluation for reliability.

They are indicated in colors in the related drawings (Appendixes F and G).

5.1. Olive Oil Production in Araser Mill in the past

Olives harvested in October-December for oil are received at the mill in sacks through the courtyard gate at the southern side of the plot which is the only access to the site are weighed, numerated, recorded and stocked in semi-open storage areas and storage bays, called *dökek*, in the courtyard sequentially according to the owner names. This arrangement is done by a staff member, called *mevdancı*. When the preparations

for oil extraction are ready, the work starts with mill's whistle. Following the control of the water in it, steam boiler is fired with olive pomace (called *pirina*) or wood (Figure 5.1. a). Steam is transmitted to the steam engine, which rotates main pulley (called *kasnak*) first and intermediate pulley (*pomparya*), activating the gear wheels which rotate the stone-crushing wheels (Figure 5.1. b, Appendix G.1).



Figure 5.1. a) Water boiler, b) steam engine, hydraulic pump and the intermediate pulley (*pomparya*)

Crushing (or grinding) mill is composed of double vertical cylindrical stones rotated by gear wheels (Figure 5.2. a) which are activated by intermediate pulley (Appendix G.1).

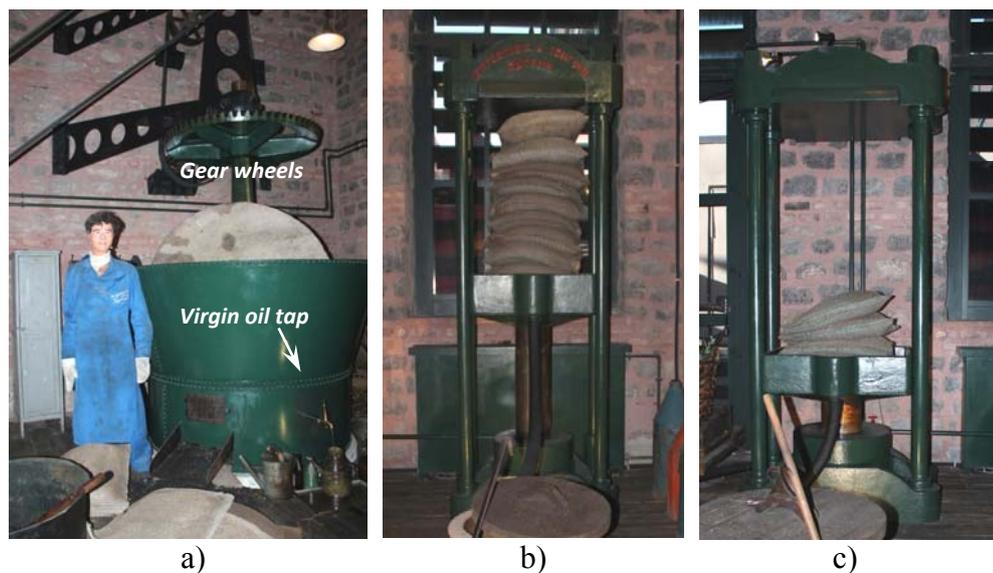


Figure 5.2. a) Crusher (grinder) with double vertical stones, b, c) two hydraulic presses

Olive sacks are brought to the mezzanine floor by wooden stairs, raised to an approximate level of a conical wooden vessel (called *ambar*), from where olives are poured into crushing mill. This carrying job is done by three porters who work in the mill. A staff, called *taşçı*, is responsible for the crushing mill and control of crushing process. Prime (virgin) olive oil, which leaks out during crushing, is collected from the crushing mill immediately by means of a basin called *havza*. It is considered as the most invaluable part of oil named *sızma*. Olive paste, poured into a basin in front of the mill, is taken by another worker, called *kavatacı*, and carried to bags to be filled and used in pressing process.

Olive paste is properly filled into the bags of rectangular shape and piled between the discs of hydraulic presses (Figure 5.2. b) by a worker called *torbacı*. Pressing device runs by water power which is supplied by a hydraulic pump. First press is done dry. Second and third presses are done by the addition of a certain amount of hot water supplied by boiler through hot a water pipe installed to the presses. Fifty bags are pressed at once and each press takes 30 minutes. Mixture of olive oil and vegetation water (called *kara su*) are transferred to the decantation ponds, called *polima*, by wastewater conduits (Appendix G.1).

The oil, mixed with vegetation water is collected from the surface (because of its lower specific gravity than water) in decantation ponds by a worker called *yağcı*. The vegetation water is drained out through the outlets at the bottom of the ponds. The residues left in the bags called *pirina* are sent, usually to Dikili or Ayvalık, for soap production or to be sold as fuel. Following the extraction, collected oil is taken by the farmers, or poured into large earthenware jars and kept in cool and dark storage spaces until sale.

Olive pressing was realized day and night, and in each session twelve pressing operation is done until the end of harvest season (Araser 2014, Öncel 2014, Aydınlı 2014).

5.2. Restitution Phases of the Mill

The information obtained by the examination of the current situation of the mill and information from the interviews revealed that the mill has undergone two periods. The first one, the ownership of which is attributed to a villager of Bademli, although legendary but mentioned as Yannis (Yurtdaş 2014), who first built and operated the mill

and went to Lesbos Island during population exchange in 1922 (Appendix F), and, the second one, to be called Araser period, when the ownership was given to a Turkish migrant Haydar Bey from Thessaloniki Serres upon the same population exchange (Appendix G). After the death of Haydar Bey, the mill was operated by his son, Nail and grandchild Nadir Araser afterwards, being the third generation. Besides the change in production technique, the mill has also undergone wide-scope constructional changes in the second period.

5.2.1. Yannis period

Except the change in ownership and the oil production technique which was based on man power, there is no precise information about the mill in this period. The only information, which was given by Nadir Araser and the aged inhabitants interviewed in Bademli, is that the initial structure was composed of three parts; today's main production unit (G-01 at present), machinery unit (G-07 at present) and boiler unit (G-08 at present), all in the same mass with a 'plain rectangular plan' without any protrusion (Appendixes F.1 and F.2). It is also stated that the olive sacks used to be stacked in front of the mill, implying that there were no open or closed olive storage facilities. Therefore, it is thought that machinery and boiler units (G-07 and G-08 at present) were used likely for oil storage purpose while the main production unit was for oil extraction as was afterwards. It is also stated that, the water supply was provided by the well by means of the pump worked by hand, both of which exist today.

Within this plain-rectangular plan layout, the door and window openings existed in the mill during this period are;

- three doors provided accesses to these three spaces from courtyard, the doors, one of which provides access from main production unit to the space in the west (machinery unit, G-07 at present), and the other one, placed in the western wall this space (infilled and converted to a cupboard later and exists today) gave way to the last space (boiler unit, G-08 at present) (Appendix F.2),
- the windows; seven in production unit (three in the south, two in the east and two windows in the northern walls), the one in the western wall of the last space (having almost same dimensions with others in the production unit), and the top windows above the entrance doors of the last two space (Appendix F.2).

Besides the openings above, decantation ponds in production unit located in front of the east and southern walls, being necessary components of any mill, also existed in Yannis Period.

5.2.2. Araser Period

When the plain mass with rectangular plan defined as the first stage of the mill above is extracted from the overall plan layout that the mill possesses today, it will be recognized that; decantation ponds area (G-02), administration units (G-03, G-04 and G-05), water tank unit (G-06), protruded-northern part of boiler unit (G-08), timber mezzanine floor, platforms for steam engine, grinder and hydraulic presses, the chimney with its fume gallery (because of the requirement of continuous fuel-combustion for boiler to supply steam engine), open, semi-open and closed storage facilities, and accommodations were built during Araser Period (Appendixes G.3 and G.4).

Besides these massive additions in the overall layout of the mill and the site, the passageways, door and window openings added in the mill building are;

- the passageway-openings (without door joinery); in the northern wall to the west of the two windows in production unit and the western wall of machinery unit (G-07) providing connection with boiler unit (G-08) (Appendixes G.4 and G.5),
- the door opening spanned with a segmental arch and a batten door to enter water tank unit (G-06) from boiler unit (G-08) (Appendix G.5),
- the windows; in the western wall of production unit (for passing the belts, chains *etc.* connected to grinding mill) and in the western wall of boiler unit to the north of the existed window (Appendix G.6),
- the open air olive storage bays in front of the east and western sides of the mill are also considered as the latter additions to the mill building (Appendixes G.8 and G.9).

The second period was the last operation period of the mill until the end of oil production in 1994. Following the removal of hardware equipment to the museum in 1999, the mill was totally abandoned and used as warehouse by the neighbors.

As noted at the beginning, these stages have been defined and documented as a separate set of drawings (Appendixes F and G).

CHAPTER 6

RESTORATION PROPOSAL

Araser Olive Oil Mill, having the largest oil production capacity and covering the largest area in the village in the past, has a unique place in the memories of the inhabitants of Bademli Village in addition to its historical, architectural and industrial heritage values. Besides its touristic potential, which was popular with summer holiday, sociocultural activities gain an increasing importance in the daily life of Dikili and Bademli Village respectively in the recent years. Instead of wishing to have facilities with luxury and/or comfort, all activities take place in authentic spaces with modest arrangements by the inhabitants and guests.

As an extension of such activities in Bademli, Araser Mill and its courtyard hosted some of the activities, e.g. an exhibition, discussion panels and a small workshop for children by the permission of the owner Nadir Araser since the last year (Kutlu-Maraş 2014).

Impossibilities in re-functioning, the recent developments in social life of the village, and the public interest which focused on the preservation of industrial buildings and sites in our country have led to the idea of giving a new function to the mill to sustain its life.

While conforming to the internationally accepted principles of preservation, historic, architectural and cultural heritage values of the mill, it is tried to be preserved by the proposal of a new function defined below.

6.1. Sociocultural Activities in Dikili and Bademli Village

As well as its natural beauties and resources such as beaches, bays, and its closeness to Bergama, where important archaeological sites are found, make Dikili an attractive spot at Aegean Coasts in terms of national and international sociocultural tourism. Especially in August and September, it hosts popular artists, players, musicians, writers, and university students who gather in camps and take part in several workshops containing various themes and discussion groups. By the sponsorship of the municipality, plenty of panels, exhibitions, bookstands, concerts, festivals with colorful

parades and other entertainment are performed at Dikili annually (Yenigün 2014, Dikilim 2014) (Figure 6. 1a, b and c).

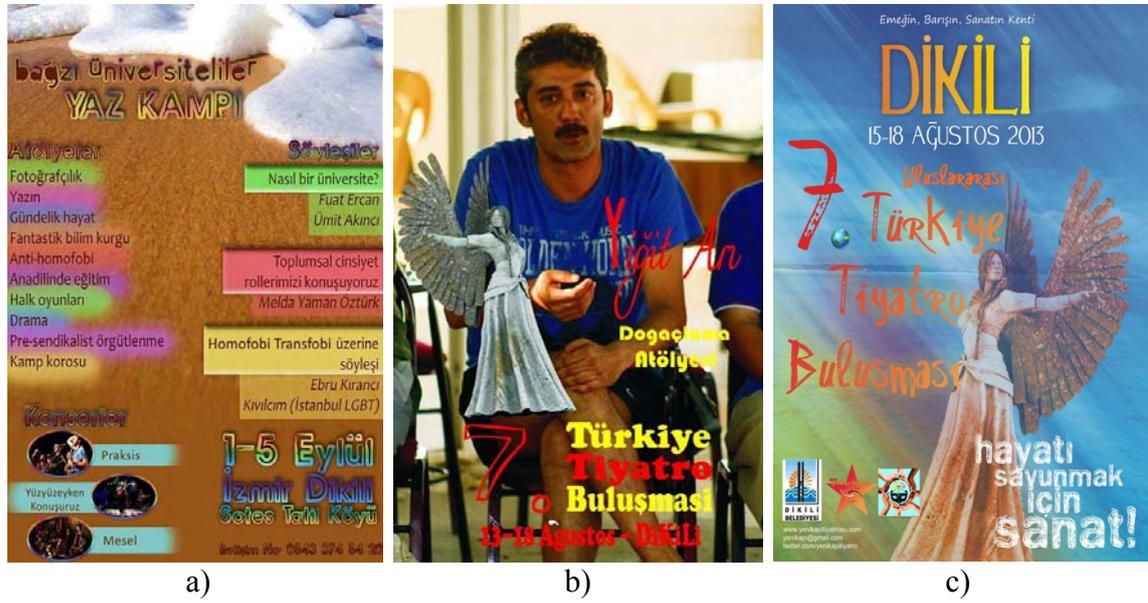


Figure 6.1. Posters announcing the activities realized at Dikili (Source: Üniversiteler 2014); a) a camp for university students containing workshops on different themes, b) workshops with the theme of extemporaneous theatrical play, and c) a play with the title of “the art to defense life”

As a result of friendly relations developed by the mutual visits between Dikili and Lesbos Island of Greece, Dikili is referred to as a “Town of Peace” since 1986. Since then, “Peace, Democracy and Environment Festival” which starts on September 1st and takes four days by the participations of politicians, heads of municipalities and villagers, musicians, writers from both sides and numerous guests from other countries with the wish for a “Global Peace.” These activities are not limited only to Dikili, but constantly expand over the neighbor villages; Deliktaş, Salihleraltı, Yahşibey and Bademli by the collaboration between their inhabitants and especially the heads of the villages.

Owing to its open-minded and intellectual inhabitants, sociocultural activities enliven the social life of Bademli besides ever importance of olive cultivation in its economic life. Festivals which include concerts, theater plays and exhibitions have been organized by “Bademli Kültür Sanat ve Gelişim Derneği (Bademli Culture Art and Development Association),” “Bademli Doğayı Koruma ve Su Sporları Derneği

(Bademli Nature Protection and Aquatic Sports Association)” in addition to “*Camiyi Koruma ve Yaşatma Derneği* (Association for the Protection and Sustenance of the Mosque).”

By the efforts of these associations “*Bademli Çevre ve Yaşam Hakları Festivali* (Bademli Environment and Living Rights Festival)” were realized in August, 2014. Within the festival program; a camp for international students which contained several workshops as architectural and graphical arts and discussion groups on the current issues such as education, environmental and sociopolitical problems at global and national levels, two concerts, and an exhibition have been organized in Bademli.

One of these concerts was performed by the Turkish Rock Group “*Bulutsuzluk Özlemi*” with the theme of “*Çevreme, özgürlüğüme ve yaşam haklarıma dokunma* (Don’t touch my environment, freedom and living rights)” (Figure 6.2. a, b). The other one was performed by “Dikili Turkish Classical Music Chorus.” Both concerts were performed in an area, which was formerly used as dumping ground of the village by a thorough cleaning and arrangement.

All these jobs are carried out by the efforts of inhabitants, vacationers who come for summer period guided by the head of Bademli, and partial support of Dikili Municipality (Kutlu-Maraş 2014).



a)



b)

Figure 6.2. Posters announcing the activities realized at Dikili (Source: Üniversiteliler 2014); a) a camp for university students containing workshops on different themes, b) workshops with the theme of extemporaneous theatrical play, and c) a play with the title of “the art to defense life”

As a certain part of the activities above, small discussion panels (sometimes with invited speakers) (Figure 6.3. a and b), a workshop with the theme of environmental consciousness designed for children (Figure 6.3. c) and an exhibition of group paintings were realized in the courtyard and in one of the storage buildings of Araser mill (Figure 6.3. d).



Figure 6.3. a) An inhabitant of the village is delivering his speech about the problems and suggestions for the future of Bademli, b) participants (mostly inhabitants), c) a workshop with the theme of environmental consciousness designed for children, and d) an exhibition of group paintings in the storage building to the east of the mill

There is another workshop organized at Yahşibey Village since 1983. Realized by the participation of the students of architecture and graphical design, the groups of this workshop are conducted by a well-known Turkish architect Nevzat Sayın. A similar workshop is also planned to be organized at Bademli in collaboration with Yahşibey teams next year. The organization of a “women bazaar,” where the villagers will find the opportunity to sell their own handworks and “homemade productions” prepared with organic crops, is also planned to be realized in summer in 2015 (Kutlu-Maraş 2014).

6.2. Proposal for Araser Mill

Olive cultivation and oil production is the major mainstay which shapes the life of inhabitants of Bademli and other villages around for a long time. By the development

of new oil production techniques, so called “continuous systems,” which give way to faster olive oil production, the old mills which were operated by manpower lost their feasibility and were replaced with contemporary factories or abandoned, as happened to Araser Mill in Bademli. However, olive and olive oil production never lost its vital importance. Moreover, the preference of olive oil consumers has tended to turn back to the products obtained through classical processes other than factory productions. Although work with limited production capacity at present, some olive oil mills are re-operated with minor modifications and gain popularity recently, e.g. Adatepe Mill, as mentioned at the beginning of the thesis. In this respect, traditional olive oil mills may have to be evaluated in a different way from other abandoned industrial buildings totally lost their availability in terms of their past-products (Manisa 2013).

6.2.1. New Function

Reflecting the most important socioeconomic aspect of the village in the past, the mill covers the largest area in the village together with its; large courtyard, olive stock areas and semi-open units, oil production unit, storage depots, worker dorms and other service spaces. As the area of the accommodations for workers implied, the mill employed great number of workers in its active days and has left long-lasting traces in the memories of the Bademli and neighborhoods in terms of economic life there.

Except for the change in machinery hardware in 1927 from manpower to steam power and addition of some offices and decantation unit, the original core of the mill building was not subjected to substantial changes as the observations carried out in the mill, evaluation of the current traces, and the statements of the owner and aged inhabitants revealed. By the considerations of internationally accepted preservation principals (Burra Charter 1999) and those declared on industrial heritage (Nihny Tagil 2003), the overall evaluation of the current state of the complex and the recent sociocultural trends in Dikili and Bademli respectively, Araser Mill has been determined to be used as a cultural complex including a museum of olive oil and exhibition places utilizing closed, semi-open and open air spaces besides the production unit.

6.2.2. New Layout

In the overall layout, the mill building and its latter additions of decantation area and administration units, is determined to be the center of the cultural complex (Appendix H.3). Besides the open spaces at present other annexes, including open, semi-open and closed storage facilities and accommodation units, will also join as supplementary spaces fit with the new function (Appendix H.2.).

The production unit (G-01) is determined to be an olive oil museum where olive and olive oil equipment, tools, utensils and other goods of memorial value for the inhabitants will be exhibited (Appendix H.3).

The information about the history of the village, background of olive and olive oil culture, including oil production techniques will be depicted on lightweight panels, 1.20 / 1.50 m in size, and hung with transparent ropes to the timber frames of the roof and fixed to the ground (only to prevent panels from swinging) with the same transparent ropes tied up to the movable weights placed on the ground. Mezzanine floor will be a place where the panels, which give written and illustrative information about the historical and cultural features of Bademli village and transparent display-boxes which contain small scale objects related to the same theme (Appendixes H.4 and H.5).

The bases, platforms and the traces belonging to the equipment used for oil process will be kept in-place along with freestanding explanation-panels. On these panels, information about the features of devices and their function in the overall process will be given with photographs, flow diagrams and verbal descriptions. In addition to these, small objects will be displayed in transparent boxes set on portable stands together with explanatory plates (Appendixes H.4 and H.5). In this connection, following the renewal of its roof, **decantation area (G-02)** will also be used as the continuation of the museum space G-01, but to display large and heavy objects to be placed on the wooden base-plates put on the ground (Appendixes H.3 and H.5).

While exhibiting the bases of the equipment placed on them in the past, **machinery (G-7)** and **boiler (G-08) units** will be used also as exhibition spaces for group paintings and photographs (Appendixes H.3 and H.4).

Administration offices (G-03 and G-04) are decided to serve as café to the guests for a short rest offering beverages during their visit. The space G-05, which was used as lavatory and possessed water installation before the abandonment of the mill, will also serve for the same purpose by the improvement of its installation with the addition of

new basins and closets. Similarly, **water tank unit (G-06)**, and the steel tank with its installations to the well in the courtyard will also be improved to reserve and supply water for café and lavatory. Other outlets to the production unit will be nullified (Appendixes H.3 and H.6).

As the continuation of the same ambience, the **closed-oil storage units**, in the east (Figure 6.3. d) and the other in the north of the mill, are assigned as exhibition halls for larger scale exhibitions (of painting, photography, *etc.*) while displaying themselves with their huge baked clay oil jars slightly embedded in the ground and steel oil storage tanks on the concrete platforms. The last two spaces in the north will be reserved as depots for chairs, tables and other goods to be used during the activities held in the complex (Appendixes H.2 and H.9).

Following the completion of the roof and repairs inside, the rows of brick-built cells which were used as **accommodation units for seasonal workers** in the past, are determined to be used as a local ‘women bazaar’ where homemade products produced by the inhabitants will be sold. The idea is already in the agenda of the village inhabitants as noted previously (Kutlu-Maraşlı 2014). The space in the northern end will be utilized as lavatory (Appendixes H.1 and H.2).

The spaces located along with the south-southwestern periphery wall of the site, which were used as **accommodation units for workers** in the past, will be used as a café, workshops which have been used for the same purpose in the last few years (Figure 6.3. c.), semi-open exhibition spaces and a sales room Appendixes H.1 and H.2). The building with double-story in the east of the main gate will be assigned as a lodgment for a permanent security staff, which has also been used for the same purpose. A small office will be formed in the ground floor as a check-point. The second building, also with double-story in the western side of the entrance, will be used as an information office at the ground floor and an administration office at the first floor. The space in the farthest end of the southwestern wing will be used as a lavatory unit (served for workers in the past) to serve during open-air activities (Appendixes H.1 and H.2). Regarding the open areas, the courtyard in front of the mill building will be used as an area of meeting for discussions, open panels and other occasions for pleasure or ceremonies. As noted previously, this area has already been used for the same purposes (Figure 6.3. a, b, Appendix H.1).

The other open and empty area (without trees) in the northwest is considered to be a suitable yard for concerts, plays *etc.* held at the old dumping ground of the village in the recent years (Figure 6.2. a, b, Appendix H.1).

As shown on the restoration project, the trees of olive and almond trees, both identical to the region, will be planted at suitable spots, and the rest of the area will have grass. The connection between the units and other open spaces will be provided by means of simple paths formed with slate stone slabs, also unique to the region (Appendix H.1).

Within the frame of the concept proposed above, interventions to be carried out in the mill and other units are defined below.

6.2.3. Intervention Decisions

Except for the interventions to be carried out according to the new function, there are some problems in terms of structure, or material problems which may cause much more serious problems within the structural fabric have been given under the heading of “urgent interventions.” The rest, defined as “further interventions” to be carried out here are determined in favor of the new function proposed above.

6.2.3.1. Urgent Interventions

As noted in Chapter 4, section 4.9, the damaged and deflected uppermost part of the brick-built chimney is the most visible structural problem in the overall appearance of the mill (Figure 4.54. a). The repair of this part, with brick and mortar compatible with the original ones, and improvement of grounding line of the chimney are considered as the most urgent items to be intervened.

In its current state, decantation area (G-02) is entirely open to the natural conditions. As well as its ground, the screed cover of which is totally damaged, decantation ponds act as water-saturated and water-filled and long-lasting dampness sources. Dampness problem displays itself by biological growths, besides; mortar discharges, plaster losses, dark grey wet bottom parts of the masonry walls and weakening of wall fabric observed at the upper parts (Figures; 4.45. b, 4.53). Therefore, construction of a new roof is unavoidable for decantation ponds area G-02. The remnants of rows of eaves and roof tiles on the edges of the gable and side walls, and

the traces of the collapsed roof where it leaned to the northern wall of production unit clearly underline the contours of the roof to be constructed above this space (Figure 4.27 see 4.53). By following these contours, the new roof will also be supported by timber frames and covered with interlocking tiles as the technique employed in the roofs of other parts of the mill. However, roof tiles will resemble existing ones but with slightly different in profile (easy to obtain in the market today) to be distinguished from original roof covers of the other parts since it is going to be a new application. Besides, the remaining portion of the eaves will be kept, completed with the same materials, but with a slight protrusion from the contours of original eaves. Thus, while sustaining the use of original materials and techniques, the renewals which are suggested for this space would have been implied without causing confusion with original parts conforming to the principals of Venice and Burra Charters (Venice Charter 1964, Burra Cahrter 1999).

Mortar discharges, which appear as a crack on the exterior face of the northern part of boiler unit-western wall, and those seen in the rows of eave are the third problem to be considered together and urgently intervened (Figure 4.54. b, c). As noted in section 4.9, discharges are limited to the eaves and exterior leaf of this problematic part, therefore it was determined that the problem was due to rainwater leaks from damaged part of the roof (Figure 4.51. a). Following the repair of the eaves and refilling the discharged joints with a mortar mixture compatible with the original one, the intersection between the 'hip-ended gable part' and the continuation of the northern face of the gable roof of boiler unit will be repaired by the renewal of decayed wooden elements and the broken tiles. These works must be carried out after checking the depth of discharges and the situation.

Although considered for the mostly-damaged parts above, mortar discharges in the joints of stone and brick masonry, and material losses such as stone and brick units in the walls respectively are also considered as important problems. The composition of repair mortars should be compatible with the original ones, to be determined by laboratory analyses. As well as discharged joints, the completion of lost stone and brick units will be done by the new repair mortar after cleaning the joints from weakened mortar residues.

6.2.3.2. Further Interventions

Interventions to be carried out following the urgent ones are grouped as; removals, cleanings, completions, repairs, and installations:

Removals: Damage, caused by cement applications is observed as disintegration and detachment of layers from brick and stone surfaces on walls including the decantation ponds and open bays for olive storage. The hazards that cementitious applications caused extended over the masonry materials of stone and brick (Figure 4.55. a, b, c). Therefore the removal of all cement-based applications is considered necessary. Although it was cement-based plaster, the plastering of the walls (completely or to a certain heights) is considered to be applications in the past. Therefore, following the removal of cement plaster, repair of joints (if needed) and cleaning the surfaces with hard plastic brushes, lime plaster will be applied to the original heights. Since they were fixed on cement plaster, ceramic tiles (faience) will also be removed, but will be renewed and fixed with hydraulic lime on their previous places.

The screed, which contains high amount of cement and therefore being the source of soluble salts which cover all ground surfaces of closed spaces with considerable damages in many parts, will be removed. From the statements of the last owner Nadir Araser, it is known that the ground was of compacted earth in the Yannis Period. During the enlargement of the mill all ground surfaces of closed spaces were covered with screed. Therefore, following the removal of screed layer, the opened surfaces will be insulated by laying waterproof bituminous sheets, and screed layer will be renewed. Waterproof layer will be bent along the bottom of the walls to a certain height (not more than the thickness of new screed layer) to prevent them absorbing water-soluble salts from the screed. Instead of using a new material, screed is also accepted as an application material of a certain period, but its harm would have been neutralized.

Cleaning: The wall surfaces which are covered with layer of stain composed of dust and oil particles will be cleaned by using hard-plastic brushes as possible as it could be. No insistence is recommended for a thorough cleaning. The same attitude will also be available for the stained wood surfaces. Different from masonry surfaces, wood materials will be applied with a convenient solution by brush against insect and fungal attacks following cleaning. Rusted iron and steel surfaces will be cleaned with suitable methods without harm. After cleaning, they will be protected with rust-proof paint and

then will be painted with their original colors. Missing, broken and lost metal elements will be completed with the same material, size and details.

Completions: Following cleaning work, partial losses in the walls, lost frames and panes (with and without glazing) of original door and window joineries, and lost planks of mezzanine floor will be completed with the materials compatible with the original ones.

Repairs: Problematic part of boiler unit roof and damaged eaves, and the roof of water tank unit will be repaired with materials compatible with the original ones. Although partially mentioned above, the demolished and rebuilt uppermost part of the chimney and damaged vault of fume gallery will be repaired with materials similar to the original materials. The grounding line for lightning existed on the chimney will also be improved. Infilling discharged joints with suitable mortar can also be mentioned as a repair work here.

Installations: Surrounding the buildings, a drainage system is proposed to prevent rising damp from the ground. As noted in the 'new layout' above, the existing well will be activated. Water tank in space G-06 and the connection between the tank and well will be improved. Except for the one which supply water for the proposed-lavatory unit, other outlets to the production unit will be nullified. A submersible pump will be placed in the well to provide water regularly.

The existing power supply system will also be improved for lighting and heating the spaces. Lighting and heating will be provided by means of movable devices.

Following the completion of the above works, thorough observations and the permanent maintenance which cover all components of the complex should be considered as a fundamental responsibility, as pointed out in Venice, Nara, and Burra Charters (Venice Charter 1964, Nara Charter, Burra Charter 1999).

CHAPTER 7

CONCLUSION

Even if they lost their function of production, industrial buildings and sites are accepted as evidence, which reflect socioeconomic, architectural and technological features of the periods they were constructed. As noted at the beginning of the thesis, having no difference from other historical monuments under protection, they are also considered as heritage buildings to be preserved and clearly defined in the charter of TICCIH (The International Committee for the Conversation of Industrial Heritage) which was declared at Nizhny-Tagil (Nizhny Tagil 2003).

In this context, Araser Olive Oil Mill Complex, as the oldest one among the four in Bademli Village and reached today by reflecting significant features of olive culture of the region and architectural values of its period, is determined to be studied as an industrial heritage building.

Built at the beginning of the 20th century by the Greek citizens who used to live in the village, the mill was enlarged and increased its production capacity by the new owner who undertook the operation by the population exchange in 1922. Having the features of both periods, the mill is always an important figure in the memories of Bademli inhabitants representing olive culture which was, and still, the main source of livelihood for the region.

The current situation, architectural features, structural and material problems and the alterations that Araser Mill has undergone are examined in detail. The overall evaluation was done by; the consideration of the geographical and social environment, the area where it took place and the information obtained through interviews with the last owner and aged inhabitants who remember active days of the mill. In addition, the hardware equipment donated to the Rahmi M. Koç Industry Museum in İstanbul, were found and documented through a photographic work by a visit in December, 2013. By the help of this documentation, the entire olive oil production scheme, which is an indispensable characteristic of such an industrial heritage, could be regenerated visually, conforming to one of the essential issues declared by TICCIH Charter (Nizhny Tagil 2003).

In terms of its central location, the area it covers, and especially architectural and historical values it possesses, the mill has a great potential to be preserved with a new function. By the consideration of intellectual inhabitants of Bademli, who are willing to give hand for any innovation for the village and gradually increasing cultural activities and encouraging vision of Dikili Municipality, a restoration project which suggests the mill to exhibit itself while hosting such activities with the contribution to the social, cultural and economic vivacity of the village.

As noted in the previous section, while proposing the new function, historical, architectural and cultural values of the mill have been carefully considered when taking the decisions of interventions to be carried out.

The conversion of increasing touristic potential in Dikili and Bademli into a branch of tourism which contributes to olive oil culture in the region will be an important attempt in the development of cultural tourism for other villages to be continued in winter. In this respect, the restoration of Araser mill will be a motivating example for other abandoned olive oil mills in the region.

Finally, registration of such an invaluable industrial building is determined to be unavoidable.

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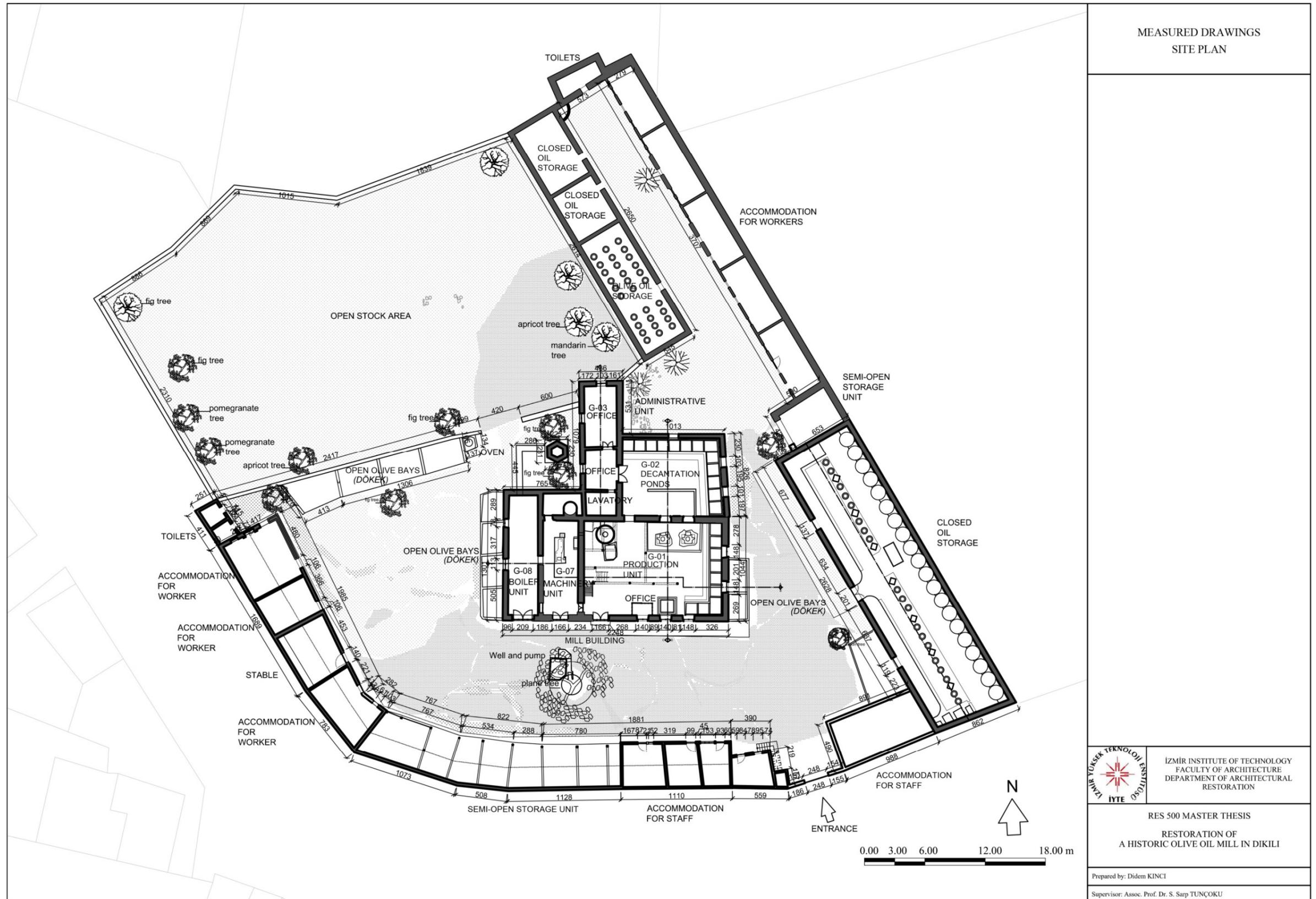
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APPENDIX A

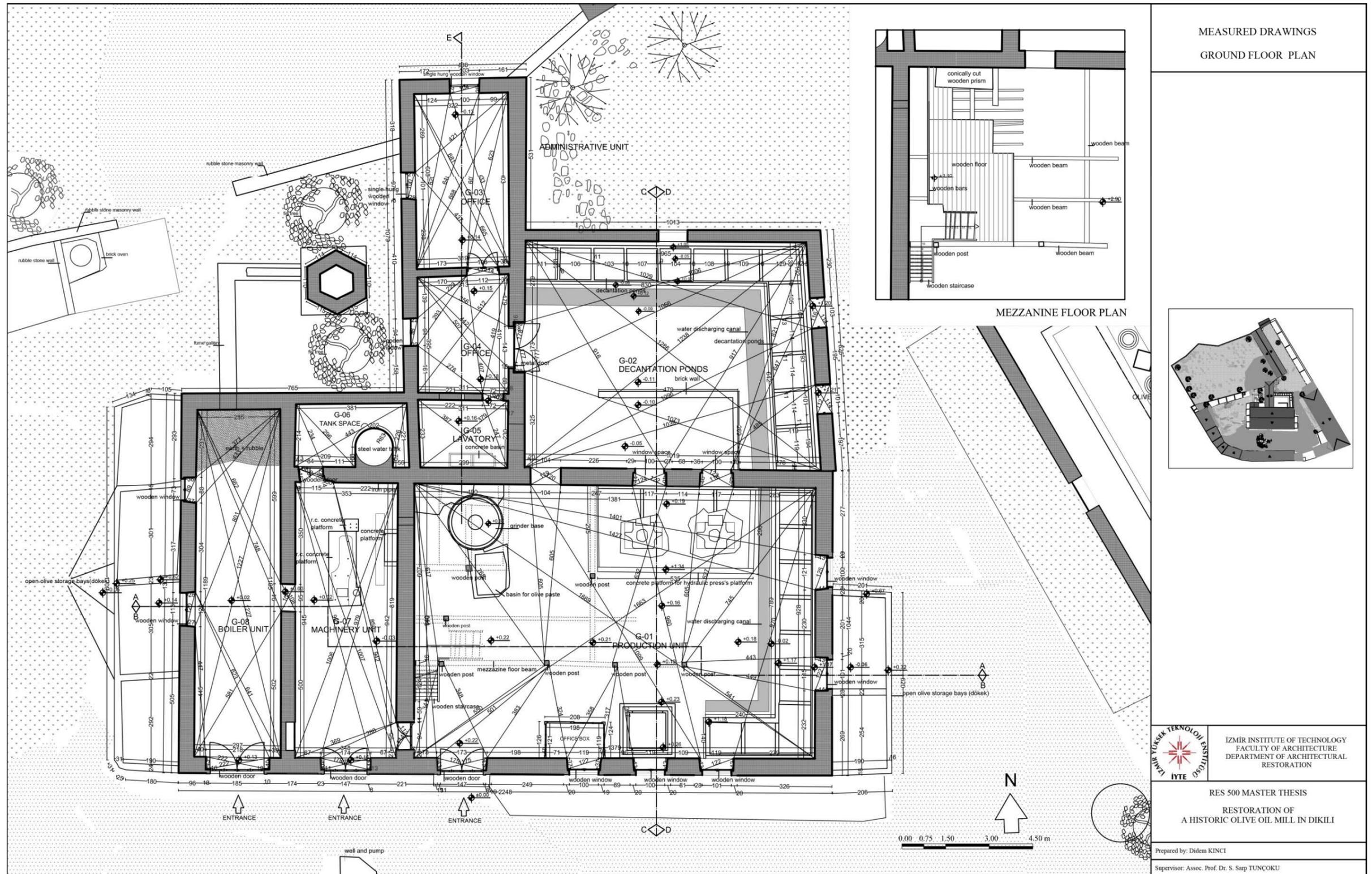
MEASURED DRAWINGS



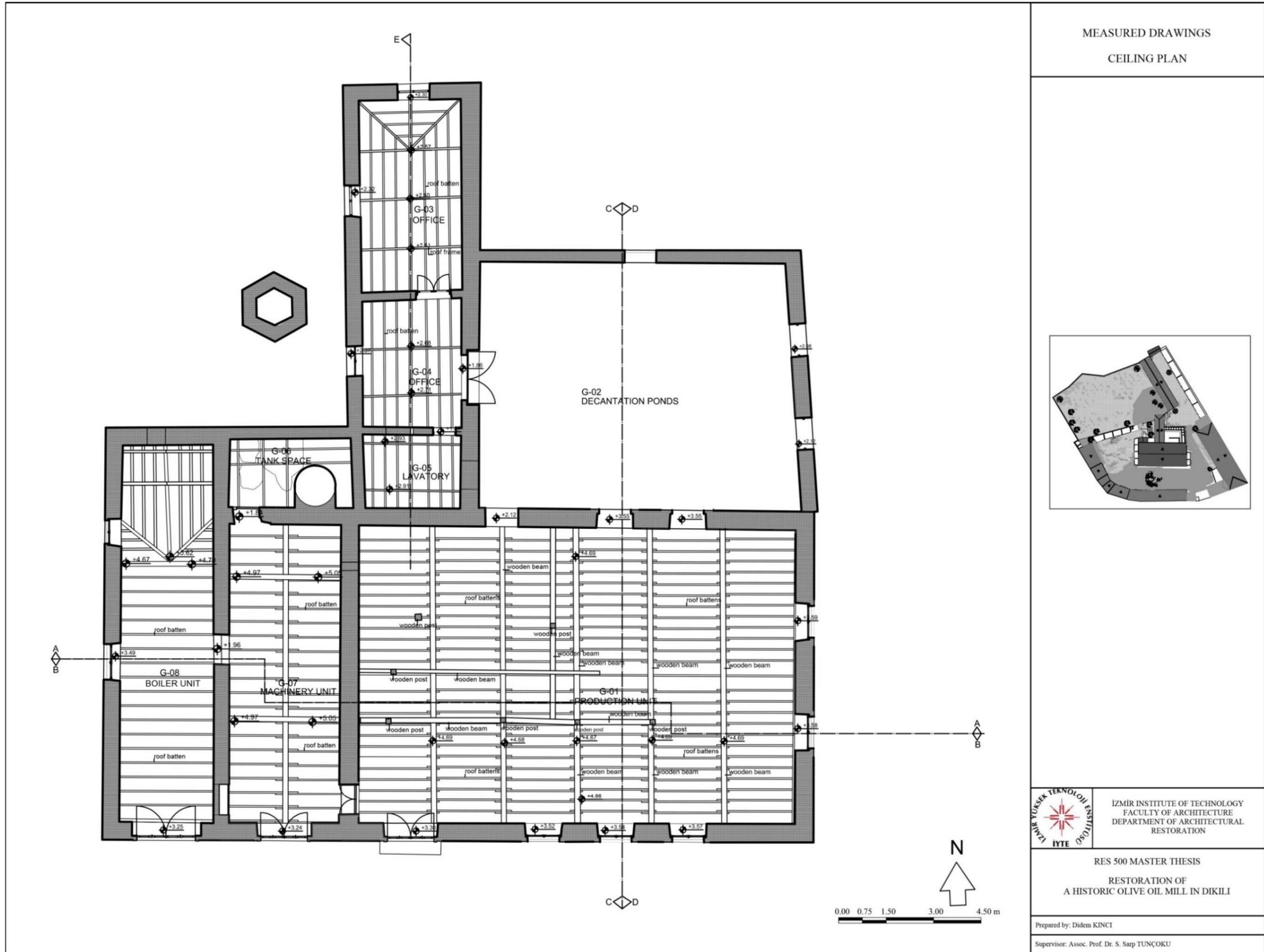
A.1. Measured drawings- Site Plan



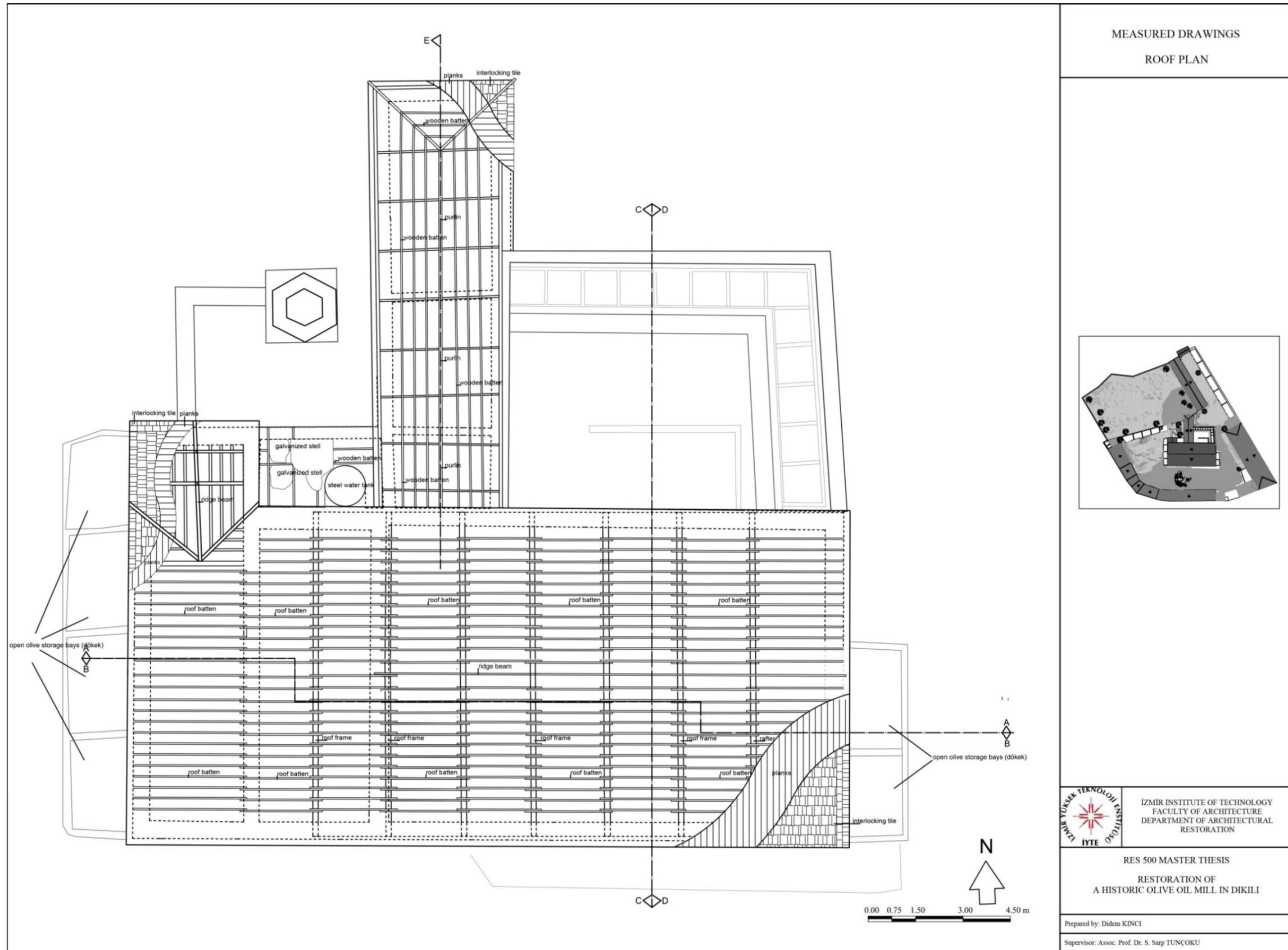
A.2. Measured drawings- Site Plan



A.3. Measured drawings- Ground Floor Plan

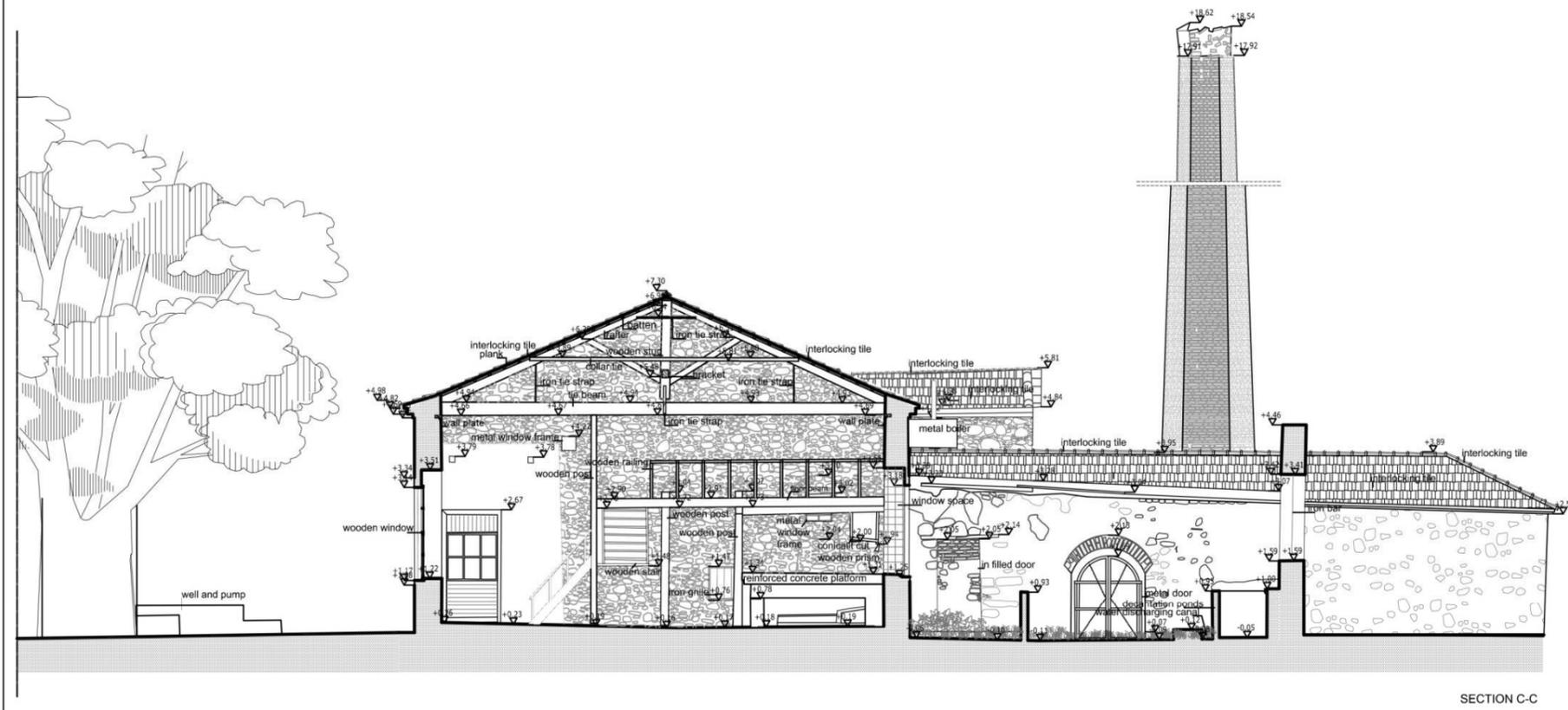


A.4. Measured drawings- Ceiling Plan

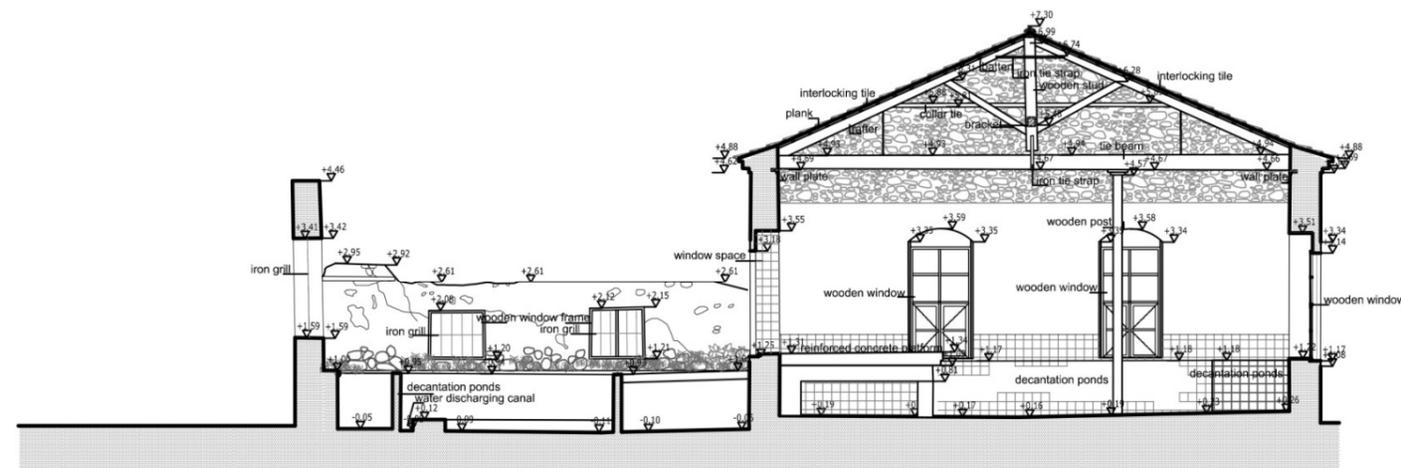


A.5. Measured drawings- Roof Plan

MEASURED DRAWINGS
SECTIONS



SECTION C-C



SECTION D-D



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RESTORATION

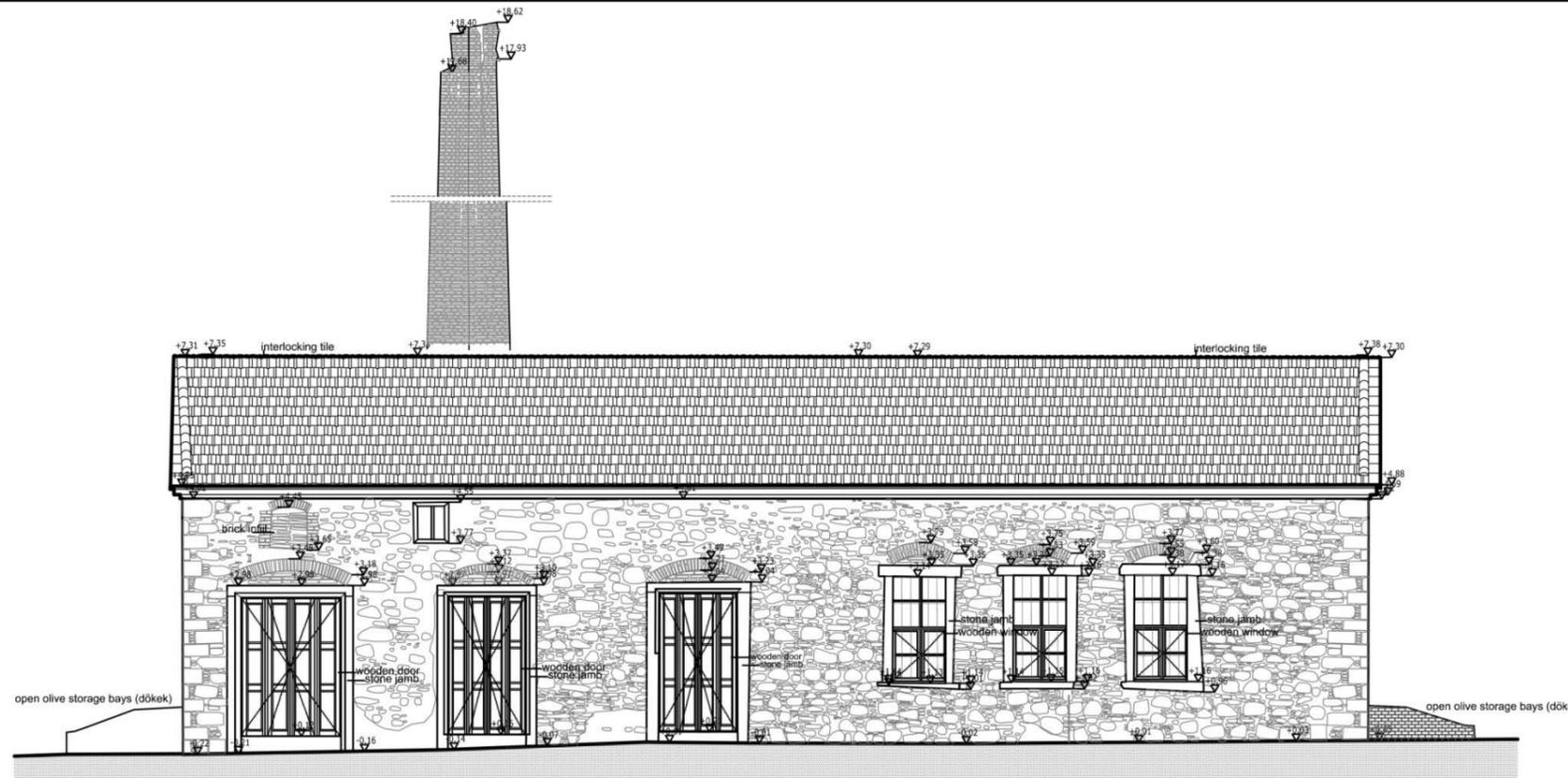
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RESTORATION OF
A HISTORIC OLIVE OIL MILL IN DİKİLİ

Prepared by: Didem KINCI

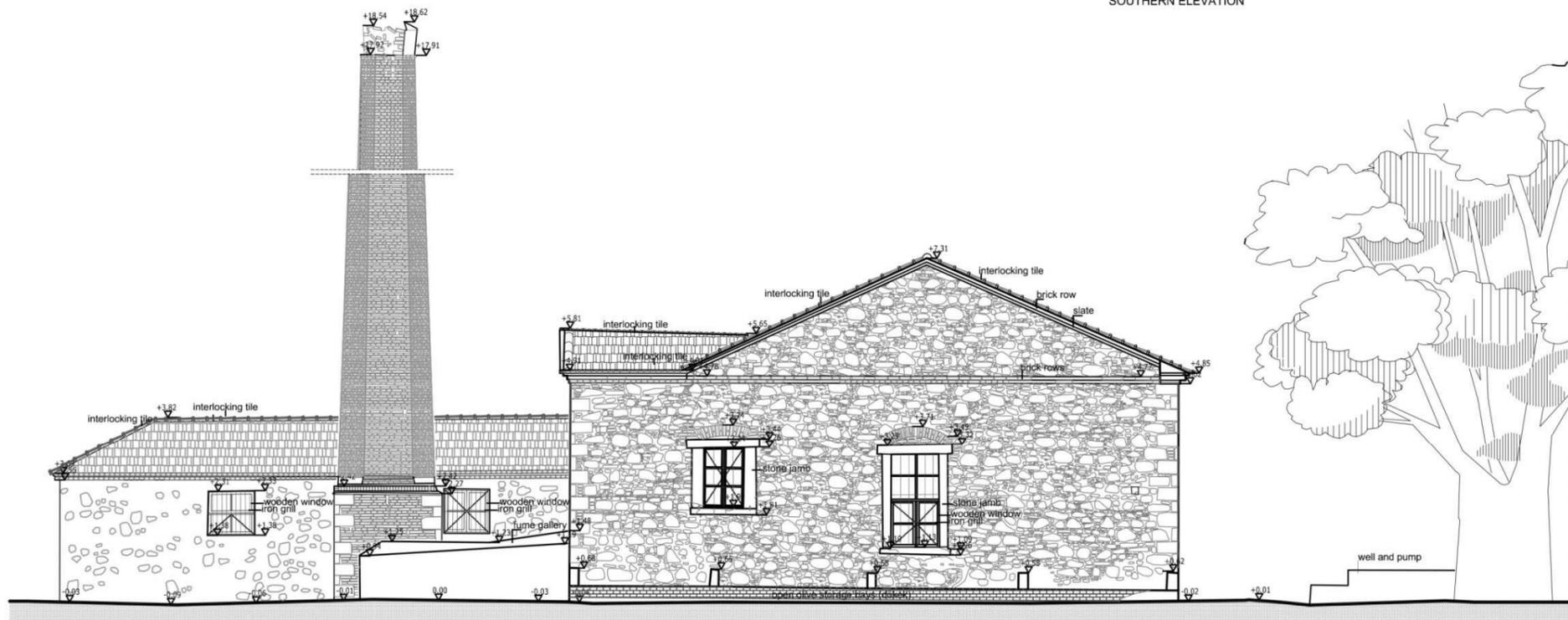
Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

A.7. Measured drawings- Sections C-C and D-D

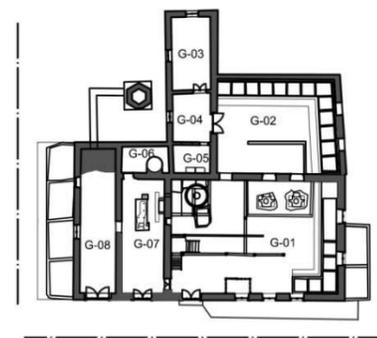
MEASURED DRAWINGS
ELEVATIONS



SOUTHERN ELEVATION



WESTERN ELEVATION
0.00 0.75 1.50 3.00 4.50 m



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RESTORATION

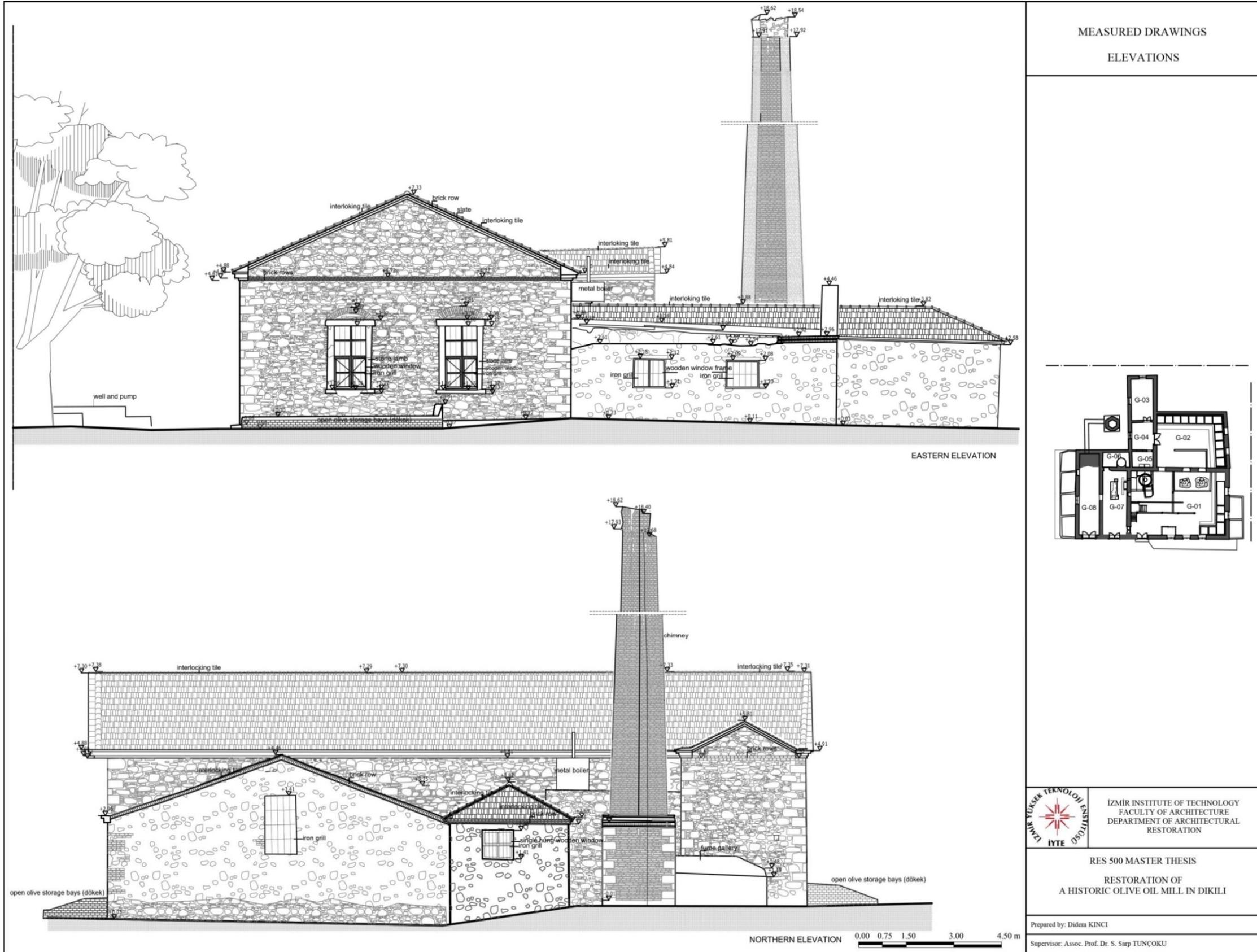
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RESTORATION OF
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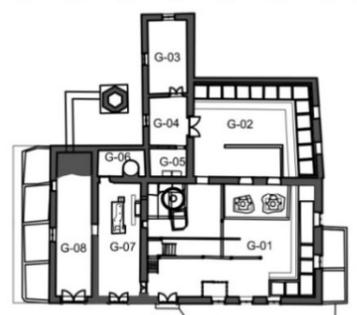
Prepared by: Didem KINCI

Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

A.9. Measured drawings- Southern and Western Elevations



MEASURED DRAWINGS
ELEVATIONS



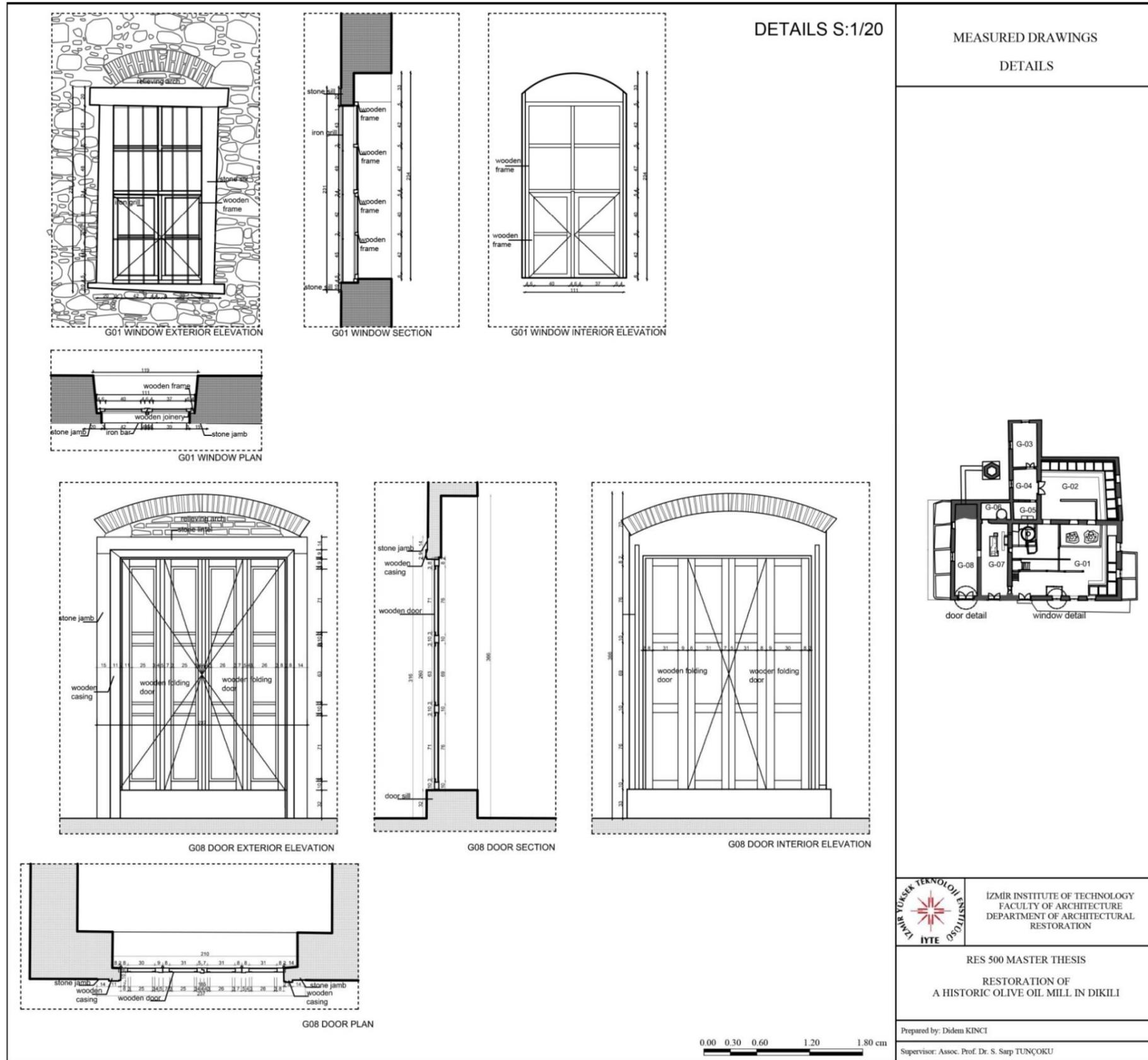
IZMIR YÜKSEK TEKNOLOJİ ENSTİTÜSÜ
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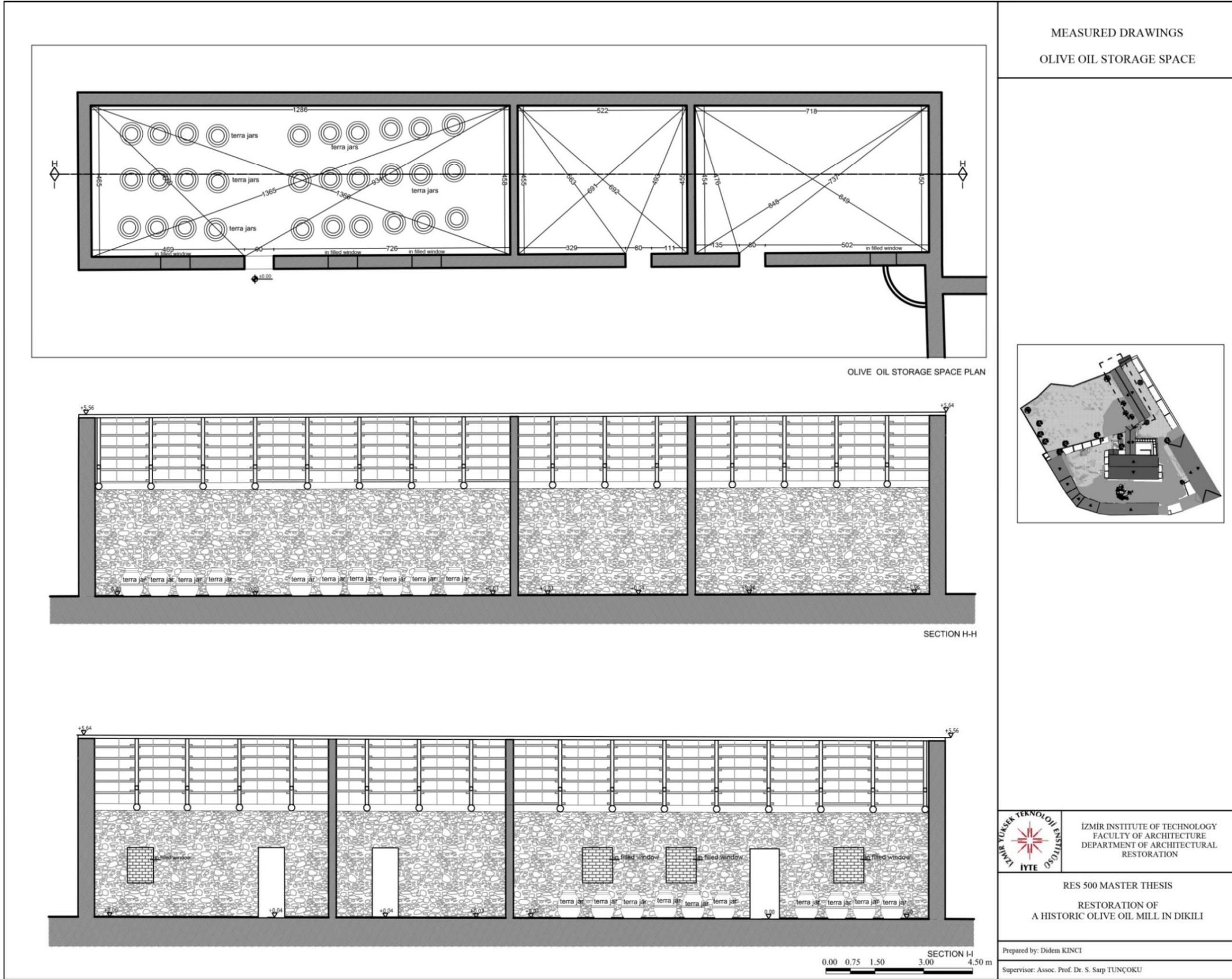
RES 500 MASTER THESIS
RESTORATION OF
A HISTORIC OLIVE OIL MILL IN DİKİLİ

Prepared by: Didem KINCI
Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

A.10. Measured drawings- Eastern and Northern Elevations



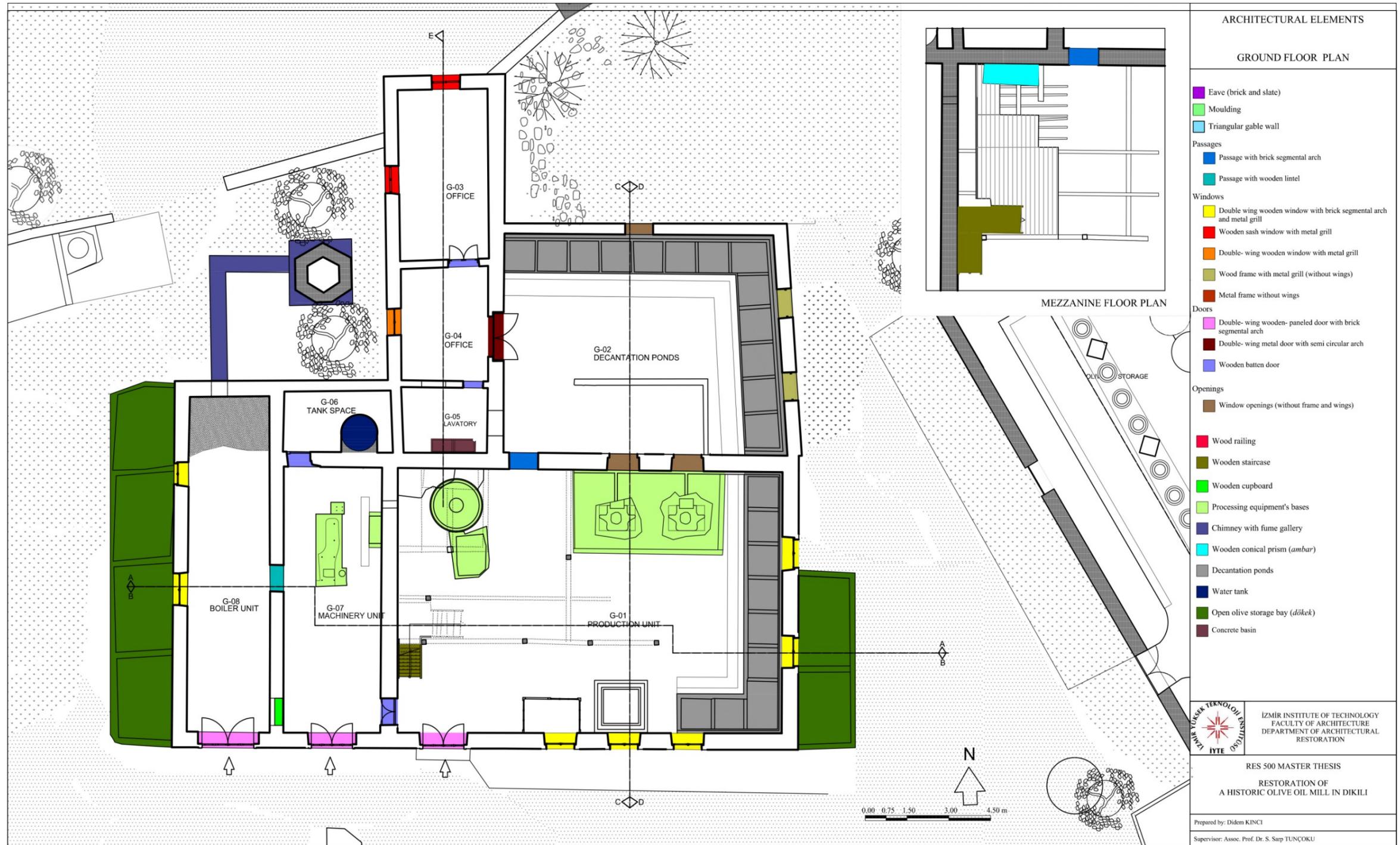
A.11. Measured drawings- Details of window and door



A.13. Measured drawings- Olive storage space on northern side of the courtyard

APPENDIX B

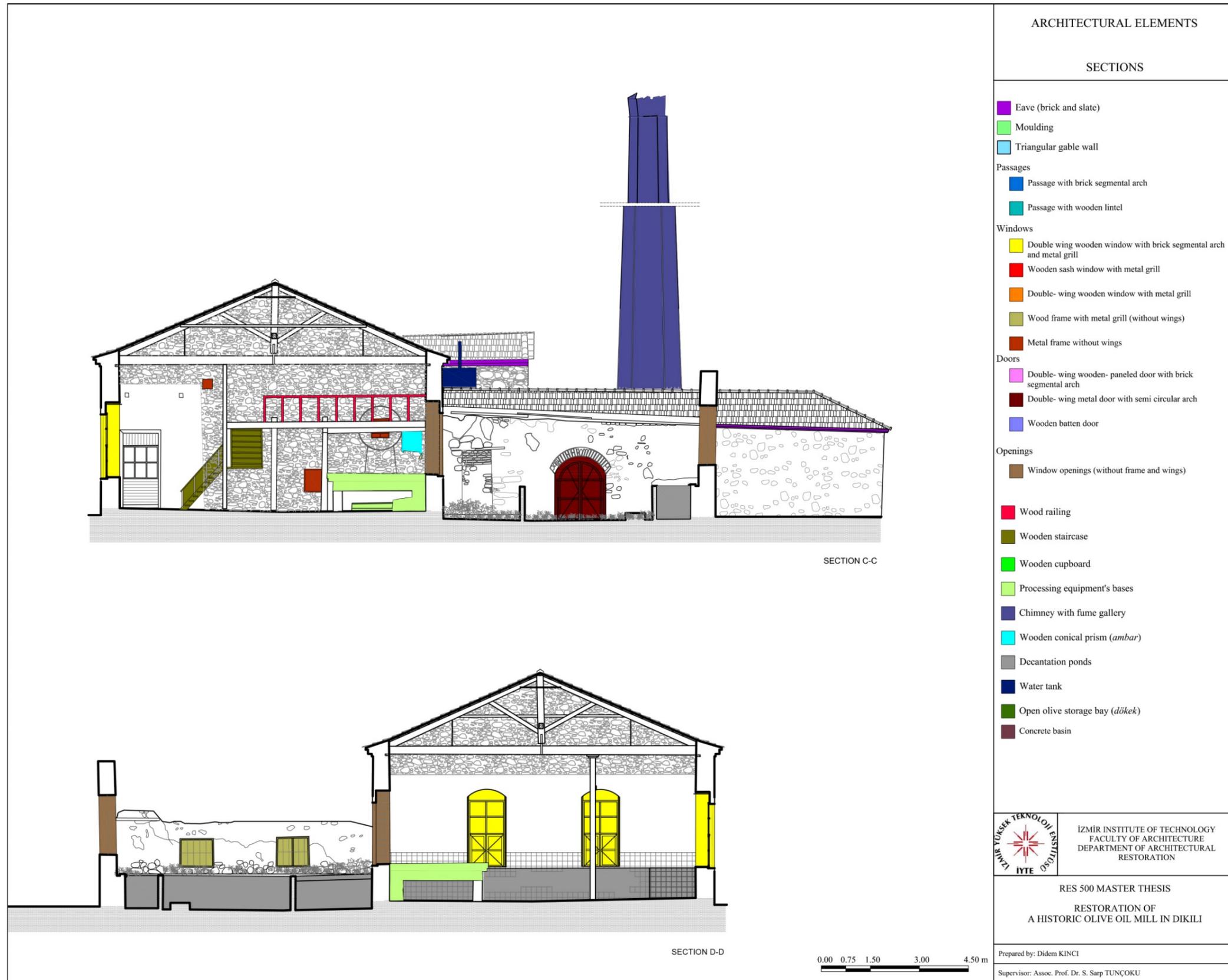
ANALYSIS OF ARCHITECTURAL ELEMENTS



B.1. Analysis of architectural elements- Ground Floor Plan



B.2. Analysis of architectural elements- Sections A-A and B-B



ARCHITECTURAL ELEMENTS

SECTIONS

- Eave (brick and slate)
- Moulding
- Triangular gable wall
- Passages
 - Passage with brick segmental arch
 - Passage with wooden lintel
- Windows
 - Double wing wooden window with brick segmental arch and metal grill
 - Wooden sash window with metal grill
 - Double- wing wooden window with metal grill
 - Wood frame with metal grill (without wings)
 - Metal frame without wings
- Doors
 - Double- wing wooden- paneled door with brick segmental arch
 - Double- wing metal door with semi circular arch
 - Wooden batten door
- Openings
 - Window openings (without frame and wings)
- Wood railing
- Wooden staircase
- Wooden cupboard
- Processing equipment's bases
- Chimney with fume gallery
- Wooden conical prism (*ambar*)
- Decantation ponds
- Water tank
- Open olive storage bay (*dökek*)
- Concrete basin



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RES 500 MASTER THESIS
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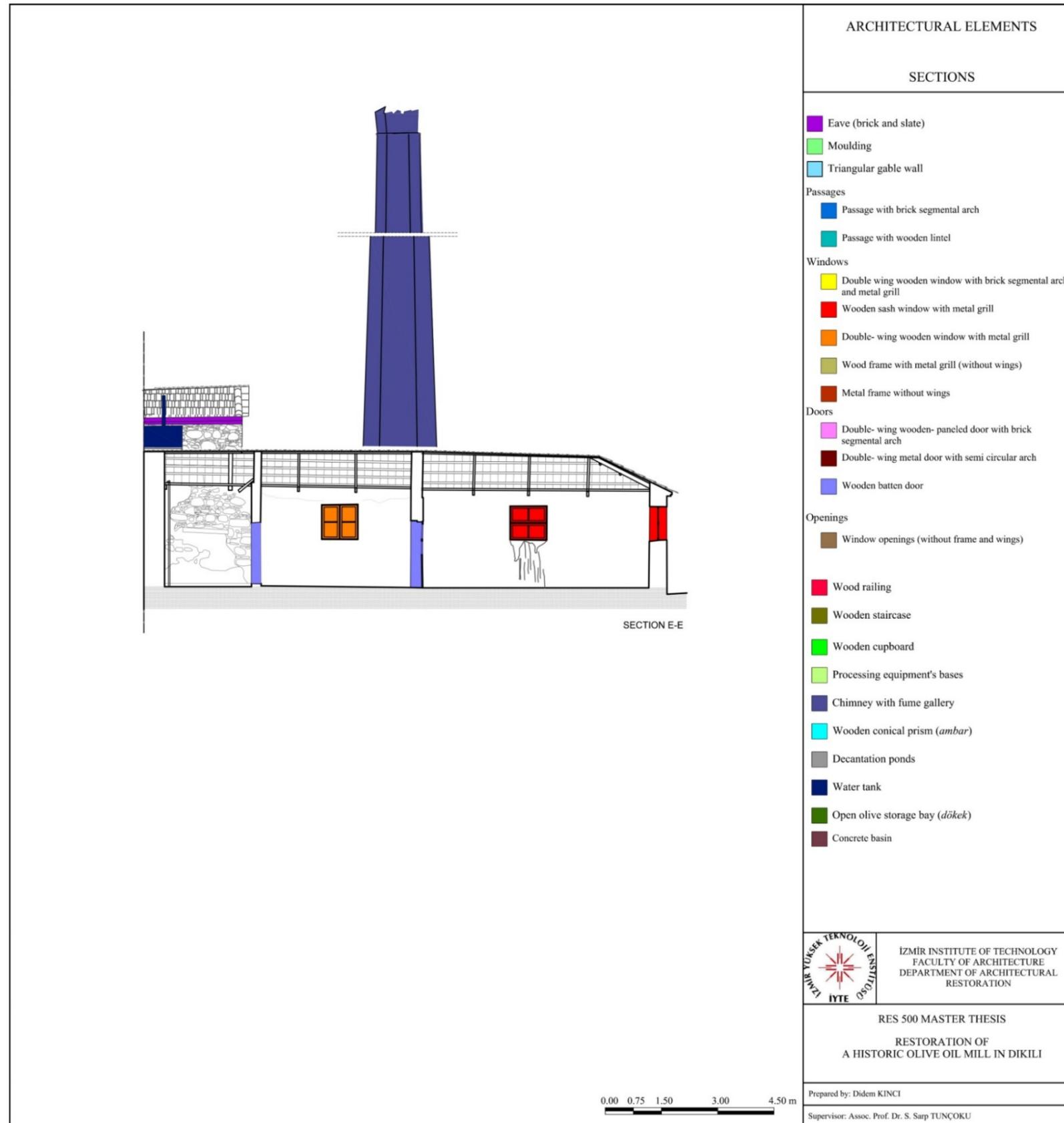
Prepared by: Didem KINCI

Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

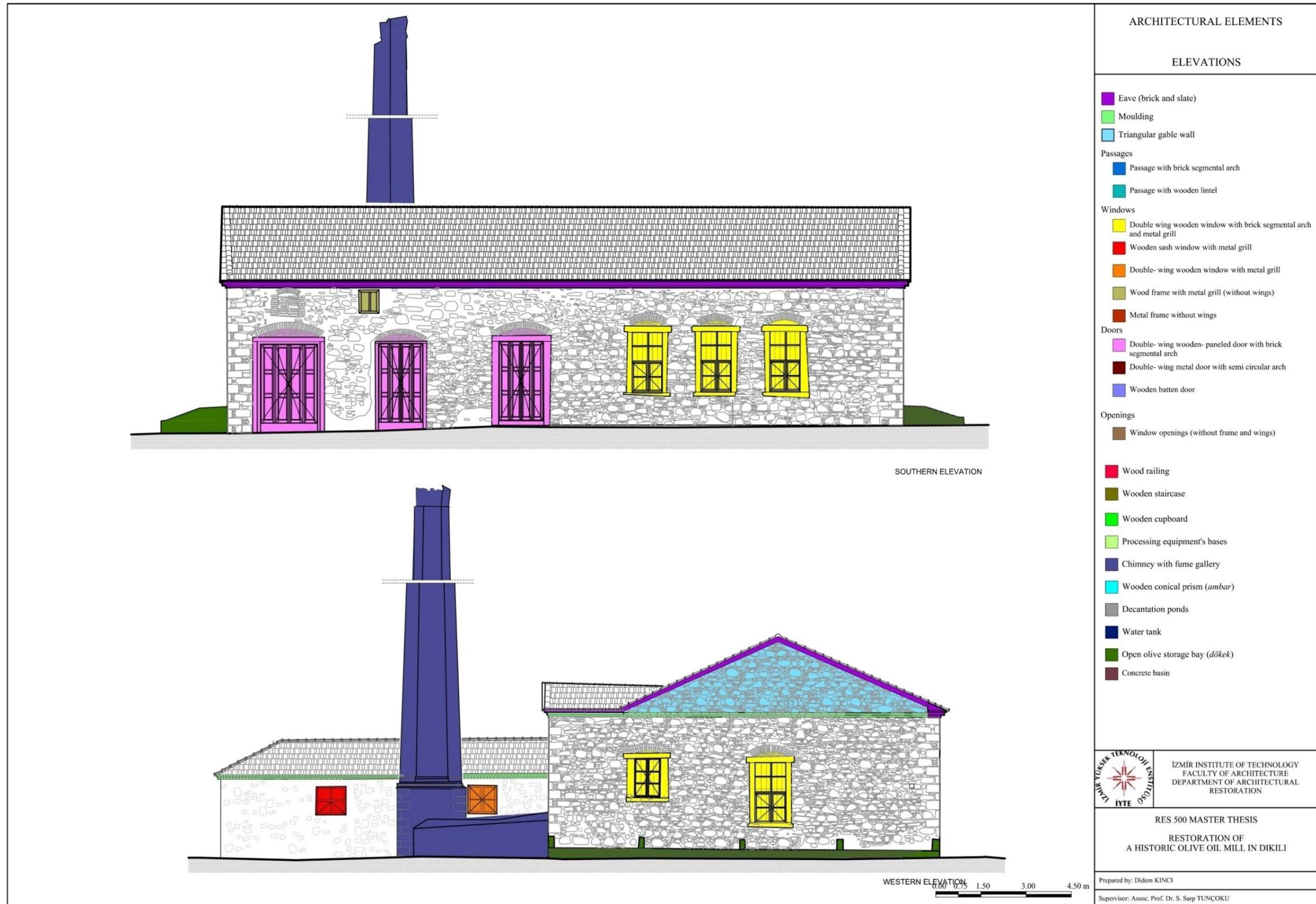
SECTION D-D



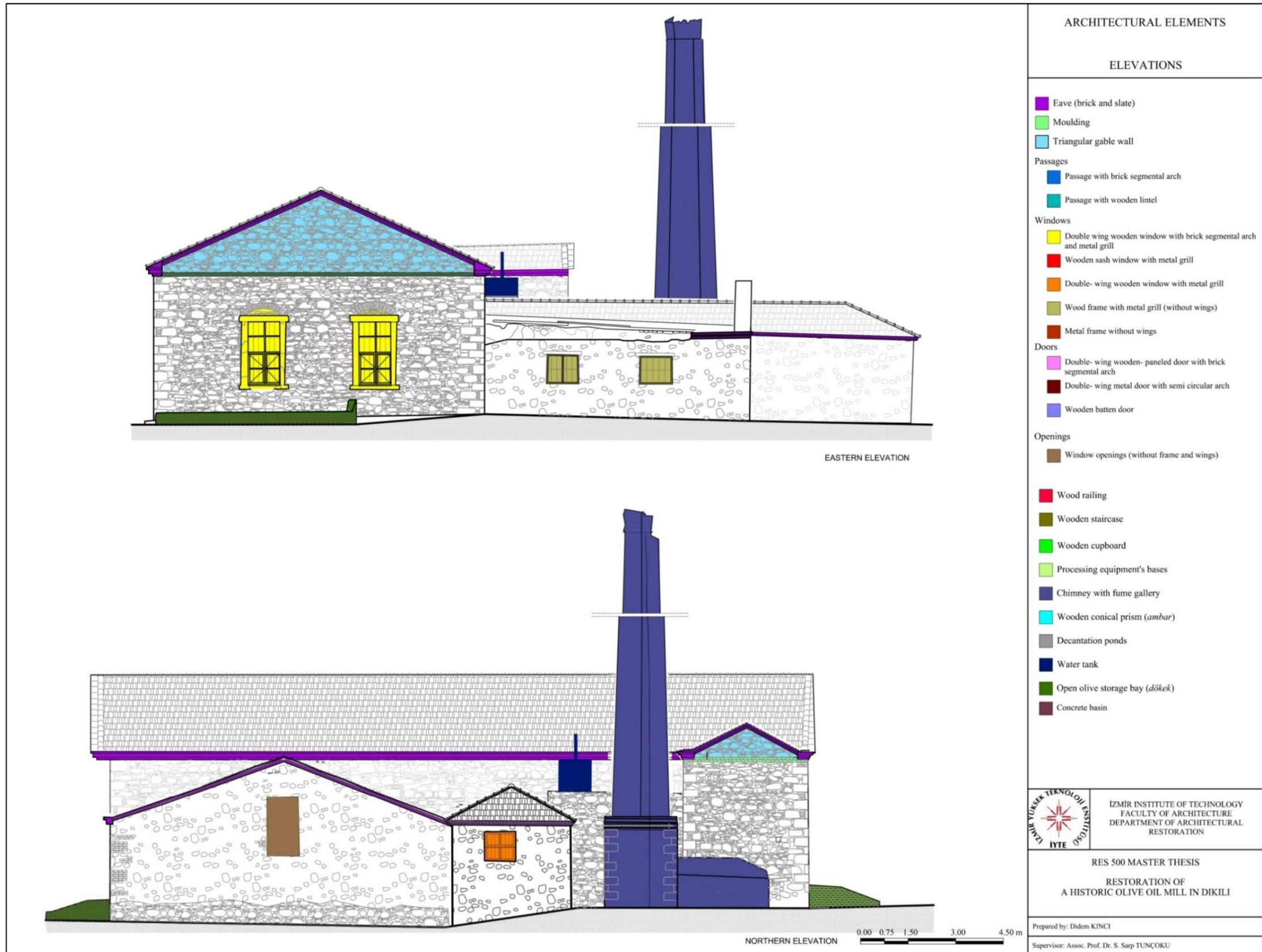
B.3. Analysis of architectural elements- Section C-C and D-D



B.4. Analysis of architectural elements- Section E-E



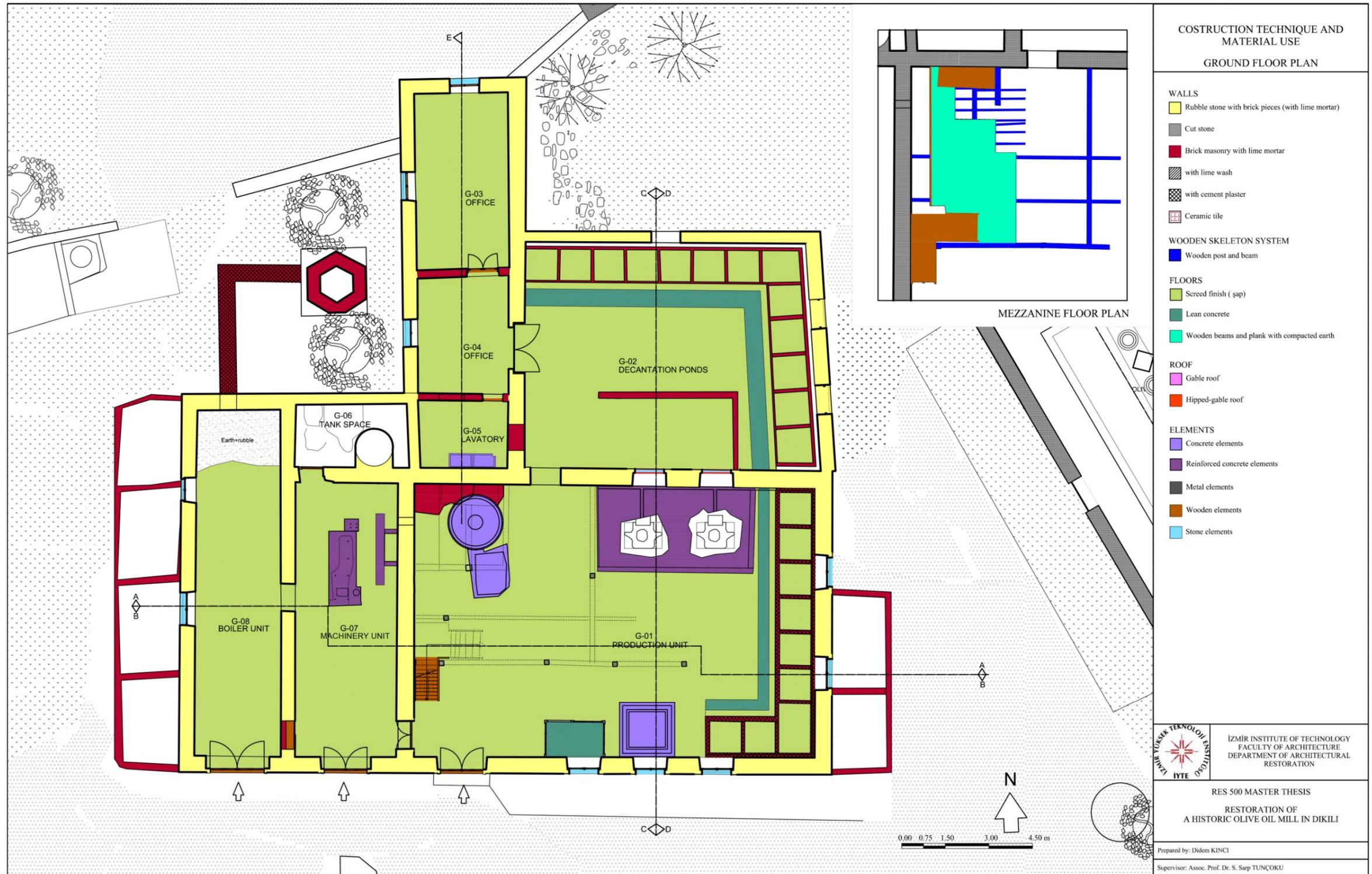
B.5. Analysis of architectural elements- Southern and Western Elevations



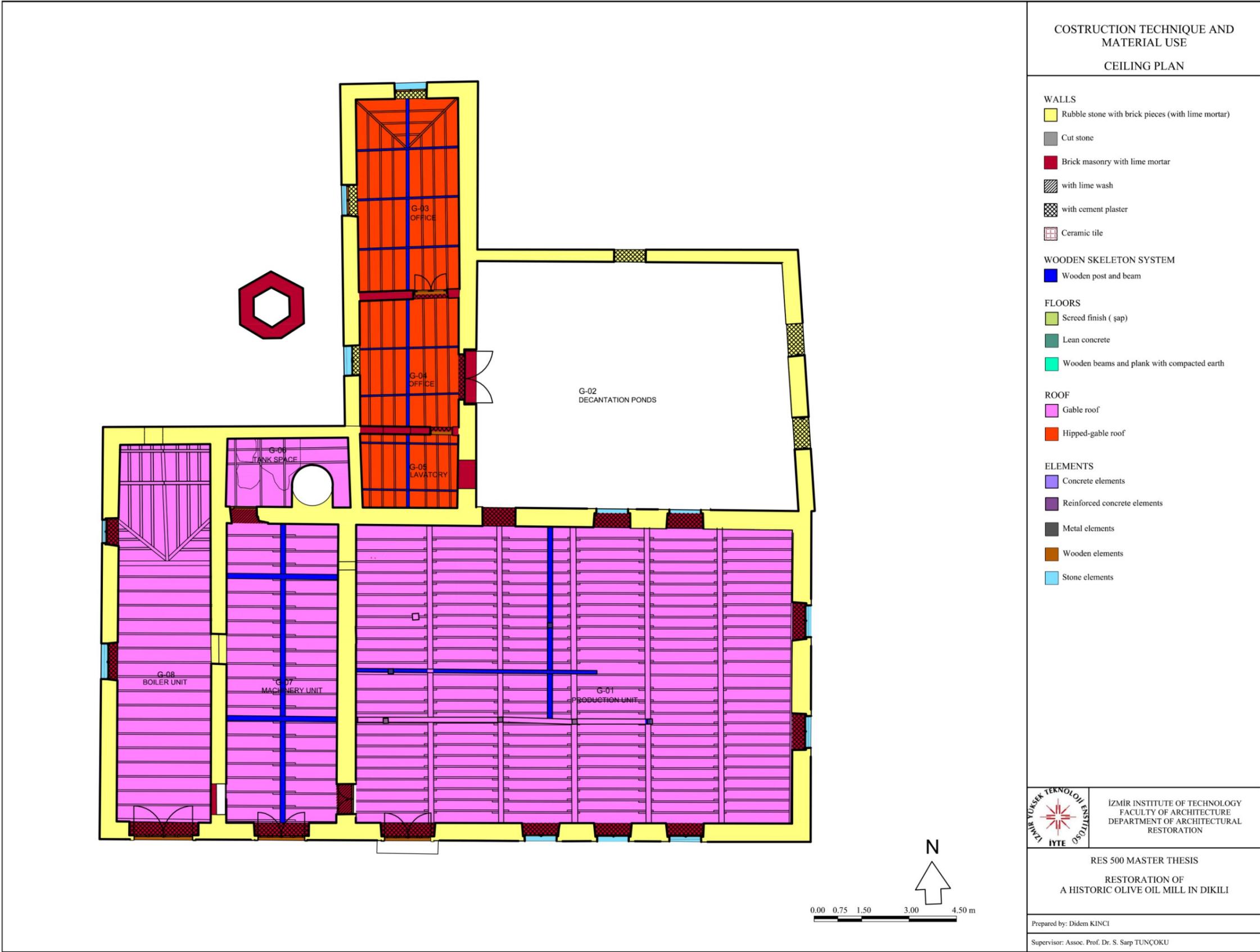
B.6. Analysis of architectural elements- Eastern and Northern Elevations

APPENDIX C

ANALYSIS OF CONSTRUCTION TECHNIQUE AND MATERIAL USE



C.1. Analysis of construction technique and material use- Ground Floor Plan



COSTRUCTION TECHNIQUE AND MATERIAL USE
CEILING PLAN

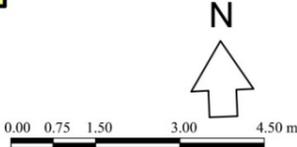
- WALLS**
- Rubble stone with brick pieces (with lime mortar)
 - Cut stone
 - Brick masonry with lime mortar
 - with lime wash
 - with cement plaster
 - Ceramic tile
- WOODEN SKELETON SYSTEM**
- Wooden post and beam
- FLOORS**
- Screed finish (şap)
 - Lean concrete
 - Wooden beams and plank with compacted earth
- ROOF**
- Gable roof
 - Hipped-gable roof
- ELEMENTS**
- Concrete elements
 - Reinforced concrete elements
 - Metal elements
 - Wooden elements
 - Stone elements

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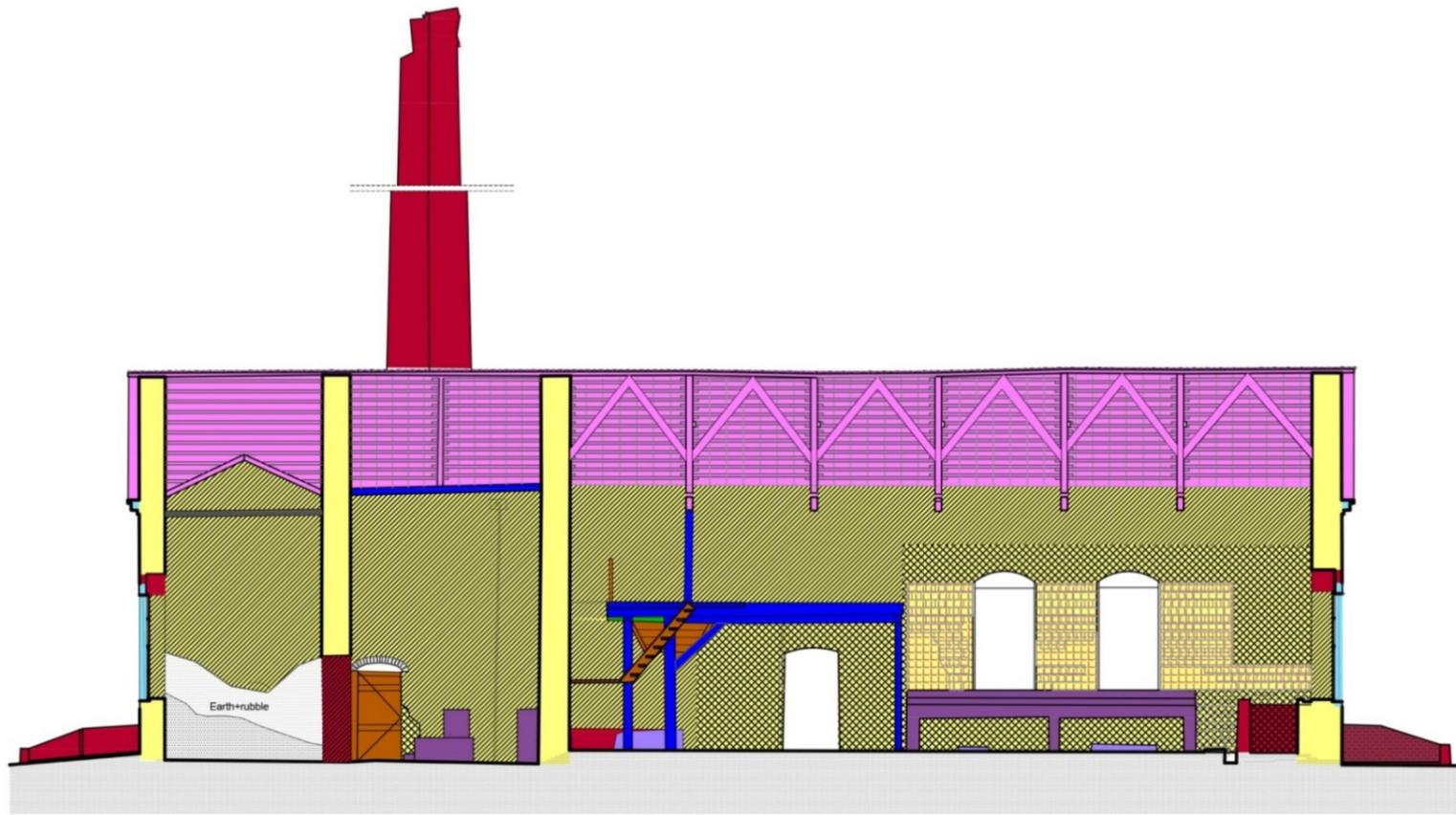
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RES 500 MASTER THESIS
RESTORATION OF
A HISTORIC OLIVE OIL MILL IN DIKILI

Prepared by: Didem KINCI
Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU



C.2. Analysis of construction technique and material use- Ceiling Plan



SECTION A-A



SECTION B-B
0.00 0.75 1.50 3.00 4.50 m

COSTRUCTION TECHNIQUE AND MATERIAL USE

SECTIONS

WALLS

- Rubble stone with brick pieces (with lime mortar)
- Cut stone
- Brick masonry with lime mortar
- with lime wash
- with cement plaster
- Ceramic tile

WOODEN SKELETON SYSTEM

- Wooden post and beam

FLOORS

- Screed finish (şap)
- Lean concrete
- Wooden beams and plank with compacted earth

ROOF

- Gable roof
- Hipped-gable roof

ELEMENTS

- Concrete elements
- Reinforced concrete elements
- Metal elements
- Wooden elements
- Stone elements



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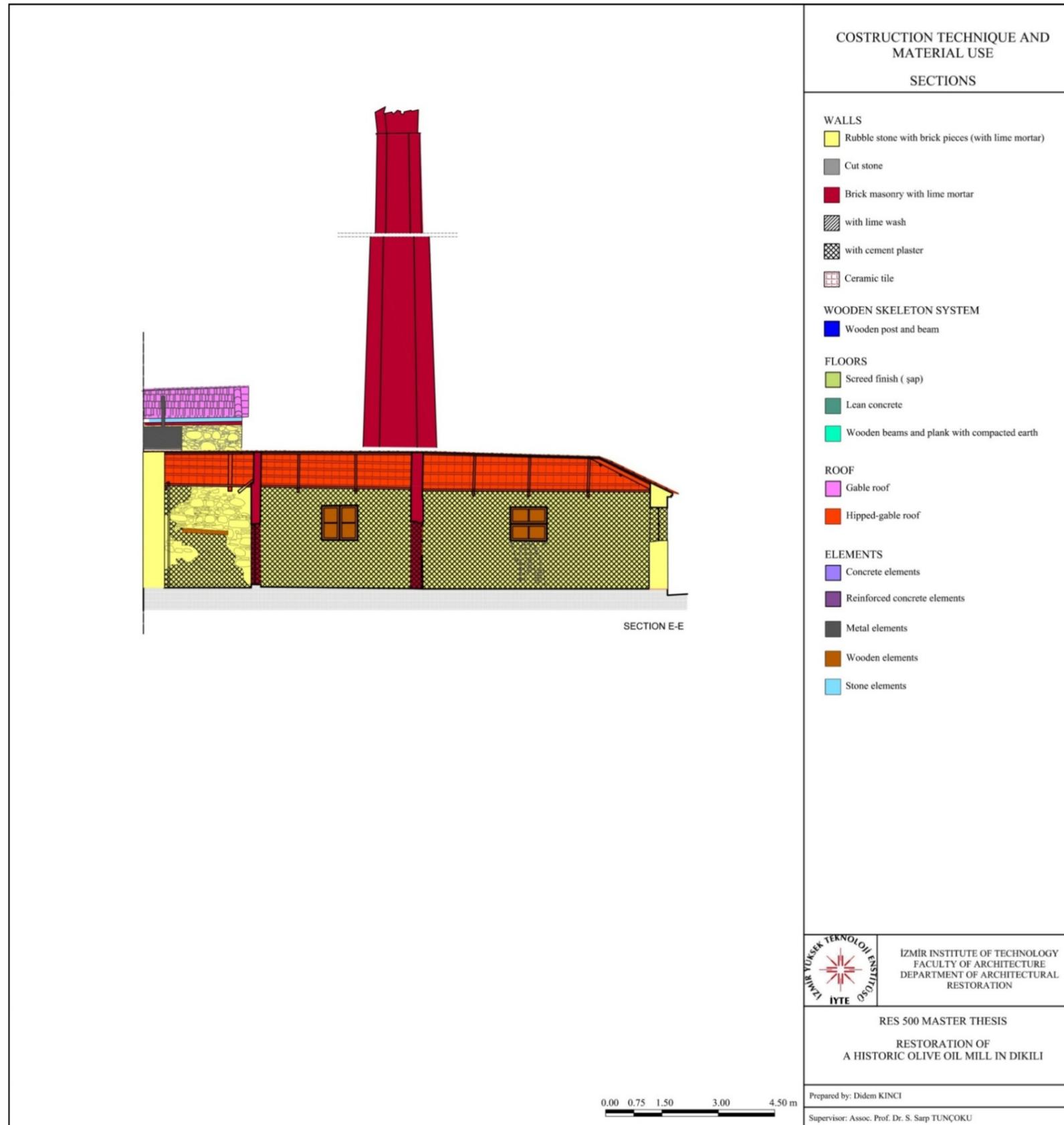
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Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

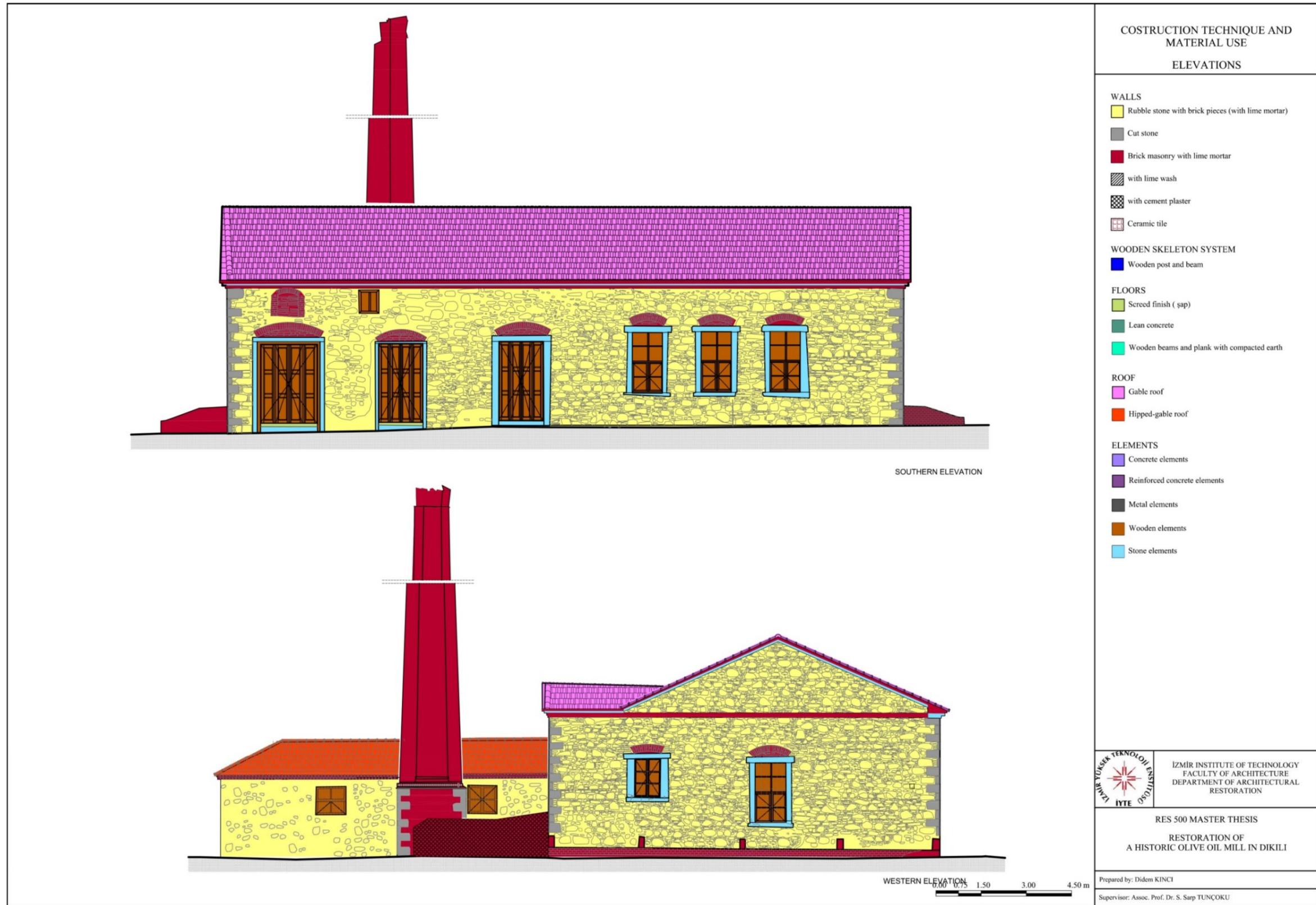
C.3. Analysis of construction technique and material use- Sections A-A and B-B



C.4. Analysis of construction technique and material use- Section C-C and D-D



C.5. Analysis of construction technique and material use- Section E-E



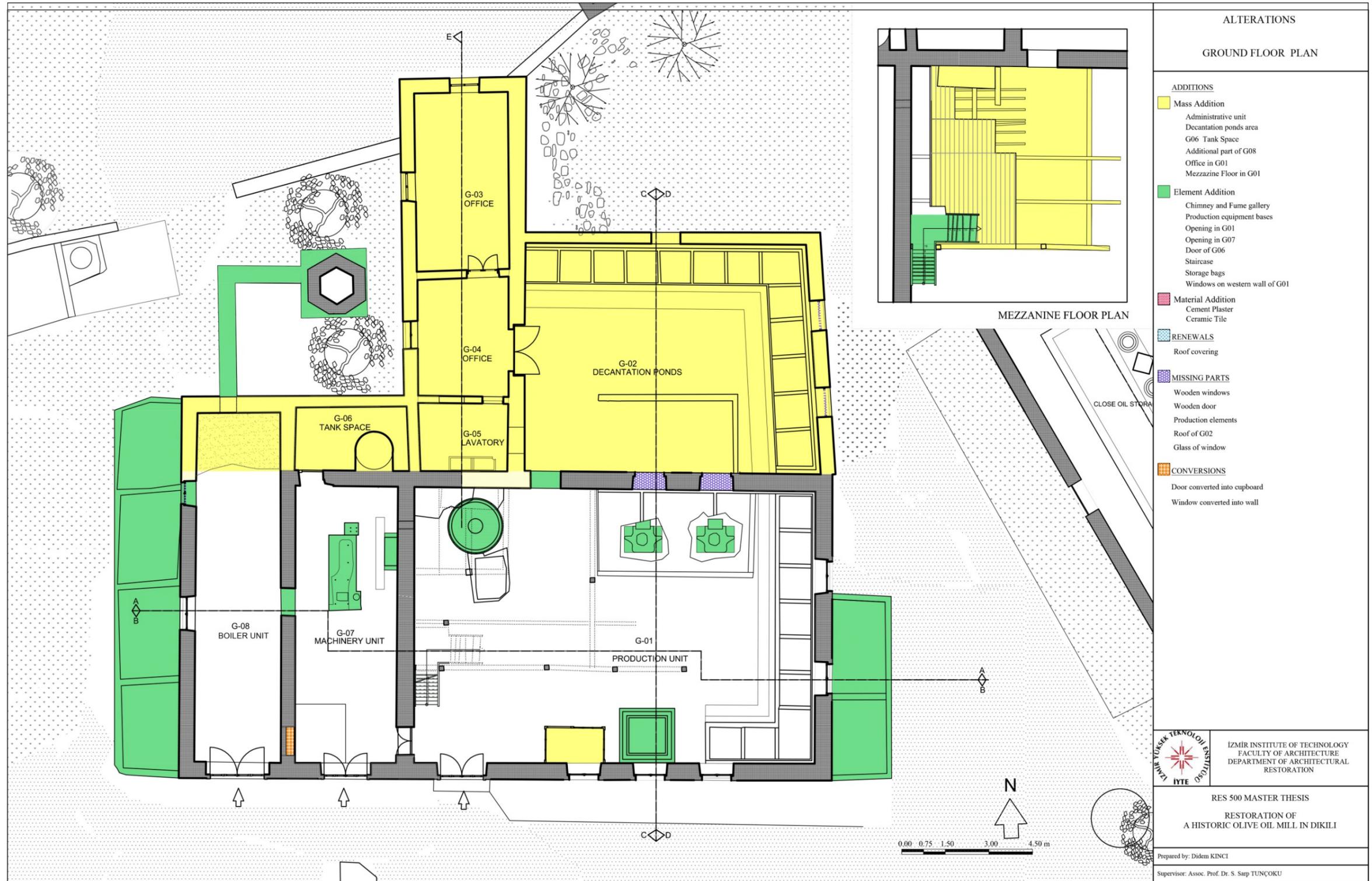
C.6. Analysis of construction technique and material use- Southern and Western Elevations



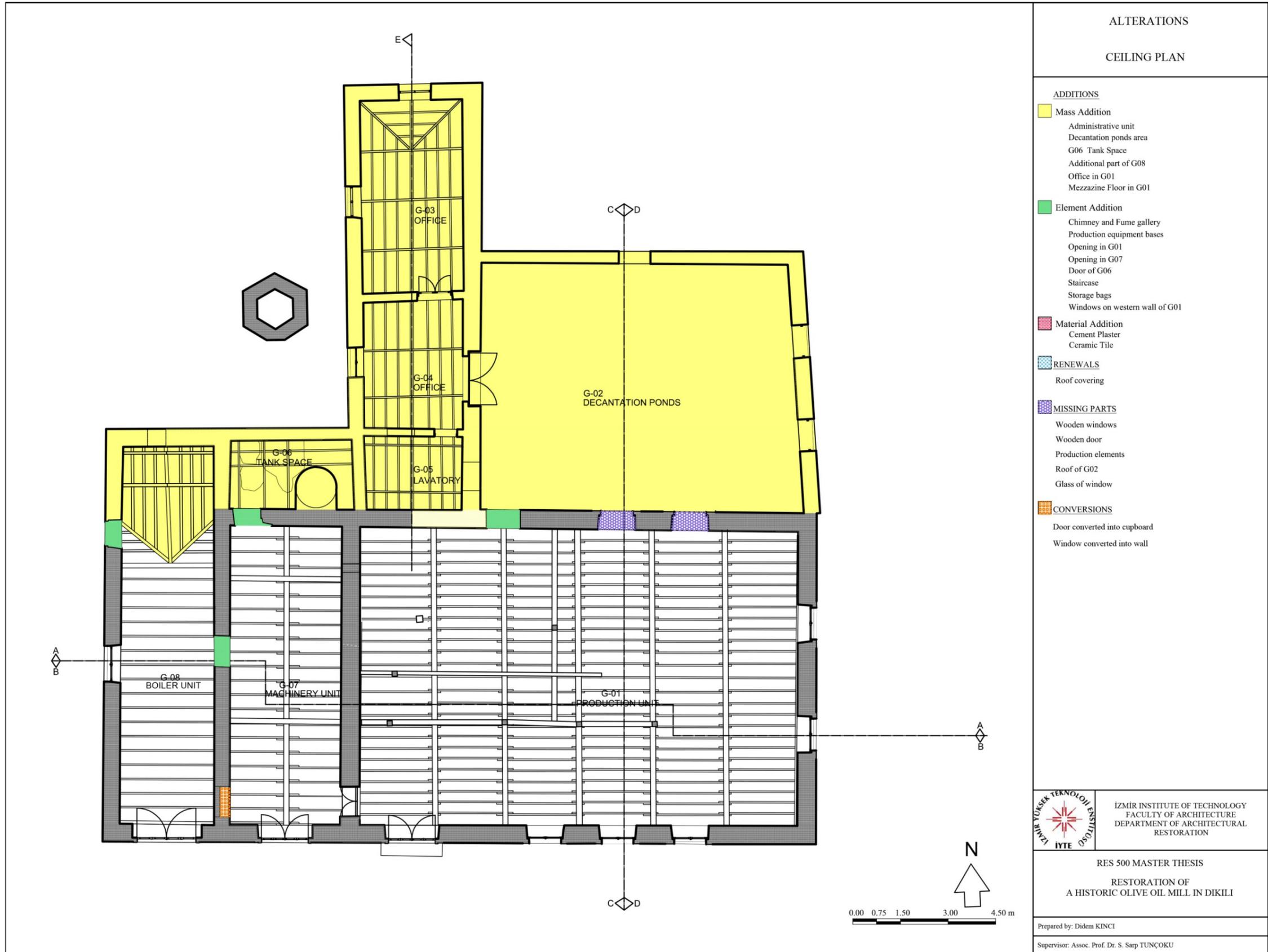
C.7. Analysis of construction technique and material use- Eastern and Northern Elevations

APPENDIX D

ANALYSIS OF ALTERATIONS



D.1. Analysis of alterations- Ground Floor Plan



ALTERATIONS
CEILING PLAN

- ADDITIONS**
- Mass Addition**
 - Administrative unit
 - Decantation ponds area
 - G06 Tank Space
 - Additional part of G08
 - Office in G01
 - Mezzanine Floor in G01
 - Element Addition**
 - Chimney and Fume gallery
 - Production equipment bases
 - Opening in G01
 - Opening in G07
 - Door of G06
 - Staircase
 - Storage bags
 - Windows on western wall of G01
 - Material Addition**
 - Cement Plaster
 - Ceramic Tile
 - RENEWALS**
 - Roof covering
 - MISSING PARTS**
 - Wooden windows
 - Wooden door
 - Production elements
 - Roof of G02
 - Glass of window
 - CONVERSIONS**
 - Door converted into cupboard
 - Window converted into wall

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Prepared by: Didem KINCI
Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

D.2. Analysis of alterations- Ceiling Plan



ALTERATIONS

SECTIONS

ADDITIONS

Mass Addition

- Administrative unit
- Decantation ponds area
- G06 Tank Space
- Additional part of G08
- Office in G01
- Mezzanine Floor in G01

Element Addition

- Chimney and Fume gallery
- Production equipment bases
- Opening in G01
- Opening in G07
- Door of G06
- Staircase
- Storage bags
- Windows on western wall of G01

Material Addition

- Cement Plaster
- Ceramic Tile

RENEWALS

- Roof covering

MISSING PARTS

- Wooden windows
- Wooden door
- Production elements
- Roof of G02
- Glass of window

CONVERSIONS

- Door converted into cupboard
- Window converted into wall

SECTION A-A

SECTION B-B

0.00 0.75 1.50 3.00 4.50 m



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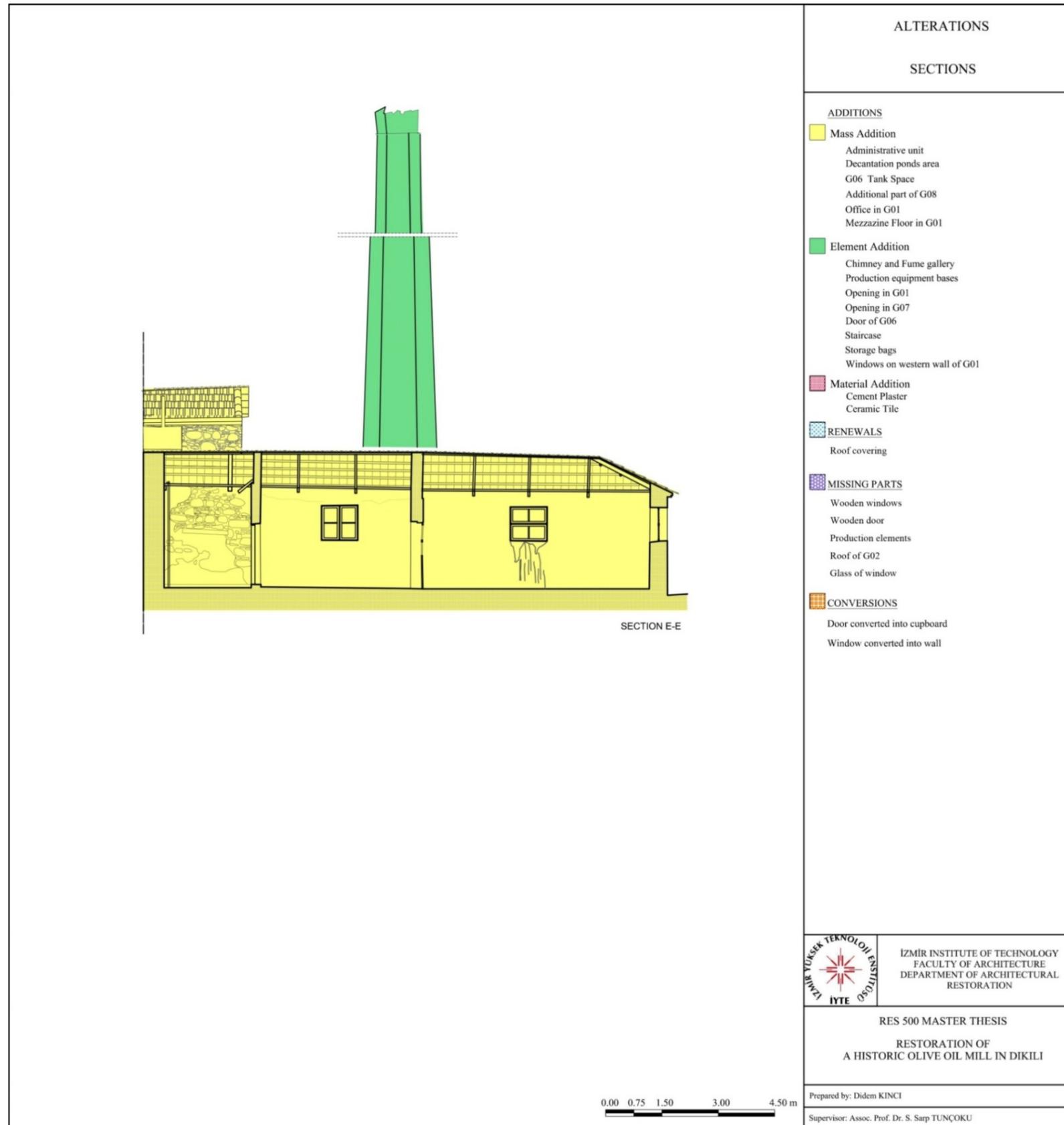
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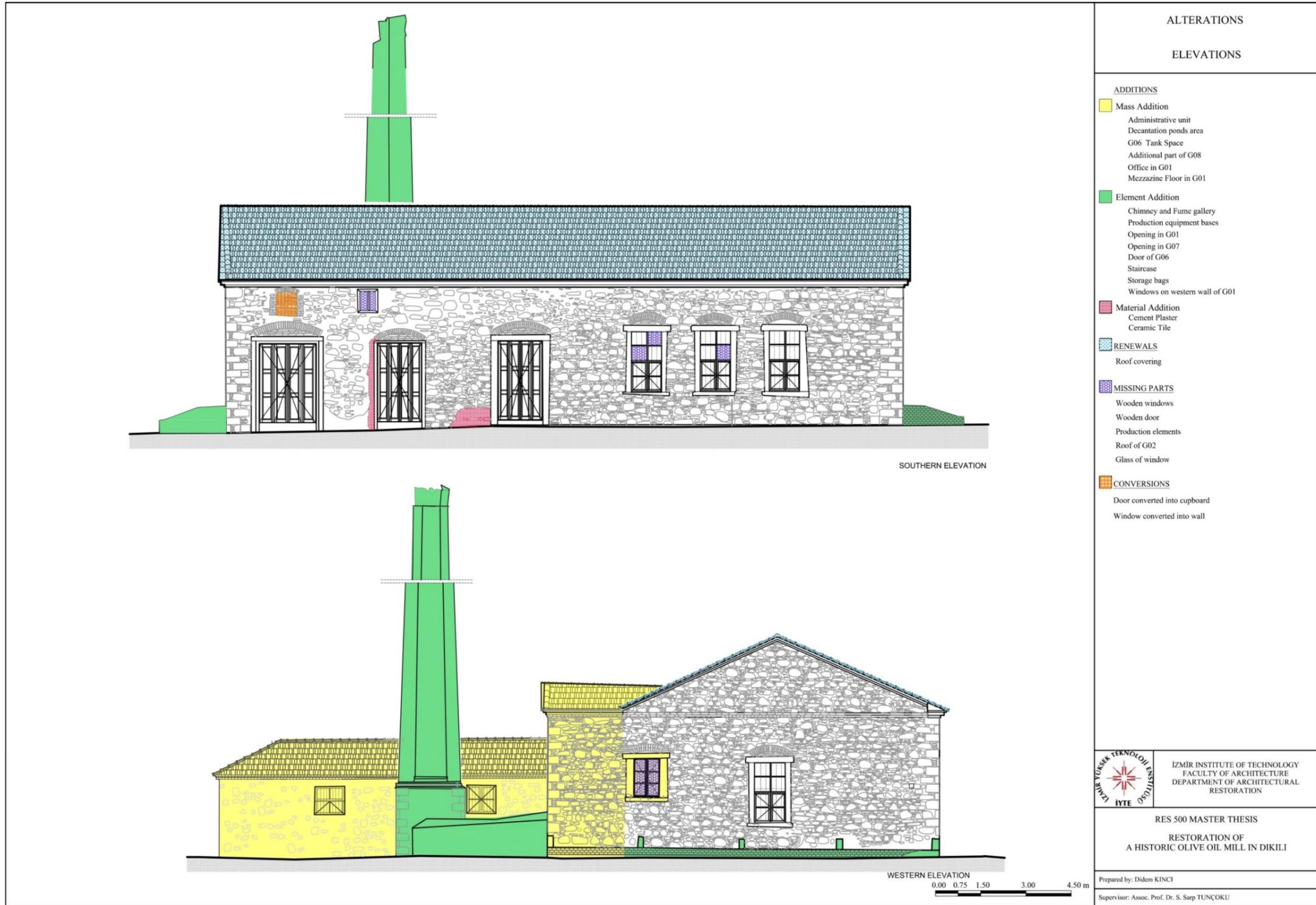
D.3. Analysis of alterations- Sections A-A and B-B



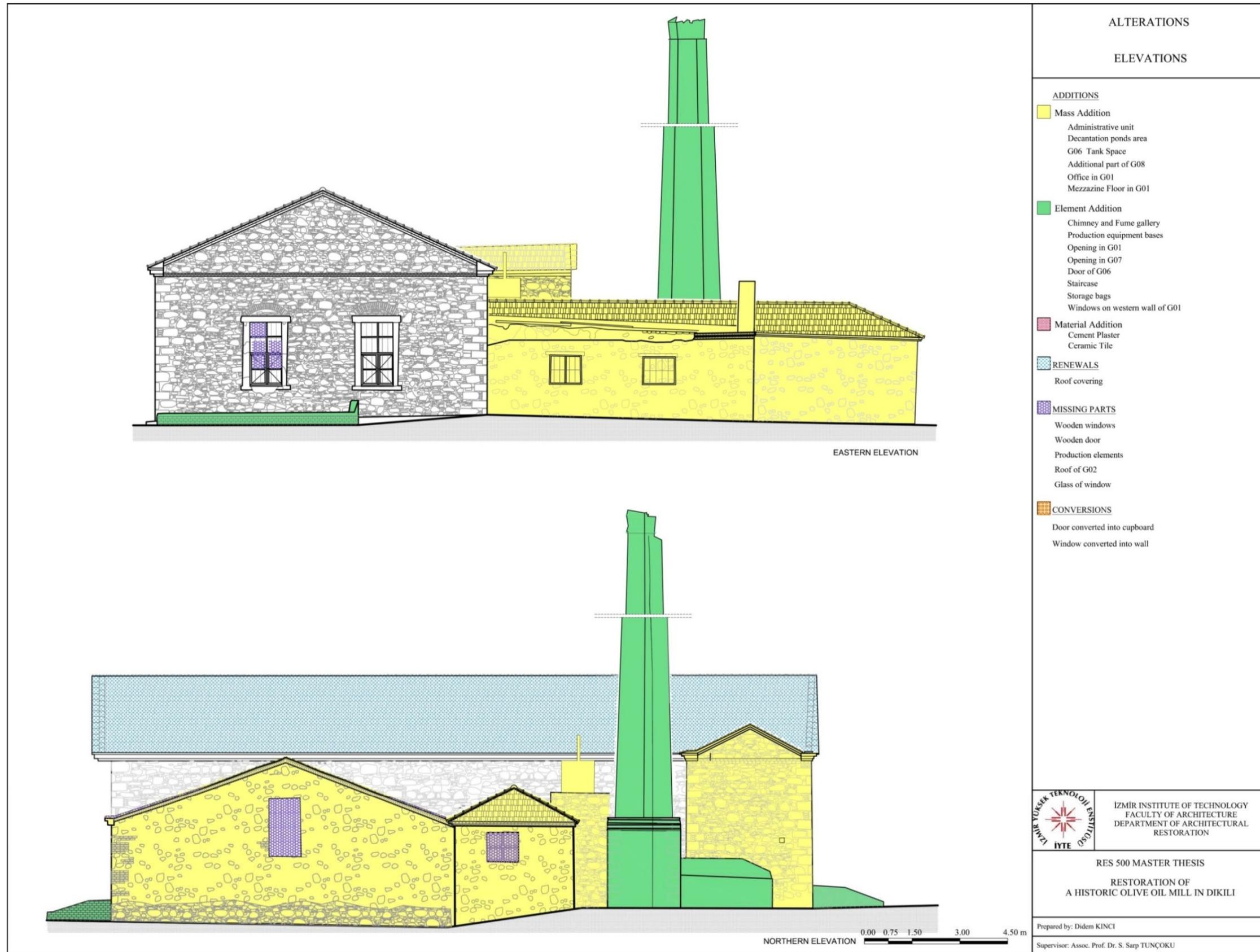
D.4. Analysis of alterations- Section C-C and D-D



D.5. Analysis of alterations- Section E-E



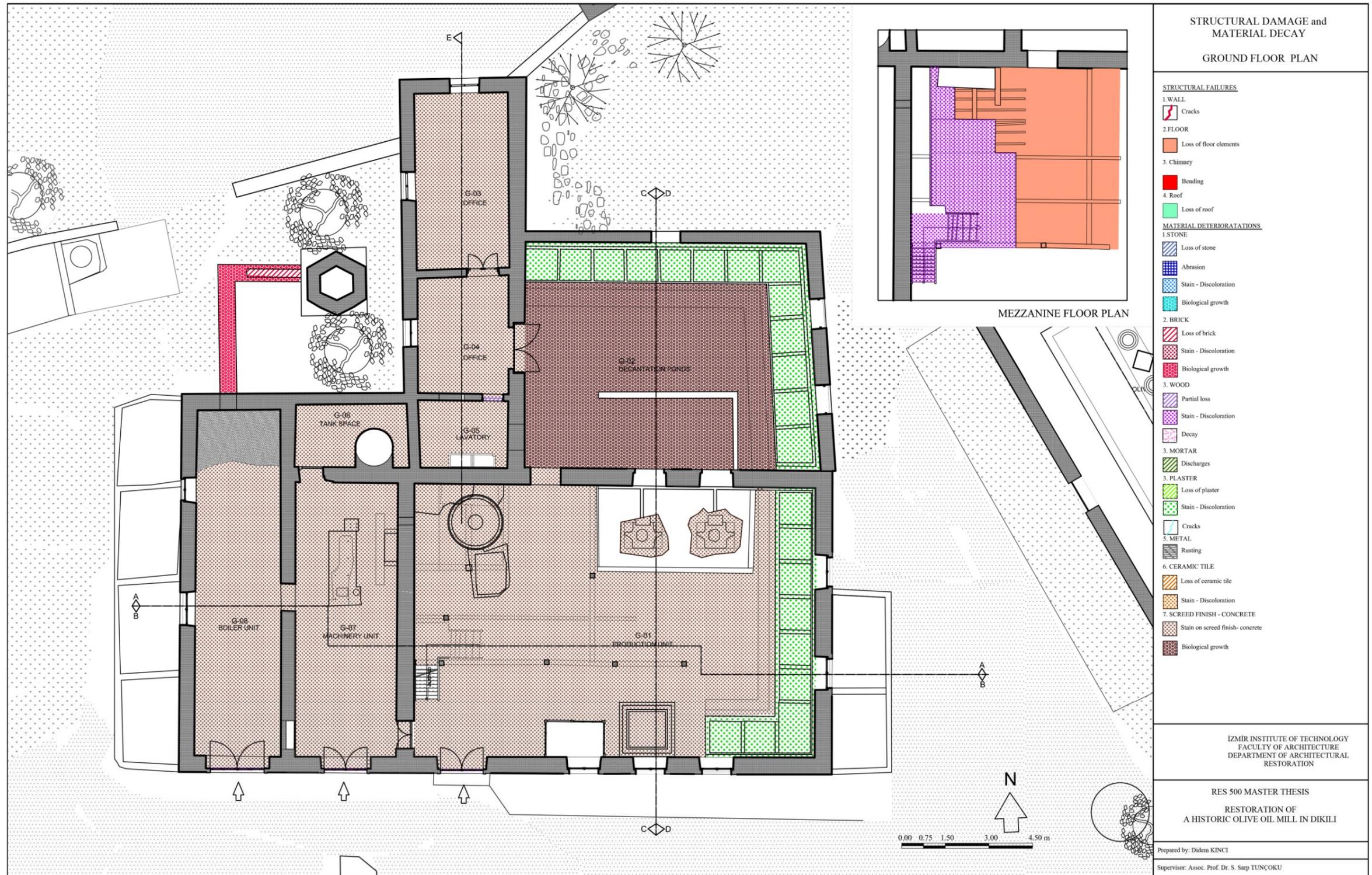
D.6. Analysis of alterations- Southern and Western Elevations



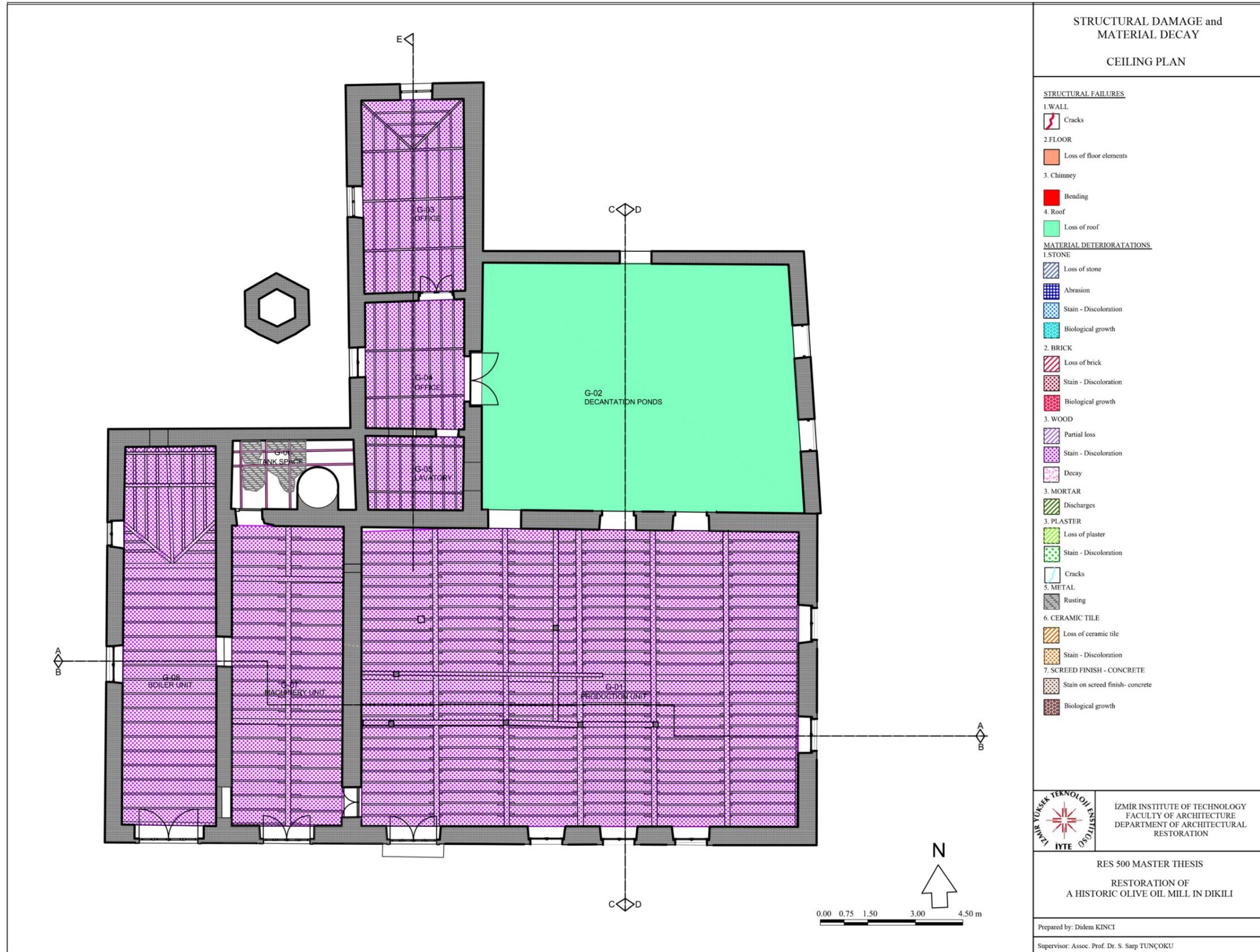
D.7. Analysis of alterations- Eastern and Northern Elevations

APPENDIX E

ANALYSIS OF STRUCTURAL DAMAGES AND MATERIAL DECAYS



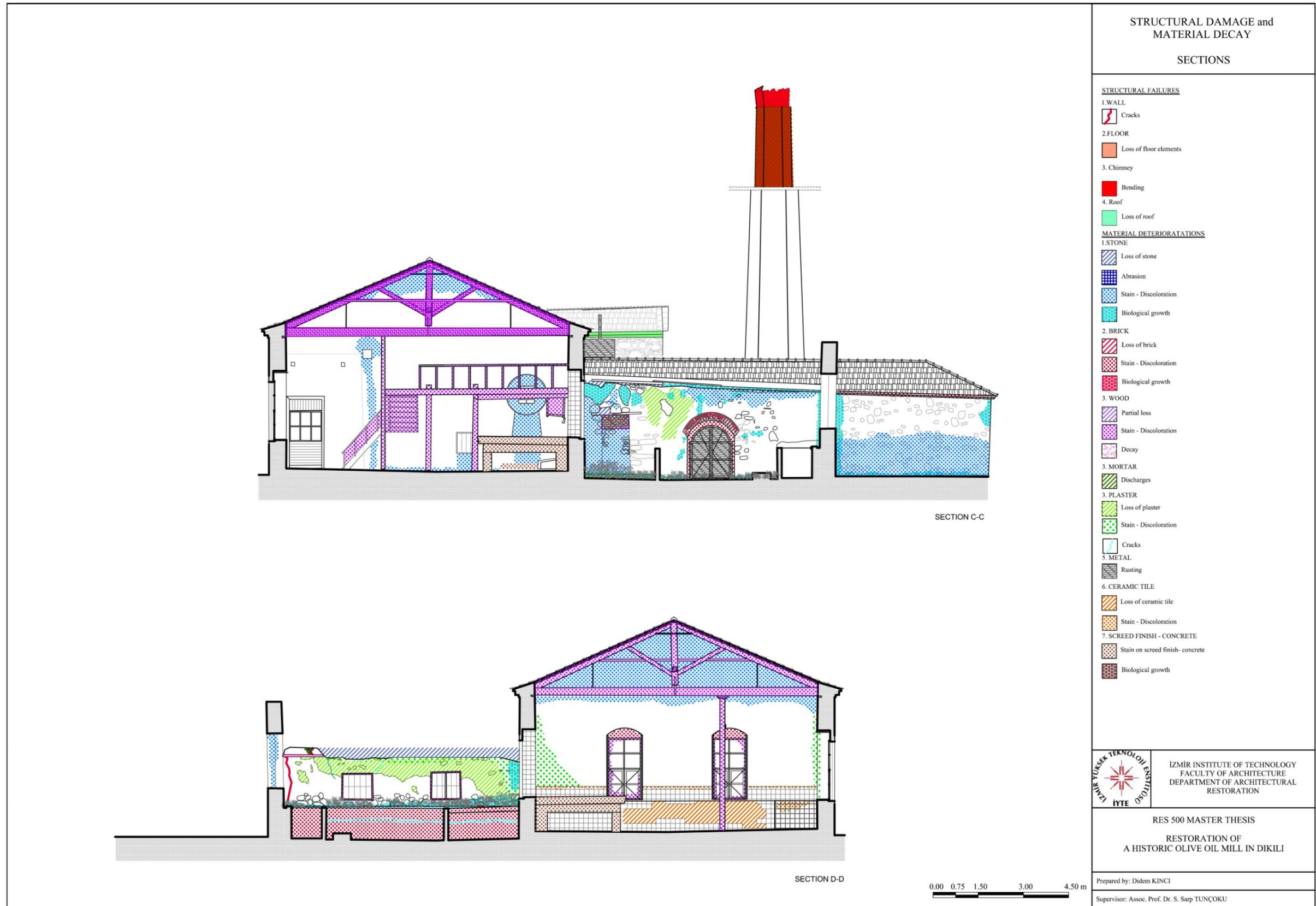
E.1. Analysis of structural damages and material decay- Ground Floor Plan



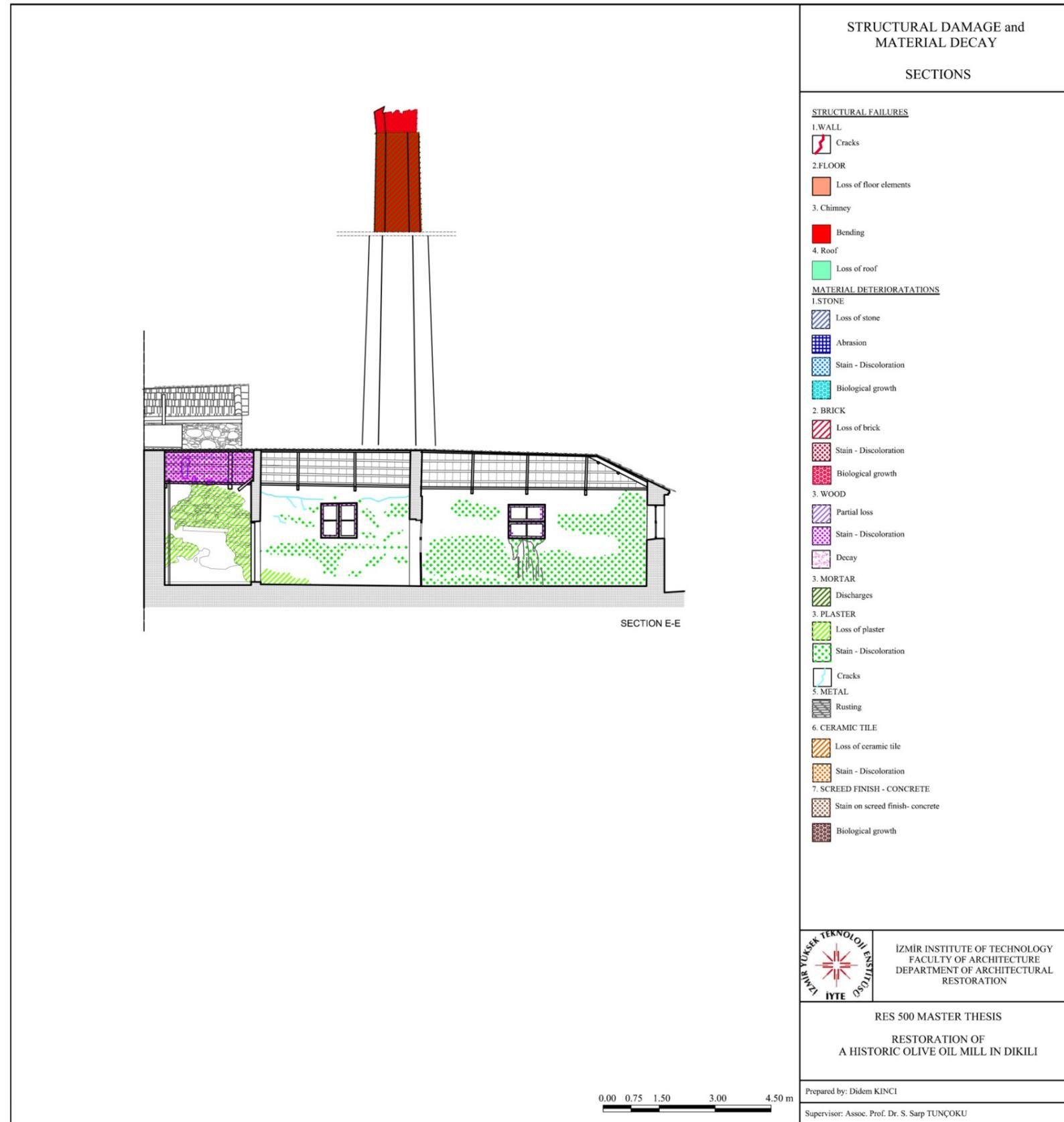
E.2. Analysis of structural damages and material decay- Ceiling Plan



E.3. Analysis of structural damages and material decay- Sections A-A and B-B



E.4. Analysis of structural damages and material decay- Section C-C and D-D



STRUCTURAL DAMAGE and MATERIAL DECAY SECTIONS

- STRUCTURAL FAILURES**
1. WALL
 Cracks
2. FLOOR
 Loss of floor elements
3. Chimney
 Bending
4. Roof
 Loss of roof
- MATERIAL DETERIORATIONS**
1. STONE
 Loss of stone
 Abrasion
 Stain - Discoloration
 Biological growth
2. BRICK
 Loss of brick
 Stain - Discoloration
 Biological growth
3. WOOD
 Partial loss
 Stain - Discoloration
 Decay
3. MORTAR
 Discharges
3. PLASTER
 Loss of plaster
 Stain - Discoloration
 Cracks
5. METAL
 Rusting
6. CERAMIC TILE
 Loss of ceramic tile
 Stain - Discoloration
7. SCREED FINISH - CONCRETE
 Stain on screed finish- concrete
 Biological growth

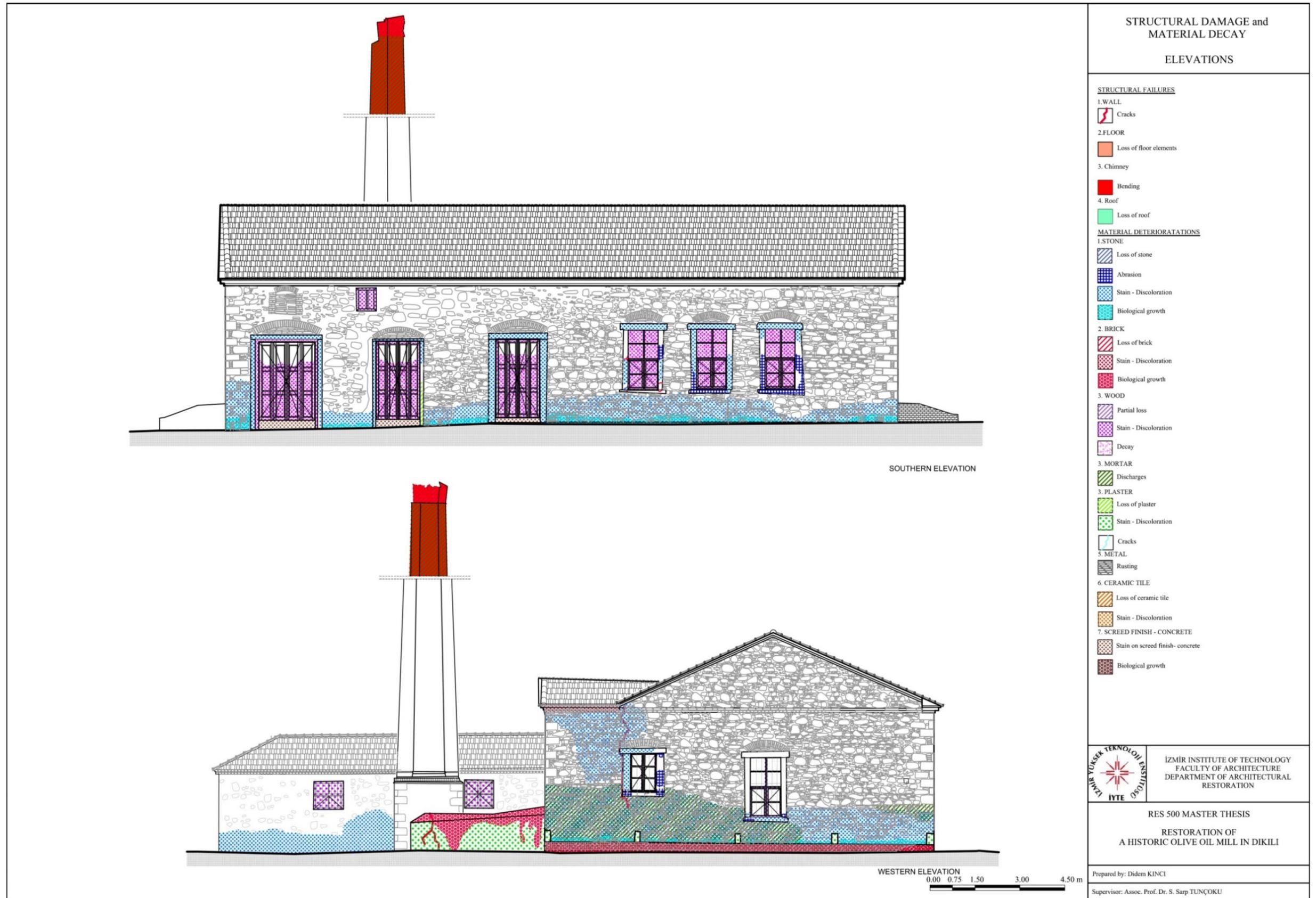
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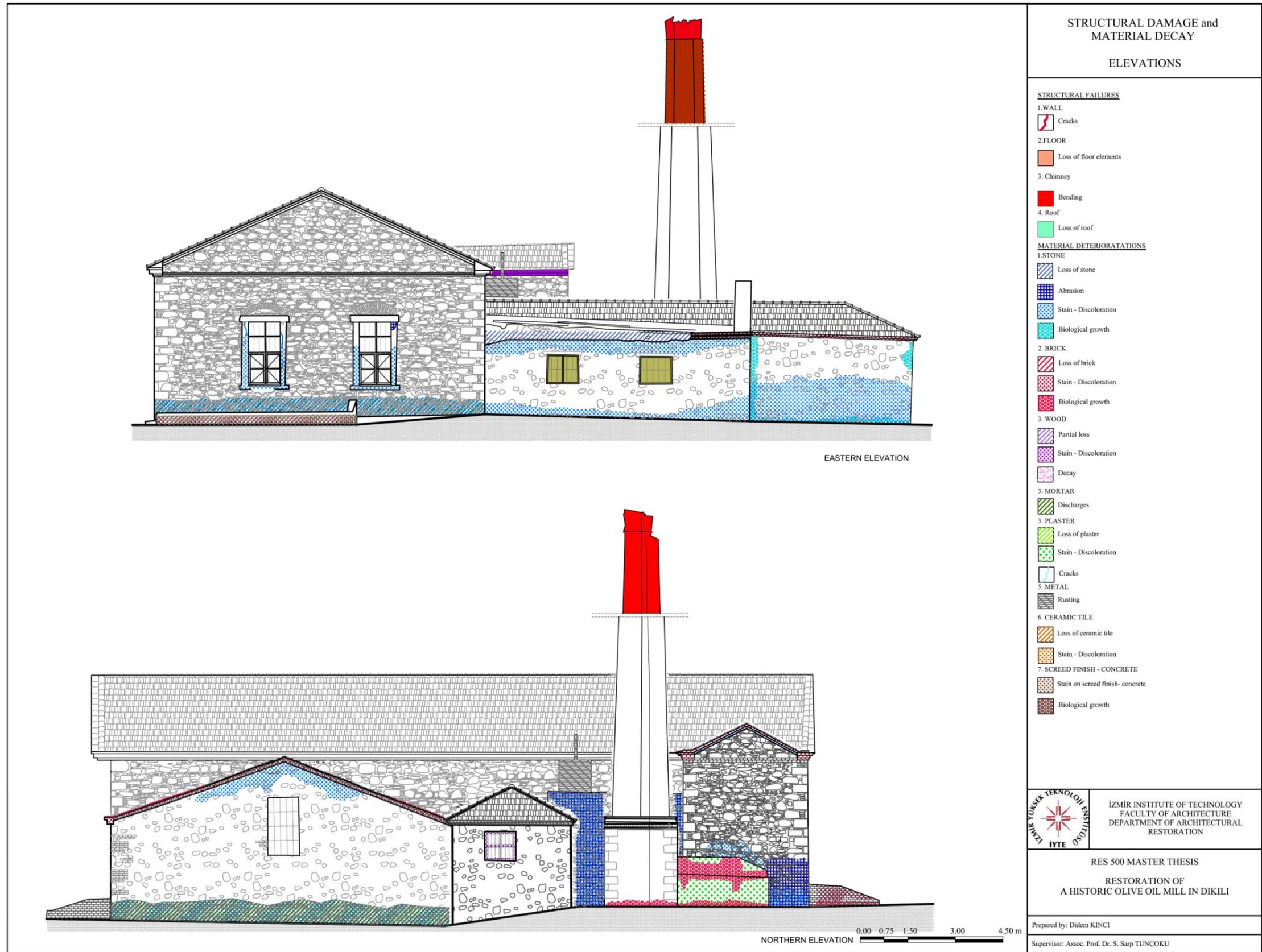
RES 500 MASTER THESIS
 RESTORATION OF
 A HISTORIC OLIVE OIL MILL IN DIKILI

Prepared by: Didem KINCI
 Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

E.5. Analysis of structural damages and material decay- Section E-E



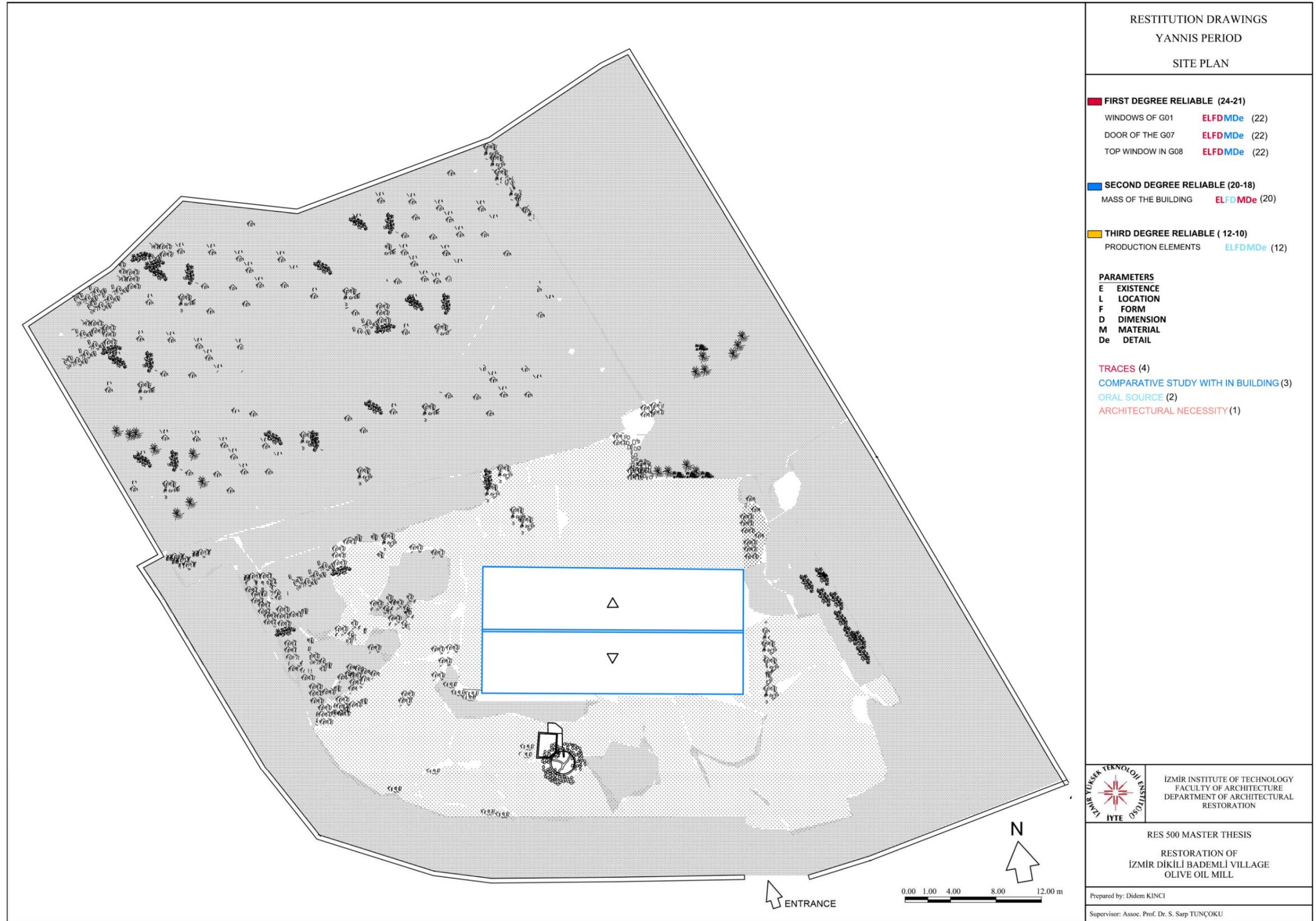
E.6. Analysis of structural damages and material decay- Southern and Western Elevations



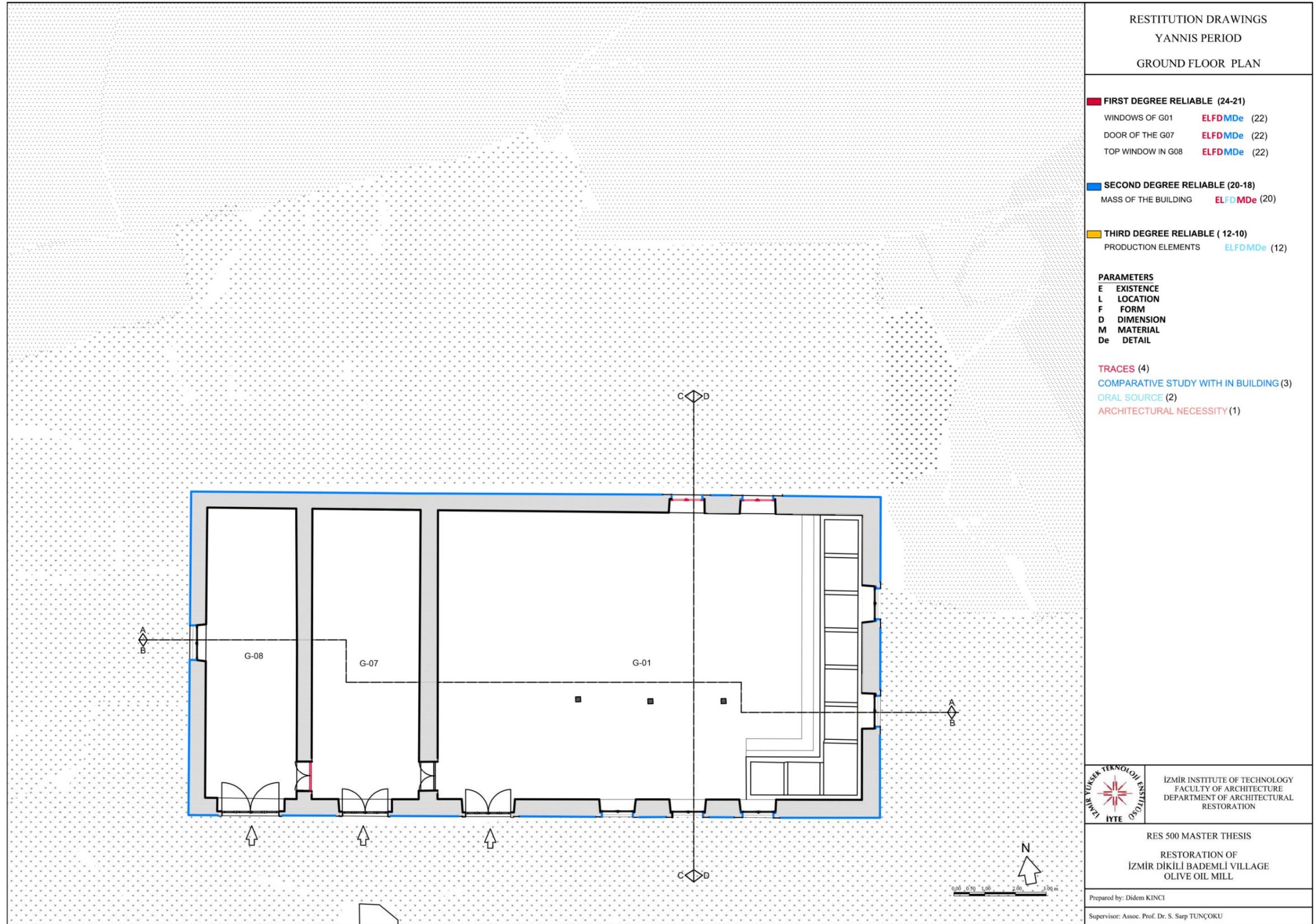
E.7. Analysis of structural damages and material decay- Eastern and Northern Elevations

APPENDIX F

RESTITUTION OF YANNIS PERIOD



F.1. Restitution of Yannis Period- Site Plan



F.2. Restitution of Yannis Period- Ground Floor Plan



F.3. Restitution of Yannis Period- Sections A-A and B-B



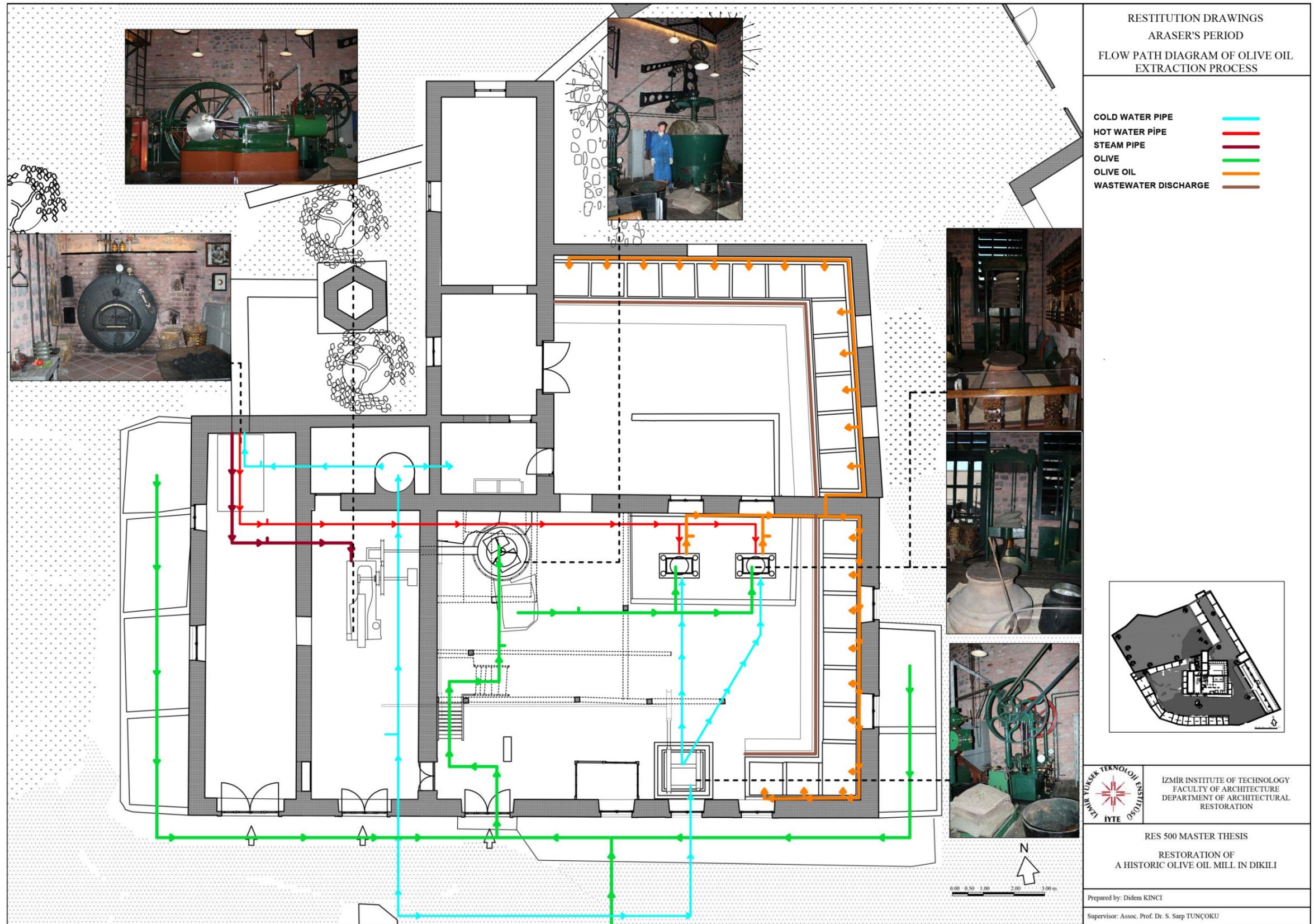
F.4. Restitution of Yannis Period- Section C-C, D-D and Southern elevation



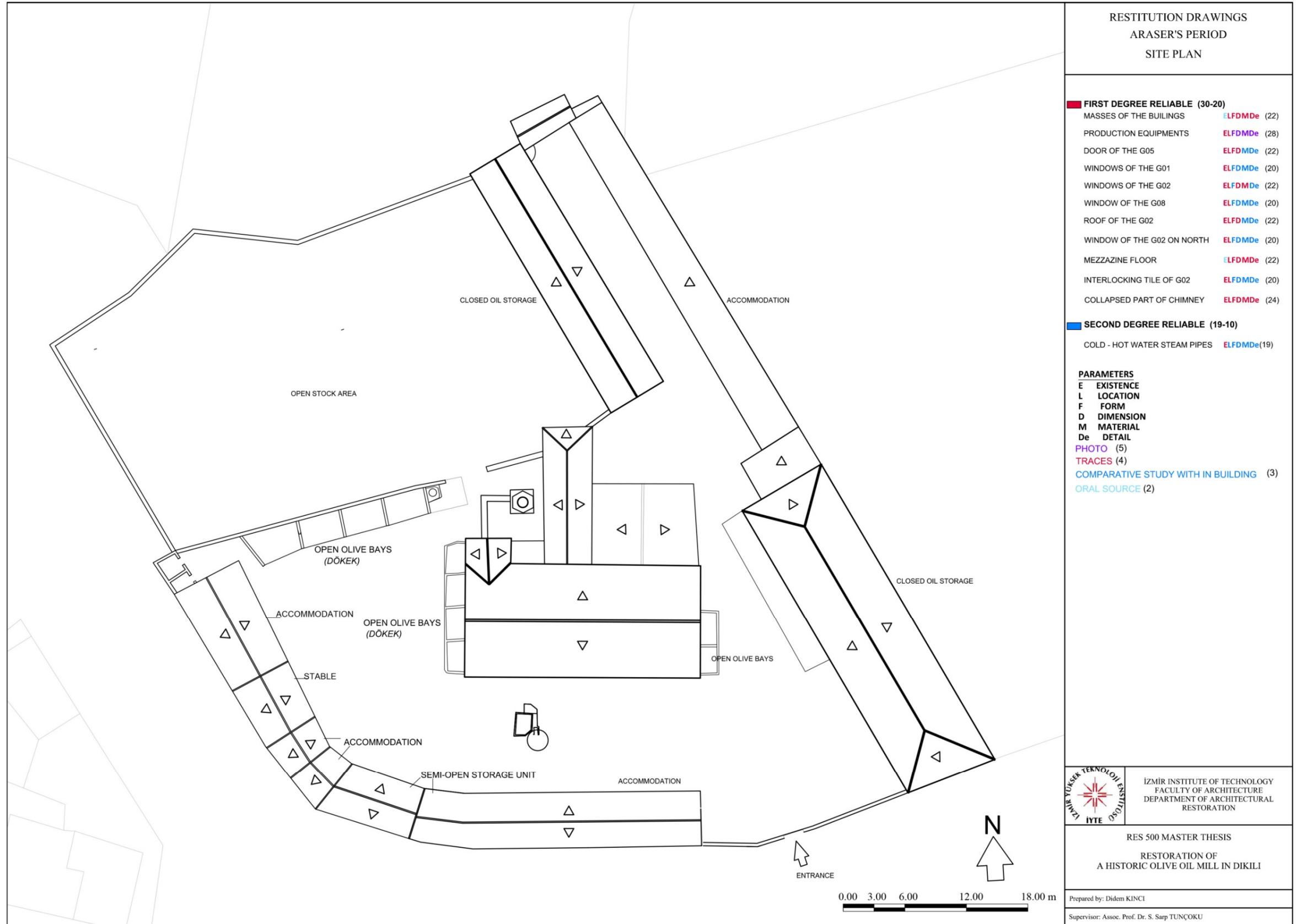
F.5. Restitution of Yannis Period- Western, Eastern and Northern Elevations

APPENDIX G

RESTITUTION OF ARASER PERIOD



G.1. Restitution of Araser Period- Flow- path diagram of oil extraction process in Araser mill



RESTITUTION DRAWINGS
ARASER'S PERIOD
SITE PLAN

- **FIRST DEGREE RELIABLE (30-20)**
- MASSES OF THE BUILDINGS ■ LFDMDe (22)
- PRODUCTION EQUIPMENTS ■ ELFDMDe (28)
- DOOR OF THE G05 ■ ELFDMDe (22)
- WINDOWS OF THE G01 ■ ELFDMDe (20)
- WINDOWS OF THE G02 ■ ELFDMDe (22)
- WINDOW OF THE G08 ■ ELFDMDe (20)
- ROOF OF THE G02 ■ ELFDMDe (22)
- WINDOW OF THE G02 ON NORTH ■ ELFDMDe (20)
- MEZZAZINE FLOOR ■ LFDMDe (22)
- INTERLOCKING TILE OF G02 ■ ELFDMDe (20)
- COLLAPSED PART OF CHIMNEY ■ ELFDMDe (24)

- **SECOND DEGREE RELIABLE (19-10)**
- COLD - HOT WATER STEAM PIPES ■ ELFDMDe(19)

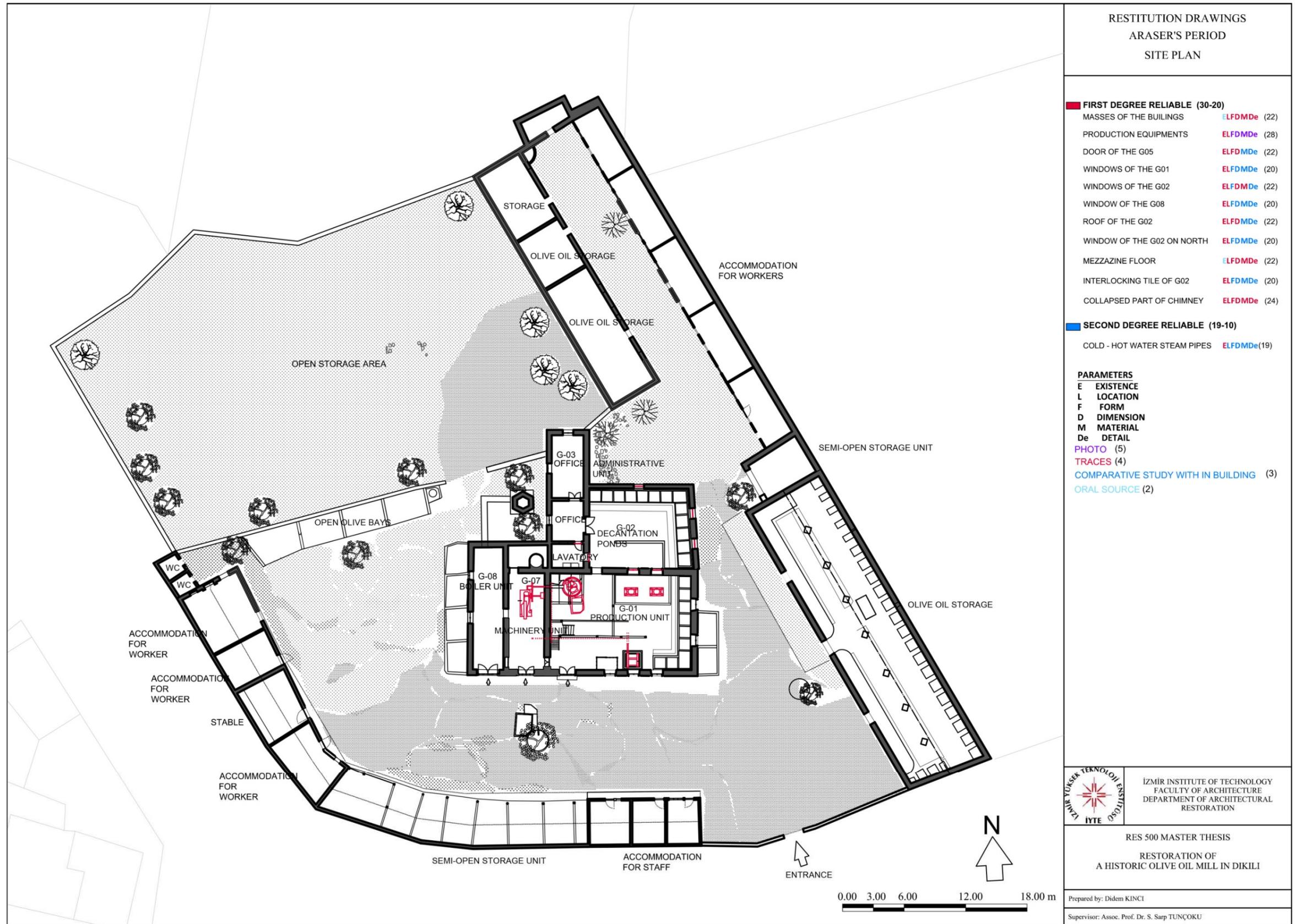
- PARAMETERS**
- E EXISTENCE
 - L LOCATION
 - F FORM
 - D DIMENSION
 - M MATERIAL
 - De DETAIL
 - PHOTO (5)
 - TRACES (4)
 - COMPARATIVE STUDY WITH IN BUILDING (3)
 - ORAL SOURCE (2)

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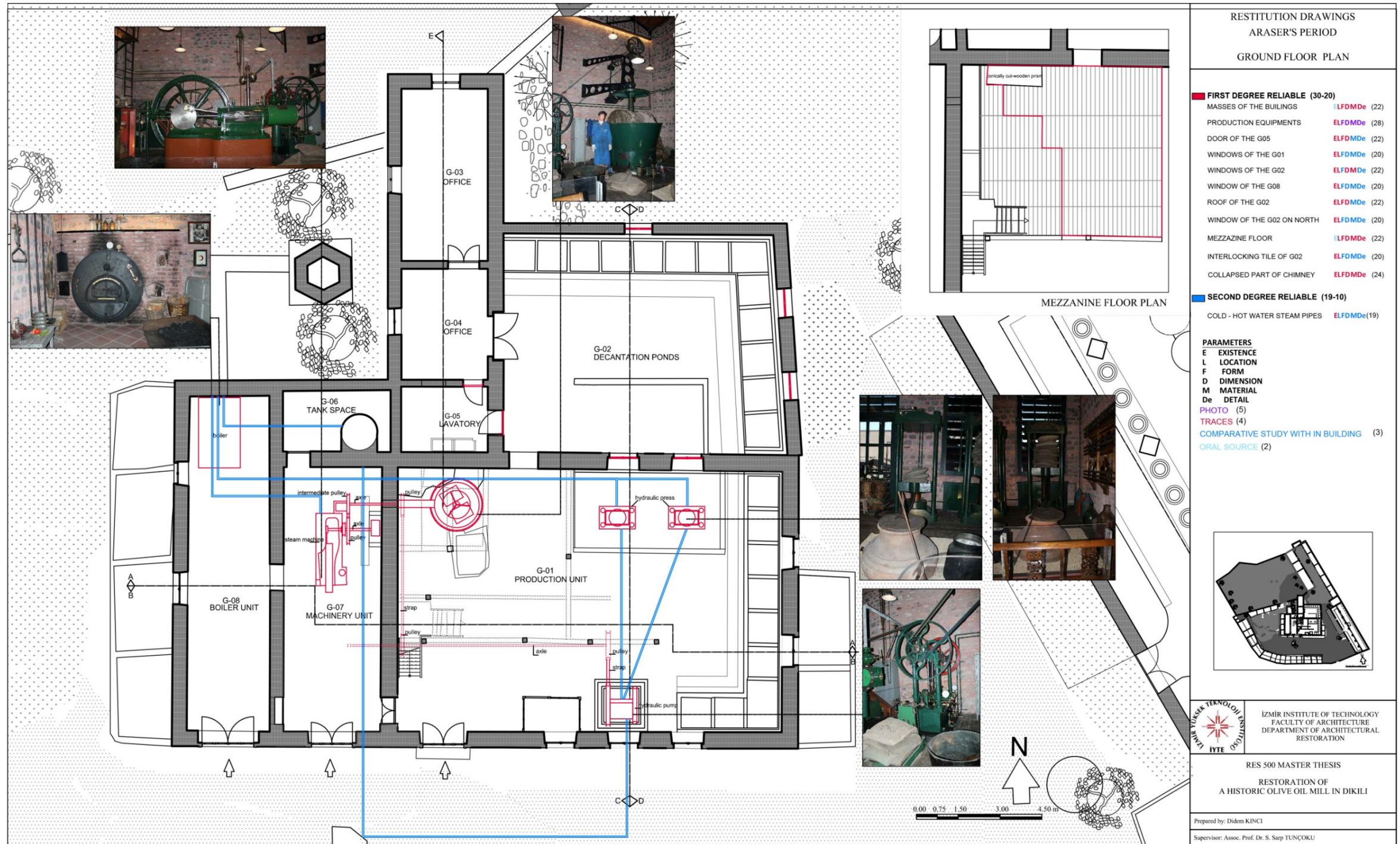
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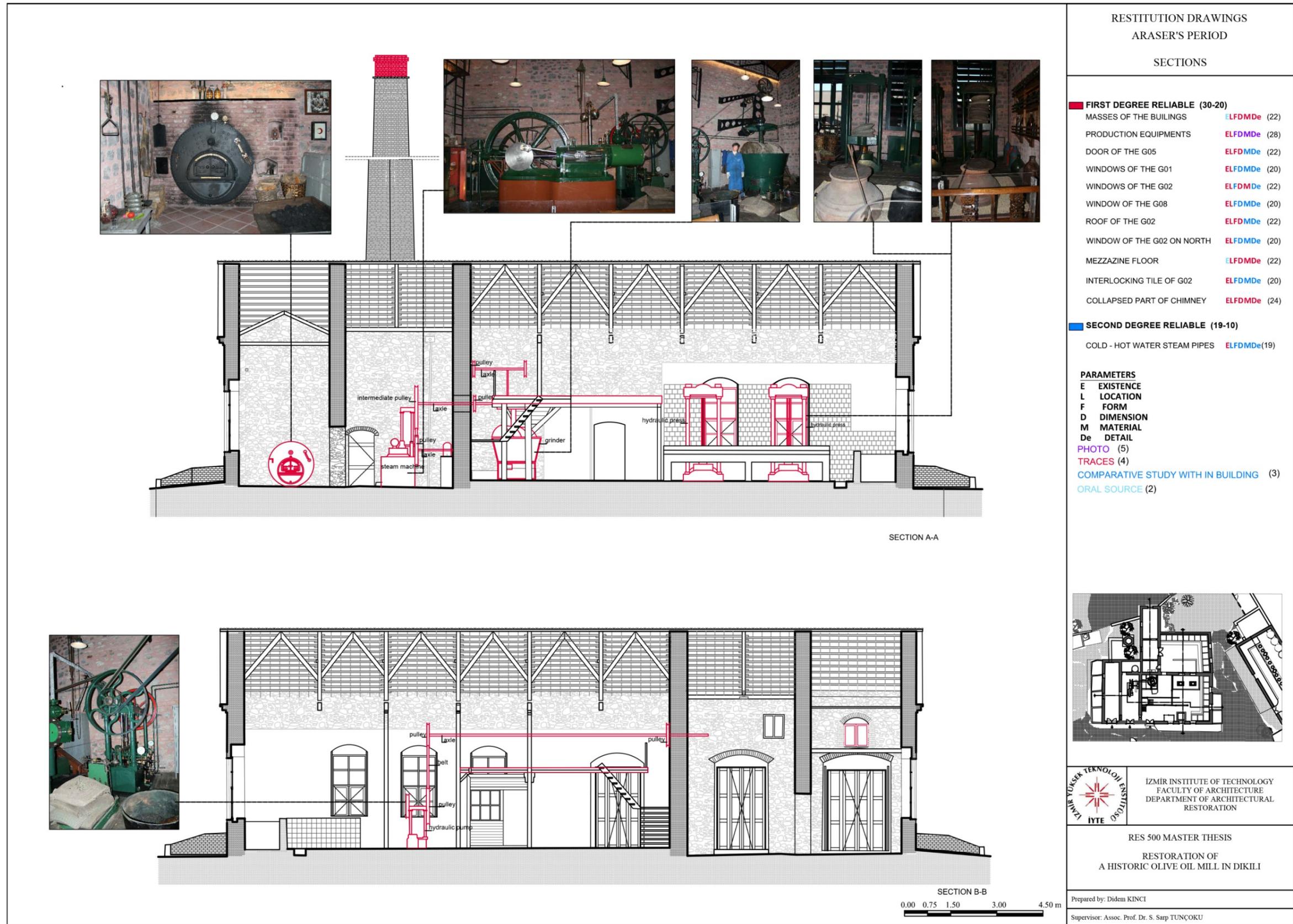
G.2. Restitution of Araser Period- Site Plan



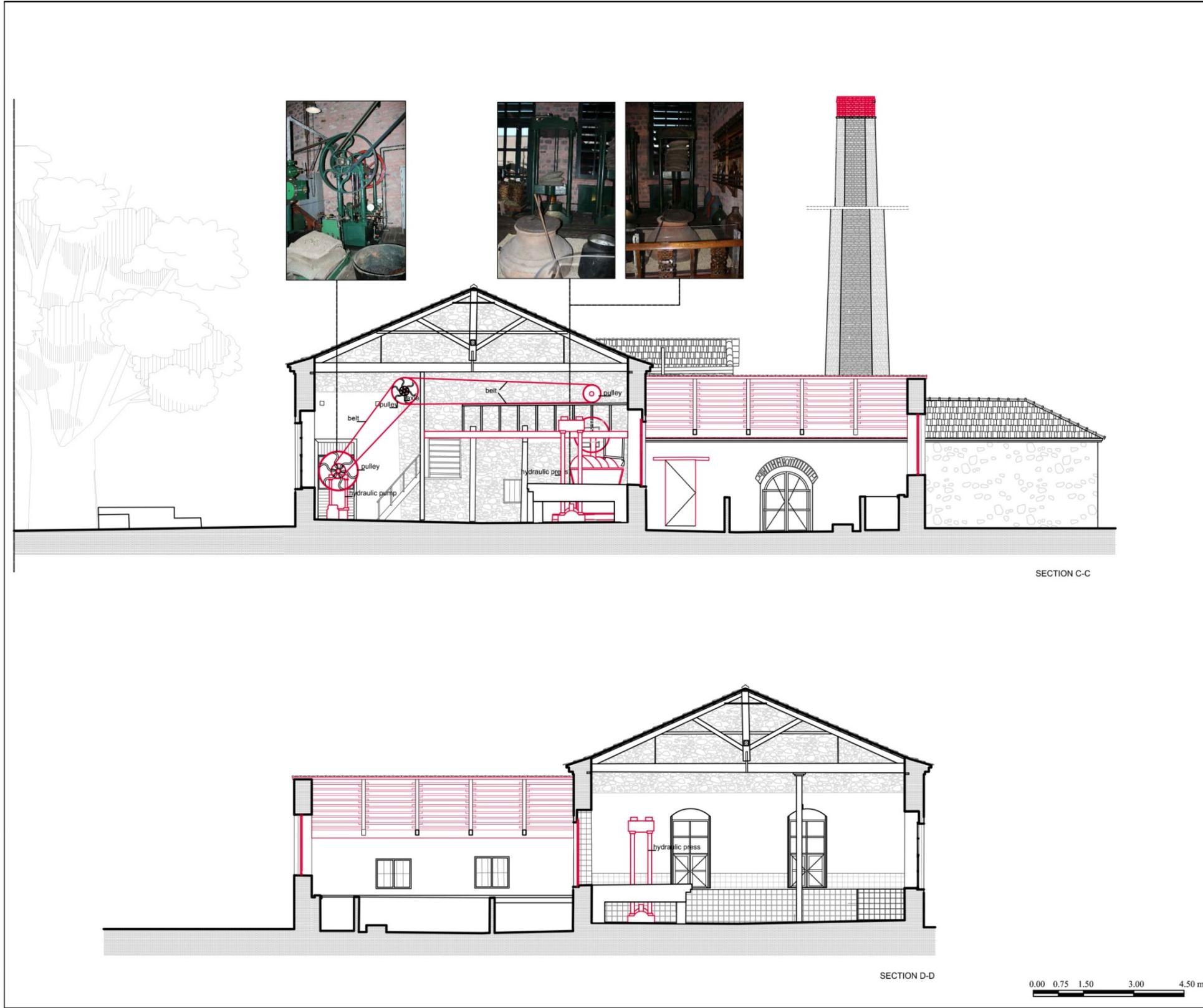
G.3. Restitution of Araser Period- Ground Floor Plans



G.4. Restitution of Araser Period- Ground Floor Plan



G.5. Restitution of Araser Period- Sections A-A and B-B

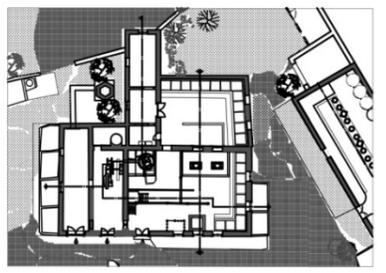


RESTITUTION DRAWINGS
ARASER'S PERIOD
SECTIONS

- **FIRST DEGREE RELIABLE (30-20)**
- MASSES OF THE BUILINGS ■ ELFDMDe (22)
- PRODUCTION EQUIPMENTS ■ ELFDMDe (28)
- DOOR OF THE G05 ■ ELFDMDe (22)
- WINDOWS OF THE G01 ■ ELFDMDe (20)
- WINDOWS OF THE G02 ■ ELFDMDe (22)
- WINDOW OF THE G08 ■ ELFDMDe (20)
- ROOF OF THE G02 ■ ELFDMDe (22)
- WINDOW OF THE G02 ON NORTH ■ ELFDMDe (20)
- MEZZAZINE FLOOR ■ ELFDMDe (22)
- INTERLOCKING TILE OF G02 ■ ELFDMDe (20)
- COLLAPSED PART OF CHIMNEY ■ ELFDMDe (24)

- **SECOND DEGREE RELIABLE (19-10)**
- COLD - HOT WATER STEAM PIPES ■ ELFDMDe(19)

- PARAMETERS**
- E EXISTENCE
 - L LOCATION
 - F FORM
 - D DIMENSION
 - M MATERIAL
 - De DETAIL
 - PHOTO (5)
 - TRACES (4)
 - COMPARATIVE STUDY WITH IN BUILDING (3)
 - ORAL SOURCE (2)



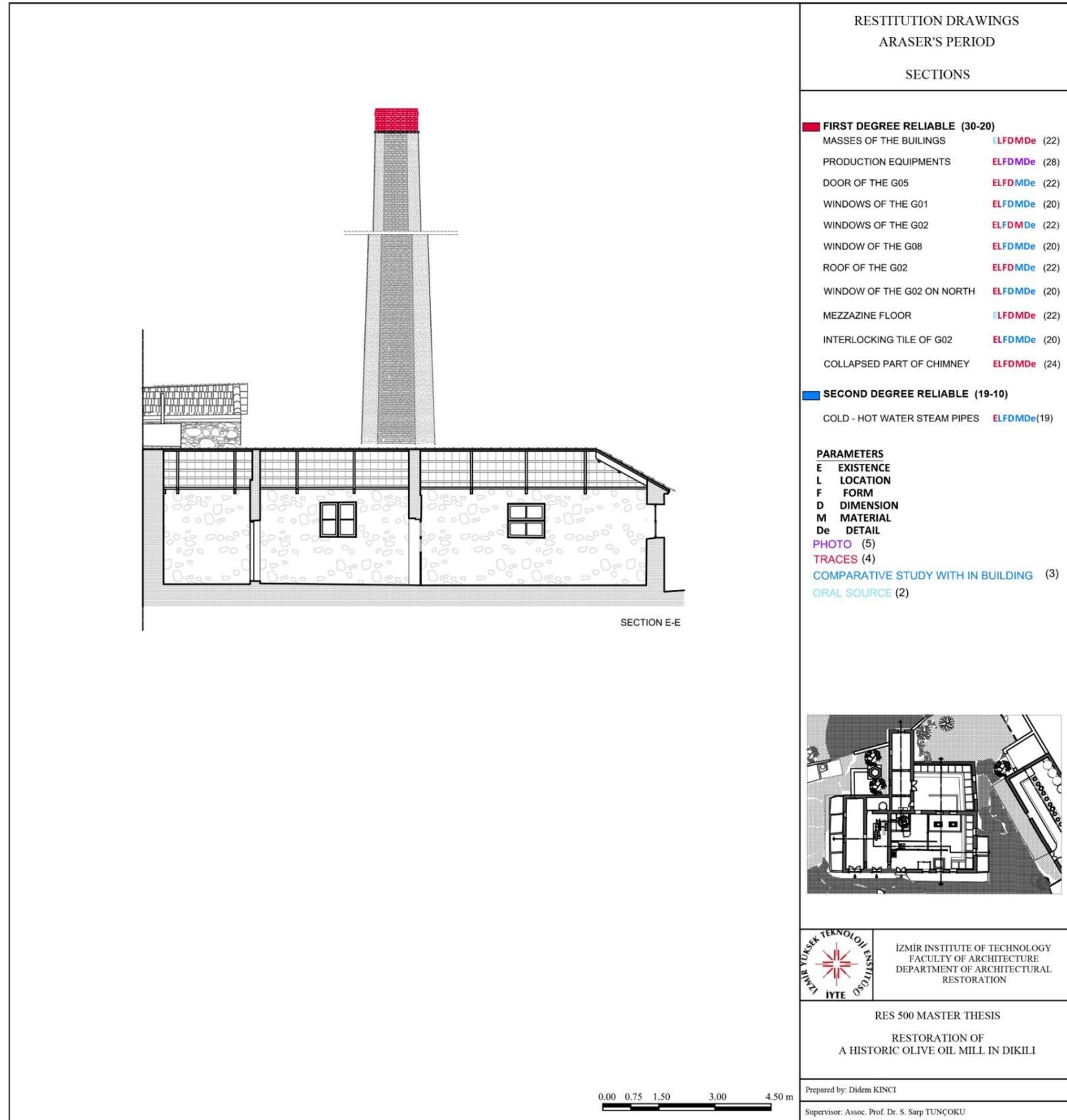
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Prepared by: Didem KINCI
Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

G.6. Restitution of Araser Period- Section C-C and D-D



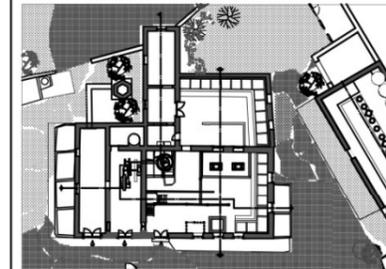
RESTITUTION DRAWINGS
ARASER'S PERIOD
SECTIONS

- FIRST DEGREE RELIABLE (30-20)**
- MASSES OF THE BUILDINGS **ELFDMDe** (22)
 - PRODUCTION EQUIPMENTS **ELFDMDe** (28)
 - DOOR OF THE G05 **ELFDMDe** (22)
 - WINDOWS OF THE G01 **ELFDMDe** (20)
 - WINDOWS OF THE G02 **ELFDMDe** (22)
 - WINDOW OF THE G08 **ELFDMDe** (20)
 - ROOF OF THE G02 **ELFDMDe** (22)
 - WINDOW OF THE G02 ON NORTH **ELFDMDe** (20)
 - MEZZAZINE FLOOR **ELFDMDe** (22)
 - INTERLOCKING TILE OF G02 **ELFDMDe** (20)
 - COLLAPSED PART OF CHIMNEY **ELFDMDe** (24)

- SECOND DEGREE RELIABLE (19-10)**
- COLD - HOT WATER STEAM PIPES **ELFDMDe**(19)

PARAMETERS
E EXISTENCE
L LOCATION
F FORM
D DIMENSION
M MATERIAL
De DETAIL

- PHOTO (5)
- TRACES (4)
- COMPARATIVE STUDY WITH IN BUILDING (3)
- ORAL SOURCE (2)



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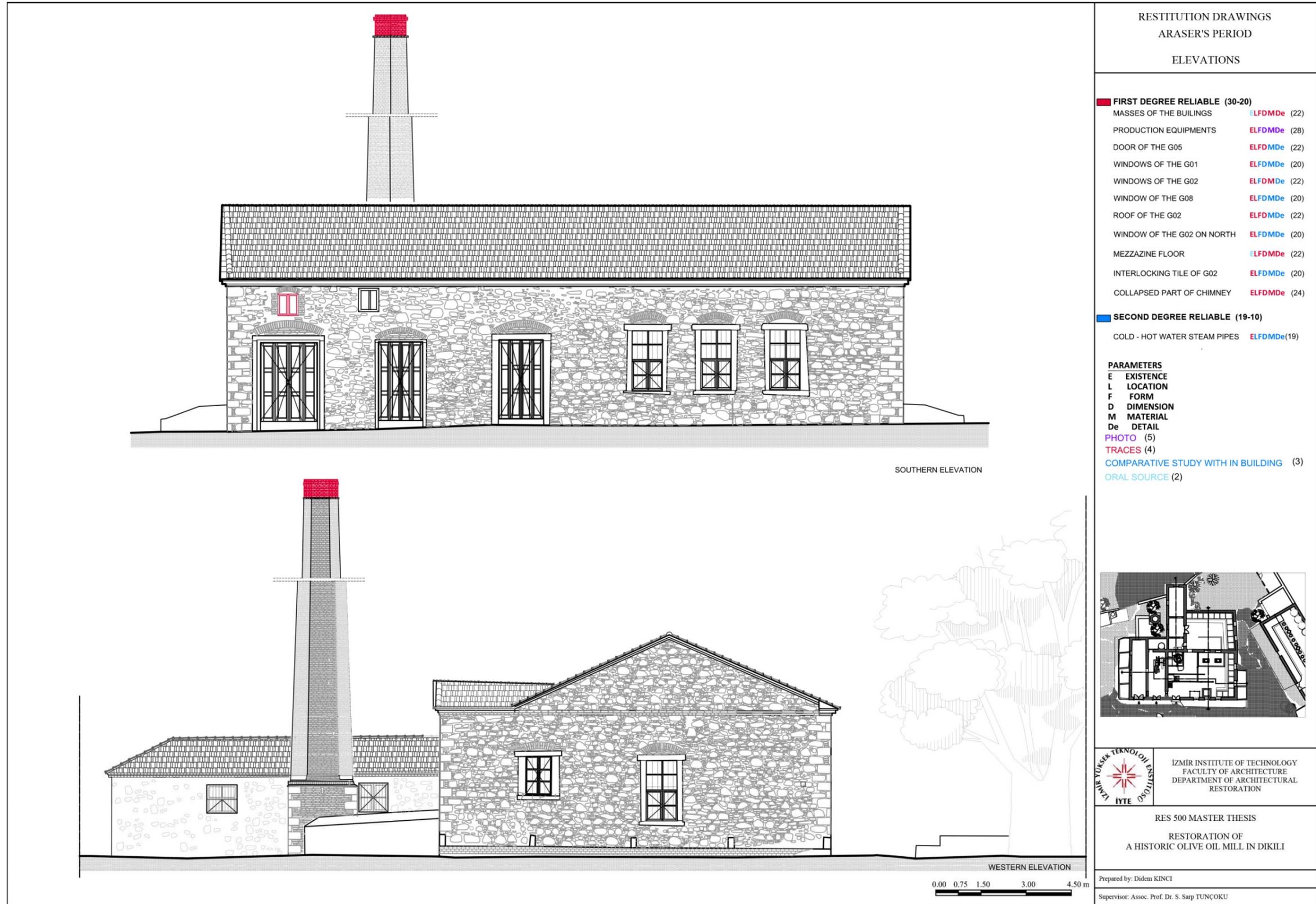
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0.00 0.75 1.50 3.00 4.50 m

G.7. Restitution of Araser Period- Section E-E

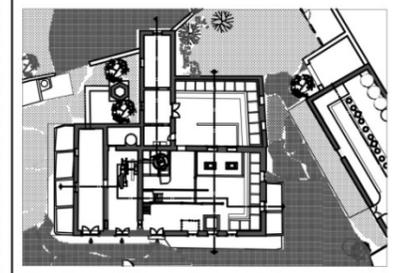


RESTITUTION DRAWINGS
ARASER'S PERIOD
ELEVATIONS

- **FIRST DEGREE RELIABLE (30-20)**
- MASSES OF THE BUILDINGS ELFDMDe (22)
- PRODUCTION EQUIPMENTS ELFDMDe (28)
- DOOR OF THE G05 ELFDMDe (22)
- WINDOWS OF THE G01 ELFDMDe (20)
- WINDOWS OF THE G02 ELFDMDe (22)
- WINDOW OF THE G08 ELFDMDe (20)
- ROOF OF THE G02 ELFDMDe (22)
- WINDOW OF THE G02 ON NORTH ELFDMDe (20)
- MEZZAZINE FLOOR LFDMDe (22)
- INTERLOCKING TILE OF G02 ELFDMDe (20)
- COLLAPSED PART OF CHIMNEY ELFDMDe (24)

- **SECOND DEGREE RELIABLE (19-10)**
- COLD - HOT WATER STEAM PIPES ELFDMDe(19)

- PARAMETERS**
- E EXISTENCE
 - L LOCATION
 - F FORM
 - D DIMENSION
 - M MATERIAL
 - De DETAIL
 - PHOTO (5)
 - TRACES (4)
 - COMPARATIVE STUDY WITH IN BUILDING (3)
 - ORAL SOURCE (2)



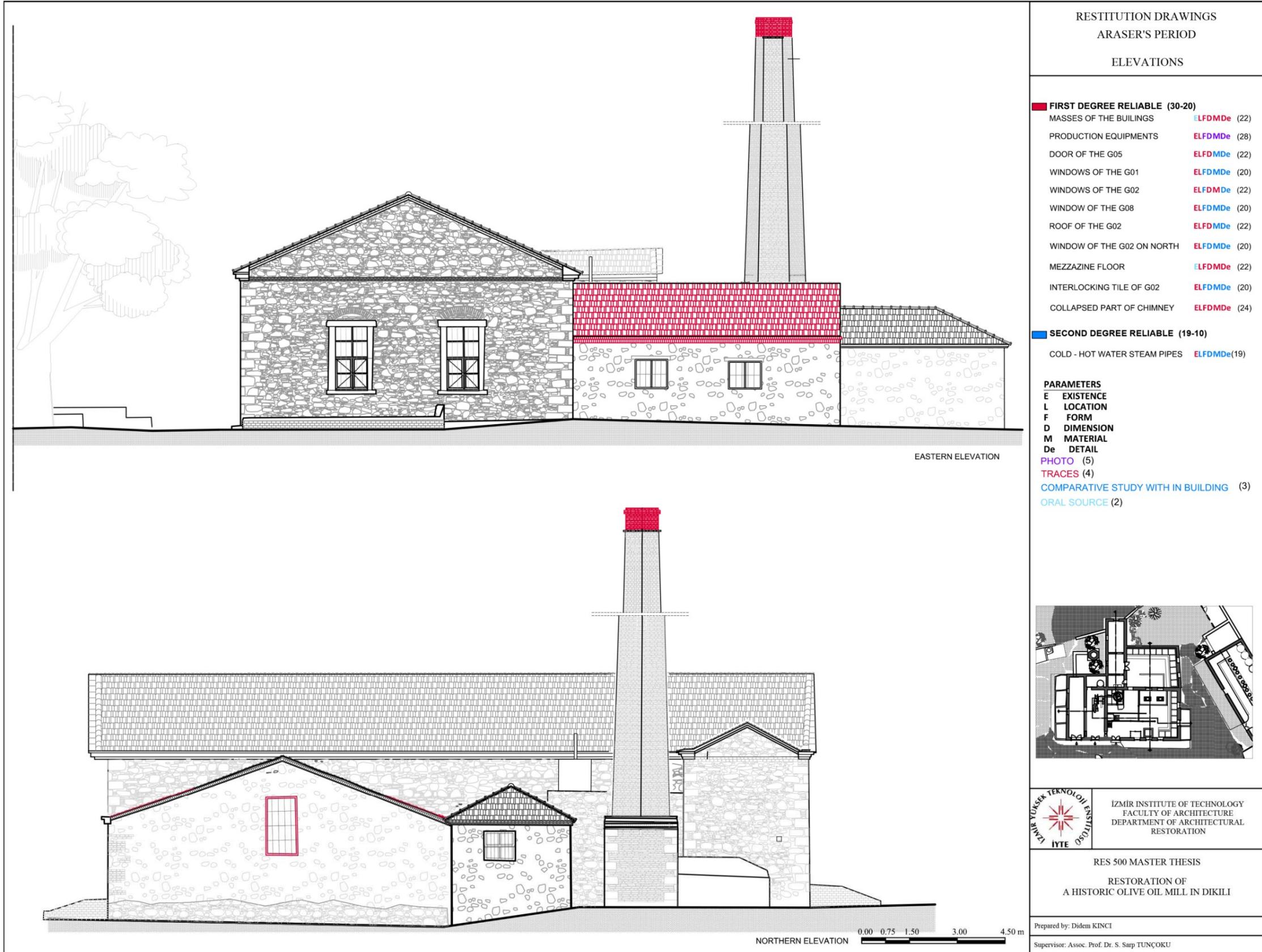
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G.8. Restitution of Araser Period- Southern and Western Elevations

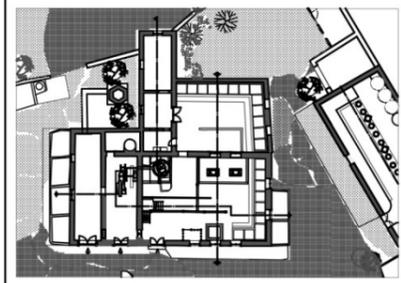


RESTITUTION DRAWINGS
ARASER'S PERIOD
ELEVATIONS

- **FIRST DEGREE RELIABLE (30-20)**
- MASSES OF THE BUILDINGS ELFDMDe (22)
- PRODUCTION EQUIPMENTS ELFDMDe (28)
- DOOR OF THE G05 ELFDMDe (22)
- WINDOWS OF THE G01 ELFDMDe (20)
- WINDOWS OF THE G02 ELFDMDe (22)
- WINDOW OF THE G08 ELFDMDe (20)
- ROOF OF THE G02 ELFDMDe (22)
- WINDOW OF THE G02 ON NORTH ELFDMDe (20)
- MEZZAZINE FLOOR ELFDMDe (22)
- INTERLOCKING TILE OF G02 ELFDMDe (20)
- COLLAPSED PART OF CHIMNEY ELFDMDe (24)

- **SECOND DEGREE RELIABLE (19-10)**
- COLD - HOT WATER STEAM PIPES ELFDMDe(19)

- PARAMETERS**
- E EXISTENCE
 - L LOCATION
 - F FORM
 - D DIMENSION
 - M MATERIAL
 - De DETAIL
 - PHOTO (5)
 - TRACES (4)
 - COMPARATIVE STUDY WITH IN BUILDING (3)
 - ORAL SOURCE (2)



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DEPARTMENT OF ARCHITECTURAL
RESTORATION

RES 500 MASTER THESIS

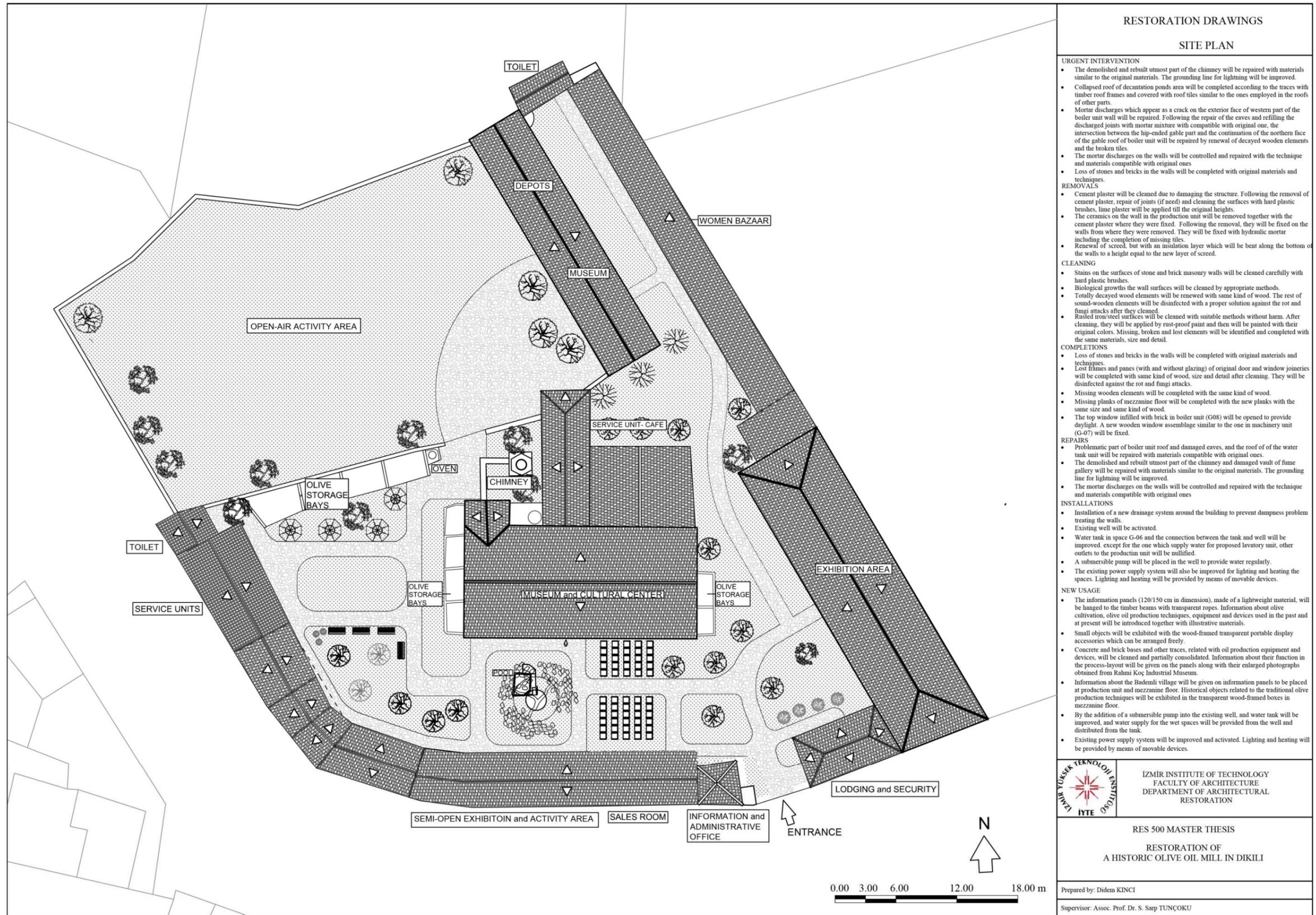
RESTORATION OF
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Supervisor: Assoc. Prof. Dr. S. Saip TUNÇOKU

G.9. Restitution of Araser Period- Eastern and Northern Elevations

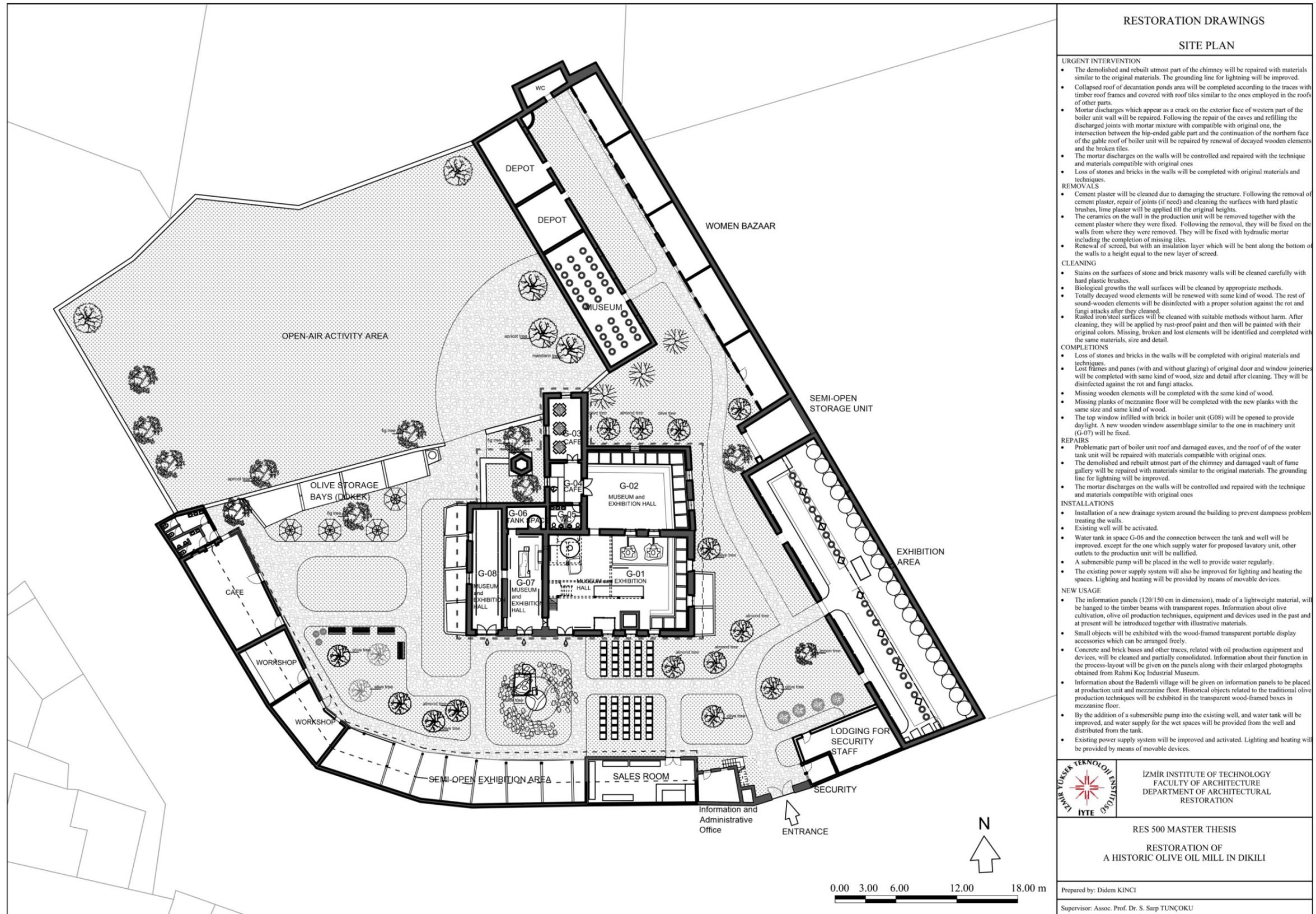
APPENDIX H

INTERVENTION DECISION AND RESTORATION PROPOSAL



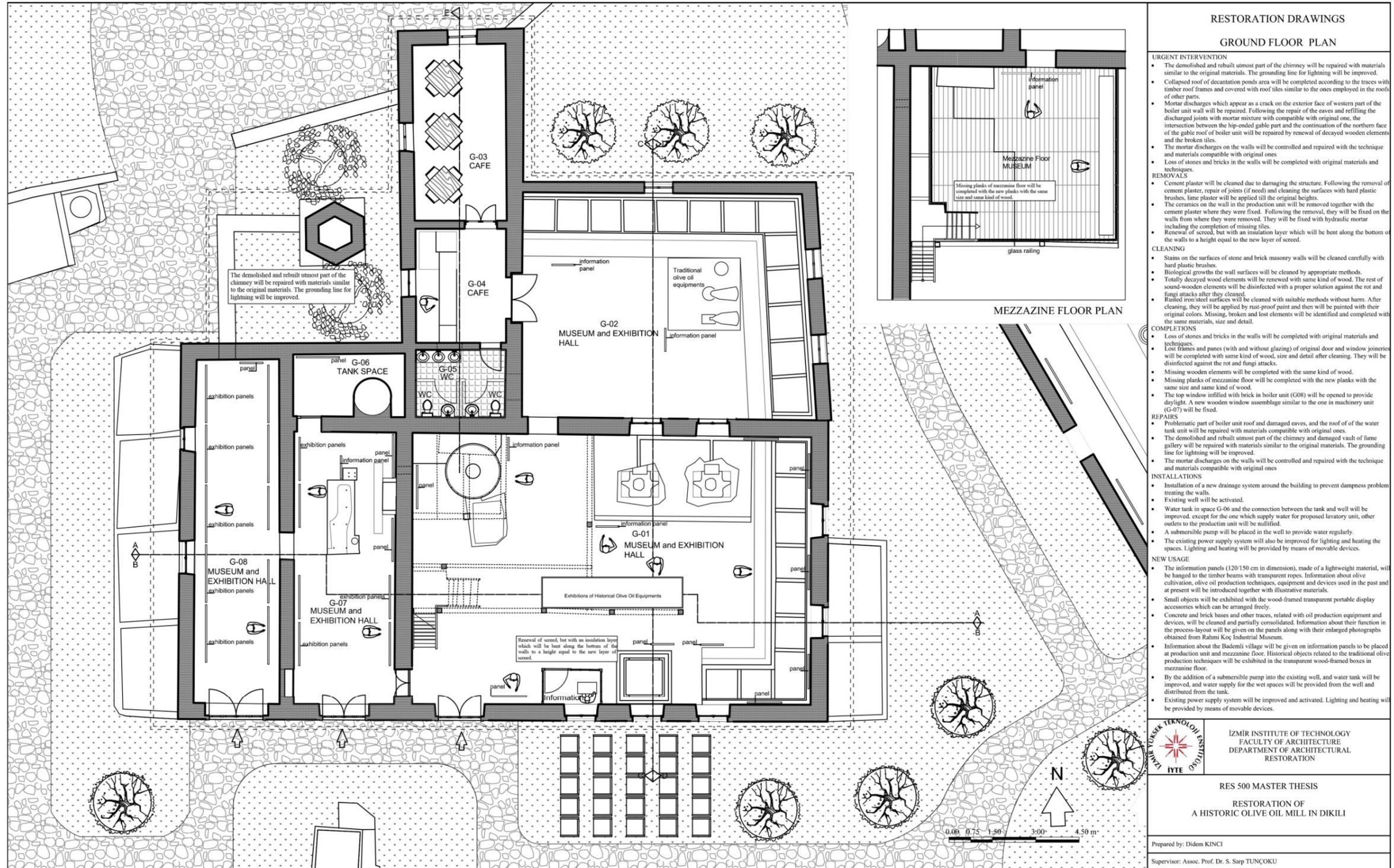
RESTORATION DRAWINGS	
SITE PLAN	
<p>URGENT INTERVENTION</p> <ul style="list-style-type: none"> The demolished and rebuilt utmost part of the chimney will be repaired with materials similar to the original materials. The grounding line for lightning will be improved. Collapsed roof of decantation ponds area will be completed according to the traces with timber roof frames and covered with roof tiles similar to the ones employed in the roofs of other parts. Mortar discharges which appear as a crack on the exterior face of western part of the boiler unit wall will be repaired. Following the repair of the eaves and refilling the discharged joints with mortar mixture with compatible with original one, the intersection between the hip-ended gable part and the continuation of the northern face of the gable roof of boiler unit will be repaired by renewal of decayed wooden elements and the broken tiles. The mortar discharges on the walls will be controlled and repaired with the technique and materials compatible with original ones Loss of stones and bricks in the walls will be completed with original materials and techniques. 	
<p>REMOVALS</p> <ul style="list-style-type: none"> Cement plaster will be cleaned due to damaging the structure. Following the removal of cement plaster, repair of joints (if need) and cleaning the surfaces with hard plastic brushes, lime plaster will be applied till the original heights. The ceramics on the wall in the production unit will be removed together with the cement plaster where they were fixed. Following the removal, they will be fixed on the walls from where they were removed. They will be fixed with hydraulic mortar including the completion of missing tiles. Renewal of screed, but with an insulation layer which will be bent along the bottom of the walls to a height equal to the new layer of screed. 	
<p>CLEANING</p> <ul style="list-style-type: none"> Stains on the surfaces of stone and brick masonry walls will be cleaned carefully with hard plastic brushes. Biological growths the wall surfaces will be cleaned by appropriate methods. Totally decayed wood elements will be renewed with same kind of wood. The rest of sound-wooden elements will be disinfected with a proper solution against the rot and fungi attacks after they cleaned. Rusted iron/steel surfaces will be cleaned with suitable methods without harm. After cleaning, they will be applied by rust-proof paint and then will be painted with their original colors. Missing, broken and lost elements will be identified and completed with the same materials, size and detail. 	
<p>COMPLETIONS</p> <ul style="list-style-type: none"> Loss of stones and bricks in the walls will be completed with original materials and techniques. Lost frames and panes (with and without glazing) of original door and window joineries will be completed with same kind of wood, size and detail after cleaning. They will be disinfected against the rot and fungi attacks. Missing wooden elements will be completed with the same kind of wood. Missing planks of mezzanine floor will be completed with the new planks with the same size and same kind of wood. The top window infilled with brick in boiler unit (G08) will be opened to provide daylight. A new wooden window assemblage similar to the one in machinery unit (G-07) will be fixed. 	
<p>REPAIRS</p> <ul style="list-style-type: none"> Problematic part of boiler unit roof and damaged eaves, and the roof of of the water tank unit will be repaired with materials compatible with original ones. The demolished and rebuilt utmost part of the chimney and damaged vault of fume gallery will be repaired with materials similar to the original materials. The grounding line for lightning will be improved. The mortar discharges on the walls will be controlled and repaired with the technique and materials compatible with original ones 	
<p>INSTALLATIONS</p> <ul style="list-style-type: none"> Installation of a new drainage system around the building to prevent dampness problem treating the walls. Existing well will be activated. Water tank in space G-06 and the connection between the tank and well will be improved, except for the one which supply water for proposed lavatory unit, other outlets to the production unit will be modified. A submersible pump will be placed in the well to provide water regularly. The existing power supply system will also be improved for lighting and heating the spaces. Lighting and heating will be provided by means of movable devices. 	
<p>NEW USAGE</p> <ul style="list-style-type: none"> The information panels (120/150 cm in dimension), made of a lightweight material, will be hanged to the timber beams with transparent ropes. Information about olive cultivation, olive oil production techniques, equipment and devices used in the past and at present will be introduced together with illustrative materials. Small objects will be exhibited with the wood-framed transparent portable display accessories which can be arranged freely. Concrete and brick bases and other traces, related with oil production equipment and devices, will be cleaned and partially consolidated. Information about their function in the process-layout will be given on the panels along with their enlarged photographs obtained from Rahmi Koç Industrial Museum. Information about the Bademli village will be given on information panels to be placed at production unit and mezzanine floor. Historical objects related to the traditional olive production techniques will be exhibited in the transparent wood-framed boxes in mezzanine floor. By the addition of a submersible pump into the existing well, and water tank will be improved, and water supply for the wet spaces will be provided from the well and distributed from the tank. Existing power supply system will be improved and activated. Lighting and heating will be provided by means of movable devices. 	
	<p>İZMİR INSTITUTE OF TECHNOLOGY FACULTY OF ARCHITECTURE DEPARTMENT OF ARCHITECTURAL RESTORATION</p>
<p>RES 500 MASTER THESIS</p> <p>RESTORATION OF A HISTORIC OLIVE OIL MILL IN DIKILI</p>	
<p>Prepared by: Didem KINCI</p> <p>Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU</p>	

H.1. Restoration proposal- Site Plan



RESTORATION DRAWINGS	
SITE PLAN	
URGENT INTERVENTION	
<ul style="list-style-type: none"> The demolished and rebuilt utmost part of the chimney will be repaired with materials similar to the original materials. The grounding line for lightning will be improved. Collapsed roof of decantation ponds area will be completed according to the traces with timber roof frames and covered with roof tiles similar to the ones employed in the roofs of other parts. Mortar discharges which appear as a crack on the exterior face of western part of the boiler unit wall will be repaired. Following the repair of the caves and refilling the discharged joints with mortar mixture with compatible with original one, the intersection between the hip-ended gable part and the continuation of the northern face of the gable roof of boiler unit will be repaired by renewal of decayed wooden elements and the broken tiles. The mortar discharges on the walls will be controlled and repaired with the technique and materials compatible with original ones Loss of stones and bricks in the walls will be completed with original materials and techniques. 	
REMOVALS	
<ul style="list-style-type: none"> Cement plaster will be cleaned due to damaging the structure. Following the removal of cement plaster, repair of joints (if need) and cleaning the surfaces with hard plastic brushes, lime plaster will be applied till the original heights. The ceramics on the wall in the production unit will be removed together with the cement plaster where they were fixed. Following the removal, they will be fixed on the walls from where they were removed. They will be fixed with hydraulic mortar including the completion of missing tiles. Renewal of screed, but with an insulation layer which will be bent along the bottom of the walls to a height equal to the new layer of screed. 	
CLEANING	
<ul style="list-style-type: none"> Stains on the surfaces of stone and brick masonry walls will be cleaned carefully with hard plastic brushes. Biological growths the wall surfaces will be cleaned by appropriate methods. Totally decayed wood elements will be renewed with same kind of wood. The rest of sound-wooden elements will be disinfected with a proper solution against the rot and fungi attacks after they cleaned. Rusted iron/steel surfaces will be cleaned with suitable methods without harm. After cleaning, they will be applied by rust-proof paint and then will be painted with their original colors. Missing, broken and lost elements will be identified and completed with the same materials, size and detail. 	
COMPLETIONS	
<ul style="list-style-type: none"> Loss of stones and bricks in the walls will be completed with original materials and techniques. Lost frames and panes (with and without glazing) of original door and window joineries will be completed with same kind of wood, size and detail after cleaning. They will be disinfected against the rot and fungi attacks. Missing wooden elements will be completed with the same kind of wood. Missing planks of mezzanine floor will be completed with the new planks with the same size and same kind of wood. The top window infilled with brick in boiler unit (G08) will be opened to provide daylight. A new wooden window assemblage similar to the one in machinery unit (G-07) will be fixed. 	
REPAIRS	
<ul style="list-style-type: none"> Problematic part of boiler unit roof and damaged eaves, and the roof of of the water tank unit will be repaired with materials compatible with original ones. The demolished and rebuilt utmost part of the chimney and damaged vault of fume gallery will be repaired with materials similar to the original materials. The grounding line for lightning will be improved. The mortar discharges on the walls will be controlled and repaired with the technique and materials compatible with original ones 	
INSTALLATIONS	
<ul style="list-style-type: none"> Installation of a new drainage system around the building to prevent dampness problem treating the walls. Existing well will be activated. Water tank in space G-06 and the connection between the tank and well will be improved, except for the one which supply water for proposed lavatory unit, other outlets to the production unit will be nullified. A submersible pump will be placed in the well to provide water regularly. The existing power supply system will also be improved for lighting and heating the spaces. Lighting and heating will be provided by means of movable devices. 	
NEW USAGE	
<ul style="list-style-type: none"> The information panels (120/150 cm in dimension), made of a lightweight material, will be hanged to the timber beams with transparent ropes. Information about olive cultivation, olive oil production techniques, equipment and devices used in the past and present will be introduced together with illustrative materials. Small objects will be exhibited with the wood-framed transparent portable display accessories which can be arranged freely. Concrete and brick bases and other traces, related with oil production equipment and devices, will be cleaned and partially consolidated. Information about their function in the process-layout will be given on the panels along with their enlarged photographs obtained from Rahmi Koç Industrial Museum. Information about the Bademli village will be given on information panels to be placed at production unit and mezzanine floor. Historical objects related to the traditional olive production techniques will be exhibited in the transparent wood-framed boxes in mezzanine floor. By the addition of a submersible pump into the existing well, and water tank will be improved, and water supply for the wet spaces will be provided from the well and distributed from the tank. Existing power supply system will be improved and activated. Lighting and heating will be provided by means of movable devices. 	
	İZMİR INSTITUTE OF TECHNOLOGY FACULTY OF ARCHITECTURE DEPARTMENT OF ARCHITECTURAL RESTORATION
	RES 500 MASTER THESIS RESTORATION OF A HISTORIC OLIVE OIL MILL IN DIKILI
	Prepared by: Didem KINCI Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

H.2. Restoration proposal- Ground Floor Plans



RESTORATION DRAWINGS

GROUND FLOOR PLAN

- URGENT INTERVENTION**
- The demolished and rebuilt utmost part of the chimney will be repaired with materials similar to the original materials. The grounding line for lightning will be improved.
 - Collapsed roof of decantation ponds area will be completed according to the traces with timber roof frames and covered with roof tiles similar to the ones employed in the roofs of other parts.
 - Mortar discharges which appear as a crack on the exterior face of western part of the boiler unit wall will be repaired. Following the repair of the eaves and refilling the discharged joints with mortar mixture with compatible with original one, the intersection between the hip-ended gable part and the continuation of the northern face of the gable roof of boiler unit will be repaired by renewal of decayed wooden elements and the broken tiles.
 - The mortar discharges on the walls will be controlled and repaired with the technique and materials compatible with original ones
 - Loss of stones and bricks in the walls will be completed with original materials and techniques.
- REMOVALS**
- Cement plaster will be cleaned due to damaging the structure. Following the removal of cement plaster, repair of joints (if need) and cleaning the surfaces with hard plastic brushes, lime plaster will be applied till the original heights.
 - The ceramics on the wall in the production unit will be removed together with the cement plaster where they were fixed. Following the removal, they will be fixed on the walls from where they were removed. They will be fixed with hydraulic mortar including the completion of missing tiles.
 - Removal of screed, but with an insulation layer which will be bent along the bottom of the walls to a height equal to the new layer of screed.
- CLEANING**
- Stains on the surfaces of stone and brick masonry walls will be cleaned carefully with hard plastic brushes.
 - Biological growth on the wall surfaces will be cleaned by appropriate methods.
 - Totally decayed wood elements will be renewed with same kind of wood. The rest of sound-wooden elements will be disinfected with a proper solution against the rot and fungi attacks after they cleaned.
 - Rusted iron-steel surfaces will be cleaned with suitable methods without harm. After cleaning, they will be applied by rust-proof paint and then will be painted with their original colors. Missing, broken and lost elements will be identified and completed with the same materials, size and detail.
- COMPLETIONS**
- Loss of stones and bricks in the walls will be completed with original materials and techniques.
 - Lint frames and panes (with and without glazing) of original door and window joineries will be completed with same kind of wood, size and detail after cleaning. They will be disinfected against the rot and fungi attacks.
 - Missing wooden elements will be completed with the same kind of wood.
 - Missing planks of mezzanine floor will be completed with the new planks with the same size and same kind of wood.
 - The top window infilled with brick in boiler unit (G08) will be opened to provide daylight. A new wooden window assemblage similar to the one in machinery unit (G-07) will be fixed.
- REPAIRS**
- Problematic part of boiler unit roof and damaged eaves, and the roof of the water tank unit will be repaired with materials compatible with original ones.
 - The demolished and rebuilt utmost part of the chimney and damaged vault of fume gallery will be repaired with materials similar to the original materials. The grounding line for lightning will be improved.
 - The mortar discharges on the walls will be controlled and repaired with the technique and materials compatible with original ones
- INSTALLATIONS**
- Installation of a new drainage system around the building to prevent dampness problem treating the walls.
 - Existing well will be activated.
 - Water tank in space G-06 and the connection between the tank and well will be improved, except for the one which supply water for proposed lavatory unit, other outlets to the production unit will be nullified.
 - A submersible pump will be placed in the well to provide water regularly.
 - The existing power supply system will also be improved for lighting and heating the spaces. Lighting and heating will be provided by means of movable devices.
- NEW USAGE**
- The information panels (120x150 cm in dimension), made of a lightweight material, will be hanged to the timber beams with transparent ropes. Information about olive cultivation, olive oil production techniques, equipment and devices used in the past and at present will be introduced together with illustrative materials.
 - Small objects will be exhibited with the wood-framed transparent portable display accessories which can be arranged freely.
 - Concrete and brick bases and other traces, related with oil production equipment and devices, will be cleaned and partially consolidated. Information about their function in the process-layout will be given on the panels along with their enlarged photographs obtained from Rahmi Koc Industrial Museum.
 - Information about the Bademli village will be given on information panels to be placed at production unit and mezzanine floor. Historical objects related to the traditional olive production techniques will be exhibited in the transparent wood-framed boxes in mezzanine floor.
 - By the addition of a submersible pump into the existing well, and water tank will be improved, and water supply for the wet spaces will be provided from the well and distributed from the tank.
 - Existing power supply system will be improved and activated. Lighting and heating will be provided by means of movable devices.

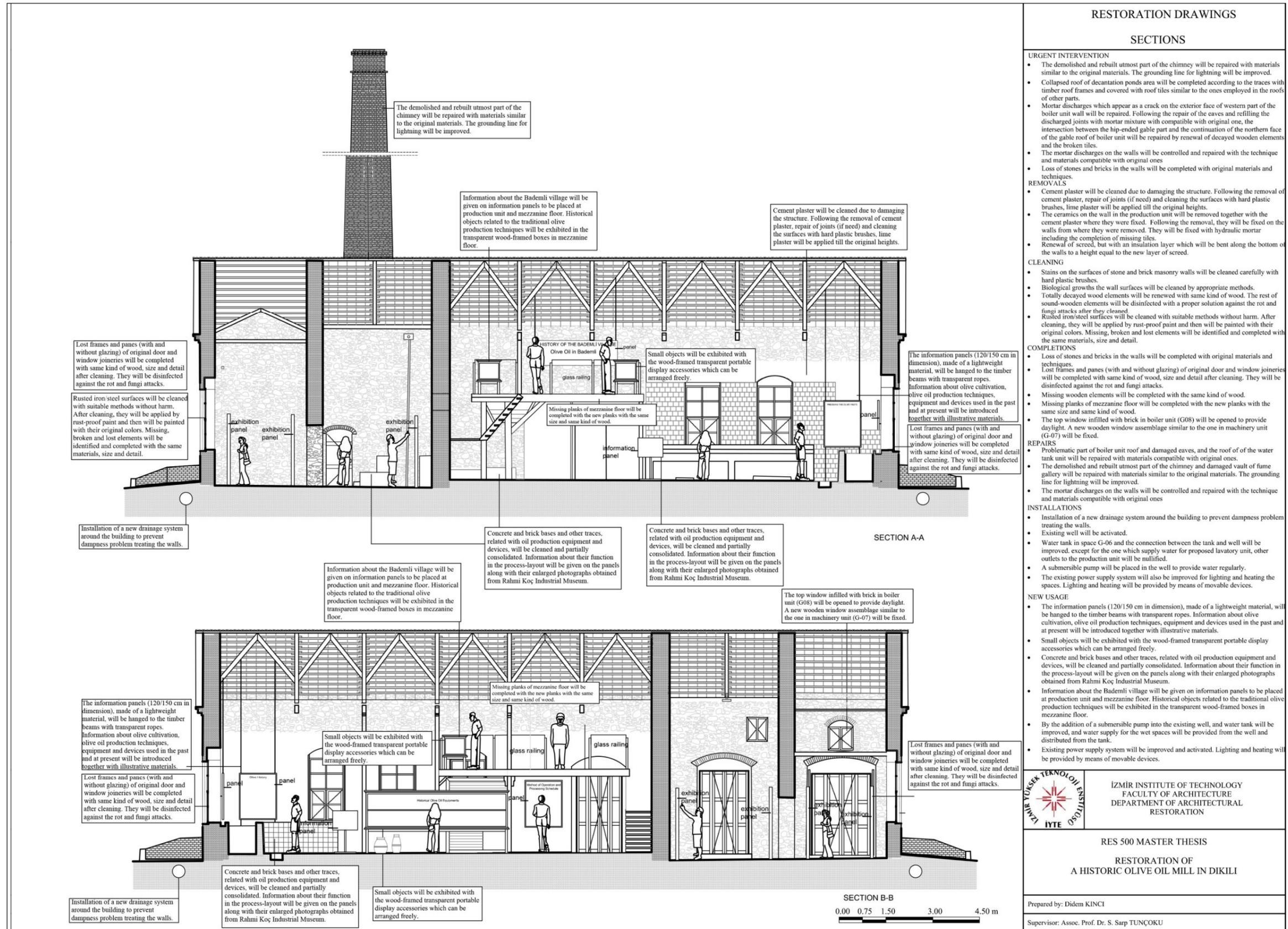
IZMIR INSTITUTE OF TECHNOLOGY
FACULTY OF ARCHITECTURE
DEPARTMENT OF ARCHITECTURAL
RESTORATION

RES 500 MASTER THESIS

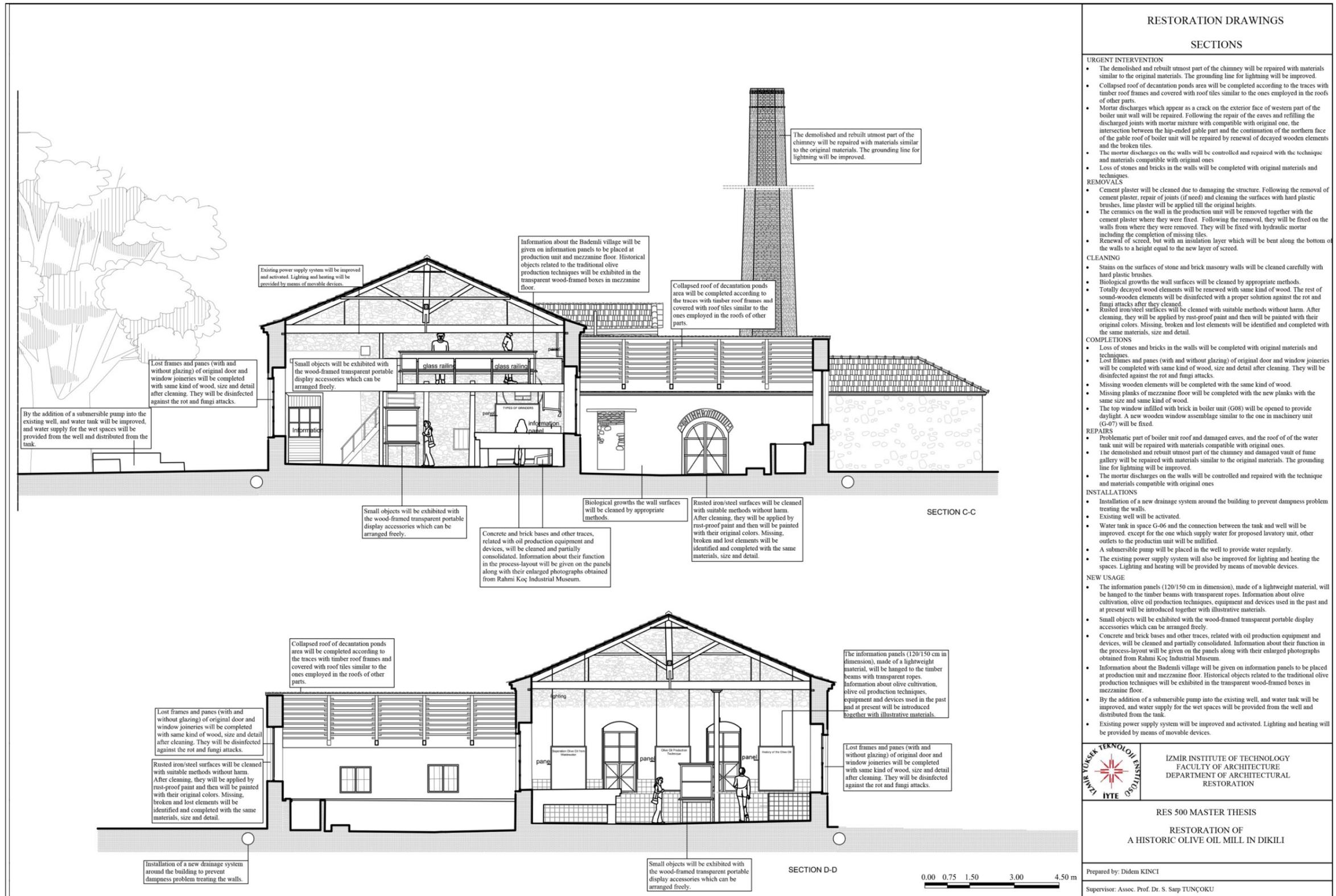
RESTORATION OF
A HISTORIC OLIVE OIL MILL IN DIKILI

Prepared by: Didem KINCI
Supervisor: Assoc. Prof. Dr. S. Sarp TUNÇOKU

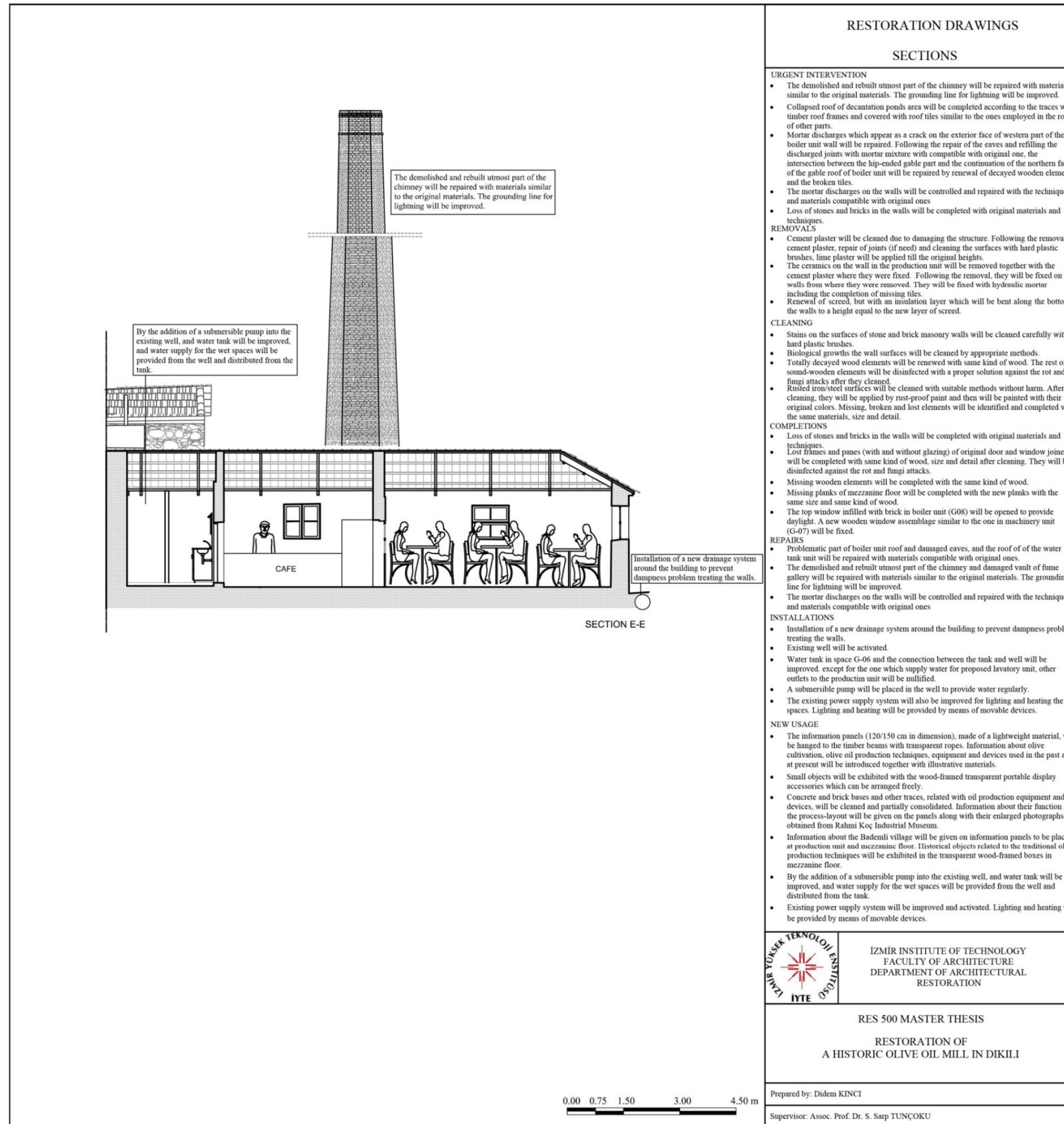
H.3. Restoration proposal- Ground Floor Plan



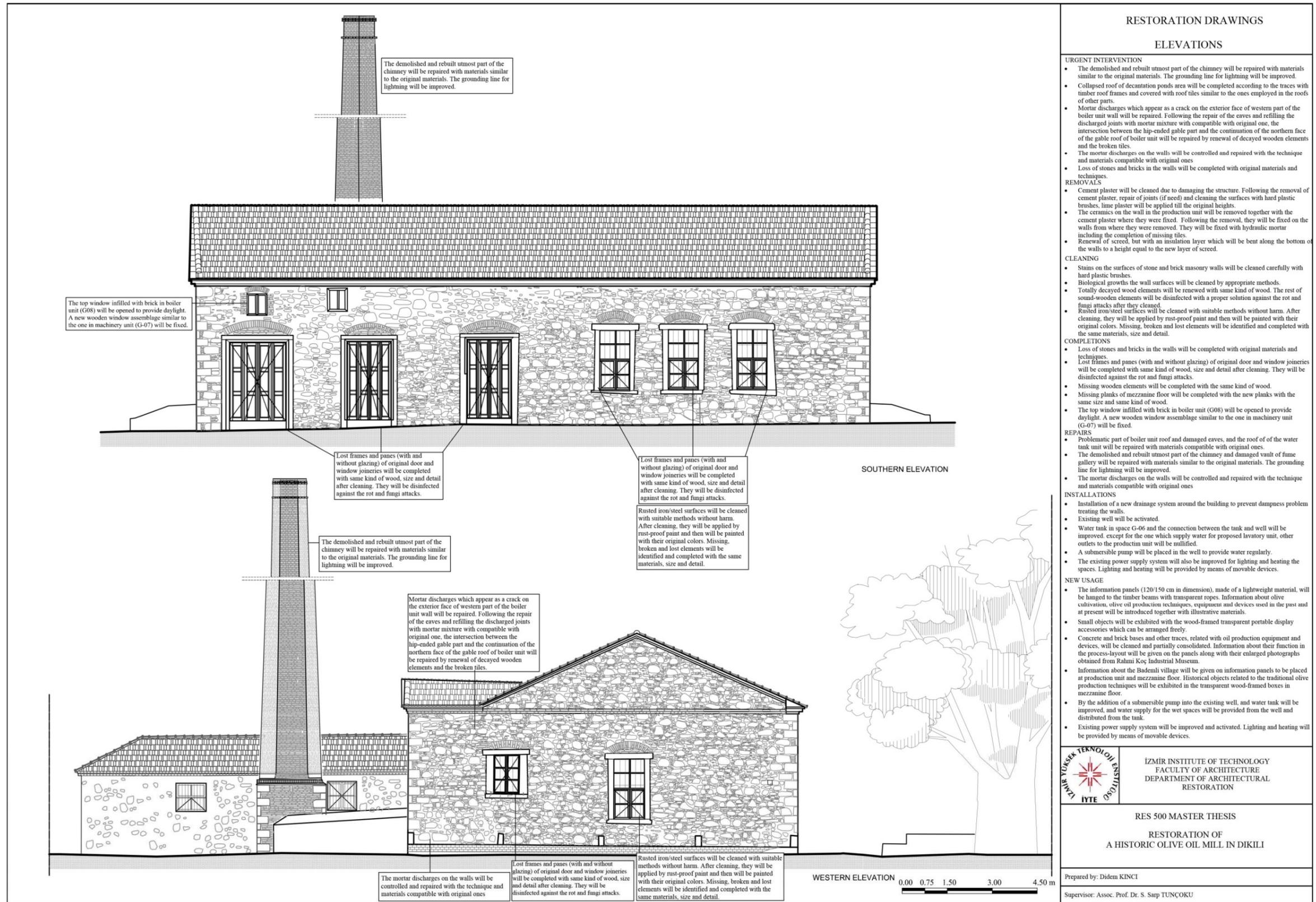
H.4. Restoration proposal- Sections A-A and B-B



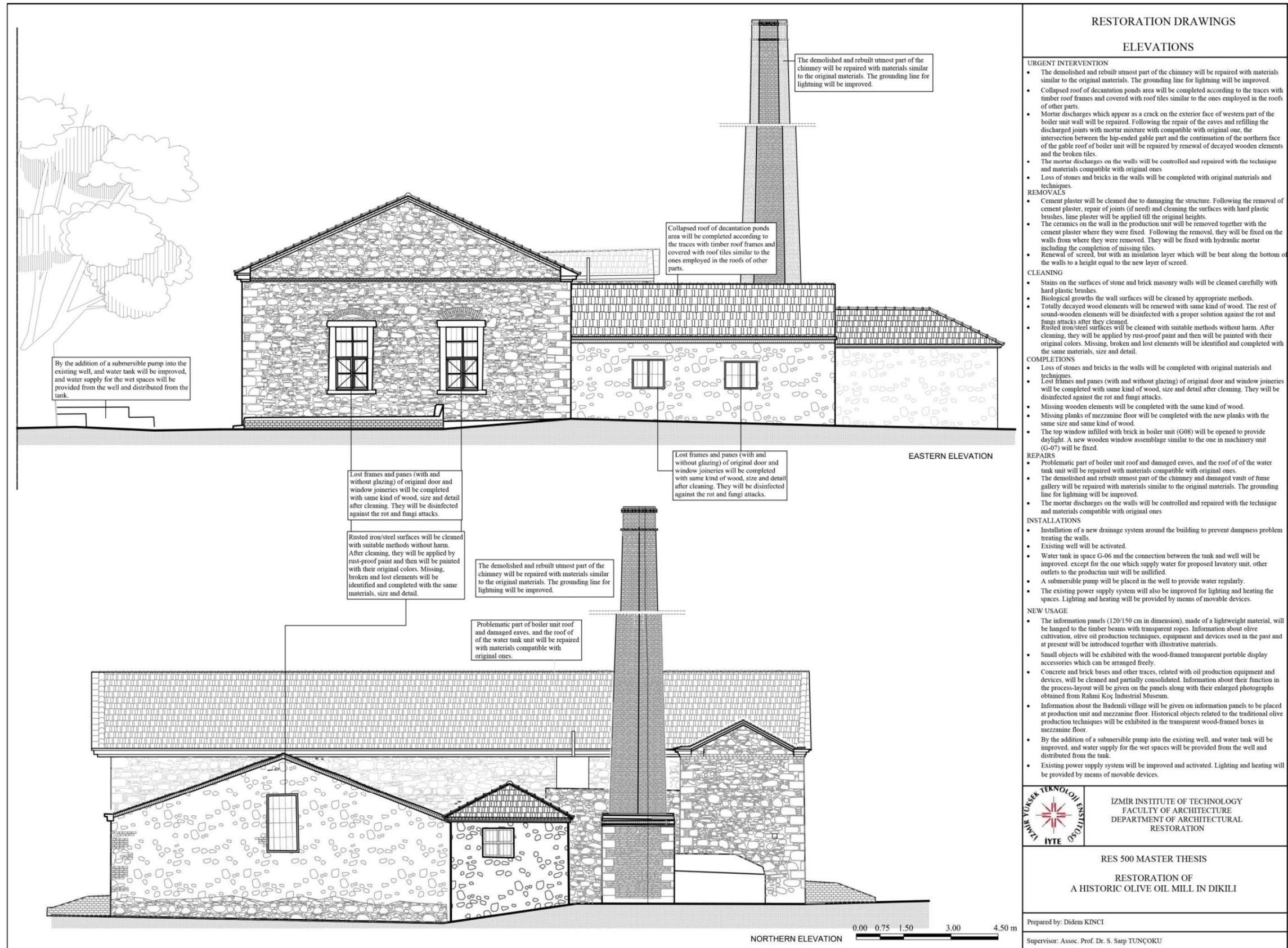
H.5. Restoration proposal- Section C-C and D-D



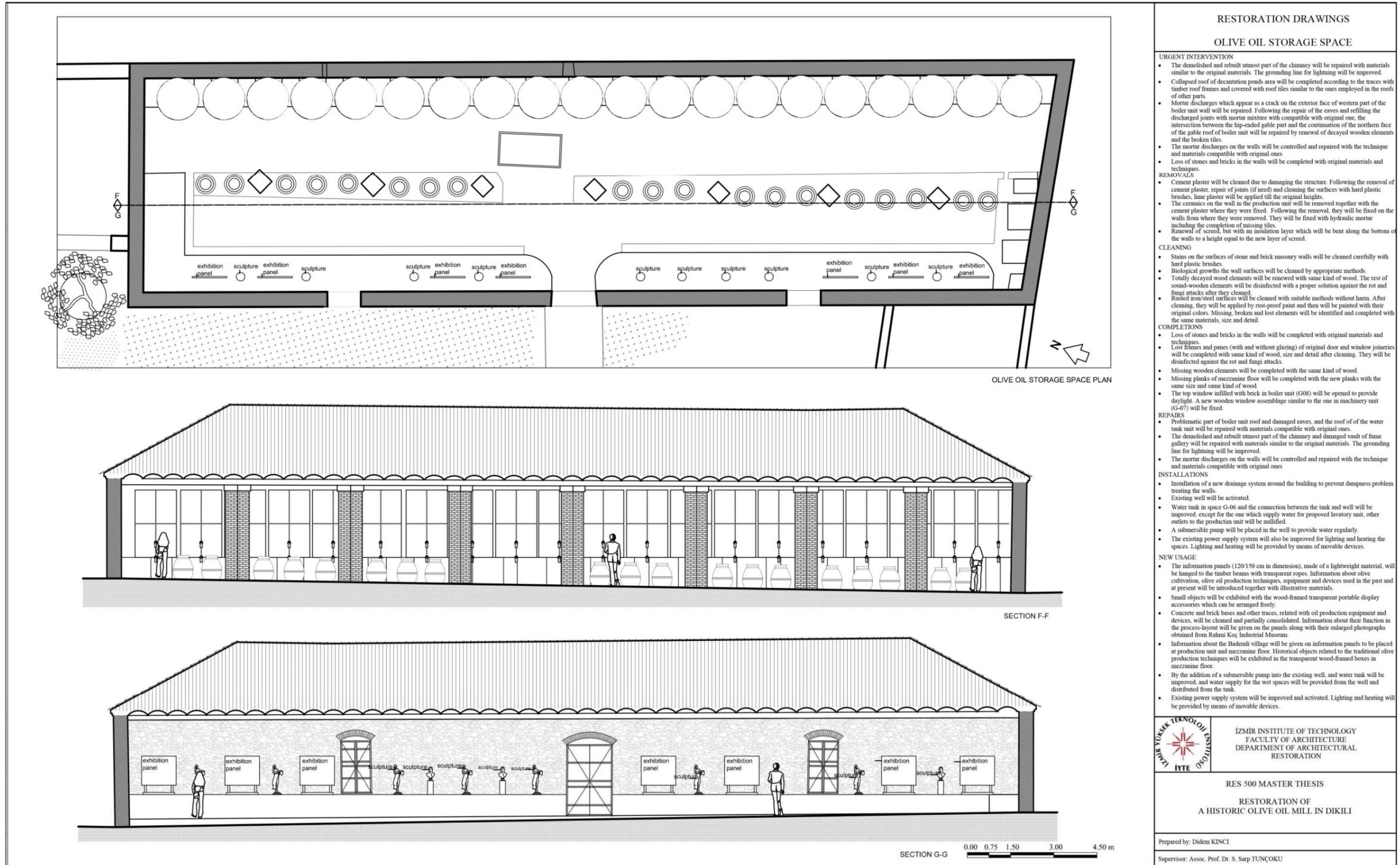
H.6. Restoration proposal- Section E-E



H.7. Restoration proposal- Southern and Western Elevations



H.8. Restoration proposal- Eastern and Northern Elevations



H.9. Restoration proposal- Storage Space on the eastern side of the courtyard