CONSTRUCTION TECHNIQUES OF TRADITIONAL HOUSES IN KARABURUN VILLAGES

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ABSTRACT

CONSTRUCTION TECHNIQUES OF TRADITIONAL HOUSES IN KARABURUN VILLAGES

This thesis aims to understand the building materials and construction techniques utilized in the traditional houses of the villages in Karaburun Peninsula; Küçükbahçe and Kösedere in particular. With this aim, a preliminary study is carried out in 13 historical villages of the Peninsula in order to understand their traditional building reservoir, preservation state of traditional buildings and materials and construction techniques. The results of the preliminary study showed that materials and techniques utilized are quite similar with slight differences between east and west zones of the Peninsula. Two villages, Küçükbahçe and Kösedere, that best represent these differences are selected from two zones. The traditional building reservoir in these two villages is further analyzed to understand materials and techniques applied in foundations, walls, floors, roofs and architectural elements.

As conclusion, it is understood that hybrid construction system is used in both villages. The exterior walls are stone masonry; the inner walls are timber frame without infill. Although the system is similar, there are slight differences in materials choices. The stone material used in two villages differs in shape, size and color related with the source of the materials. This is related with different geological characteristics of east and west zones of the peninsula. Another difference observed in Küçükbahçe is the common use of reed instead of timber laths in timber frame walls. Timber flooring system is similar in both villages. The original flat roof system has slight differences related with the availability of materials. Reed is used instead of timber elements in Küçükbahçe. The soil type is also different. The soil type, that is called “geren” used in Küçükbahçe has higher clay content. The materials and technique of architectural elements are similar in both villages.

Keywords: Karaburun Peninsula, Construction Technique, Traditional Houses, Kösedere, Küçükbahçe.

ÖZET

KARABURUN KÖYLERİ GELENEKSEL KONUTLARININ YAPIM TEKNİKLERİ

Bu çalışma, Karaburun Yarımadasında bulunan köylerdeki geleneksel konut yapılarında kullanılan yapı malzemelerini ve yapım tekniklerini; Küçükbahçe ve Kösedere köyleri üzerinden anlamayı amaçlamaktadır. Bu amaçla, yarımadada bulunan 13 tarihi köydeki geleneksel konut stoğu, bu konutların korunmuşluk dereceleri, yapılarda kullanılan malzeme ve yapım tekniklerini anlamak için ön bir çalışma gerçekleştirilmiştir. Bu ön çalışmanın sonucunda yarımadanın doğusu ve batısı arasındaki ufak farklılıklar dışında genel olarak kullanılan malzemelerin ve yapım tekniklerinin çok benzer olduğu görülmüştür. Yarımadanın doğu ve batısından, bu farklılıkların en iyi anlaşılabileceği iki köy; Küçükbahçe ve Kösedere daha detaylı çalışılmak üzere seçilmiştir. Bu iki köydeki geleneksel yapı stoğu; temel, duvar, döşeme, çatı sistemleri ile mimari elemanlarda kullanılan malzeme ve yapı tekniklerini anlamak için ikinci bir arazi çalışması doğrultusunda detaylı olarak incelenmiştir.

Sonuç olarak; iki köyde de dış duvarların taş yığma, iç duvarların dolgusuz ahşap karkas duvar olarak inşa edildiği hibrit yapım sistemi kullanıldığı görülmüştür. Her iki köyde de yapım tekniğinin benzer olmasına rağmen malzeme seçimlerinde ufak farklılıklar tespit edilmiştir. Yarımadanın doğu ve batı bölgelerinin jeolojik yapılarındaki farklılıklara bağlı olarak iki köydeki yapılarda kullanılan taşlar; renk, şekil ve büyüklük bakımından farklılık göstermektedir. Diğer bir farklılık ise Küçükbahçe'deki yapılarda bağdadi inşasında ahşap çıtalar yerine kamış kullanılmasıdır. Ahşap döşeme tekniği her iki köyde de aynı olup geleneksel düz çatı sistemlerinde malzemelerin erişilebilirliğinden kaynaklanan küçük farklılıklar görülmektedir. Küçükbahçe de ahşap çıta yerine kamış kullanımı yaygındır. Bu iki köydeki toprak tipi de farklılık göstermektedir; Küçükbahçe'de kullanılan toprağın kil içeriği fazla olup bu toprak 'geren' olarak isimlendirilmektedir. Bunların dışında mimari elamanlarda kullanılan malzemeler ve inşa teknikleri genel olarak iki köyde de aynıdır.

Anahtar kelimeler: Karaburun Yarımadası, Yapım Tekniği, Geleneksel Konut, Kösedere, Küçükbahçe.

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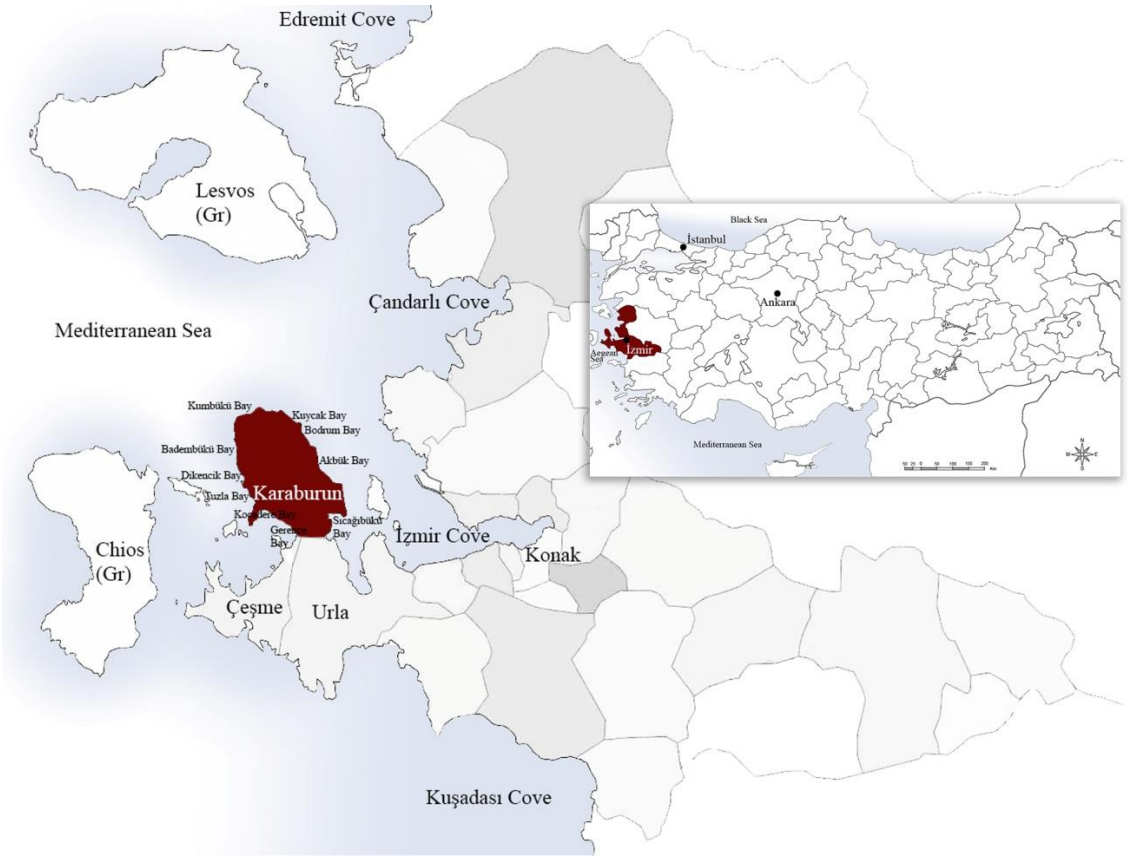
CHAPTER 1

INTRODUCTION

1.1. Problem Definition

Karaburun Peninsula is located at the west of the city of İzmir and is surrounded by the Aegean Sea. The peninsula has the same name with the town, Karaburun, which is the administrative center of the Peninsula and is located at north-east cost. The peninsula is one of the westernmost points of Anatolia (Map 1.1). There are many bays and coves around the peninsula, and it is surrounded by many inhabited small islands. The Greek island of Chios is found directly opposite of the peninsula at the west, the peninsula is bordered by Çeşme and Urla at the south.



Map 1.1. Location.

A rural historic landscape is a geographical area that historically has been used by people and shaped or modified by human activity, occupancy or intervention. It has been possessed a significant linkage and continuity of areas of land use, vegetation, structures, roads, waterways and natural features. This interaction between man and nature is an ongoing process which has been evolved by the values produced by the location and inhabitants. As a result of this interaction, an environment built territorially is produced. (U.S. Department of the Interior National Park Service Cultural Resources, 1989; Revised 1999). Karaburun peninsula is one of the examples to this interaction with its built environment and untouched natural beauties.

Karaburun peninsula which has been inhabited since the prehistoric times has many rural settlements that still represent rural architectural characteristics of 19th century with a high level of preservation. Main reason of the high preservation level depends on poor accessibility possibilities to the region. However, this splendidly preserved condition and the peninsula is subject to major alterations in recent years (Figure 1.1, 1.2, 1.3).

The main factor that cause alterations in the physical and social structure is migration. The migration process that the peninsula is experiencing has two opposite faces: migration from the peninsula and migration to the peninsula.

Another reason that accelerates migration from the peninsula is poor education opportunities. Families living in the peninsula move other cities, especially İzmir, to provide better education for their children. Thus, mainly the elder population remains in the region. This results with abandonment of the buildings which brings dilapidation and disappearance in relation. Migration of native population from the peninsula also results with loss of traditional way of life, agricultural production practices and related know-how.

Figure 1.1. Disappearing structures in Ambarseki (May 2017).

Figure 1.2. Disappearing structures in Bozköy (October 2016).

Figure 1.3. Disappearing structures in Salman (October 2016).

On the other hand, the migration to the peninsula also gained momentum in recent years. The new highway construction which aims to link all the Karaburun settlements to the main transportation network ease access to the peninsula. Thus, urbanite looking for natural life alternatives discovered untouched villages of the peninsula. Unfortunately, these new comers dramatically changed the physical environment to meet their needs. This process also introduced changes to the social structure (Figure 1.4, 1.5).

Figure 1.4. Old and new structure relation in Ambarseki (May 2017).

Figure 1.5. Old and new structure relation in Saip (May 2017).

Beside migration, the change in administrative status also affected the peninsula. In 2014 with the low numbered 6360 the borders of responsibility areas of metropolitan cities are defined including İzmir. With this law, all the villages of the Peninsula become neighborhood as many villages belong to the 14 cities mentioned in the law.

As for another reason threatening the preserved nature of the peninsula, tourism aimed projects ruins the structure. In terms of natural beauty, virgin lands, original texture traditional life style, eco- tourism, alternative tourism and eco-tourism Karaburun Peninsula is a very valuable region. Even though Karaburun Peninsula has a significant potential for marine and cultural tourism, it is defined as an undeveloped area in a report by İZKA[1]. Especially, road repair for the revival of the tourism have been accelerated. One of these tourisms aimed projects is the marina project including two yacht marinas to involve 400 yachts for each in Mordoğan and Karaburun (Genç & Levi, 2016). The yacht harbor project means that a construction for shopping areas, accommodation units and similar transactions should be handled in case of enterprises that would serve this sector. However, in parallel with this, the population of upper income group in the region would rise. Therefore, it will lead to an increase in the construction of secondary

[1] İZKA – İzmir Development Agency means 'İzmir Kalkınma Ajansı' İZKA for short in Turkish. In the EU accession process, it was decided to establish development agencies in the year of 2006 within the scope of the policy of decreasing inter-regional disparities and income differences in Turkey. Currently, there are 26 development agencies in Turkey. The Ministry of Development is responsible for the coordination of development agencies in Turkey (https://en.wikipedia.org/wiki/Development_Agency_(Turkey)) (Accessed in 2017).
The vision is to become a forerunner and an effective agency in sustainable local development with an international reputation. The mision is to develop and to implement participative tools which will mobilize local potentials within a holistic approach for İzmir's sustainable development (http://www.izka.org.tr/en/30691/Vision-Mission-Core-Values) (Accessed in 2017).
The report titled Analysis of Tourism Types and Tourism Investments in İzmir. It is prepared in May 2009 by İZKA.

housing. On this basis, it can be actually observed that there is a slight increase in the number of secondary housing and investors' interest in Karaburun region (Yanardağ & Yanardağ, 2009).

Another ongoing and fabulous project in the region is Wind Turbines. Due to the windy weather in the zone, wind turbines are erected intensively (Figure 1.6, 1.7). Although these sources are one of the least harmful methods to produce energy, they affect the eco-system of the surrounding area. Wind tribunes also have visual effect disturbing the authentic integrity of the traditional settlement patterns.

Figure 1.6. Wind Tribunes and Parlak Village (June 2017).

Figure 1.7.Wind Tribunes in Karaburun Peninsula (June 2017).

Because of fish farms, the sea of Karaburun which has variety of living habitat underneath and above the ground is in danger (Figure 1.8).

Figure 1.8. Fish Farms in Karaburun Peninsula (June 2017)

Though they seem beneficial to the development of the region, all the counted factors harm natural and cultural assets. The rural areas in Karaburun Peninsula are faced to deterioration in terms of natural and cultural integrity which has been preserved up to now.

1.2. Aim and Method of the Study

The thesis focuses on understanding construction techniques and materials used in the traditional houses in the villages of Karaburun Peninsula. Considering this aim, the thesis intends to answer the following questions:

- What are the building materials and construction techniques utilized in different villages?
- Are there any similarities and differences in terms of materials and construction techniques between villages?
- If so; what might be the reason of these similarities and differences?

With this aim, the method of the study is formulated starting with the preliminary field survey. This Preliminary field survey is carried out to historic villages of the peninsula which are; Ambarseki, Bozköy, Eğlenhoca, Hasseki, İnecik, Kösedere, Küçükbahçe, Parlak, Saip, Salman, Sarpıncık, Tepeboz and Yayla villages (Map 1.2).

Map 1.2. Karaburun Villages Studied in the Thesis.

The aim of the preliminary field survey is to understand the traditional building reservoir, their state of preservation and building materials and techniques. All the historical houses in the visited villages are analyzed. And two villages are selected according to their traditional building reservoir and availability of information related to building materials and construction techniques. Buildings that preserve their original characteristics and partially collapsed buildings providing information about construction details are considered during this selection process.

Considering the analysis, it is understood that Kösedere and Küçükbahçe have most appropriate villages among the peninsula. Thus, they are selected for further detailed investigations. The analysis is done from foundation to roof then architectural elements in these two villages. Photographs are used to corroborate the gathered information and technical details were produced via AutoCAD software.

1.3. Literature Review

Karaburun has been subject of various studies. Some of the publication concentrated on general aspects of the peninsula such as geographical, historical and demographical features; the others concentrated on specific features like architecture. However, most of these studies include social and geographic information about peninsula.

The book *'XVI. Asırda Çeşme Kazasının Sosyal ve İktisadi Yapısı'* (Social and Economic Structure of Çeşme District in 16th Century) written by Mübahat Kütükoğlu contains the information about the Çeşme region. It is possible to get information about Karaburun which was connected to the Çeşme District at that time. The study has been largely based on archival studies; especially 16th century tax books[2]. This source was helpful to understand the history of the region as well as population characteristics.

Another book about geographical structure of the region is *'Urla Yarımadasında Arazinin Sınıflandırılması ile Kullanılışı Arasındaki İlişkiler'* (Relations between Classification and Use of Land in Urla Peninsula) by Barış Mater. It was helpful to understand historical, population and geographical characteristics of Karaburun.

'Tanrılar ve Tanrıçalar Diyarı Karaburun ve Mordoğan' (Gods and Goddess region, Karaburun and Mordoğan) is another source that gives historical information about Karaburun Peninsula. Historical information concentrated on ancient times and the relations of the Karaburun with other ancient settlements have been compiled by Neşet Öztekin in this study.

The most important resource focused on the Karaburun region is *'Karaburun Yarımadasının Tarihsel Coğrafyası'* (Historical Geography of the Karaburun Peninsula) by Şevket Işık. It is important to understand the general settlement history of the peninsula and population movements throughout history. The book contains detailed information about change of the settlement pattern of peninsula throughout history and population distribution of the region.

[2] In the Ottoman state, population, land and real estate were identified and recorded; this process called as '*tahrir*', and the book in which this information was recorded was called as *'tapu tahrir defteri'*.

Another study is ‘Karaburun’ by Barış Güntürkün and Cahit Telci. The study is based on archival studies and largely oral information and gives general information about the history, population, source of income and daily life practices of the region.

‘Karaburun Yarımadası’nda Türk Mimarisi’ (Turkish Architecture on Karaburun Peninsula) is the only source that concentrates on architectural features of Karaburun Peninsula. The architectural features of mosques in the peninsula have been examined in this study. It is possible to find the plan types, architectural elements and structural system of these mosques.

Along with these published books, there are theses about Karaburun. ‘Identifying the Values of Küçükbahçe Village through Its Architecture on Collective Memory’ by Öget Nevin Cöcen is one of them. The study concentrates identifying the architectural characteristics of Küçükbahçe while understanding its rural life and determining its cultural, social and physical values.

Another thesis about Karaburun is *‘Karaburun Yarımadasının Kırsal ve Köysel Çevre İncelemesi’* (Rural and Local Environment Review of the Karaburun Peninsula) by Bahar Sintaç. This study contains general information about peninsula and very basic information about architecture and construction techniques of the buildings.

Besides the sources related to Karaburun, the sources related to traditional construction techniques have also been analyzed. Although they give information about building materials and construction techniques of different historic settlements such as Birgi, Ormana and Muğla, they were helpful in terms of their methodology and terminology. Diri (2010), Ergin (2008), Çelik (2009) are among these sources. Aşanlı’s (2016) book named *‘Geleneksel Yapı Teknikleri’* (Traditional Construction Techniques) was helpful for obtaining general information about the traditional materials and details about construction techniques.

1.4. Content

The thesis is composed of five chapters. The first chapter is an introduction of the theses and comprises problem definition, aim and method and literature review parts.

In the second chapter, general characteristics of Karaburun Peninsula is identified under the headings of access, geographical characteristics, historical developments and

settlement pattern, population characteristics, seismicity and social and economic characteristics.

In the third chapter, general features of the building materials and construction techniques of 13 Karaburun villages are analyzed and visualized.

In the fourth chapter, constructional features of the structural components, such as; the foundations, walls, floors and the roofs of the traditional houses in Kösedere and Küçükbahçe villages are examined. Scaled drawings are produced to ease understanding.

In fifth chapter, similarities and differences of construction techniques and materials utilized in the traditional houses of Karaburun villages are evaluated.

CHAPTER 2

CHARACTERISTICS of KARABURUN PENINSULA

2.1. Access

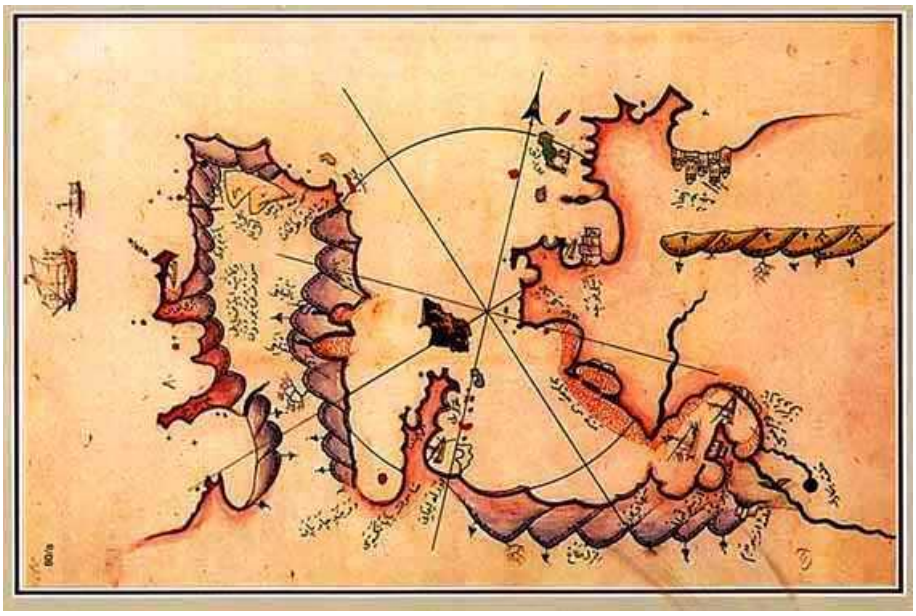
The distance from Karaburun to İzmir city center is about 100 km; from Karaburun to İzmir Adnan Menderes Airport is about 110 km; and from Karaburun to Çeşme is about 95 km via the highway. It is also possible to access to the peninsula with public transportation from İzmir via seaside road named D300 (Map 2.1).

The former road that links Karaburun to other settlements is still in use, but the new constructed highway is preferred because the former road is narrow and bumpy. The new constructed highway, that has been planned to surround the peninsula, is still under construction and it has been reached to Eğlenhoca village so far.

Map 2.1. Road Map

2.2. Geographical Characteristics

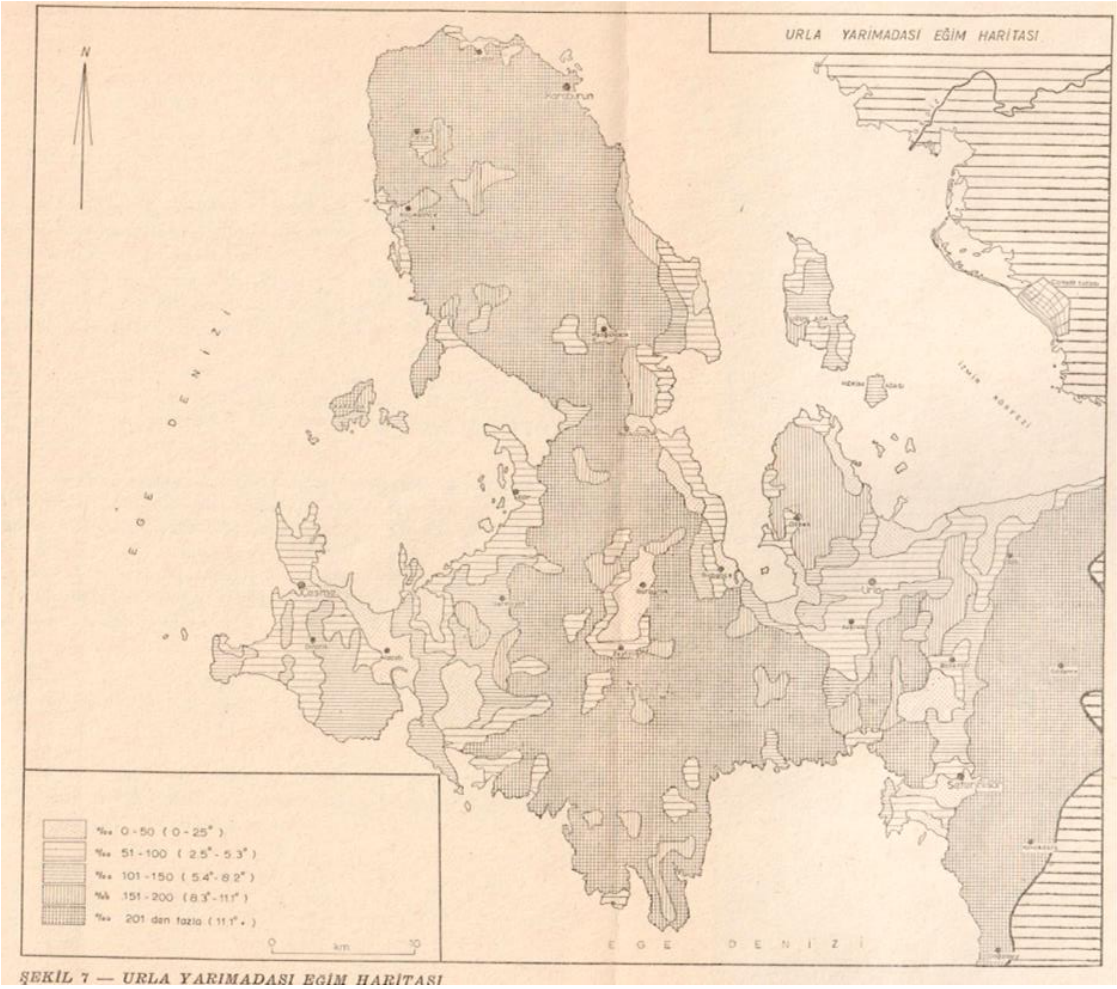
Karaburun Peninsula has a very indented coastline (Kütükoğlu, 2010). The shores on the peninsula are quite steep because of this reason the coastline is very narrow or almost absent (Mater, 1982). The indented character of the peninsula shores is also observed on the map of Piri Reis[3] (Map 2.2).



Map 2.2. Karaburun Map of Piri Reis

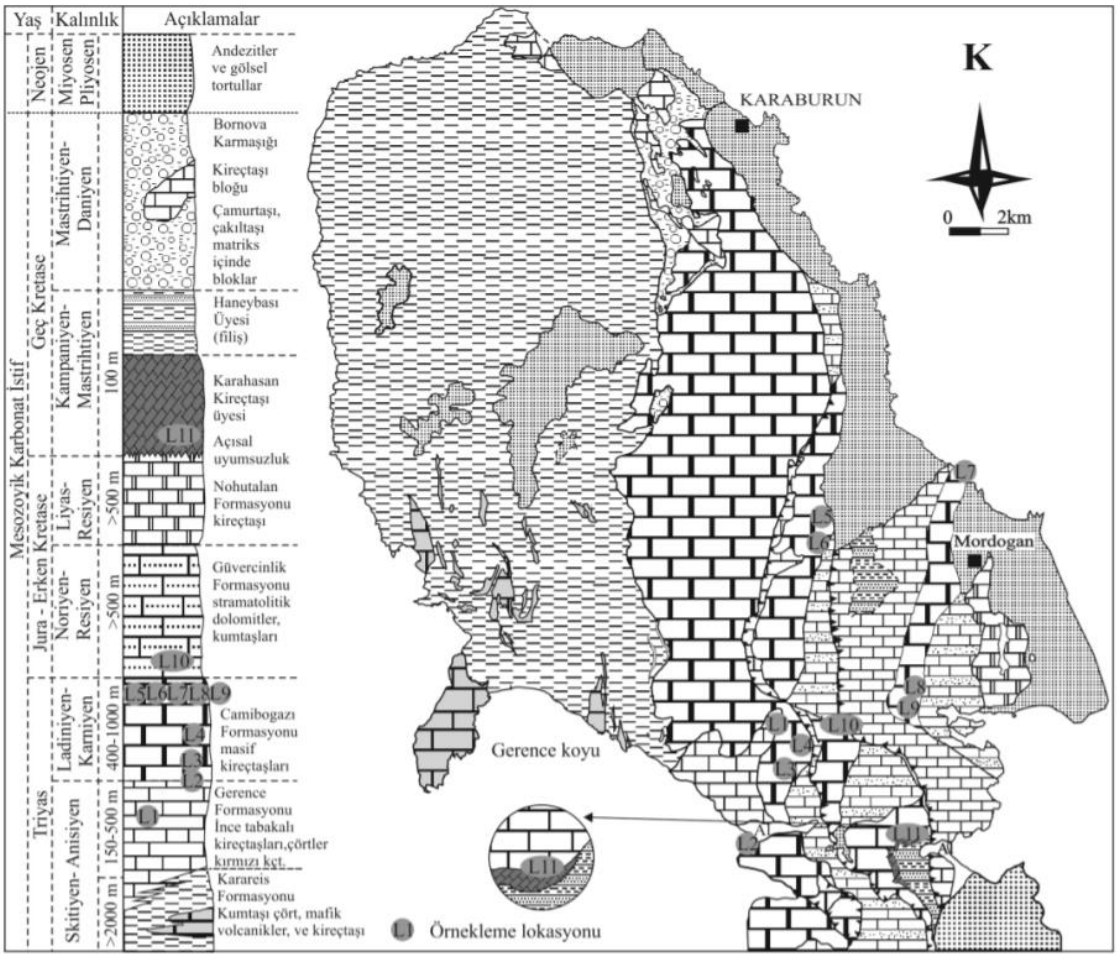
The peninsula generally has a rather rugged earth structure. Bozdağ Mountain, which extends in the north-south direction in the middle part, forms the highest part of the peninsula with a height of 1212 meters. The altitude descends from north to south to 600 meters (Kütükoğlu, 2010). Eastern part of the peninsula is steeper, and this area has bare rocks. The slope of the land in this region is also more and this situation diminishes going west (Mater, 1982) (Map 2.3).

[3] Piri Reis is a well-known Ottoman-Turkish admiral, geographer and cartographer from the 16th century. The full name of Piri Reis is Hadji Muhiddin Piri Ibn Hadji Mehmed. He was called Reis for his excellence as a naval captain. He was born between 1465 and 1470 in Gallipoli on the Aegean coast of Turkey and he died in 1554 or 1555. (http://www.muslimheritage.com/article/piri-reis-genius-16th-century-ottoman-cartographer-and-navigator) (Accessed in 2017)



Map 2.3. Slope Map of Urla Peninsula (Source: Mater, 1982).

Karaburun is located on a peninsula with a very thick carbonate stagnation. With this feature, this region has attracted the attention of natural stone operators and in the last 15-20 years, a large number of blocks (11 quarries) were opened for the production of stone quarries (Elçi, Türk, & İşintek, 2015). Today, block stone production is made in 6 of these quarries and the others are abandoned due to production efficiency (Elçi, Türk, & İşintek, 2015). The Karaburun Peninsula is mostly located in the class “limestone” and “dolomitic limestone” (Map 2.4). Karaburun Peninsula carbonate rocks are high quality natural stones that can be used both on the exterior and ground floor, even in harsh climates with their physical, mechanical and durability properties. Karaburun limestone is low in texture homogeneity, high in composition homogeneity (purity > 95%) limestone (Elçi, Türk, & İşintek, 2015).



Map 2.4. Geological map of Karaburun Peninsula (Source: Elçi, Türk, & İşintek, 2015).

The climate of the peninsula is Mediterranean climate and the vegetation also carries a typical Mediterranean character (Mater, 1982). The summers are hot and arid, and the winters are warm and rainy. The region is in the "semi-humid marine climate" category in the annual average (Mater, 1982). According to the average for the last 5 years; the average annual precipitation is 650 - 750 mm, the lowest temperature is -2 ° C and the highest temperature is 35 ° C (www.izmirkulturturizm.gov.tr, 2018). The most important climatic problem in the peninsula is water deficiency (Mater, 1982). The most important reason for this is that the rainfall is inadequate, far from meeting evaporation and not distributed regularly (Mater, 1982). Due to the climatic and topographical features of the peninsula, southern and northeastern winds are dominant. The average annual wind speed is 3.6 m / sec (Mater, 1982).

2.3. Historical Characteristics

The history of Karaburun Peninsula dates back to the prehistoric period. The Peninsula had continuously inhabited since then and gone under the control of various civilizations (Table 2.1). Considering the aim and scope of this research, which is understanding the historical background of construction practices of traditional houses in Karaburun villages, the information on the history of the Peninsula is concentrated at the end of 19th century and at the very beginning of 20th century when these traditional houses were constructed.

There hasn't yet been an exact judgment about ancient Karaburun because of lack of investigation. However; the archeological findings excavated in Çakmaktepe area show that there the peninsula had been inhabited in 4000 BC. The archaeologist İlgün Günöy mentions these findings in his graduate thesis prepared in 1985:

> 'There is some archaeological find has dated back to chalcolithic period were found Çakmaktepe area. Stone hand bells, a number of grinding tools, cutting tools, primitive pots and pottery prove that; this area was a settlement site in 4000 BC.'

The literature sources are almost silent about historical developments of the peninsula till Ionian period which is around 1000 BC. Ionian cities (Map 2.5) have been started to establish since 11th century BC but they have united under Panionion Union[4] around 900 BC and 700 BC (Boyana, 2011). These Ionian cities are Miletus, Myus, Priene at the south; and Ephesos, Teos, Kolophan, Lebedos in the central region; Erythrai, Klazomenai, Phokaia, Samos and Khios islands at the north (Akurgal, Anadolu Uygarlıkları, 1989). The archeological excavations on Erythrai, which is one of the Ionian cities, give considerable information on the history of peninsula since the border of the Erythrai included the Karaburun Peninsula and it is known as 'Mimas' in the ancient period (Bayburtluoğlu, 1975).

[4] Panionion / Ionian League which was founded in Archaic period and preserved to exist until the Roman period. The Panionion / Ionian Union consists of the settlements of Miletos, Ephesos, Priene, Khios, Erythrai, Teos, Kolophon, Lebedos, Klazomenai, Samos, Phokaia, Myus and later the Smyrna. It is known that the union has gained political, military and religious characteristics in the course of history (Aytüre, 2017).

Map 2.5. 12 Ionian Cities.

According to Bayburtluoğlu, archaeological findings indicate that they are indigenous people living in and around Erythrai during the prehistoric times. With the first colonization, Greeks from Crete dominated the region, and according to the documents, it is determined that this situation reached until the 15th century BC. After Crete colonization, it is seen that Myken or Aka colonization had been continued until the Ion colonization. During the Myken domination, the migration movements in small groups were made towards the Anatolian and Aegean islands reached a greater degree with Doric invasion. This migration occurred between 1150 and 1050 BC at intervals. Erythrai developed in a short time and became an important city center. It is seen that in 547 BC Persians came to Anatolia and Ion cities league together against Persians. It is understood from the taxes paid by Erythrai that Erythrai was a rich city on these dates. During the Persian domination of the region, Erythrai occasionally became an independent city or under Persian dominance. In 133 BC, with the connection of the Kingdom of Pergamon to Roma, all western Anatolia entered the Roman administration.

After the Roman government, Erythrai gradually lost its importance. In 395 AD, with the separation of the Roman Empire into two as East and West, Erythrai remained in Eastern part due to its geography. After the 3rd century AD, Erythrai has lost its richness and power and it has started becoming a settlement gradually turned into a village. The region had been under the control of Turks thanks to Çaka Bey between 1071-1081 years and passed to Byzantium again after a while. In the period of Beyliks, the region was once again dominated by the Turks, and the area was passed over to Aydınoğulları by Aydınoğlu Mehmet Bey. The region was under Ottoman rule during the Yıldırım Beyazıt[5] period (1389-1402). (Bayburtluoğlu, 1975) During the Ottoman Interregnum[6] (1402-1413), Karaburun peninsula has been under the rule of Aydınoğulları, the Ottomans and the Genoese pirates. Pirate attacks and fear continued for a long time in Karaburun during the Ottoman period. This is understood from the locations of the old villages on the Karaburun peninsula. The villages that exist from the time of the pirate attacks to the end of the 18th century is located in hidden places that are not seen or difficult to see from the sea. These villages are usually in the creek or on the slopes. These villages which are Ahırlı (Karaburun), Eski Mordoğan, Hasseki, Küçükbahçe and Parlak villages are the oldest villages of Karaburun (Işık, 2002). There was a great rebellion by Börklüce Mustafa in the time of Interregnum Period not yet in Ottoman domination. By suppressing this rebellion, Karaburun joined the Ottoman lands in 1414 (Işık, 2002). With the Ottoman domination in the region, the resources about Karaburun Peninsula increased and it is seen that Saruhan, Aydın and Sığla Sanjaks had been in Aydın Province, which was a part of Anatolian Province[7] in this period. İzmir is the center city of the Sığla

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5 Yıldırım Bayezid is the fourth Ottoman sultan. (1389 -1403)

6 The **Ottoman Interregnum**, or the **Ottoman Civil War** (20 July 1402 – 5 July 1413; Turkish: *Fetret Devri*, "Interregnum Period"), was a civil war in the Ottoman Empire between the sons of Sultan Bayezid I following the defeat of their father by the Central Asian warlord Timur at the Battle of Ankara on 20 July 1402. Although Mehmed Çelebi was confirmed as sultan by Timur, his brothers İsa Çelebi, Musa Çelebi, Süleyman Çelebi, and later, Mustafa Çelebi, refused to recognize his authority, each claiming the throne for himself. Civil war was the result. The Interregnum lasted for 11 years until the Battle of Çamurlu on 5 July 1413, when Mehmed Çelebi emerged as victor in the strife, crowned himself sultan Mehmed I, and restored the empire. With the defeat of Timur in this period, the Anatolian principality revived, and the Anatolian unity was established during the Yıldırım Beyazid period. (https://en.wikipedia.org/wiki/Ottoman_Interregnum) (Accessed in 2017).

7 The Ottoman Empire was first subdivided into provinces, in the sense of fixed territorial units with governors appointed by the sultan, in the late 14th century. In 17th century, there were 42 provinces in Ottoman Empire. Each province had sub-provinces like Aydın Province. The provinces were divided into sanjaks and were further subdivided into Kaza referred to the basic administrative district. Districts were divided into nahiye, referred to the basic administrative sub-districts.
(https://en.wikipedia.org/wiki/Administrative_divisions_of_the_Ottoman_Empire) (Accessed in 2017) (Varlık, M.Çetin , 1991).

Sanjak. In 1575, İzmir, Çeşme, Ayasuluğ and Akçaşehir districts were in Sığla Sanjak (Sarıbey Haykıran, 2014). In 16th century, center of Çeşme, Sivrihisar (now Seferihisar), Hereke and Karaburun sub districts were in Çeşme district (Kütükoğlu, 2010). There are some sources giving information about population of 16th century. According to these sources, the population of the peninsula was 6970 and there were 10 settlements in the peninsula at that time (Işık, 2002).[8] In this period, Çeşme had an important role in trade for the Ottoman Empire and there were commercial relations with Chios Island. It is known that there were not any non-Muslim population so Turkish people were engaging in trade in this period (Baykara, 1999). With the Ottoman domination in Chios Island in 1566, migration to the Çeşme had been started (Baykara, 1999).

After 1826, commercial activities in the region had been increased. These activities were mainly managed by Rum and Armenian merchants. (Baykara, 1999). Rum and Armenian population also increased in this period. Population census of 1831 is one of the rare sources giving information on the peninsula about these years. According to this document, there were 2240 Muslim people and unknown quantity of non-Muslims with 1015 households[9] (Işık, 2002).[10] There was a labor shortage because of poor population, so Rums from the Aegean islands be brought as agricultural workers at the end of the 18th century and the beginning of the 19th century (Baykara, 1999).

Karaburun became a district in 1910. After the Balkan Wars (1912-1913), before the World War I (1914-1918), in the western Anatolian region, there were fluctuations in social and economic life due to the effects of the Balkan Wars. The Balkan Wars resulted with the defeat of the Ottoman State in 1913, and the Muslim-Turkish population in the lost lands had begun to migrate into the safe territories of the empire. It is known that the Bosnian refugees were located in Çeşme region. When immigrant people were placed in the regions where the Rums were densely populated in Anatolia, serious problems came out with the existing Rums. To solve that problem, negotiation between Ottoman Empire and Greek Empire ended with the decision of population exchange. Nevertheless, this process could not be completed with the beginning of World War I (Çetin, 2010).

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8 See Chapter 2.5. Population Characteristics.

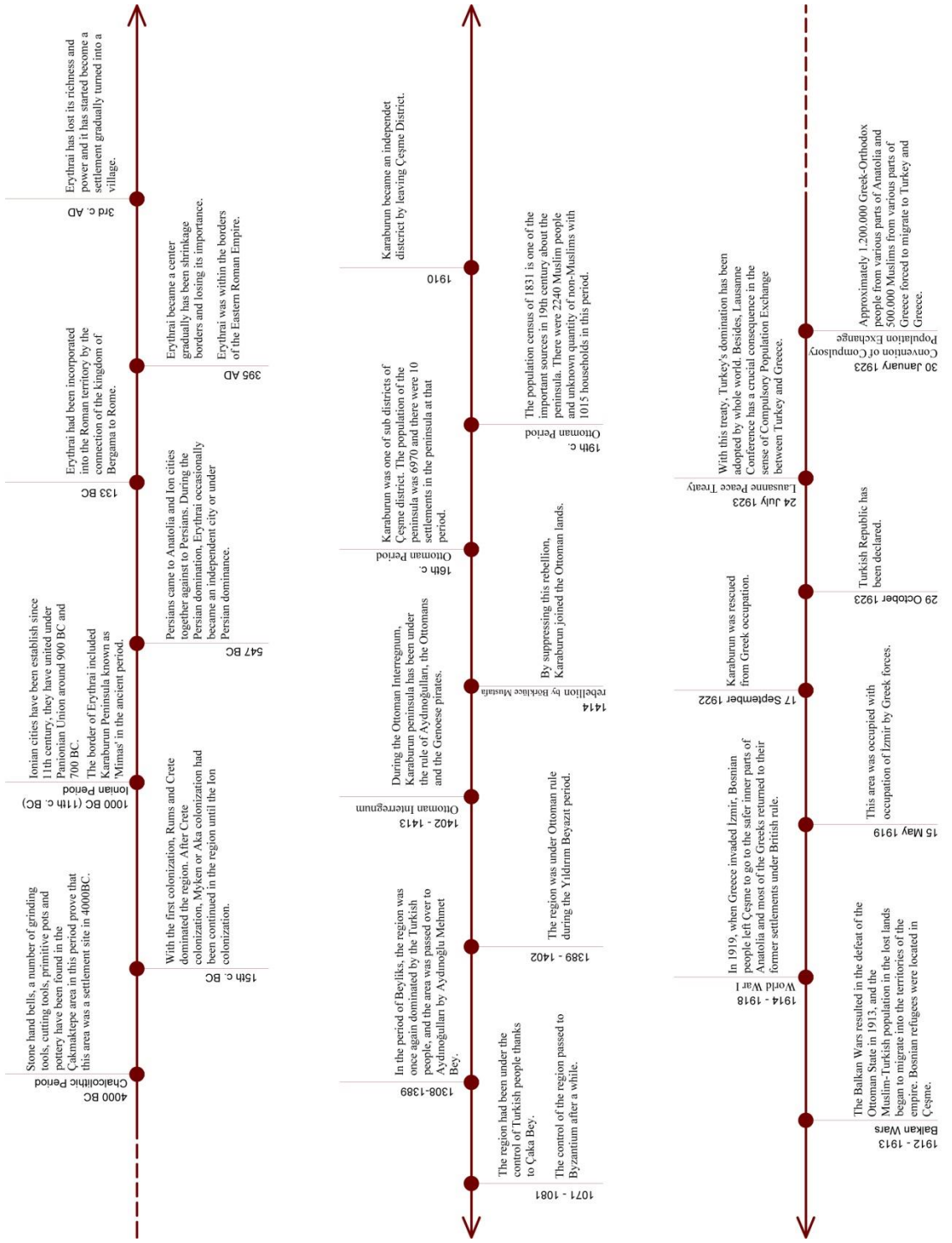
9 This population census of 1831 classifies the people as Muslim or non-Muslims and it gives detailed information about Muslims. Because the army consists of Muslim man and the government need detailed information about them. Therefore, the census shows the number of people in Muslims houses and their gender while it shows only the number of houses of non-Muslims.

10 See Chapter 2.5. Population Characteristics.

However, the immigrant people could not live in the Aegean region for a long time. In 1919, when Greece invaded İzmir, Bosnian people left Çeşme region to go to the safer inner parts of Anatolia and most of the Rums returned to their former settlements under British rule (Çil & Kul, 2015). According to the Ottoman records, Karaburun, where the city could get connected with the Greek islands easily at the entrance of İzmir Gulf, was an important region for İzmir. This area was occupied on May 15, 1919 with invasion of İzmir by Greek forces. On September 17, 1922, Karaburun was rescued from Greek occupation.

Following the Turkish Independence War (May 19, 1919– October 29, 1923), In 1923 Turkish Republic has been declared and Lausanne Peace Treaty was signed on 24th July 1923. With this treaty, Turkey's domination has been adopted by whole world. Besides, Lausanne Conference has a crucial consequence in the sense of Compulsory Population Exchange between Turkey and Greece. Issue of Population Exchange was discussed at the Lausanne Peace Conference and finally Turkey and Greece agreed that subject. Convention of Compulsory Population Exchange was signed on 30th January 1923. Approximately 1.200.000 Rum-Orthodox people from various parts of Anatolia and 500.000 Muslims from various parts of Greece forced to migrate to Turkey and Greece (Erdal, 2006). The migration of Rum population has a significant impact on the Karaburun Peninsula's settlements pattern, its economic and social structure. After the population exchange, the first development started in the region with the immigrants from various Balkan countries. However, the new comers with a different agricultural culture have not been able to handle existing agricultural activities. Along with the Republican period, the value of the region has continued to grow and diversify. Especially the region has been started to become important with its economy and nature.

Table 2.1. Timeline.



2.4. Settlement Pattern

In this chapter, the changes on the settlement pattern will be examined. The main source is Işık (2002) which gives information about Karaburun settlements from 16th century. According to Işık; there were 5 villages in Karaburun peninsula in 1528 according to the tax books numbered with 148-935/1528 (Işık, 2002). These were Kösederesi, Boynak (Parlak), Sayip Yüzü (Saip), Emirdoğanlı (Mordoğan), and Baluklagu (Balıklıova). There were 9 villages in Karaburun peninsula in 1575 according to the tax books numbered with 537- 983/1575 (Işık, 2002). They are Emirtoğan-ı Kebir, Emirtoğan-ı Sağir, Kösederesi, Sayip Yüzü (Saip), Boynak (Parlak), Selman Önü (Salman), Küçükbahçe (Kablakağaç), Bozburun, Bozköy (Table 2.2). Işık claims that the information coming from the tax books doesn't reflect the real settlement pattern and there should be more settlements than stated in the tax books. He claims that the mentioned villages in the books might be center of other neighboring villages and the taxes are collected in these centers, only their names are mentioned in tax books.

Table 2.2. Household numbers in 16th century in Karaburun Peninsula's villages (Source: Işık, 2002).

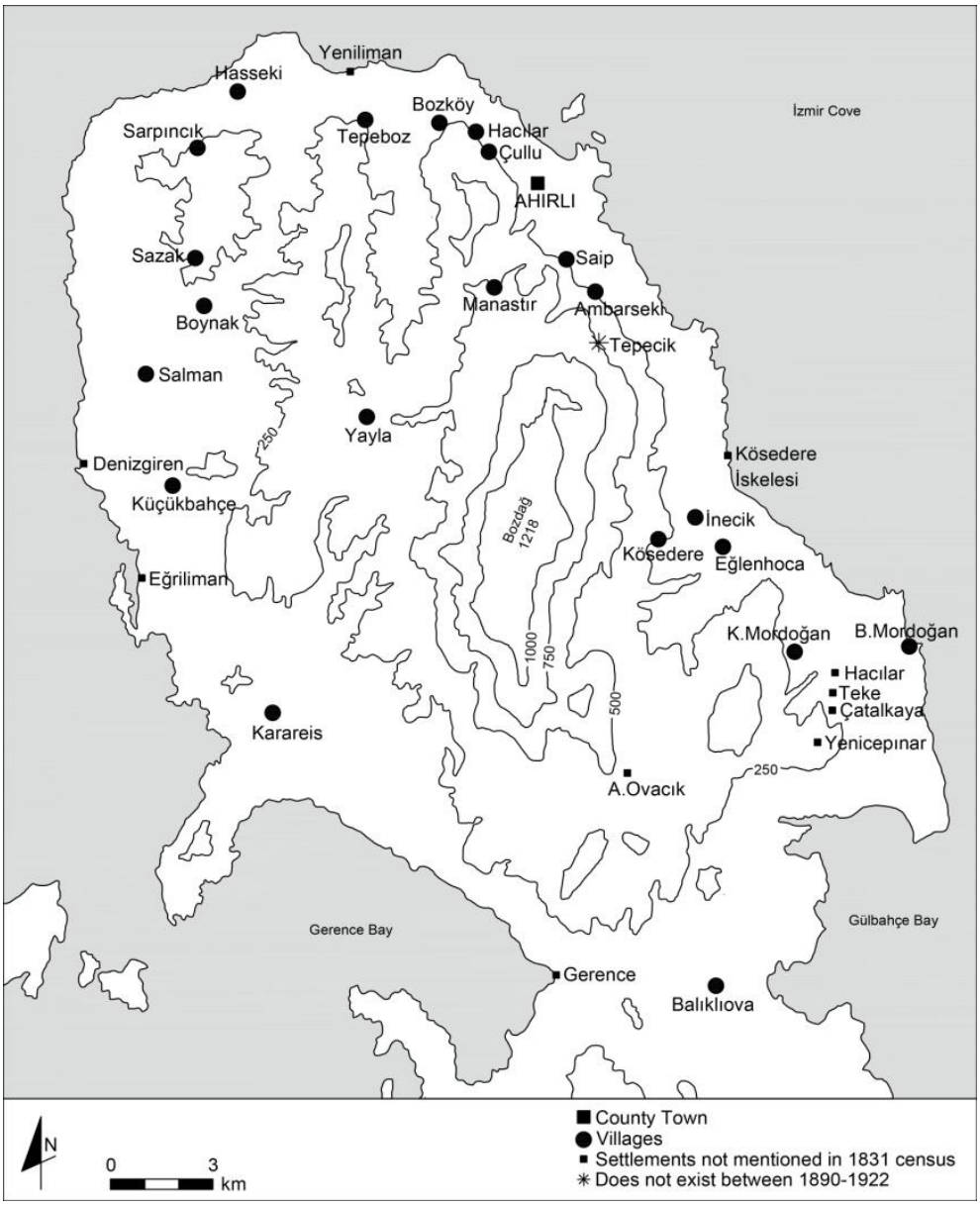
villages	number of household
KÖYLER	HANE SAYISI
Sahip Yüzü	360
Emirtoğan-ı Kebir	283
Emirtoğan-ı Sağir	60
Boynak	56
Selman Önü	39
Bozburun	74
Küçükbahçe	64
Bozköy	36
Kösedere	374
Balıklıova*	48

The first available source to reveal the settlement pattern of the 19th century is the population census of 1831. According to this census, there are 23 villages in the peninsula (Işık, 2002) (Table 2.3).

Table 2.3. Settlements in the Karaburun Peninsula according to the 1831 census (Source: Işık, 2002).

1. Baluklu (Balıklıova)	13. Çullu
2. Mordoğan-ı Kebir	14. Hisarcık
3. Mordoğan-ı Sağir	15. Bozköy
4. Ahurlu	16. Hasseki
5. Ambarseki	17. Sazak
6. Yayla	18. Boynak
7. Saip	19. Küçükbahçe
8. Manastır	20. Eğlenhoca
9. Tepecik	21. İnecik
10. Tepeboz	22. Kösederesi
11. Sarpıncık	23. Karareis Çiftliği
12. Salman	

Between 1831 and 1922, approximately 32-33 settlements are located on the peninsula (Map 2.6). Depending on the commercial activities carried out by the sea, it is observed that some settlements are located on the coast. These settlements served as piers for surrounding settlements. The villages located just behind the shore were also significantly influenced by the relation with the sea for the provision of transportation. Karareis, Denizgiren and Eğriliman ports have been located on the western coast of the peninsula, Yeniliman port on the north, Saip, Kösedere, Mordoğan and Balıklıova ports on the eastern shores, and many settlements have been located behind of these ports have been vitally important for economic reasons. Another reason that affected the settlements' location is topography. The settlements have been located in the inner parts of the coast to the east and north of the peninsula were established on narrow abrasion plains 100-150 meters above the shore. This topographical feature of the founding places of these settlements is also reflected in the names of the villages; Ambarseki, Hasseki, Ağalarsekisi (the old name of Kösedere). *'Seki'* means terrace on the hill. Each of a series of this flat areas made on a slope, used for cultivation. The other notable feature is that other settlements outside the Greek settlements; Denizgiren, Eğriliman and Sazak on the west side of the peninsula were built on the slopes facing the inner valleys, not seen from the sea. While Küçükbahçe, Salman and Parlak villages have been located in the valleys and on the slopes facing the inner parts of the peninsula, Karareis, Denizgiren, Eğriliman on the shore where the Greek population is dominant; Sazak village was founded on the hillsides that sees the island of Chios.



Map 2.6. Settlement Pattern between 1831 and 1922 (Source: Işık, 2002).

The first radical change in the settlement texture of the Karaburun Peninsula was experienced in 1923 when the Rums completely left the peninsula. The most important source that reveals the settlement texture after the population exchange is the İzmir Province's 1339/1923-year statistic. The villages that have no population according to the statistics are: Karareis, Eğriliman, Denizgiren, Teke, Kösedere İskelesi, Yenicepınar. In addition, there is very few people found in Sazak, Manastır and Yeniliman, Rum villages before 1923 (Işık, 2002). After the Rums completely left the peninsula, the first development in the settlement began with settlement of Turkish migrants coming from Greece to the villages that are left by Rums. Especially in this act of insurgency involving Thessaloniki and Kavala immigrants, it has been aimed to regain the empty agricultural

areas after the Rum migration and to solve the problems of the immigrants. With this purpose, immigrants are settled in Yenicepınar, Manastır (Kalecik), Denizgiren, Karareis and Yeniliman. The presence of the population in the villages mentioned in the 1935 general census reveals that settlements have been re-settled (Map 2.7).

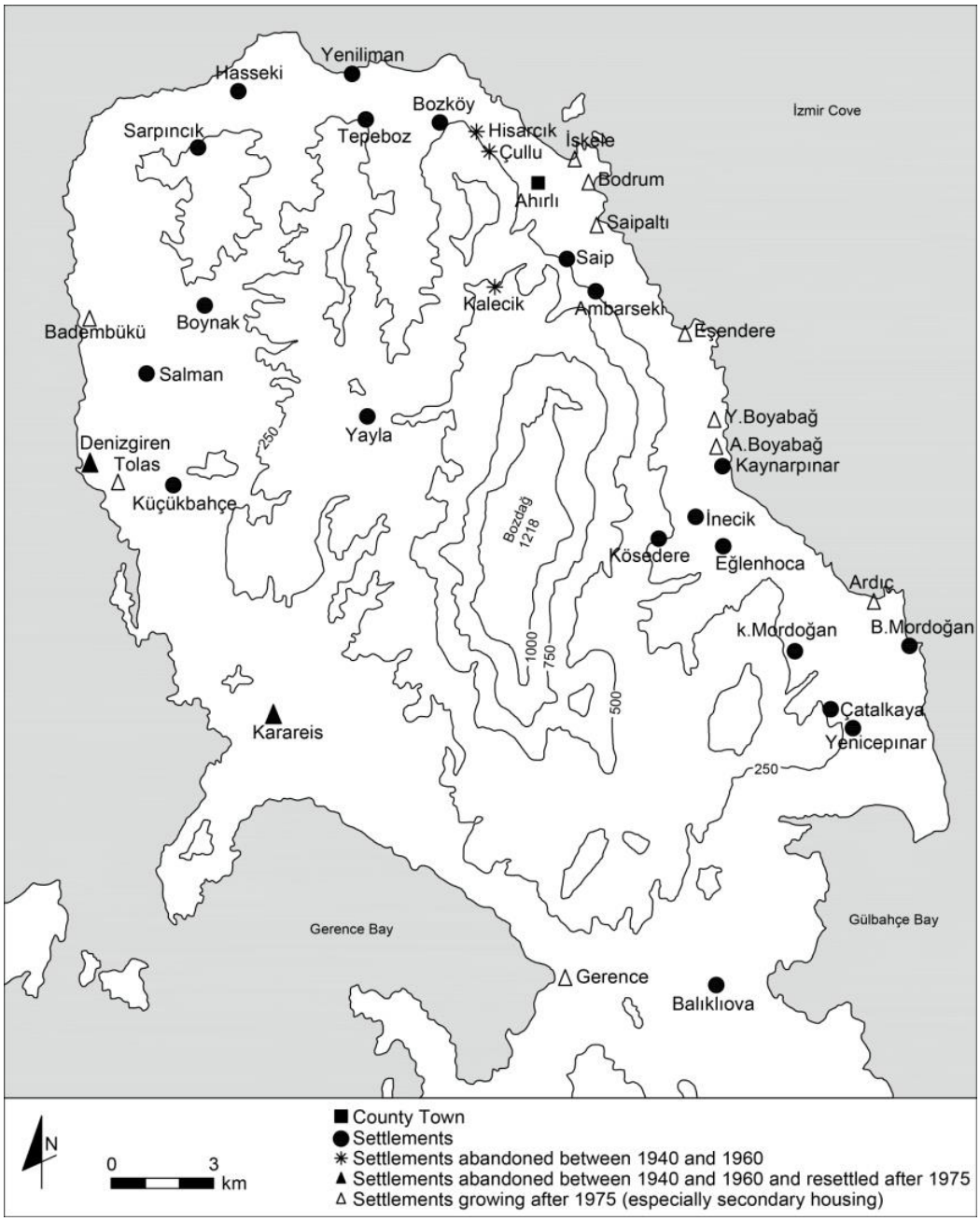
Map 2.7.Settlement Pattern between 1922 and 1940 (Source: Işık, 2002).

The inability of the immigrants to pursue the policies and the earthquake took place in 1949 brought some changes in the settlement pattern of the peninsula. Since the new comers did not had the know-how to deal with current agricultural lands, they

migrated to big cities especially İzmir for better job alternatives. Thus, the Manastır (Kalecik), Denizgiren, Karareis, which had been re-settled by immigrants, was abandoned. However, this abandonment process has spread to a long period like 1940-60, according to the 'Turkish Populated Settlements Guide' *(in Turkish Türkiye Meskun Yerler Kavuzu)* published in 1946 (Işık, 2002).

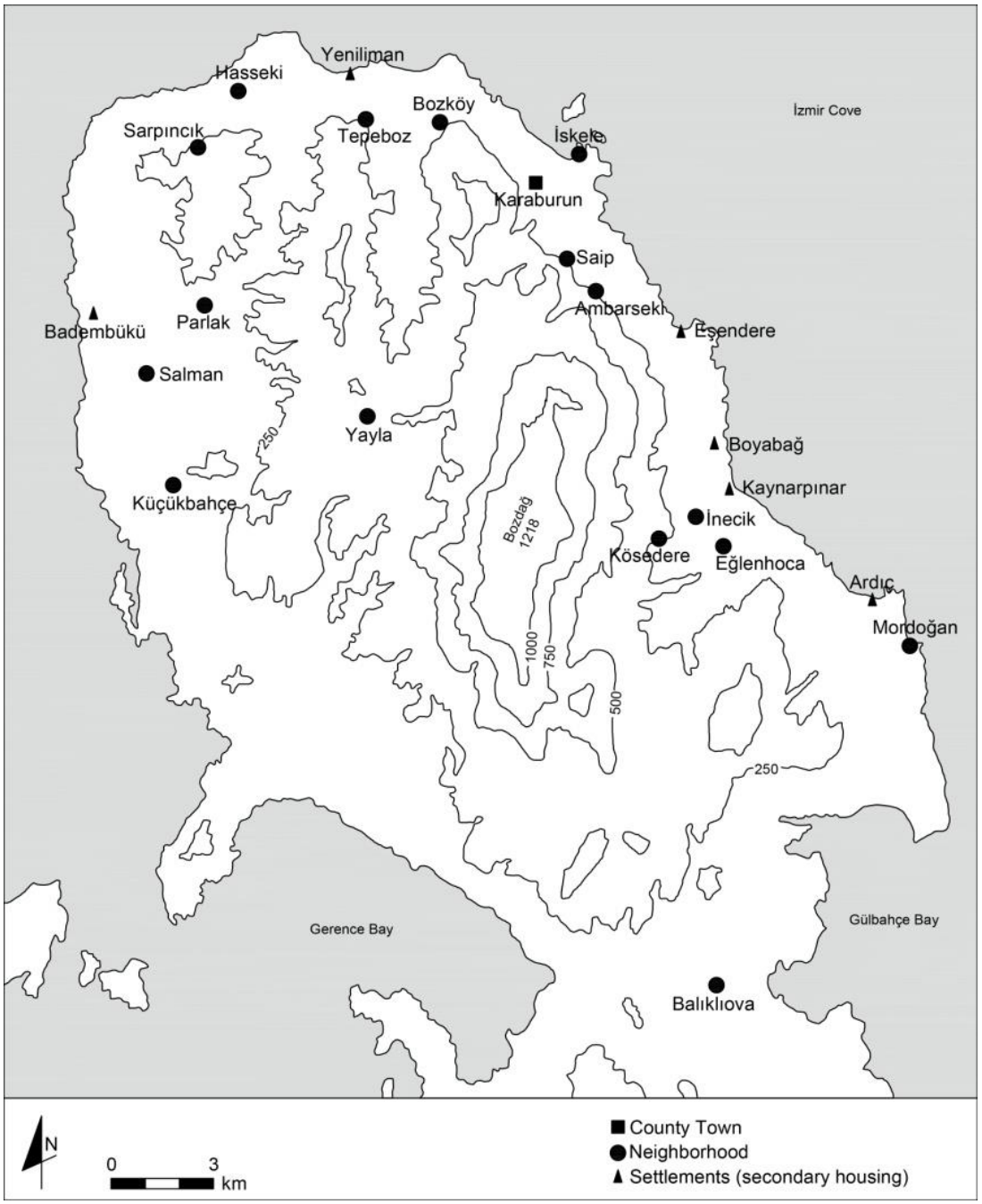
After the 1980s, on the eastern shores of the peninsula, Saipaltı, Eşendere, Kaynarpınar, Ardıç, Aşağı and Yukarı Boyabağ; on the west coast; Tolas, Denizgiren, Karareis and Gerence settlements have been established and developed. This new phenomenon observed in the settlement structure has led to the re-emergence of the settlement texture before the Greek population left the peninsula with different qualities (Işık, 2002). It is observed that settlements that developed after the 1980s on the peninsula occurred in two forms. The first one is settlements for the agricultural use of small coastal plains; and the second is the settlement consisting of summer residences. The fields where olive and grapes were dominant in the past, gradually became irrigated farming after 1980's; artichokes and citrus fruits. The highway has important effect on the coastal settlements which concentrated on the eastern shores. This factor has been influential in the rapid growth of existing coastal settlements, as well as in the emergence of settlements starting from the 1980's and gaining momentum after 1990. Ardıç, Mordoğan, Yenişan, Kaynarpınar and Karaburun are rapidly developing secondary housing settlements (Işık, 2002). While the village of Balıklıova was located on the slope, 1.5 km from the coast, it was abandoned starting from 1970's due to the improvement of the highway and the slipping of some economic activities to the shore (Işık, 2002). Secondary housing settlements on the western shores of Karaburun peninsula are gradually increasing with not so much as on the eastern shores (Işık, 2002) (Map 2.8).

The peninsula preserved its overall appearance as of 2000. There was a rapid decline in population between 2000 and 2007, but there were no major changes in the population since 2007 to present. The villages had the neighborhood status with the changing constitution in 2014.



Map 2.8. Settlement Pattern between 1940 and 2000.

With these last regulations, there are 16 districts connected to the Karaburun District; Ambarseki, Bozköy, Eğlenhoca, Hasseki, İnecik, İskele, Kösedere, Küçükbahçe, County Center, Mordoğan, Parlak, Saip, Salman, Sarpıncık, Tepeboz and Yayla. Secondary residential areas in the coastal zones of these neighborhoods have a continuous growing. Ardıç, Kaynarpınar, Boyabağ, Eşendere are the secondary residential settlements at the east coast of the peninsula; Yeniliman is at the north coast; Badembükü is at the west coast. The map below shows the settlement pattern of the peninsula by 2017.



Map 2.9. Settlement Pattern in 2017.

2.5. Population Characteristics

In this chapter, population changes affecting the settlement texture and socio-economic structure of the peninsula are reported. The earliest sources giving information on population dates back to the 16th century. The information on population in 16th century can only be reached through the data in the tax books (*'tapu tahrir defteri'* in

Ottoman Turkish)[11] kept at certain intervals. According to the information from the book of Şevket Işık; the population information of Karaburun in the 16th century can be calculated from the tax books numbered with 983/1575 and 935/1528 as follow (Işık, 2002). According to the table 2.4, he claims that the population of the peninsula was approximately 6970 in the 16th century[12].

Table 2.4. Household numbers in 16th century in Karaburun Peninsula's villages (Source: Işık, 2002).

villages	number of household	estimated population
KÖYLER	HANE SAYISI	
Sahip Yüzü	360	360x5=1800
Emirtoğan-ı Kebir	283	283x5=1415
Emirtoğan-ı Sağir	60	60x5=300
Boynak	56	56x5=280
Selman Önü	39	39x5=195
Bozburun	74	74x5=370
Küçükbahçe	64	64x5=320
Bozköy	36	36x5=180
Kösedere	374	374x5=1870
Balıklıova*	48	48x5=240
		total = 6970

The other book which collected same information is *'XVI. Asırda Çeşme Kazasının Sosyal ve İktisadi Yapısı'* (Social and Economic Structure of Çeşme District in 16th Century) by Mübahat S. Kütükoğlu and it has more detailed information about population in 16th century. The table from that book shows that there were 13 settlements in 1575 in Karaburun sub-district *(Nahiyesi)* and the population distribution was recorded different than Işık. Şevket Işık considered the 'hane' as the number of households. On the other hand, Kütükoğlu considered the 'hane' as the number of people. And 'mücerred' means single man; '*muaf*' means exempt from military service; and '*nefer*' means the total number of people. The population that time was in order to document the men who would be doing military service. Consequently, the population data is different in each book. According to the table, the population of Karaburun Sub-district is 1106 in 1529

[11] In the Ottoman state, population, land and real estate were identified and recorded; this process called as '*tahrir*', and the book in which this information was recorded was called as *'tapu tahrir defteri'*.

[12] Population data of these periods are obtained by multiplying the number of reached households by various coefficients. '5' coefficient has been adopted by many researchers (Işık, 2002).

and 1589 in 1575 (Kütükoğlu, 2010) (Table 2.5). Furthermore, when the information on the population of 1831 is compared with the 1575 population in Şevket Işık book (Table 2.6); it is seen that the population in 1831 is less than 1575. It is expected that the population would be more in 300 years later.

Table 2.5. Population of Karaburun Peninsula's villages (Source: Kütükoğlu, 2010).

Karaburun Nahiyesi Köyleri Nüfusu

Köyler	1529				1575			
	Hane	Mücerred	Muaf	Nefer	Hane	Mücerred	Muaf	Nefer
Balıklagu	49	2	6	57	32	31	3	66
Boynak	292	18	9	319	41	15		56
Boz					27	9		36
Bozburun					45	25	4	74
Bozyaka	23	2		25	13	6		19
Ciharyek	76	4		80	54	48		102
Emirdoğan	121	8	5	134	185	94	4	283
Kösederesi	140	11	8	159	217	155	2	374
Küçükbağçe					39	24	1	64
Ovacık	64	9	6	79	23	11	1	35
Reislü	43	5	1	49	52	25	4	81
Saibyüzü	175	22	7	204	181	178	1	360
Selmanönü					27	12		39
TOPLAM	**983**	**81**	**42**	**1.106**	**936**	**633**	**20**	**1.589**

It is much easier to reach the 19th century population data. The population census, made in 1831, is the most important documentary of this century. According to this census; there were 2240 Muslims with 1024 households and 1015 households' belongings to the non-Muslims (*'reaya'* in Ottoman Turkish) (Işık, 2002).

Table 2.6. Population in 16th century in Karaburun Peninsula's villages (Source: Işık, 2002).

		Population of Muslims					non-muslim
	villages	man	child	woman	total	household	
		İSLAM NÜFUS					
	KÖYLER	Saire	Çocuk	Kadın	Toplam	Hane	REAYA
	Mordoğan-ı	53	74	105	232	116	185
	Mordoğan-ı Sağir	26	74	90	190	87	40
	Ahırlı	25	38	70	133	59	145
	Baluklu	13	26	48	97	49	5
	Ambarseki	14	23	40	77	42	18
	Saip	8	40	57	105	53	89
	Tepecik	7	9	13	29	14	0
	Manastır	0	5	9	14	6	35
	Sazak	4	7	3	14	5	60
	Yayla	19	21	40	80	37	0
	Tepeboz	16	18	30	64	30	58
	Sarpıncık	12	25	40	77	32	19
	Salman	6	28	27	61	27	64
	Hasseki	30	31	42	103	52	50
	Çullu	19	28	29	76	32	0
	Hisarcık	21	29	30	80	29	0
	Bozköy	39	49	45	133	61	13
	Boynak	15	27	15	57	17	54
	Küçükbahçe	24	29	54	107	49	26
	Eğlenhoca	42	70	108	220	103	0
	İnecik	14	38	42	94	43	1
	Kösedere	35	75	82	192	81	44
	Karareis	0	0	0	0	0	105
	E.Hoca civarı Kösederesi	0	0	0	0	0	4
total	TOPLAM	442	764	1029	2240	1024	1015

Another source about the 1831 population is *'Urla Yarımadasında Arazinin Sınıflandırılması ile Kullanılışı Arasındaki İlişkiler'* by Barış Mater. According to the information compiled by Barış Mater, the population of Karaburun Peninsula was 3326 in 1831. In addition, he indicates that the majority of the population was living in the coastal areas on the peninsula (Mater, 1982).

More information about the Karaburun Peninsula's population can be found towards the end of the 19th century. The annuals of Aydın Province (*'Aydın Vilayeti Salnamesi'* in Tukish)[13] are important source on this subject. It can be found on these sources how many Turkish or Rum people lived in the peninsula between the years1883 and 1923 at intervals except 1890 (Table 2.7). The population is 10429 in 1890. However; the distribution of Turkish and Rum ethnicity is not stated. Approximately half of the

[13] 'Salname' was the publication prepared by public and private institutions in the Ottoman Empire to collectively show the events that took place for one year.

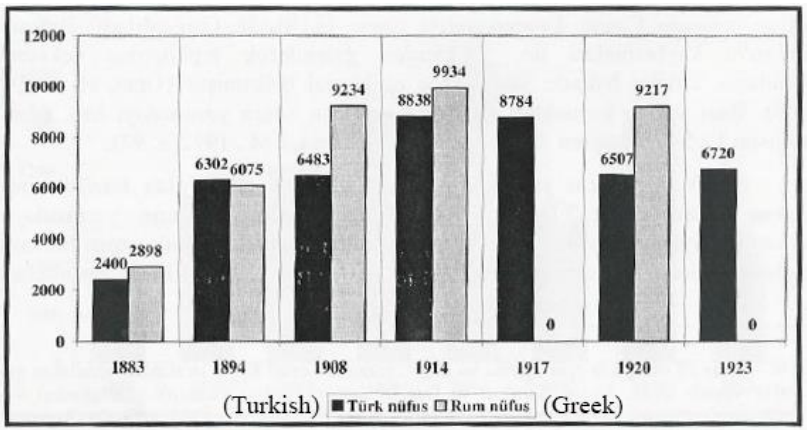
population was formed by the Rums between 1831 and 1908 and it is seen that the Rum population is more between 1908 and 1914.

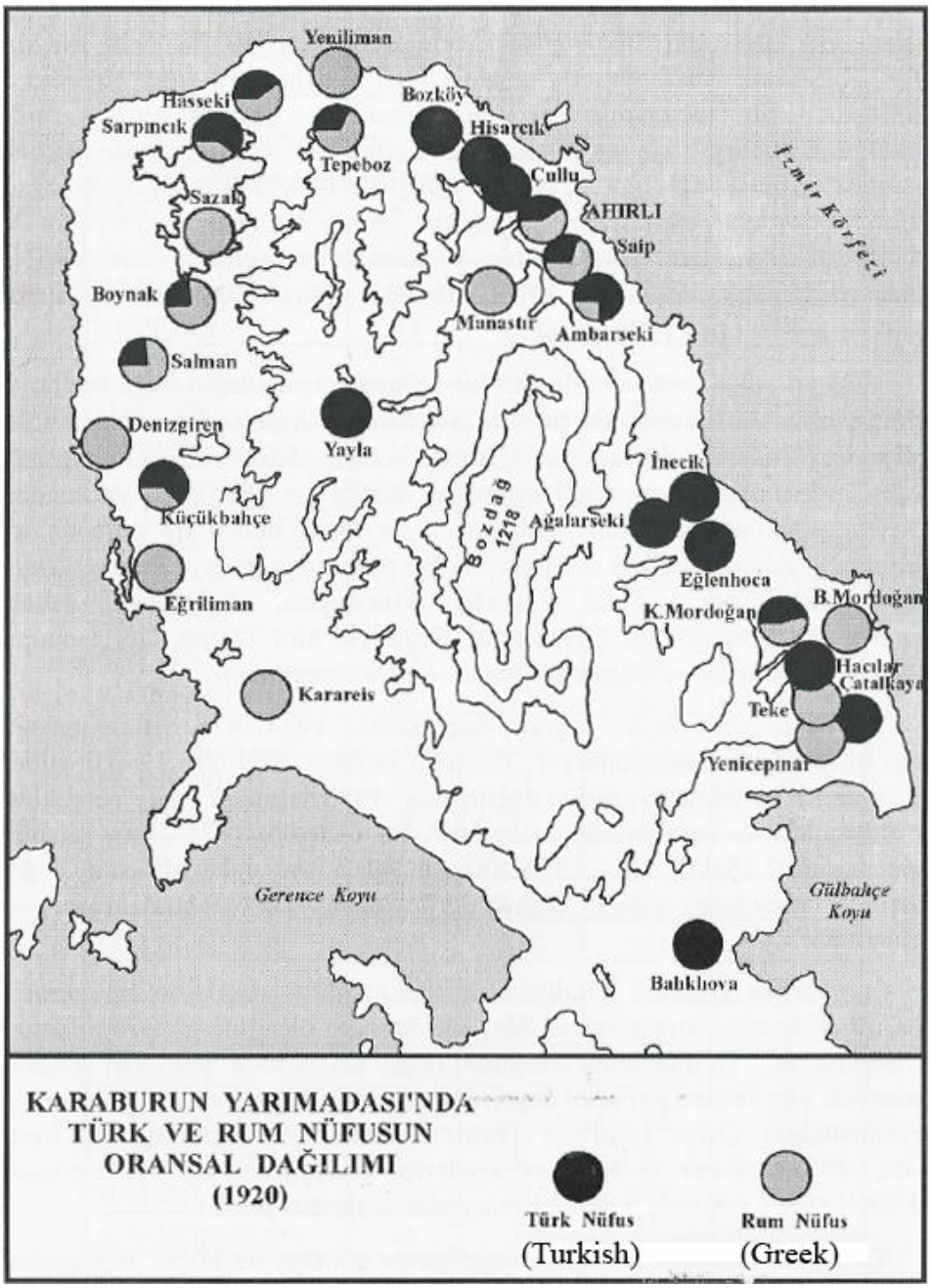
Table 2.7. Turkish and Greek population in the Karaburun Peninsula (Source: Işık, 2002).

Years	Turkish	Greek	Total
YILLAR	TÜRK NÜFUS	RUM NÜFUS	
1883	2400	2898	5298
1894	6302	6075	12377
1908	6483	9324	15717
1914	8838	9934	18772
1917	8784	0	8784
1920	6507	9217	15724
1923	6720	0	6720

According to the table, the surplus of Turkish population in 1914 can be attributed to the migration of Turkish population after the Balkan Wars. As it is stated before; the Muslim-Turkish population in the lost lands began to migrate into the territories of the empire after the Balkan Wars. Similarly; according to the 1917 data, the absence of the Rum population and also considering the absence of Rum population in Çeşme, Foça and Bergama in the same time period can be explained by the fact that the Rums left their lands and migrated to the island before the World War I. This situation was ended in the years after the Armistice of Mudros, which was signed on October 30, 1918, and the Rum population returned to the peninsula. The change in population rates can be followed in the following table in between 1883 and 1923 years (Table 2.8) (Map 2.10).

Table 2.8. Changes in Turkish and Greek population (Source: Işık, 2002).





Map 2.10. Turkish and Greek population distribution (Source: Işık, 2002).

Following the Turkish Independence War, Convention of Compulsory Population Exchange was signed on 30th January 1923 and approximately 1.200.000 Rum-Orthodox people from various parts of Anatolia and 500.000 Muslims from various parts of Greece forced to migrate to Turkey and Greece (Erdal, 2006). The absence of the Rum population in 1923 can be explained with this fact.

When population from data's of Işık is compared with legal sources[14] it is seen that there are some differences. The table in the below, all data from different sources are given (Table 2.9). When the population censuses made every five years after 1927 are examined, it is observed that the total population of Karaburun peninsula tends to decrease between 1927 and 1975. The reason for the sudden decline between the years 1926 and 1927 might be the inability of the Balkan immigrants to the agricultural conditions of peninsula. So, they moved to other cities, especially İzmir. Despite the decline between 1927 and 1975, population growth has been observed from 1975 to 2000. The main reason for this increase is the use of secondary housing in the peninsula (Işık, 2002). There is a sudden increase between 1990 and 2000 and there is a sudden decline between 2000 and 2007. This sudden change results from the population change of the Mordoğan district. Despite the sudden decline between 2000 and 2007, population growth has been observed since 2007 to 2016. The main reasons of this change are the highway construction connecting the peninsula to İzmir and the ongoing increase on the use of secondary housing in the peninsula.

Table 2.9. Population of Karaburun Peninsula in Republic Period.

	TUİK			Işık, 2002	Mater,1982
Year	Population of City Center	Population of Rural	Total	Total	Total
1923				6720	
1926				9849	
1927			7932	7880	
1935	763	6510	7273	7572	5766
1940	730	6332	7062	7379	5789
1945	762	6081	6843	7157	5886
1950	770	6311	7081	7430	6494
1955	1006	5823	6829	7200	6827
1960	998	5667	6665	7041	6429
1965	1053	5814	6867	7294	6867
1970	1120	5563	6683	7132	6683
1975	1235	5243	6478	6941	6478
1980	1456	5964	7420	8146	7420
1985	2020	5782	7802	8802	
1990	3405	5615	9020	10337	
2000	2932	10514	13446	15179	
2007	2489	5551	8040		
2008	2998	5226	8224		
2009	2785	6104	8889		
2010	2685	6004	8689		
2011	2728	6120	8848		
2012	2722	6077	8799		
2013			9092		
2014			9456		
2015			9403		
2016			9575		

[14] Population census results from 1927 to 2016 have been compiled from the website of 'The Turkish Statistical Institute' (*Türkiye İstatistik Kurumu* in Turkish (TUİK). (http://www.tuik.gov.tr/Start.do) (Accessed in 2017)

To sum up; it is understood from this table that the rural population is declined in general over the years. The villages that are experiencing population growth are located on the eastern and northern coastal shores. The secondary housing settlements which is accelerated by the highway construction is the reason of this population growth in these villages.

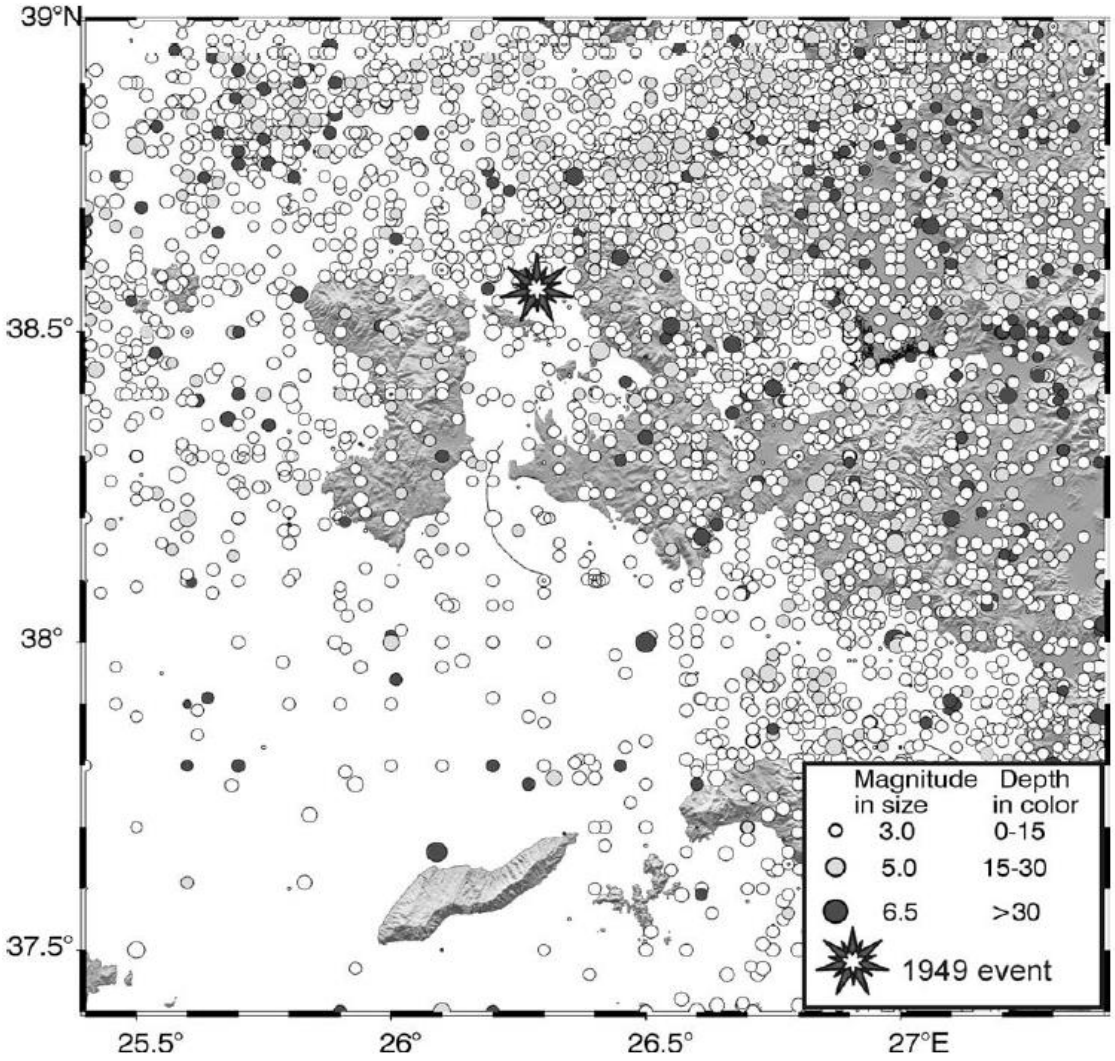
Table 2.10. Population of Karaburun Peninsula's villages in Republic Period[15].

	1935*	1940	1945*	1950	1955	1960*	1965	1970	1975	1980	1985	1990	2000	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ambarseki	309*	730*	297*	313	291	341*	331	287	258	249	263	224	253	192	217	211	215	202	193	181	195	186	193
Bozköy	260*	316*	307*	342	326	264*	256	208	206	202	170	152	177	101	113	111	120	119	117	133	147	168	166
Eglenhoca	681*	702	731*	769/669*	705	788*	757	715	628	666	638	578	702	431	433	443	428	410	400	405	421	406	410
Hasseki	258*	230*	222*	238	264	245*	224	203	145	154	149	167	91	91	91	96	85	97	105	110	119	123	117
Inecik	464*	253	245*	224	198	173*	199	152	198	268	376	324	559	143	157	138	142	142	137	155	167	155	154
Kösedere		824		811	812	825*	851	805	774	777	689	558	673	340	340	369	363	365	359	366	350	376	373
Küçükbahçe	273*	346	358*	383/583*	399	381*	462	590	469	371	398	457	776	426	441	445	471	447	460	453	504	464	458
Parlak	237*	251	252*	223	223	235*	225	203	191	193	176	184	183	109	127	130	129	121	122	133	134	132	135
Saip	319*	322*	318*	360	371	321*	336	338	288	285	229	223	219	153	163	155	151	161	161	181	205	197	202
Salman	113*	120	145*	148	140	150*	109	110	110	92	151	121	163	124	121	121	119	107	107	106	102	99	104
Sarpuncuk	249*	248*	259*	249	290	256*	282	242	249	234	224	201	244	138	136	136	131	124	112	127	117	102	103
Tepeboz	203*	303*	304*	313	286	292*	271	263	523	195	228	278	357	258	277	258	269	266	273	278	293	298	303
Yayla	235*	305	266*	273	248	235*	150	209	173	176	173	130	131	112	103	129	110	114	111	153	139	103	97
TOTAL	3601	4950	3704	4646	4553	4506	4553	4325	3942	3862	3864	3597	4528	2618	2719	2742	2733	2675	2657	2781	2893	2809	2815

[15] Signed data is compiled from Barış Mater's book; other data are compiled from TUİK.

2.6. Seismicity of the Region

İzmir is one of the seismically dynamic part of the Aegean Plate. The seismic movements hold on the Aegean Sea are seen mostly in İzmir Bay, Chios Islands and Karaburun Peninsula. The region suffered from twenty important earthquakes from 496 BC to 1949 (Y. Altinok, B. Alpar, N. Ozer, C. Gazioglu., 2005) (Map 2.11). These earthquakes were so severe that is possible to find the impact and the precautions taken afterwards both in Ottoman and Turkish archive sources.



Map 2.11. Instrumental earthquakes occurred between 1900 and 2005. Data is provided from the web page of Kandilli Observatory. Circle size represents the magnitude of the earthquake, and ranges from 0 to 6.8. (Source: Y. Altinok, B. Alpar, N. Ozer, C. Gazioglu., 2005).

The fatal earthquakes that took place at the end of 19th century (1881 and 1883) and at 20th century (1949) are important. The 3 April 1881 earthquake that took place in Chios also affected Çeşme and Karaburun peninsula is the second biggest[16] earthquake on the Ottoman lands in the 19th century. Pre-shocks were twenty pre-shocks recorded before the main shock. They were also powerful as much as the main shock. They caused plasters and ceilings of the houses to fall. The main earthquake hit the very big area from Chios Island to Çeşme including many islands in the Aegean Sea (Satlmış, 2014). The epicenter of the earthquake was at the southeast of the Chios Island and its magnitude[17] was 6.5 and it lasted 45 seconds (Y. Altinok, B. Alpar, N. Ozer, C. Gazioglu., 2005). It also affected Çeşme, Alaçatı and Çiftliköy. Aftershocks have continued for a long time and especially aftershocks occurred in 11 April 1881 and 26 August 1881 caused to demolish the houses completely that were already damaged from the main earthquake. Between 3500-4000 people lost their lives and many villages were completely destroyed and others were seriously damaged. 2700 houses were completely destroyed in the Çeşme Province (Satlmış, 2014). Because of these continuing earthquakes, people from Chios started to migrate to Anatolia (Sannav, 2004).

The other big earthquake occurred in 15 November 1883 in the Çeşme-Urla zone. The earthquake was on the north-south line and it lasted 15 seconds and its magnitude was 6.8. The earthquake destroyed all the villages between Çeşme and Urla. The earthquake was also affected Karaburun, Alaçatı, Foça, Kuşadası, İzmir, Chios, Samos, Midilli, and other small islands. Aftershocks have continued for a long time. 6153 houses were completely destroyed, and 59 people lost their lives and 200-250 people injured. It was the biggest earthquake in the history of Çeşme.

The first big earthquake occurred in 20th century was on 23 July 1949 at around 6 pm. The magnitude was 6.7 and the epicenter was the center of Çeşme, Chios and Karaburun triangle (Y. Altinok, B. Alpar, N. Ozer, C. Gazioglu., 2005). Karaburun Peninsula was the most affected area[18]. In Karaburun, 38 houses were collapsed, and 902 houses were seriously damaged. 8 people died (DAUM (Deprem Araştırma ve Uygulama Merkezi), 2017). According to the 'Cumhuriyet Journal' 250 houses in Karaburun

[16] The first biggest earthquake was the earthquake occurred in 1822 in Halep. (Satlmış, 2014)
[17] The magnitudes of earthquakes have searched from http://debis.deu.edu.tr/DEUWeb//Icerik/Icerik.php?KOD=9561 (Accessed in 2017).
[18] 33 settlement areas in Karaburun Peninsula were completely destroyed (Işık, 2002).

peninsula were destroyed. According to the 'Yeniasır Journal' (2 August 1949) Çullu village and Hisarcık districts were abandoned. Many houses in Eski Mordoğan, Çatalkaya, Ambarseki, Eğlenhoca, Karaburun district center, Iskele neighborhood and Tepeboz have severely ruined that they could not be inhabited any more. In Karaburun district center, 4 houses were totally collapsed, 80 houses were seriously damaged, and 111 houses were slightly damaged (Işık, 2002). After the earthquake, aftershocks continued until 11 September and there were almost 44 aftershocks. And these earthquakes and aftershocks produced sea waves and landslides (Y. Altinok, B. Alpar, N. Ozer, C. Gazioglu., 2005). The old people from the villages in Karaburun still remember the smokes that caused by the sea waves and landslides.

After 1949, three other important earthquakes occurred in the region. The first one was in 2 May 1953 with the magnitude of 5.2. The epicenter of the earthquake was the north peak of the Karaburun Peninsula and the aftershocks continued for one month. Almost 300 houses collapsed. As a result, Denizgiren, Manastır (Kalecik), Karareis, Çullu and Hisarcık settlements were abandoned during 1940-60 (Işık, 2002).

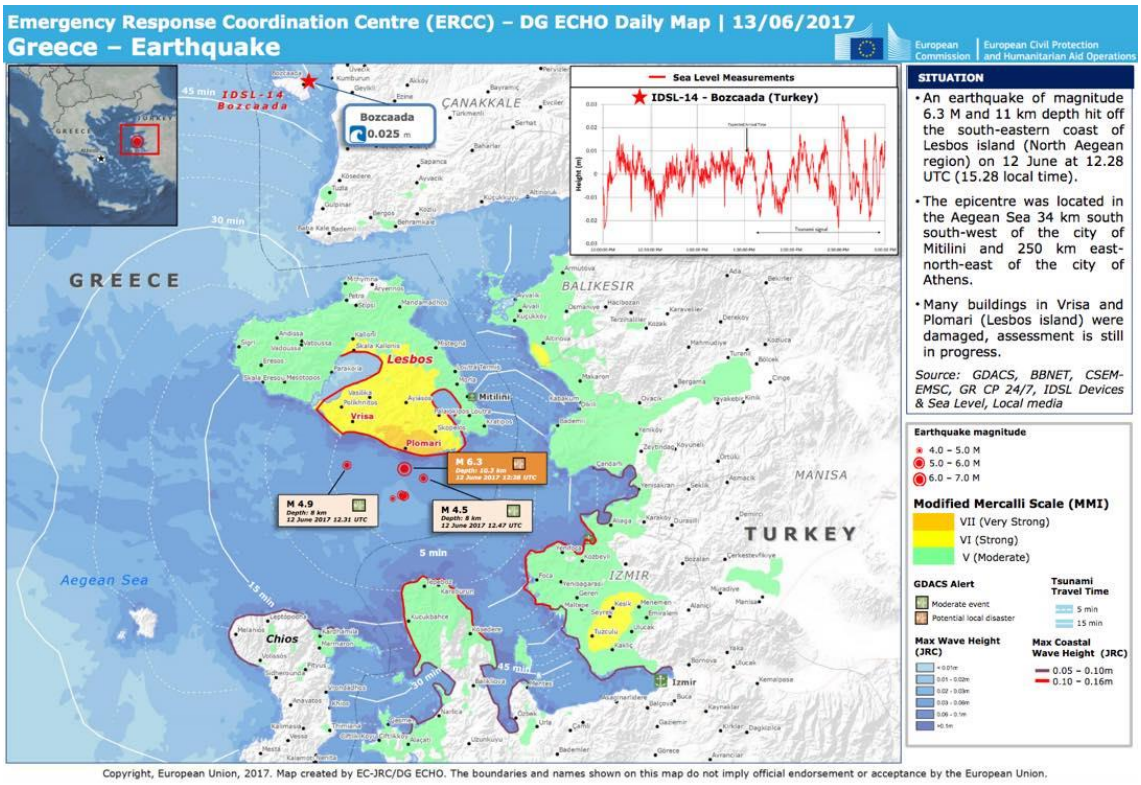
The other earthquake was in 6 April 1969. The magnitude was 5.6. The epicenter is between Çeşme, Chios and Karaburun triangle. It caused destruction in Çeşme and Chios Island (DAUM (Deprem Araştırma ve Uygulama Merkezi), 2017). According to the 'Yeniasır Journal' (8 April 1969), Mordoğan, Kösedere, İnecik, Eğlenhoca villages were seriously damaged in this earthquake (Işık, 2002). The last strong earthquake occurred in 14 June 1979, with magnitude of 5.8. The epicenter was the Aegean Sea. The earthquake also strongly felt in the İzmir. Cracks observed in the houses. 2 houses destroyed in Karaburun and one person injured (DAUM (Deprem Araştırma ve Uygulama Merkezi), 2017).

In 12 November 1992 another earthquake with magnitude 4.4 has been effective in Lesbos Island, Chios Island, Karaburun, İzmir and around. 6 earthquakes with 4.1 and 4.5 magnitudes have been occurred in the region until December (UDİM, 2005). Another big earthquake occurred in 24 May 1994. The magnitude was 5. And in same day the other two earthquakes with 5 and 4.8 magnitudes occurred in the region (UDİM, 2005).[19] It is known that these earthquakes affected the region badly. Most of the buildings of

[19] UDİM: Ulusal Deprem İzleme Merkezi (Regional Earthquake Monitoring Center)

İzmir Institute of Technology had been seriously damaged. It means all Karaburun region had been affected in large scale.

The last earthquake in the region is occurred in 12 June 2017 with 6.3 magnitude. The earthquake's epicenter was in the Aegean Sea at the very shallow depth of seven kilometers and hit at 15.28. At least 200 aftershocks were recorded. The earthquake struck the western part of Turkey; İzmir, Aydın, Balıkesir, Çanakkale, İstanbul, Manisa, Muğla, Sakarya, Tekirdağ and Greek islands Chios and Lesbos (Map 2.12). Turkey's Disaster and Emergency Management Presidency said there were no reports of casualties in the country.



Map 2.12. Overview map from the European Civil Protection. Map created by the EC-JRC/DG ECHO.

2.7. Social and Economic Characteristics

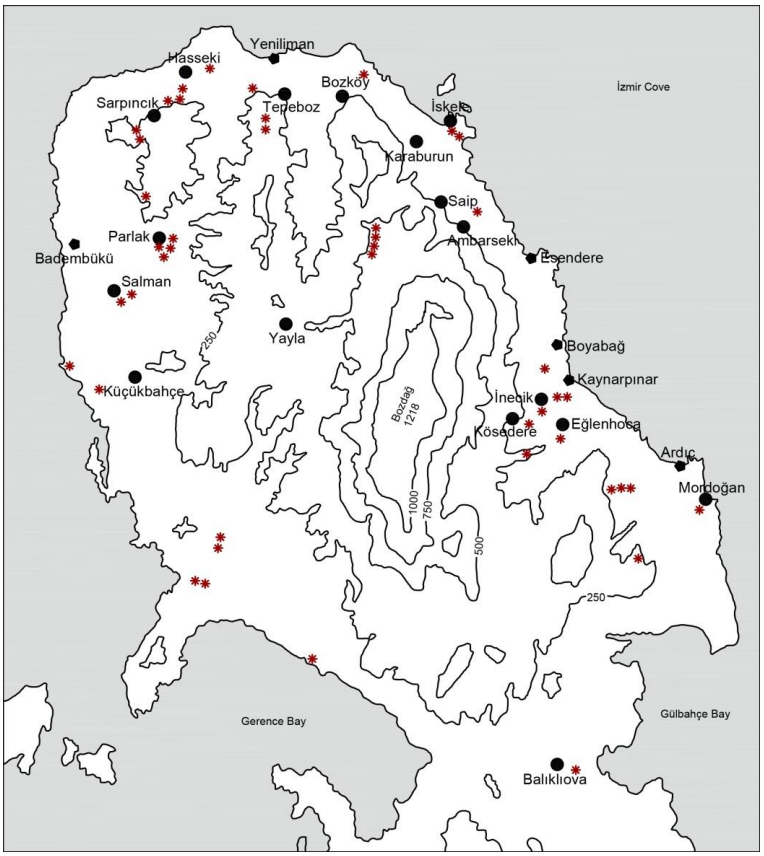
There are limited sources about economic condition of 19th century. Only available sources come from Cöcen; about Küçükbahçe, Çil and Kul, about Ildırı and Işık about the whole peninsula. Despite its extremely rugged topography, the agricultural activities in the economic structure of the Karaburun Peninsula have always maintained its priority. Especially the production of grapes and olives has a special place in

agricultural activities since antiquity. It is observed that the Karaburun Peninsula's grape production prevailed in the 16th century (Işık, 2002). The economic structure of the Karaburun Peninsula was based on agriculture in these years, especially the viticulture and olive agriculture and both Turkish and the Rum population. Furthermore, it is stated in tax books that there are many grain mills and olive mills in the peninsula. Totally 45 mills were documented in Bozköy, Küçükbahçe, Salman and Boynak. 21 of them were olive mills, 13 of them were wind mills and 11 of them were water mills. There were totally 25 mills in Kösedere. Olive oil was produced in 21 of these mills. This limited data shows that the production of grapes, olives and olive oil on the peninsula has reached a significant level. According to the survey conducted by Şevket Işık, there are nearly 50 mill ruins in the region (Map 2.13).

This agricultural structure based on grape and olive production in 16th century was also confirmed by Evliya Çelebi[20] who came to the region in the 17th century. Evliya Çelebi mentioned that in many parts of the peninsula, mountains, slopes, all distant and close circles are vineyards and horticulture, among them many olive trees are almost in the form of a forest, and they have very fertile olive groves and ties. The high level of grape and olive production also reflected in commercial activities. Especially, sea trade with İzmir and Aegean islands was a common activity. Trade was managed through '*iskele'*s[21]. Karareis, Eğriliman and Denizgiren, on the west side of the peninsula; Saip, Kösedere and Mordoğan, on the east were *iskele*s where goods were delivered and orange, tangerine, wood logs and etc. were brought to the peninsula. Furthermore, the horticulture was never the only sources of income of the Rum population. They were dealing with viticulture and olive production and fishery beside and with other type of commercial activities like crafts (Uran, 2007).

[20] Evliya Çelebi**,** also called Derviş Mehmed Zilli (born March 1611, Istanbul - died *c.* 1684, Istanbul), one of the most celebrated Ottoman travelers, who journeyed for more than 40 years throughout the territories of the Ottoman Empire and adjacent lands. (https://www.britannica.com/biography/Evliya-Celebi) (Accessed in 2017)

[21] *'İskele'* is the landing structure on the sea where the boats and ships are tied.



Map 2.13. Mill Ruins in Karaburun Peninsula (Source: Işık, 2002)

End of the 19th century and beginning of the 20th century, starting with the migration of the Rum population, not only the social character but also the economic character of the region deeply changed. Vineyards were quitted, and locals were involved with tobacco which resulted as not satisfying enough as viticulture. The grown products were different from the ones that migrants were familiar with, they were laborious to grow and take a long time and require a different knowledge and skill. It was very difficult to live in these limited agricultural possibilities for the new comers who provided their livelihood entirely by agriculture and who had no other interests (Uran, 2007). The decrease in the interest in agricultural activities resulted in extinction of other professions, too. Textile, sericulture and mill industry are few of activities that no longer exist as a profession in the peninsula (Cöcen, 2007).

Another business on the peninsula is mining (Figure 2.1). By 1929, there were three mercury mines in Karaburun. It is understood from the statistics that there were mines in Yayla in 1931, Denizgiren and Karareis villages and in Çullu village in 1933 (Işık, 2002). Another common mine in the peninsula is quarries. They still exist in the peninsula. There are different quarries where stone, marble (Figure 2.2) and clay (Figure 2.3) are processed.

Figure 2.1. Mercury Mine in Karaburun Peninsula (by Cavit Kürnek, 1997).
(Source: http://www.karaburunkentkonseyi.org/civa-maden-ocagi/)

Figure 2.2. Marble Quarry in Karaburun Peninsula (May 2017).

Figure 2.3. Clay Pit in Karaburun Peninsula.
(Source: http://www.polatmaden.com/sayfa.asp?idx=153)

The economic life of the peninsula has started to be reshaped in 1980s. With the enterprise and support of the state, introduction of new technologies with modern and more profitable equipment's initiated an interest and return to agricultural activities, which gradually encouraged economy and production in the peninsula. The use of irrigation systems in agriculture increased the type of production and since then artichoke, orange and tangerine have been the new concern of farmers. Today, in addition to the irrigated agriculture, growing cut-flowers (narcissi and hyacinth), apiculture (beekeeping) together with revival of vineyards and olive gropes compose a more qualified agriculture based economic life in the region (Cöcen, 2007). Yayla village, which is located in the middle part of the peninsula, is a village where animal husbandry activities have started to gain importance. In the village where the cattle breeding is intense, milk production and cheese production are the main source of income. Another important source of income is the fishing (Figure 2.4) in the residential areas along the coast. Sardines, mullet, sea bass, cobbles and horse mackerels are at the head of the hunted fish. In recent years fish farms have started to be established (Işık, 2002).

Today, together with agricultural activities, employment facilities in service sector and tourism has great contribution to the economic life of Karaburun. The peninsula became interesting both for locals and foreign tourists because of its preserved natural beauty and traditional rural life (Cöcen, 2007). The social and cultural activities of the peninsula have also increased recently. Hidrellez Fest (May 5), Karaburun Kırkım Fest, Utopia Meeting, Karaburun Festival, Liberation Festival (September 17), Meeting with Sea Fest (9-11 September), Daffodil Festival (December-January), Karaburun Science Congress are one of the latest activities (İZKA, 2013).

Figure 2.4. Fish Farms in Karaburun Peninsula (June 2017).

CHAPTER 3

GENERAL FEATURES OF CONSTRUCTION TECHNIQUES IN KARABURUN VILLAGES

As stated in Chapter 1.2; a preliminary site survey is carried out to 13 historical villages of the peninsula in order to decipher the historic building stock of each village and their state of preservation. Since there were no site plans of these 13 villages, Google Earth images of each village is utilized to produce technical drawings via AutoCAD software. These technical drawings were helpful to map not only the preliminary findings during the site survey but also the final results. The final results for each village are visualized in two layouts. In the first layout; the location and plan of the village is presented. Land use and condition of the buildings is clarified. Photographs from different points of the village is given. In the second layout, the building materials and construction technique utilized in the buildings is summarized.

The results of the preliminary survey are given below for each village in an alphabetical order.

3.1. Construction Techniques of Traditional Buildings in Karaburun Villages

3.1.1. Ambarseki

Ambarseki is located at the north-east of Karaburun Peninsula. It is connected to Karaburun-İzmir highway named D505 with a 1 km. asphalt road that ends at the village square. There is a coffee shop at the northeast; the village mosque and local administration *(muhtarlık)* at the southeast of the road. The village cemetery is placed at the northeast of the mosque.

There are total of 117 residential buildings in Ambarseki. 56 of this 117 is new buildings which are constructed with modern materials and technique. This constitutes 47,8% of total building stock.

There are 61 traditional buildings which are constructed with traditional materials and technique. This constitutes 52,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 13.7% of total building stock. Among these, totally collapsed ruins are 2.6% and partially collapsed are 11.1% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (11,1%); b. partially preserves original characteristics (15,4%) and c. does not preserve original characteristics (12%). (Figure 3.1)

The traditional houses are generally one or two-storey buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls changes between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, timber flooring boards are nailed to the beams in perpendicular direction.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles

are observed in altered roofs. All roofs have eaves composed of tiles or slate stones. Brick eave observed only in one example at the end of the masonry wall, between wall and the roof.

The doors, windows, shutters in traditional buildings are made of timber. Doors are generally one winged and shutters are two winged. Timber stairs are observed in two-storey houses. Use of stone is seen at the outside of two-storey houses where the main entrance to the house is from the second story. Fireplace is one of the main elements in the houses. They are generally located at the first floor. All chimneys that could be observed were made of brick. There are stone projections next to the entrance door in some houses. They were probably used as luminaire shelve. (Figure 3.2)

3.1.2. Bozköy

Bozköy is located at the north of Karaburun Peninsula. The village is 6 km away from Karaburun center. The mosque, coffee house and local administration *(muhtarlık)* are located at the north of the village road. The coffee house and local administration share the same building. The village settlement has been established through the mostly south, east and northwest part of the village square.

There are total of 115 residential buildings in Bozköy. 39 of this 115 are new buildings which are constructed with modern materials and technique. This constitutes 33,9% of total building stock.

There are 76 traditional buildings which are constructed with traditional materials and technique. This constitutes 66,1% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 40,9% of total building stock. Among these, totally collapsed ruins are 23,5% and partially collapsed are 17,4% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (15,7%); b. partially preserves original characteristics (3,5%) and c. does not preserve original characteristics (6%). (Figure 3.3)

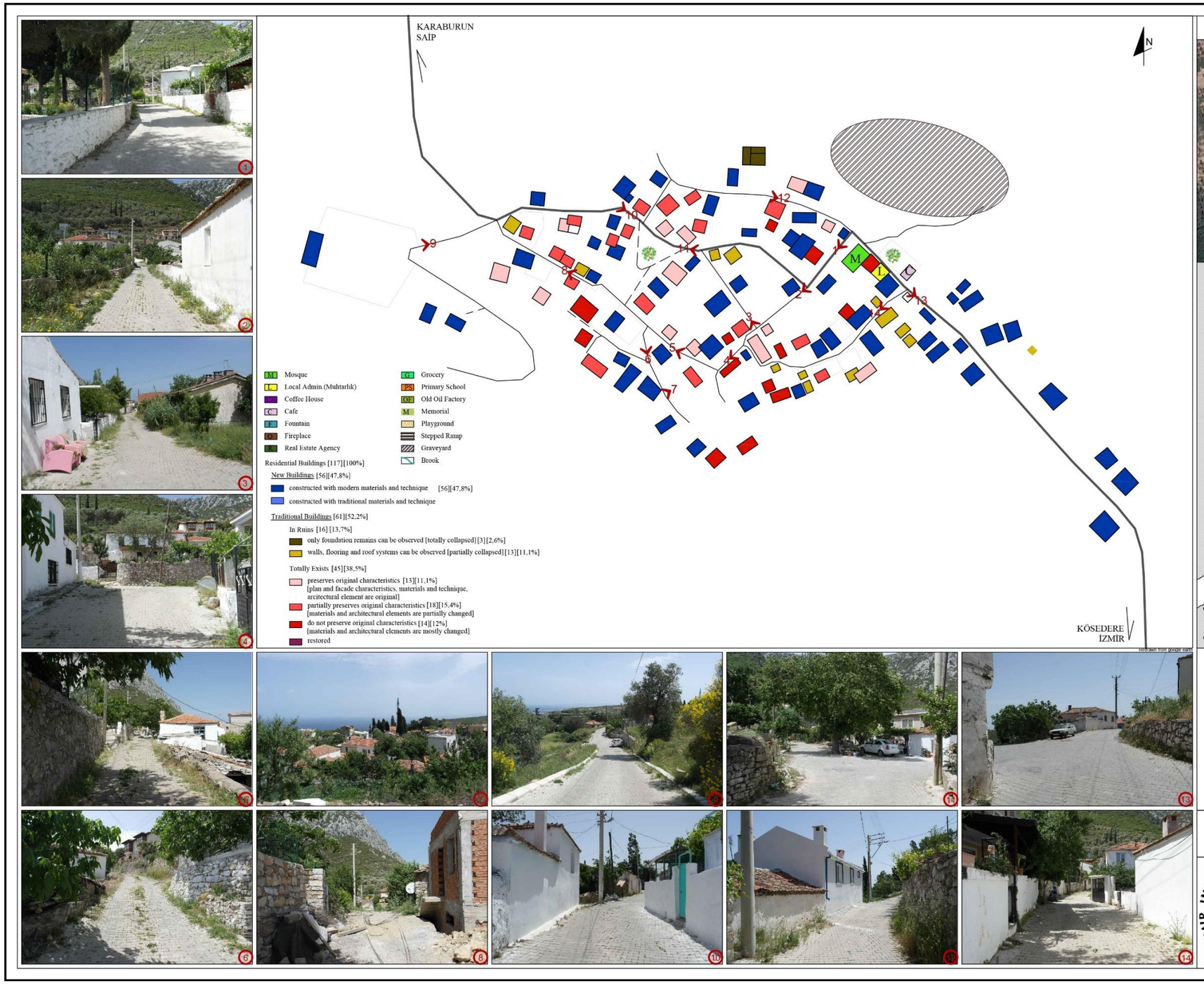
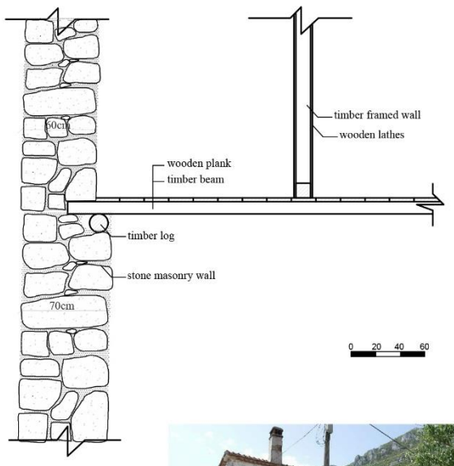


Figure 3.1. Building Category and Street Views of Ambarseki.

WALL SYSTEM

The traditional houses are generally one or two story buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls change between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm. This type of timber walls is called as 'bağdadi' in Turkish.



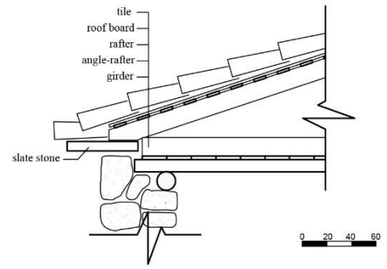
FLOOR SYSTEM

The ground floor system cannot be observed because of debris in the houses.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Hipped and pitched roofs are covered with tiles. Alaturka type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Roofs have eave. There are observed mostly tiles or slate stones. Brick has been observed for only one example at the end of the masonry wall, between wall and the roof.



ARCHITECTURAL ELEMENTS

Door Door openings are spanned with timber lintel. The single winged timber doors sit on the outer edge of the door opening so their size depend on the size of the opening.

Window & Shutter Window openings are spanned with timber lintel. They are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Staircase Timber stairs are used in two storey houses in which first floor are accessed through an entrance door in the ground floor. Use of stone is seen at the outside of two storey houses where is an entrance to the house at the second storey.

Fireplace & Chimney Fireplace is one of the main elements in the houses. They are generally located at the firsts floor. The wall that has the fireplace has no opening. All chimneys that could be observed were made of brick.

Luminaire There are stone projections next to the entrance door. They were probably used for the luminaire shelf.

OVERALL EVALUATION

There are total of 117 residential buildings in Ambarseki. 56 of this 117 is new buildings which are constructed with modern materials and technique. This constitutes 47,8% of total building stock. There are 61 traditional buildings which are constructed with traditional materials and technique. This constitutes 52,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 13.7% of total building stock. Among these, totally collapsed ruins are 2.6% and partially collapsed are 11.1% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (11,1%); b. partially preserves original characteristics (15,4%) and c. does not preserve original characteristics (12%).

İZMİR INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ARCHITECTURAL RESTORATION

İZMİR INSTITUTE OF TECHNOLOGY
IZTECH

CONSTRUCTION TECHNIQUES OF TRADITIONAL HOUSES IN KARABURUN VILLAGES

PRELIMINARY SITE SURVEY

PREPARED BY : BURÇİN GÖRÜR
SUPERVISOR : ASSIST.PROF.DR.F.NURŞEN KUL-ÖZDEMİR

Figure 3.2. Construction Techniques of Ambarseki.

The traditional houses are generally one or two-storey buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill *(bağdadi)*. The thickness of masonry walls changes between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces.

The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

Hipped and pitched timber roofs are observed in the village. They are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in Bozköy. In this system, first the main beams are placed for spanning. Then timber boards are placed at the opposite direction of the beams. Timber boards are covered with two layers; the first layer is composed of reed or thin wooden lathes and the second layer is earth. The earth composed of dried straw and earth. All roofs have eaves composed of tiles, slate stones or bricks.

Doors are generally one winged and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening.

Chimneys that could be observed are made of brick or stone in Bozköy.

Waterspouts have been observed in the houses that have flat roof. They are made of terracotta. (Figure 3.4)

3.1.3. Eğlenhoca

Eğlenhoca is located at the east of Karaburun Peninsula. It is connected to Karaburun-İzmir highway named D505 with a 1 km. asphalt road that ends at the village square. The mosque, coffee house and local administration *(muhtarlık)* are located at the south of the village road. The coffee house and local administration share the same building. The village settlement has been established around the village square.

There are total of 217 residential buildings in Eğlenhoca. 125 of this 217 is new buildings which are constructed with modern materials and technique. This constitutes 57,6% of total building stock.

There are 92 traditional buildings which are constructed with traditional materials and technique. This constitutes 42,4% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 13,4% of total building stock. Among these, totally collapsed ruins are 4,2% and partially collapsed are 9,2% in proportion. Totally existing buildings consist 29% of total residential building stock. They can be categorized into three as a. preserves original characteristics (11,5%); b. partially preserves original characteristics (13,8%) and c. does not preserve original characteristics (3,7%). (Figure 3.5)

The traditional houses are generally one or two-storey buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls changes between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces.

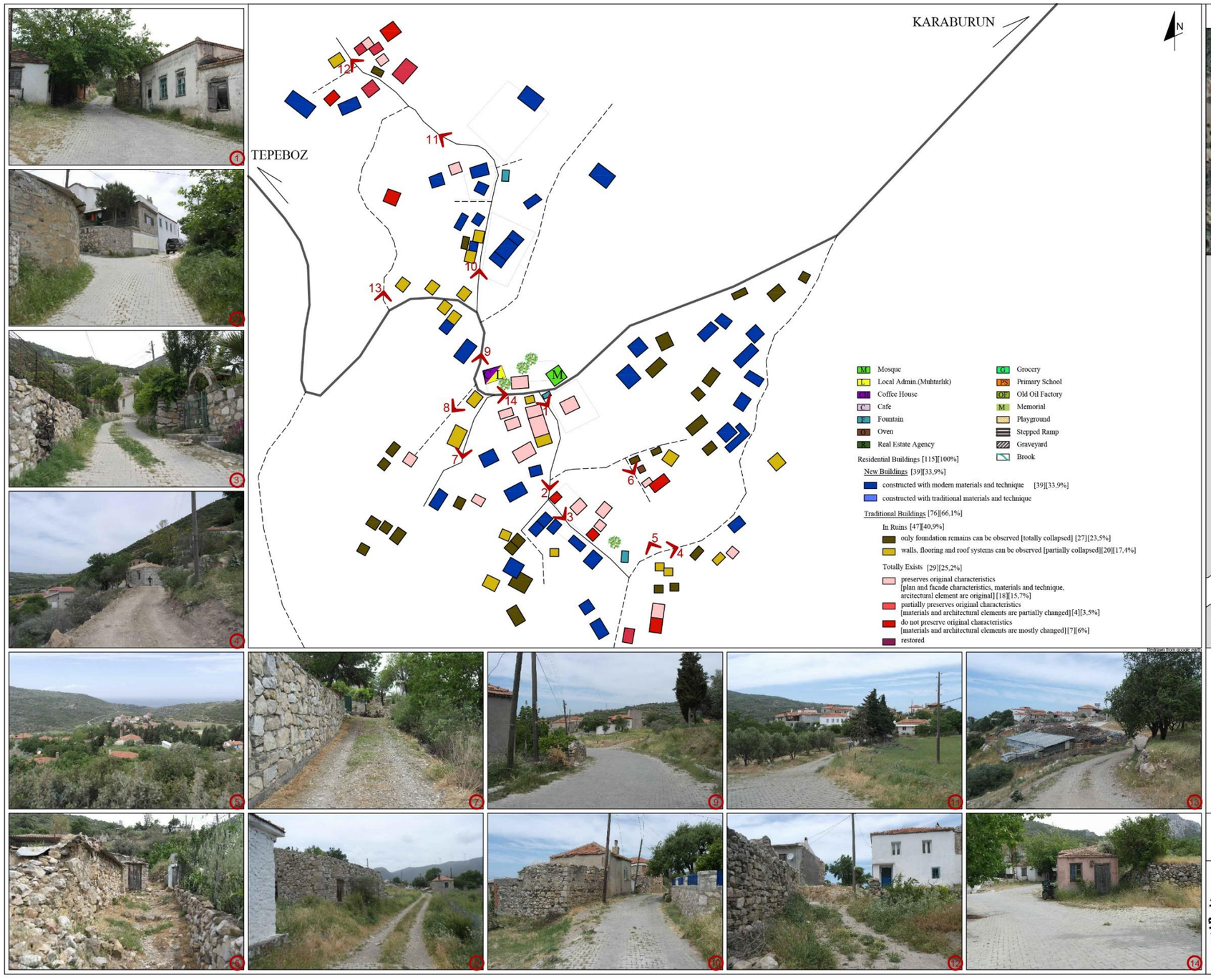
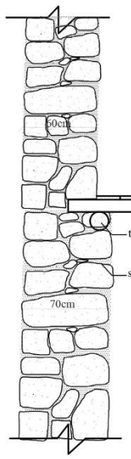


Figure 3.3. Building Category and Street Views of Bozköy.

WALL SYSTEM

The traditional houses are generally one or two story buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls change between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white colour. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm. This type of timber walls is called as 'bağdadi' in Turkish.



FLOOR SYSTEM

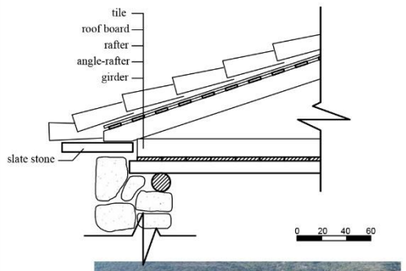
The ground floor system cannot be observed because of debris layers on floors.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Hipped and pitched roofs are covered with tiles. Alaturka type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in Bozköy. In this system, the main beams are placed firstly for spanning. Then they are covered with timber boards vertically to the direction of the beams and timber boards are covered with firstly reed or small wooden lathes then earth. The earth composed of dried straw and earth. In Bozköy, main beams have been covered with directly reed then they have been covered with earth.

Roofs have eave. There are observed as tile, slate stone or brick between wall and the roof.



ARCHITECTURAL ELEMENTS

Door Doors are generally one winged and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Chimney Chimneys that could be observed are made of brick or stone in Bozköy.

Waterspout Waterspouts have been observed in the houses that have flat roof. They are made of terracotta.

OVERALL EVALUATION

There are total of 115 residential buildings in Bozköy. 39 of this 115 are new buildings which are constructed with modern materials and technique. This constitutes 33,9% of total building stock. There are 76 traditional buildings which are constructed with traditional materials and technique. This constitutes 66,1% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 40,9% of total building stock. Among these, totally collapsed ruins are 23,5% and partially collapsed are 17,4% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (15,7%); b. partially preserves original characteristics (3,5%) and c. does not preserve original characteristics (6%).

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CONSTRUCTION TECHNIQUES OF TRADITIONAL HOUSES IN KARABURUN VILLAGES

PRELIMINARY SITE SURVEY

PREPARED BY : BURÇİN GÖRÜR
SUPERVISOR : ASSIST.PROF.DR.F.NURŞEN KUL-ÖZDEMİR

Figure 3.4. Construction Techniques of Bozköy.

The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm. This type of timber walls is called as 'bağdadi' in Turkish.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. All roofs have eaves composed of mostly tiles, slate stones. Brick eave observed only in one example at the end of the masonry wall, between wall and the roof.

Doors are generally one winged and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening. Only one fireplace is observed in one house and it has been made of stone. The chimneys that could be observed are made of brick. A kind of stone bench attached to the front facade of house has been observed. It was probably used as a steppingstone. (Figure 3.6)

3.1.4. Hasseki

Hasseki is located at the north of Karaburun Peninsula. The village is 12 km away from Karaburun center. The village, which was separated from the valley in the middle, settled on two sides. The mosque is located at the entrance of the village, south east of

the main road. There is big village square in front of the mosque. The village settlement has been established south part of the village square through to the valley.

There are total of 125 residential buildings in Hasseki. Among these; 21 buildings are new. New buildings in Hasseki can be grouped under two categories according to their materials: a. new buildings constructed with modern materials and technique, b. new buildings constructed with traditional materials and technique. New buildings consist 16,8% of total building stock. Among these, buildings constructed with modern materials and technique are 16% and constructed with traditional materials and technique are 0,8% in proportion.

There are 104 traditional buildings which are constructed with traditional materials and technique. This constitutes 83,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 59,2% of total building stock. Among these, totally collapsed ruins are 45,6% and partially collapsed are 13,6% in proportion. Totally existing buildings consist 24% of total residential building stock. They can be categorized into three as a. preserves original characteristics (15,2%); b. partially preserves original characteristics (4%) and c. does not preserve original characteristics (4,8%). (Figure 3.7)

The traditional houses are generally one or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

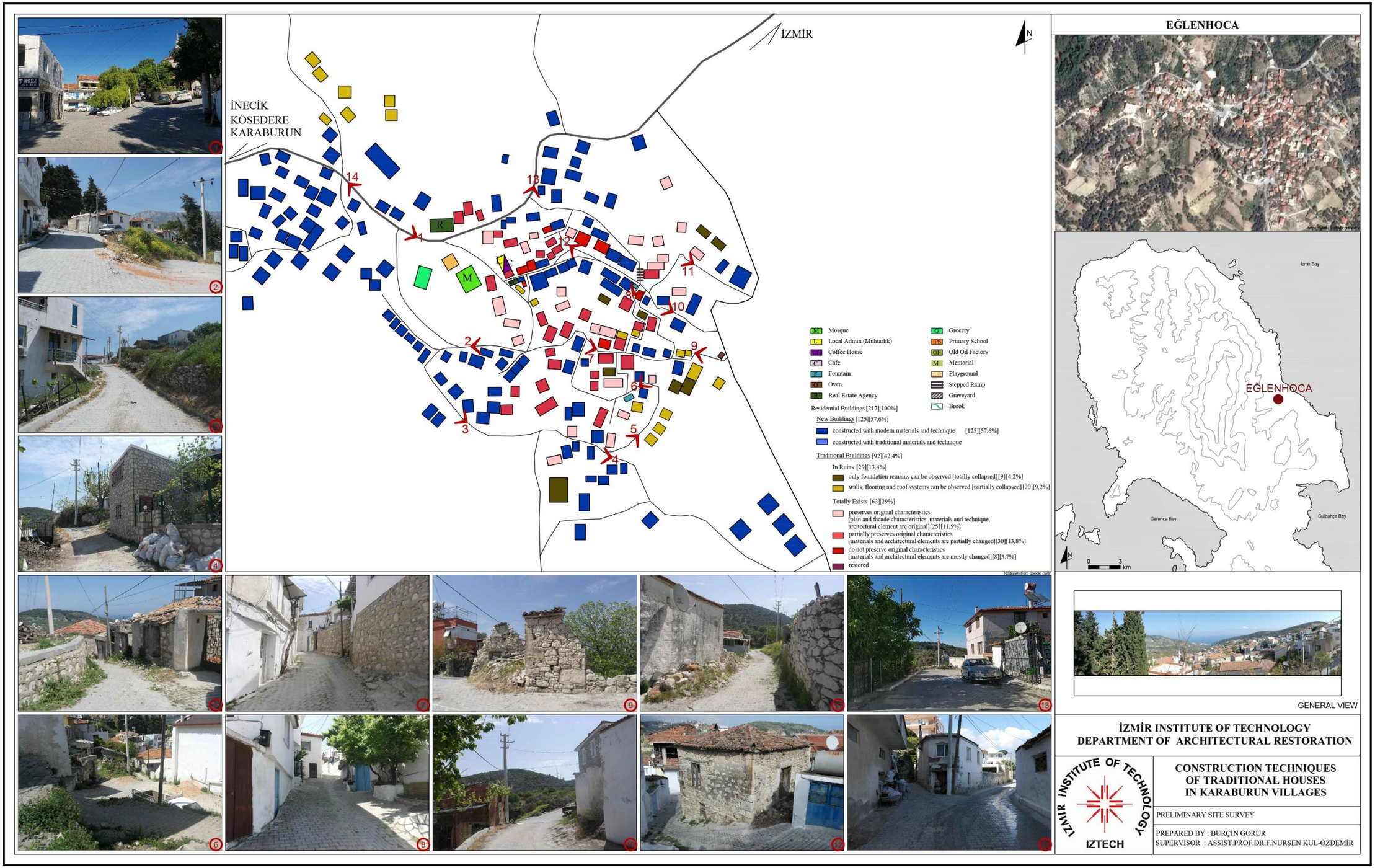
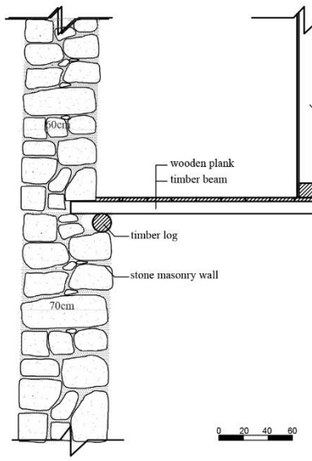


Figure 3.5. Building Category and Street Views of Eğlenhoca

WALL SYSTEM

The traditional houses are generally one or two story buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls change between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white colour. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm. This type of timber walls is called as 'bağdadi' in Turkish.



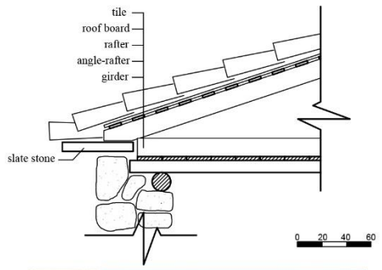
FLOOR SYSTEM

The ground floor system cannot be observed because of debris layers on floors.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Hipped and pitched roofs are covered with tiles. Alaturka type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Roofs have eave. There are observed mostly tiles, slate stones or brick for only one example at the end of the masonry wall, between wall and the roof.



ARCHITECTURAL ELEMENTS

Door Doors are generally one winged and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Fireplace & Chimney Only one fireplace is observed in one house and it has been made of stone. The chimneys that could be observed are made of brick.

Bench A kind of stone bench in front of the front facade of house has been observed.

OVERALL EVALUATION

There are total of 217 residential buildings in Eğlenhoca. 125 of this 217 is new buildings which are constructed with modern materials and technique. This constitutes 57,6% of total building stock. There are 92 traditional buildings which are constructed with traditional materials and technique. This constitutes 42,4% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 13,4% of total building stock. Among these, totally collapsed ruins are 4,2% and partially collapsed are 9,2% in proportion. Totally existing buildings consist 29% of total residential building stock. They can be categorized into three as a. preserves original characteristics (11,5%); b. partially preserves original characteristics (13,8%) and c. does not preserve original characteristics (3,7%).

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Figure 3.6. Construction Techniques of Eğlenhoca

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are composed of thick wooden beams that have round sections. These beams are then covered firstly with thick shrubs and then thin shrubs. Finally, 30-40 cm clayed soil is placed. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "*geren*". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called '*loğ taşı*' in Turkish. All roofs have eaves composed of mostly tiles, slate stones. Brick eave observed only in one example at the end of the masonry wall, between wall and the roof.

Doors are generally one winged and they are installed on the outer edge of the door opening. Windows are timber and single or double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening.

Only one fireplace is observed in one house and it has been made of brick. The chimneys that could be observed were made of brick or stone. There are two niches which are located at the two side of the observed fireplace. Only one waterspout could be observed in the village. It is made with terracotta. (Figure 3.8)

3.1.5. İnecik

İnecik is located at the east of Karaburun Peninsula. It is connected to Karaburun-İzmir highway named D505 with a 2 km. asphalt road that ends at the village square. The mosque, coffee house and local administration *(muhtarlık)* are located at the north of the village square. The coffee house and local administration share the same building. The village settlement has been south part of the village square.

There are total of 74 residential buildings in İnecik. Among these; 28 buildings are new. New buildings in İnecik can be grouped under two categories according to their materials: a. new buildings constructed with modern materials and technique, b. new buildings constructed with traditional materials and technique. New buildings consist 37,8% of total building stock. Among these, buildings constructed with modern materials and technique are 18,9% and constructed with traditional materials and technique are 18,9% in proportion.

There are 46 traditional buildings which are constructed with traditional materials and technique. This constitutes 62,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins consist 6,8% of total building stock and the all of them is partially collapsed (walls, flooring and roof systems can be observed). Totally existing buildings consist 55,4% of total residential building stock. They can be categorized into four as a. preserves original characteristics (17,6%); b. partially preserves original characteristics (18,9%); c. does not preserve original characteristics (4%) and d. restored ones (14,9%). (Figure 3.9)

The traditional houses are generally one or two-storey buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls changes between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

The ground floor system couldn't observe in all the houses however it is seen that raised timber floor system in one house and compacted soil is seen in one house. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

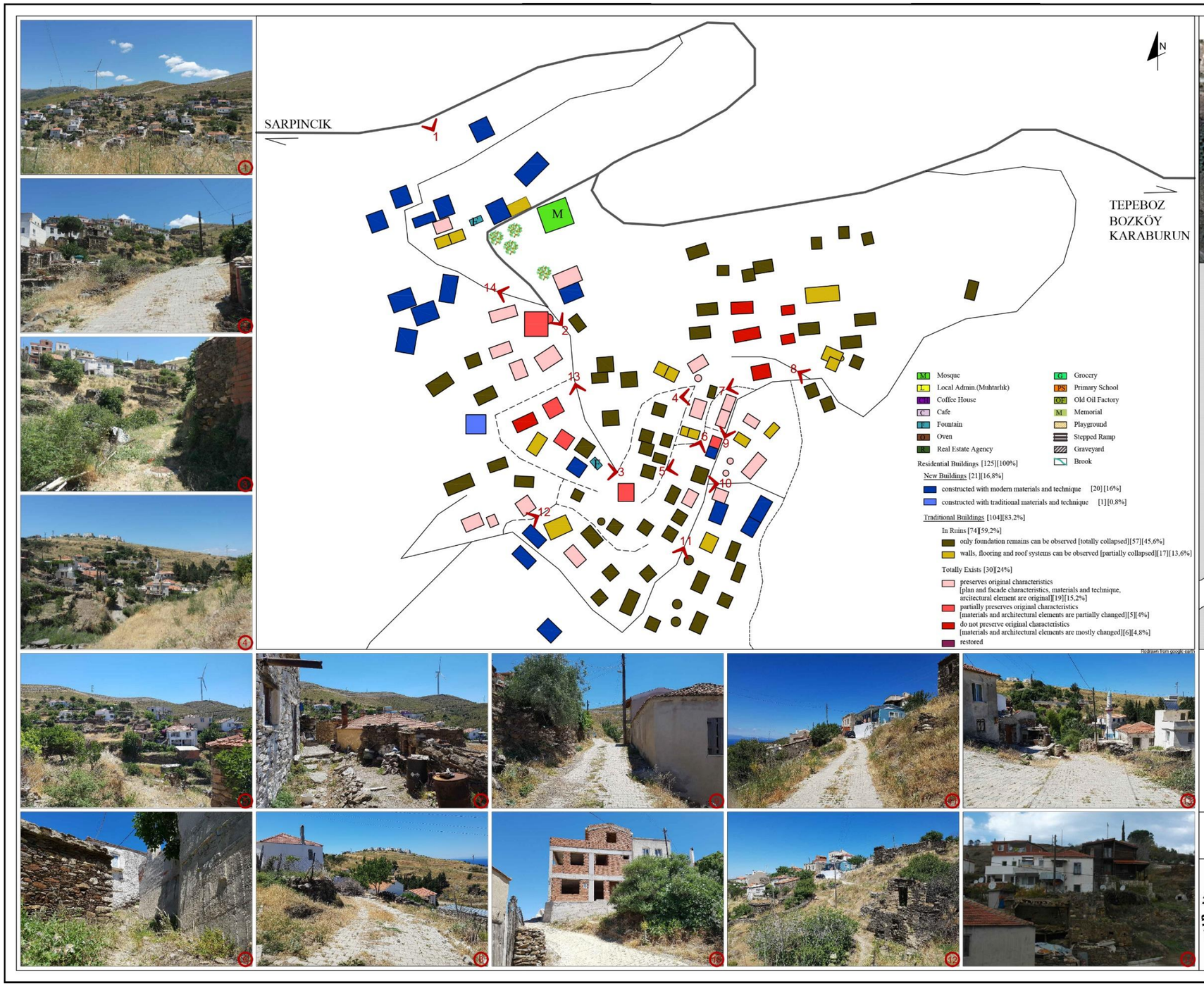
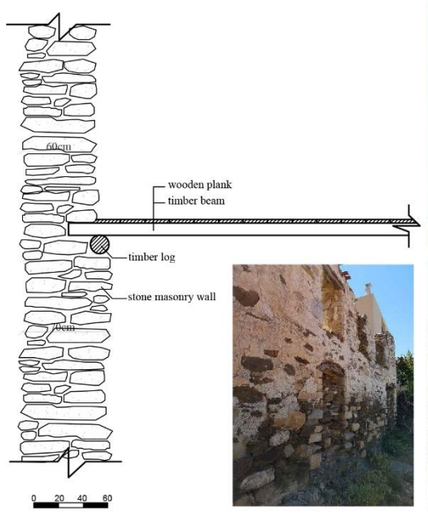


Figure 3.7. Building Category and Street Views of Hasseki.

WALL SYSTEM

The traditional houses are generally one or two story buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black colour. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.



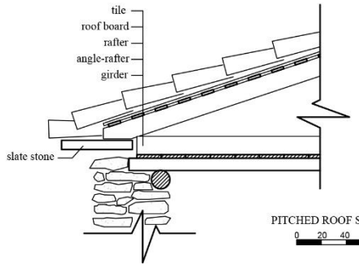
FLOOR SYSTEM

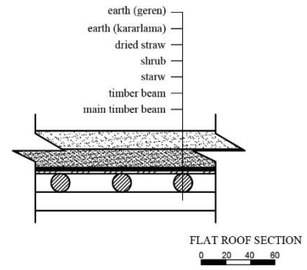
The ground floor system cannot be observed because of debris layers on floors.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Hipped and pitched roofs are covered with tiles. Alaturka type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are applied on thick wooden beams have round section and the beams are covered with pieces of thick shrub (kalın çalı), then thin shrub (ince çalı) and compressed by laying 30-40 cm clayed soil on them. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "geren". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called 'loğ taşı' in Turkish. Roofs have eave. There are observed mostly tiles, slate stones or brick for only one example at the end of the masonry wall, between wall and the roof.





ARCHITECTURAL ELEMENTS

Door Doors are generally one winged and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and single or double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Fireplace & Chimney Only one fireplace is observed in one house and it has been made of brick. The chimneys that could be observed were made of brick or stone.

Niche There are two niches at the two side of the observed Fireplace.

Waterspout Only one waterspout could be observed in the village. It is made with terracotta.

OVERALL EVALUATION

There are total of 125 residential buildings in Hasseki. Among these; 21 buildings are new. New buildings in Hasseki can be grouped under two categories according to their materials: a. new buildings constructed with modern materials and technique, b. new buildings constructed with traditional materials and technique. New buildings consist 16,8% of total building stock. Among these, buildings constructed with modern materials and technique are 16% and constructed with traditional materials and technique are 0,8% in proportion. There are 104 traditional buildings which are constructed with traditional materials and technique. This constitutes 83,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 59,2% of total building stock. Among these, totally collapsed ruins are 45,6% and partially collapsed are 13,6% in proportion. Totally existing buildings consist 24% of total residential building stock. They can be categorized into three as a. preserves original characteristics (15,2%); b. partially preserves original characteristics (4%) and c. does not preserve original characteristics (4,8%).

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Figure 3.8. Construction Techniques of Hasseki.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. All roofs have eaves composed of slate stones.

Doors are generally one winged and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening. Timber stairs are observed in two-storey houses. Only one fireplace is observed in one house and it has been made of stone. The chimneys that could be observed are made of brick or stone. Niches are observed next to the fireplace. And one closet is observed in the one house in the ground floor. It is made of timber and elevated from the ground almost 70 cm. (Figure 3.10)

3.1.6. Kösedere

Kösedere is located at the east of Karaburun Peninsula. It is connected to Karaburun-İzmir highway named D505 with a 1 km. The secondary road connecting the other villages; İnecik and Eğlenhoca to the Karaburun-Izmir road passes through the Kösedere and divided the village two. The village square located on the road. The mosque is located at the north east of the village square. Coffee house is located east side of the square and it is also served as a café to the visitors. Local administration *(muhtarlık)* is located at the north of the main road closed to the square. The village has been established mostly south and north of the village square.

There are total of 315 residential buildings in Kösedere. 115 of this 315 is new buildings which are constructed with modern materials and technique. This constitutes 36,5% of total building stock. There are 200 traditional buildings which are constructed with traditional materials and technique. This constitutes 63,5% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 16,5% of total building stock. Among these, totally collapsed ruins are 6,3% and partially collapsed are 10,2% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (23,2%); b. partially

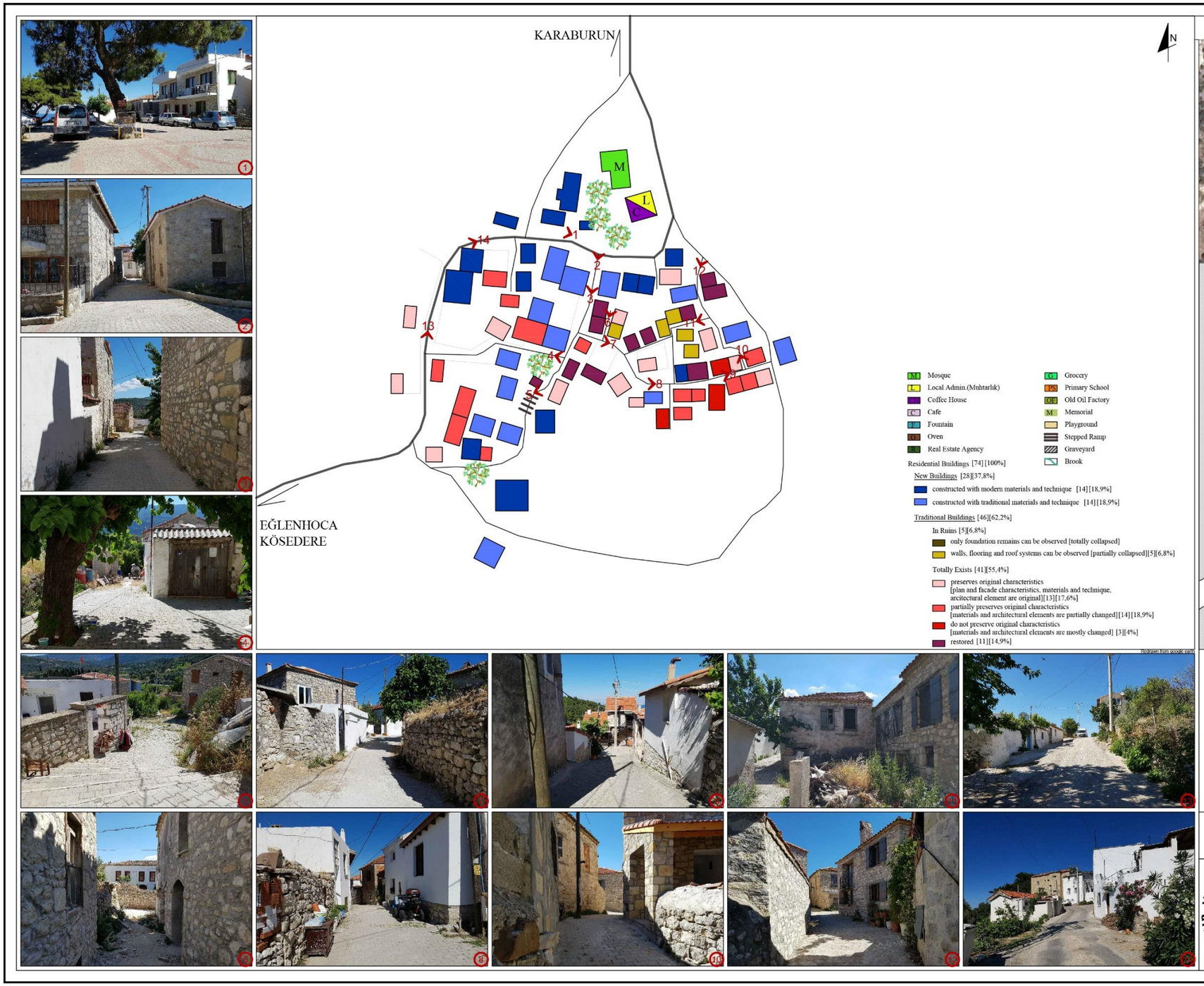
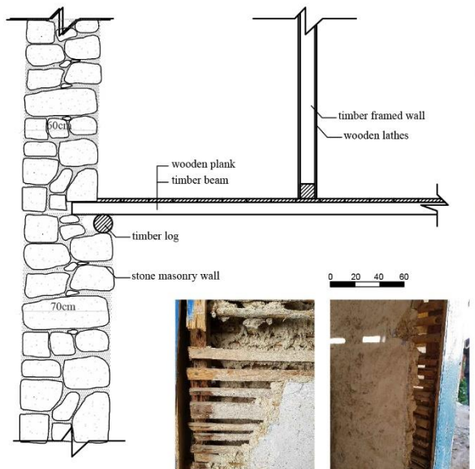


Figure 3.9. Building Category and Street Views of İnecik.

WALL SYSTEM

The traditional houses are generally one or two story buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls change between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white colour. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm. This type of timber walls is called as 'bağdadi' in Turkish.

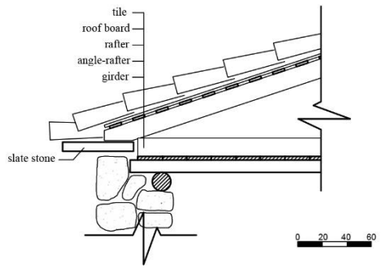


FLOOR SYSTEM

The ground floor system couldn't observed in all the houses however it is seen that raised timber floor system in one house and compacted soil is seen in one house. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Hipped and pitched roofs are covered with tiles. Alaturka type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Roofs have eave. There are observed slate stones as an eave between wall and the roof.

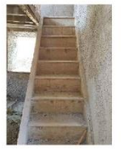


ARCHITECTURAL ELEMENTS

Door Doors are generally one winged and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Staircase Timber stairs are used in two storey houses in which first floor is accessed through an entrance door in the ground floor.



Fireplace & Chimney Only on fireplace is observed in one house and it has been made of stone. The chimneys that could be observed are made of brick or stone.

Niche /Cupboard Niches are observed next to the Fireplace. And one closet is observed in the one house in the ground floor. It is made of timber and elevated from the ground almost 70 cm.

OVERALL EVALUATION

There are total of 74 residential buildings in İnecik. Among these; 28 buildings are new. New buildings in İnecik can be grouped under two categories according to their materials: a. new buildings constructed with modern materials and technique, b. new buildings constructed with traditional materials and technique. New buildings consist 37,8% of total building stock. Among these, buildings constructed with modern materials and technique are 18,9% and constructed with traditional materials and technique are 18,9% in proportion. There are 46 traditional buildings which are constructed with traditional materials and technique. This constitutes 62,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins consist 6,8% of total building stock and the all of them is partially collapsed (walls, flooring and roof systems can be observed).Totally existing buildings consist 55,4% of total residential building stock. They can be categorized into four as a. preserves original characteristics (17,6%); b. partially preserves original characteristics (18,9%); c. does not preserve original characteristics (4%) and d. restored ones (14,9%).

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IZMIR INSTITUTE OF TECHNOLOGY
IZTECH

CONSTRUCTION TECHNIQUES OF TRADITIONAL HOUSES IN KARABURUN VILLAGES

PRELIMINARY SITE SURVEY

PREPARED BY : BURÇİN GÖRÜR
SUPERVISOR : ASSIST.PROF.DR.F.NURŞEN KUL-ÖZDEMİR

Figure 3.10. Construction Techniques of İnecik.

preserves original characteristics (19%) and c. does not preserve original characteristics (4,8%). (Figure 3.11)

The traditional houses are generally one or two-storey buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill *(bağdadi)*. The thickness of masonry walls changes between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. All roofs have eave composed of mostly tiles and slate stones. Brick eave observed in only one example at the end of the masonry wall, between wall and the roof.

Doors are generally one winged and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening.

Timber stairs are observed in two-storey houses Use of stone is seen at the outside of two-storey houses where the main entrance to the house is from the second story.

Fireplace is one of the main elements in the houses. They are generally located at the first's floor. The wall that has the fireplace has no opening. All chimneys that could be observed were made of brick. (Figure 3.12)

3.1.7. Küçükbahçe

Küçükbahçe is located at the west of Karaburun Peninsula across the Chios Island. The village is 30 km away from Karaburun center via seaside secondary road and 25 km away from the inner secondary road. The road ends up with the village square. Mosque is located at the west side of the square. Mosque and village square are located at the lowest level of the village. The village is divided two as old and new village by the brook. These two districts settled onto two hills around the brook. The new village is settled at the east of the old village. There are also old mosques and oil factory remains in old village (Cöcen, 2007). There is a primary school in the new village, but it does not educate anymore.

There are total of 162 residential buildings in Küçükbahçe. 16 of this 162 is new buildings which are constructed with modern materials and technique. This constitutes 9,9% of total building stock.

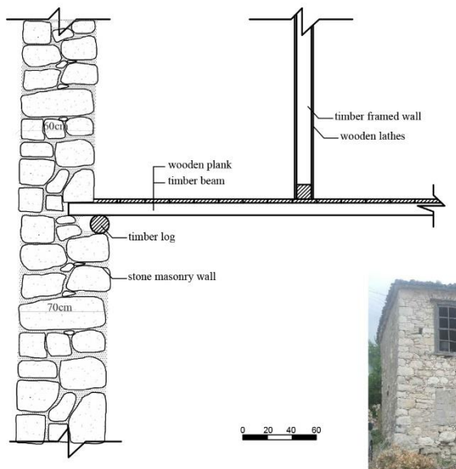
There are 129 traditional buildings which are constructed with traditional materials and technique. This constitutes 90,1% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 79,6% of total building stock. Among these, totally collapsed ruins are 17,3% and partially collapsed are 62,3% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (7,4%) b. partially preserves original characteristics (1,9%) and c. does not preserve original characteristics (1,2%). (Figure 3.13)

Figure 3.11. Building Category and Street Views of Kösedere.

WALL SYSTEM

The traditional houses are generally one or two story buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls change between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white colour. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm. This type of timber walls is called as 'bağdadi' in Turkish.



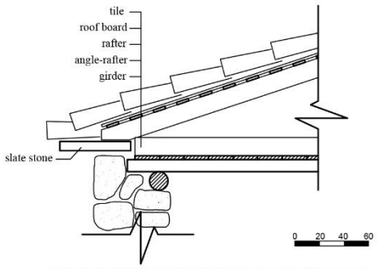
FLOOR SYSTEM

The ground floor system cannot be observed because of debris in the houses.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Hipped and pitched roofs are covered with tiles. Alaturka type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Roofs have eave. There are observed mostly tiles, slate stones or brick for only one example at the end of the masonry wall, between wall and the roof.



ARCHITECTURAL ELEMENTS

Door Doors are generally one winged and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Staircase Timber stairs are used in two storey houses in which first floor are accessed through an entrance door in the ground floor. Use of stone is seen at the outside of two storey houses where an entrance to the house at the second storey is.

Fireplace & Chimney Fireplace is one of the main elements in the houses. They are generally located at the firsts floor. The wall that has the fireplace has no opening. All chimneys that could be observed were made of brick.

OVERALL EVALUATION

There are total of 315 residential buildings in Kösedere. 115 of this 315 is new buildings which are constructed with modern materials and technique. This constitutes 36,5% of total building stock. There are 200 traditional buildings which are constructed with traditional materials and technique. This constitutes 63,5% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 16,5% of total building stock. Among these, totally collapsed ruins are 6,3% and partially collapsed are 10,2% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (23,2%); b. partially preserves original characteristics (19%) and c. does not preserve original characteristics (4,8%).

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SUPERVISOR : ASSIST.PROF.DR.F.NURŞEN KUL-ÖZDEMİR

Figure 3.12. Construction Techniques of Kösedere.

The traditional houses are generally one or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and reeds on both sides are nailed in horizontal directions. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are composed of thick wooden beams that have round sections. These beams are then covered firstly with thick shrubs and then thin shrubs. Finally, 30-40 cm clayed soil is placed. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "*geren*". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called '*loğ taşı*' in Turkish. All roofs have eaves composed of mostly tiles, slate stones.

Doors are generally one winged timber doors and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters

are parts of windows. They are installed on the outer edge of a window opening. Timber stairs are observed in two-storey houses. Use of stone is seen at the outside of two-storey houses where the main entrance to the house is from the second story. Fireplace is one of the main elements in the houses. They are generally located at the firsts floor. The wall that has the fireplace has no opening. Chimneys that could be observed were made of brick or stone.

Niches are observed next to the fireplace. Cupboards are simple timber skeletons in rectangular prism shape where two vertical sides of it on edged either by wall or wooden plates. (Figure 3.14)

3.1.8. Parlak

Parlak is located at the west of Karaburun Peninsula across the Chios island. The village is 21 km away from Karaburun center via seaside secondary road. The road divides the village two part. The village road ends up with the village square is connected to the main secondary road with a 100 m. asphalt road. There is a mosque north of the village square. There is a memorial at the end of the square. There is a primary school at the end of the village through Karaburun, but it does not educate anymore.

There are total of 135 residential buildings in Parlak. 9 of this 135 is new buildings which are constructed with modern materials and technique. This constitutes 6,7% of total building stock.

There are 126 traditional buildings which are constructed with traditional materials and technique. This constitutes 93,3% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 60% of total building stock. Among these, totally collapsed ruins are 34,8% and partially collapsed are 25,2% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (21,5%); b. partially preserves original characteristics (8,1%) and c. does not preserve original characteristics (3,7%). (Figure 3.15)

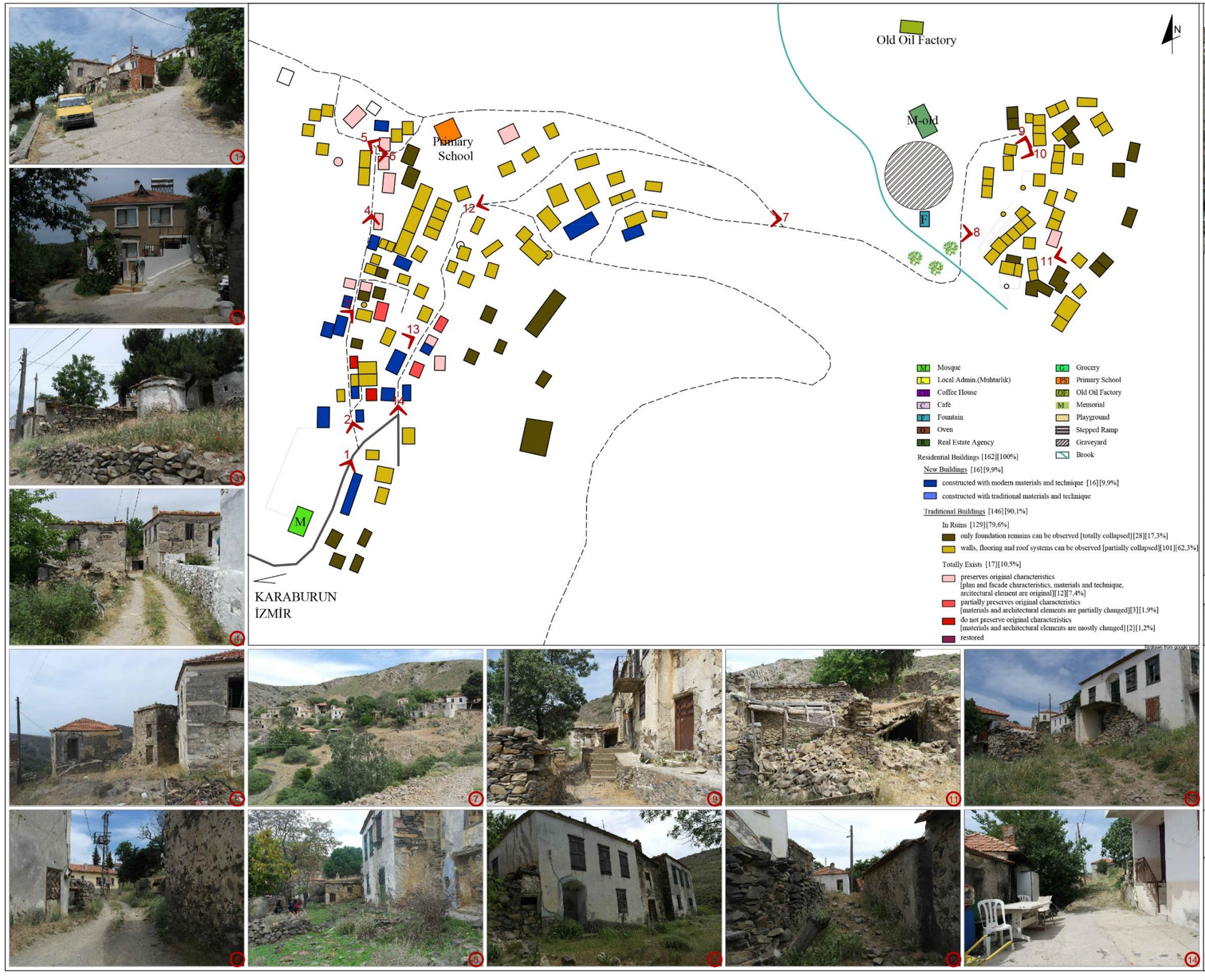
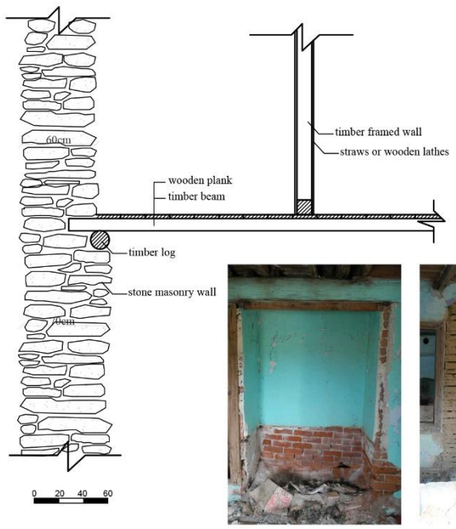


Figure 3.13. Building Category and Street Views of Küçükbahçe.

WALL SYSTEM

The traditional houses are generally one- or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and reeds on both sides are nailed in horizontal directions. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.



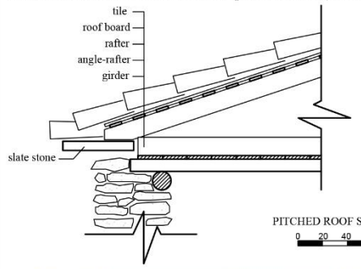
FLOOR SYSTEM

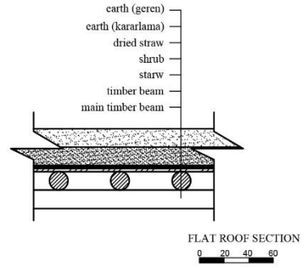
The ground floor system cannot be observed because of debris layers on floors.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are applied on thick wooden beams have round section and the beams are covered with pieces of thick shrub (kalın çalı), then thin shrub (ince çalı) and compressed by laying 30-40 cm clayed soil on them. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "geren". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called 'loğ taşı' in Turkish. All roofs have eaves composed of mostly tiles, slate stones.





ARCHITECTURAL ELEMENTS

Door Doors are generally one winged timber doors and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Staircase Timber stairs are used in two story houses in which first floor is accessed through an entrance door in the ground floor. Use of stone is seen at the outside of two-storey houses where an entrance to the house at the second story is.

Fireplace & Chimney Fireplace is one of the main elements in the houses. They are generally located at the firsts floor. The wall that has the Fireplace has no opening. Chimneys that could be observed were made of brick or stone.

Cupboard & Niche Cupboards are simple timber skeletons in rectangular prism shape where two vertical sides of it on edged either by wall or wooden plates.

OVERALL EVALUATION

There are total of 162 residential buildings in Küçükbahçe. 16 of this 162 is new buildings which are constructed with modern materials and technique. This constitutes 9,9% of total building stock. There are 129 traditional buildings which are constructed with traditional materials and technique. This constitutes 90,1% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 79,6% of total building stock. Among these, totally collapsed ruins are 17,3% and partially collapsed are 62,3% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (7,4%) b. partially preserves original characteristics (1,9%) and c.does not preserve original characteristics (1,2%).

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Figure 3.14. Construction Techniques of Küçükbahçe.

The traditional houses are generally one or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and reeds on both sides are nailed in horizontal directions. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

The floor system cannot be observed because of debris layers on ground floors and to be collapsed of first floors. However, the traces of the beams belonging to the flooring system were observed on the wall.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are composed of thick wooden beams that have round sections. These beams are then covered firstly with thick shrubs and then thin shrubs. Finally, 30-40 cm clayed soil is placed. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "*geren*". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called '*loğ taşı*' in Turkish. All roofs have eaves composed of mostly tiles, slate stones. Brick eave observed only in one example at the end of the masonry wall, between wall and the roof.

Doors are generally one winged timber doors and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening.

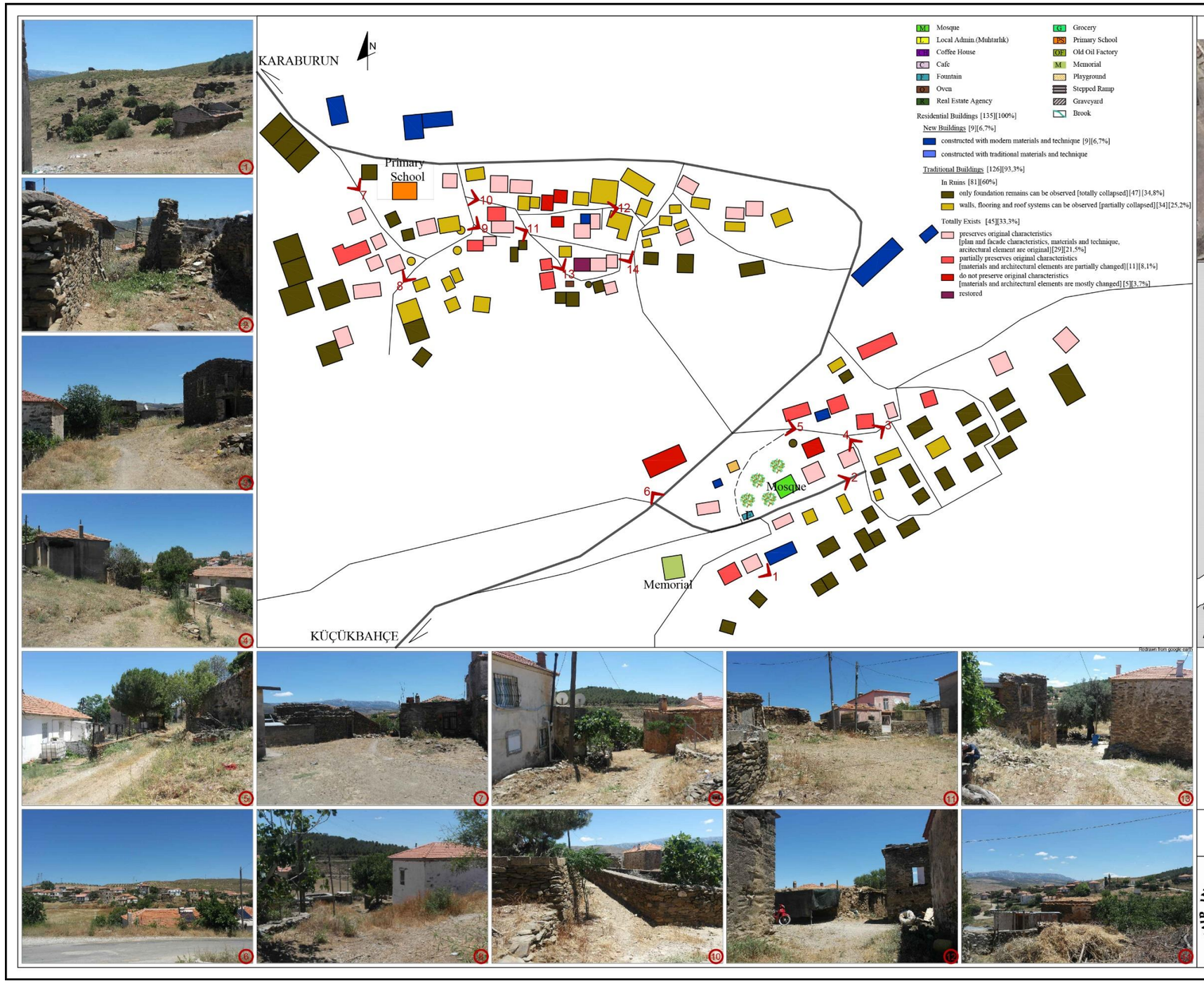
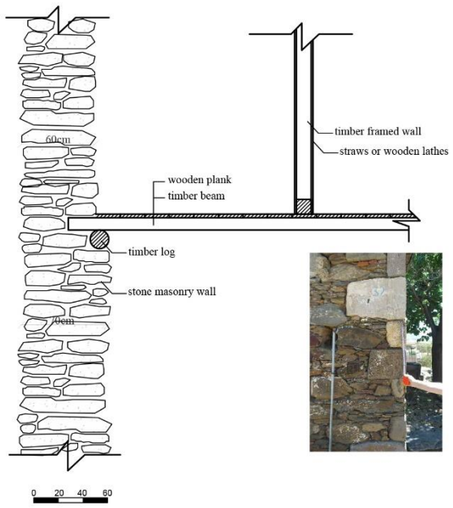


Figure 3.15. Building Category and Street Views of Parlak.

WALL SYSTEM

The traditional houses are generally one- or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and reeds on both sides are nailed in horizontal directions. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

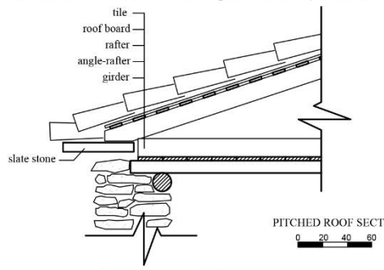


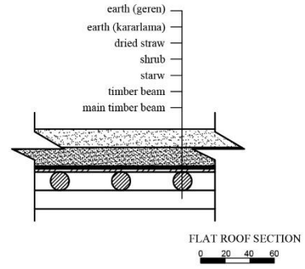
FLOOR SYSTEM

The floor system cannot be observed because of debris layers on ground floors and to be collapsed of first floors. However, the traces of the beams belonging to the flooring system were observed on the wall.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are applied on thick wooden beams have round section and the beams are covered with pieces of thick shrub (kalın çalı), then thin shrub (ince çalı) and compressed by laying 30-40 cm clayed soil on them. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "geren". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called 'loğ taşı' in Turkish. All roofs have eaves composed of mostly tiles, slate stones.





ARCHITECTURAL ELEMENTS

Door Doors are generally one winged timber doors and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Staircase Only one wooden stair is observed in the village. It is new constructed with traditional material and technique.

Fireplace & Chimney Only one example has been observed in the village and it has been repaired with contemporary materials. Chimneys that could be observed were made of stone.

Waterspout Only one waterspout could be observed in the village. It is made with terracotta.

Niche & Cupboard Niches are observed next to the Fireplace. Observed cupboard is simple timber skeletons in rectangular prism shape where two vertical sides of it on edged either by wall or wooden plates.

Luminare There are stone projections next to the windows in some houses. They were probably used as luminaire shelve.

OVERALL EVALUATION

There are total of 135 residential buildings in Parlak. 9 of this 135 is new buildings which are constructed with modern materials and technique. This constitutes 6,7% of total building stock. There are 126 traditional buildings which are constructed with traditional materials and technique. This constitutes 93,3% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 60% of total building stock. Among these, totally collapsed ruins are 34,8% and partially collapsed are 25,2% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (21,5%); b. partially preserves original characteristics (8,1%) and c. docs not preserve original characteristics (3,7%).

İZMİR INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ARCHITECTURAL RESTORATION

IZMIR INSTITUTE OF TECHNOLOGY
IZTECH

CONSTRUCTION TECHNIQUES OF TRADITIONAL HOUSES IN KARABURUN VILLAGES

PRELIMINARY SITE SURVEY

PREPARED BY : BURÇİN GÖRÜR
SUPERVISOR : ASSIST.PROF.DR.F.NURŞEN KUL-ÖZDEMİR

Figure 3.16. Construction Techniques of Parlak.

Only one wooden stair is observed in the village. It is new constructed with traditional material and technique. Fireplace is one of the main elements in the houses. Only one example has been observed in the village and it has been repaired with contemporary materials. Chimneys that could be observed were made of stone. Only one waterspout could be observed in the village. It is made with terracotta.

Niches are observed next to the fireplace. Observed cupboard is simple timber skeletons in rectangular prism shape where two vertical sides of it on edged either by wall or wooden plates. There are stone projections next to the windows in some houses. They were probably used as luminaire shelve. (Figure 3.16)

3.1.9. Saip

Saip is located at the north-east of Karaburun Peninsula. It is connected to Karaburun-İzmir highway named D505 with a 350 m. asphalt road that ends at the village square. There is a coffee shop at the east; the village mosque at the west and local administration *(muhtarlık)* at the northeast of the road. There is also café at the east of the village square with sea view. The village is an important tourist destination.

There are total of 124 residential buildings in Saip. Among these; 58 buildings are new. New buildings in Saip can be grouped under two categories according to their materials: a. new buildings constructed with modern materials and technique, b. new buildings constructed with traditional materials and technique. New buildings consist 46,8% of total building stock. Among these, buildings constructed with modern materials and technique are 45,2% and constructed with traditional materials and technique are 1,6% in proportion.

There are 66 traditional buildings which are constructed with traditional materials and technique. This constitutes 53,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 17,7% of total building stock. Among these, totally collapsed ruins are 6,4% and partially collapsed are 11,3% in proportion. Totally existing buildings can be categorized into three as a.

preserves original characteristics (14,5%); b. partially preserves original characteristics (15,3%) and c. does not preserve original characteristics (5,7%). (Figure 3.17)

The traditional houses are generally one or two-storey buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill *(bağdadi)*. The thickness of masonry walls changes between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar.

Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash. Inner walls couldn't be observed.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, timber flooring boards are nailed to the beams in perpendicular direction.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in Saip. In this system, first the main beams are placed for spanning. Then timber boards are placed at the opposite direction of the beams and timber boards. Timber boards are covered with two layers; the first layer is composed of reed or thin wooden lathes and the second layer is earth. The earth composed of dried straw and earth. All roofs have eaves composed of slate stones.

Doors are generally one winged timber doors and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening. Only one stone fireplace and chimney could be observed in the village. (Figure 3.18)

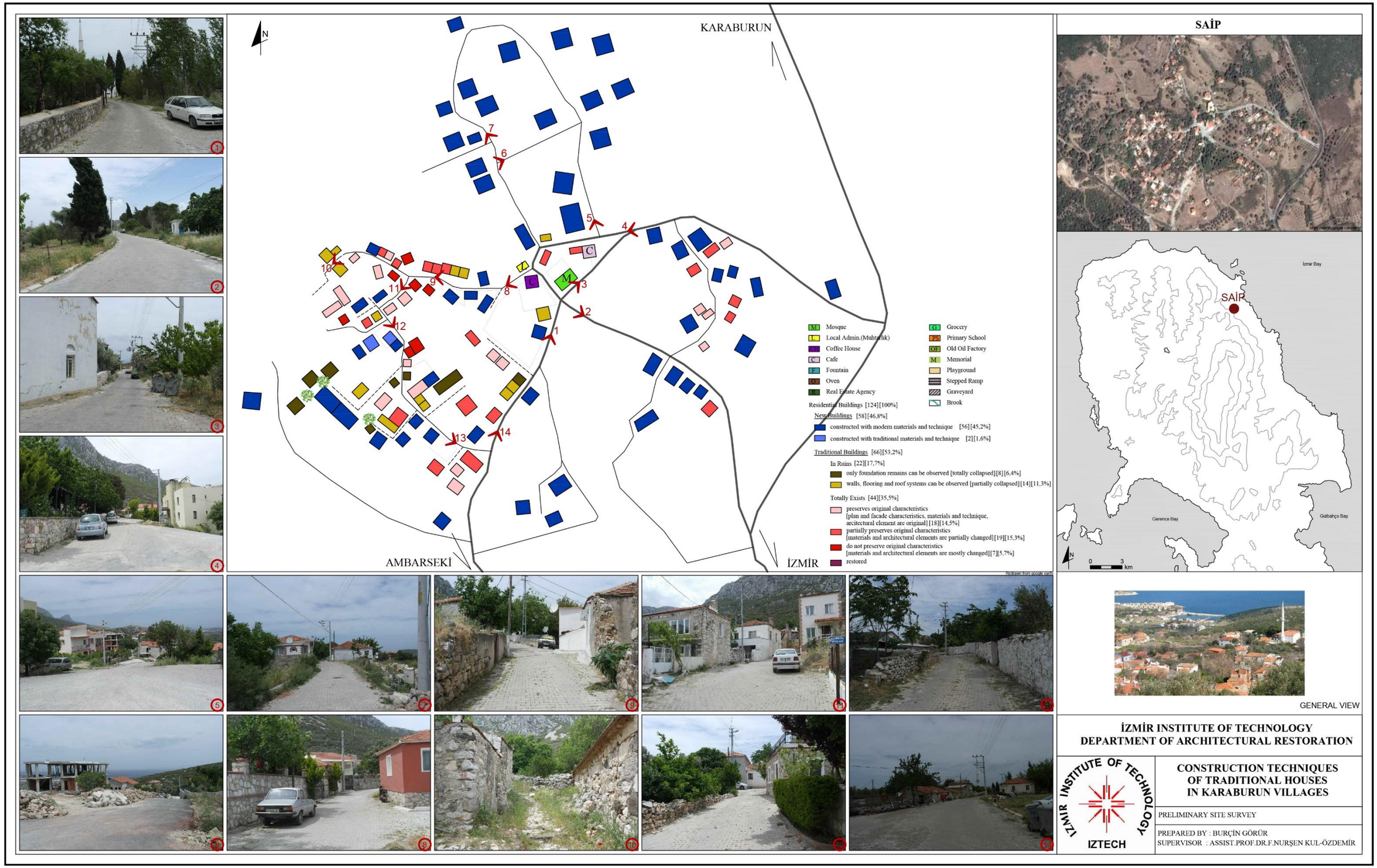
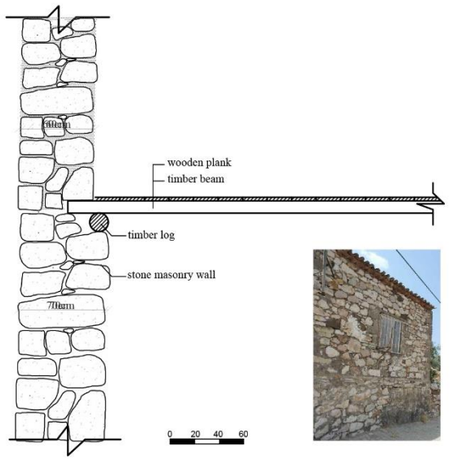


Figure 3.17. Building Category and Street Views of Saip.

WALL SYSTEM

The traditional houses are generally one- or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. Inner walls couldn't be observed.



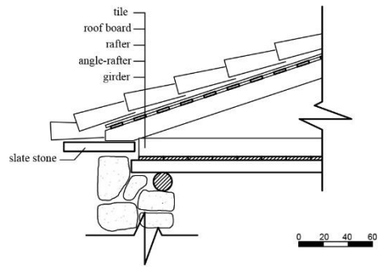
FLOOR SYSTEM

The ground floor system cannot be observed because of debris layers on floors.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, timber flooring boards are nailed to the beams in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in Saip. In this system, the main beams are placed firstly for spanning. Then they are covered with timber boards vertically to the direction of the beams and timber boards are covered with firstly reed or small wooden lathes then earth. The earth composed of dried straw and earth. In Saip, main beams have been covered with directly wooden planks then they have been covered with earth. All roofs have eaves composed of slate stones.



ARCHITECTURAL ELEMENTS

Door Doors are generally one winged timber doors and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Fireplace & Chimney Only one stone fireplace and chimney could be observed in the village.

OVERALL EVALUATION

There are total of 124 residential buildings in Saip. Among these; 58 buildings are new. New buildings in Saip can be grouped under two categories according to their materials: a. new buildings constructed with modern materials and technique, b. new buildings constructed with traditional materials and technique. New buildings consist 46,8% of total building stock. Among these, buildings constructed with modern materials and technique are 45,2% and constructed with traditional materials and technique are 1,6% in proportion. There are 66 traditional buildings which are constructed with traditional materials and technique. This constitutes 53,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 17,7% of total building stock. Among these, totally collapsed ruins are 6,4% and partially collapsed are 11,3% in proportion.Totally existing buildings can be categorized into three as a. preserves original characteristics (14,5%); b. partially preserves original characteristics (15,3%) and c. does not preserve original characteristics (5,7%).

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Figure 3.18. Construction Techniques of Saip.

3.1.10. Salman

Salman is located at the west of Karaburun Peninsula across the Chios island. The village is 23,5 km away from Karaburun center via seaside secondary road. The village is settled onto two hills located two side of the main road. The mosque and the primary school are at the south district. The school does not educate anymore. The village is almost empty.

There are total of 125 residential buildings in Salman. 9 of this 125 are new buildings which are constructed with modern materials and technique. This constitutes 7,2% of total building stock.

There are 116 traditional buildings which are constructed with traditional materials and technique. This constitutes 92,8% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 79,2% of total building stock. Among these, totally collapsed ruins are 54,4% and partially collapsed are 24,8% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (7,2%); b. partially preserves original characteristics (5,6%) and c. does not preserve original characteristics (0,8%). (Figure 3.19)

The traditional houses are generally one or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and reeds on both sides are nailed in horizontal directions. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are composed of thick wooden beams that have round sections. These beams are then covered firstly with thick shrubs and then thin shrubs. Finally, 30-40 cm clayed soil is placed. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "*geren*". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called '*loğ taşı*' in Turkish. All roofs have eaves composed of mostly slate stones.

Doors are generally one winged timber doors and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening.

Timber stairs are observed in two-storey houses. Use of stone is seen at the outside of two-storey houses where the main entrance to the house is from the second story.

Fireplace is one of the main elements in the houses. They are generally located at the firsts floor. The wall that has the fireplace has no opening. Chimneys that could be observed were made of brick or stone.

Niches are observed next to the fireplace. Cupboards are simple timber skeletons in rectangular prism shape where two vertical sides of it on edged either by wall or wooden plates. There are stone projections in some houses. They were probably used as luminaire shelve. Terracotta waterspouts are observed on flat roofs in Salman. (Figure 3.20)

3.1.11. Sarpıncık

Sarpıncık is located at the north of Karaburun Peninsula. The village is 14 km from Karaburun center. The village is settled between a valley and main road. The main road is at the highest level of the village. There is village square on the main road and there are local administration *(muhtarlık)*, coffee house, playground and fountain around the square. The mosque is built in the valley, at the end of the village.

There are total of 111 residential buildings in Sarpıncık. 17 of this 111 are new building which are constructed with modern materials and technique. This constitutes 15,3% of total building stock.

There are 94 traditional buildings which are constructed with traditional materials and technique. This constitutes 84,7% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 33,3% of total building stock. Among these, totally collapsed ruins are 21,6% and partially collapsed are 11,7% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (17,1%); b. partially preserves original characteristics (26,2%) and c. does not preserve original characteristics 8,1%). (Figure 3.21)

The traditional houses are generally one or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

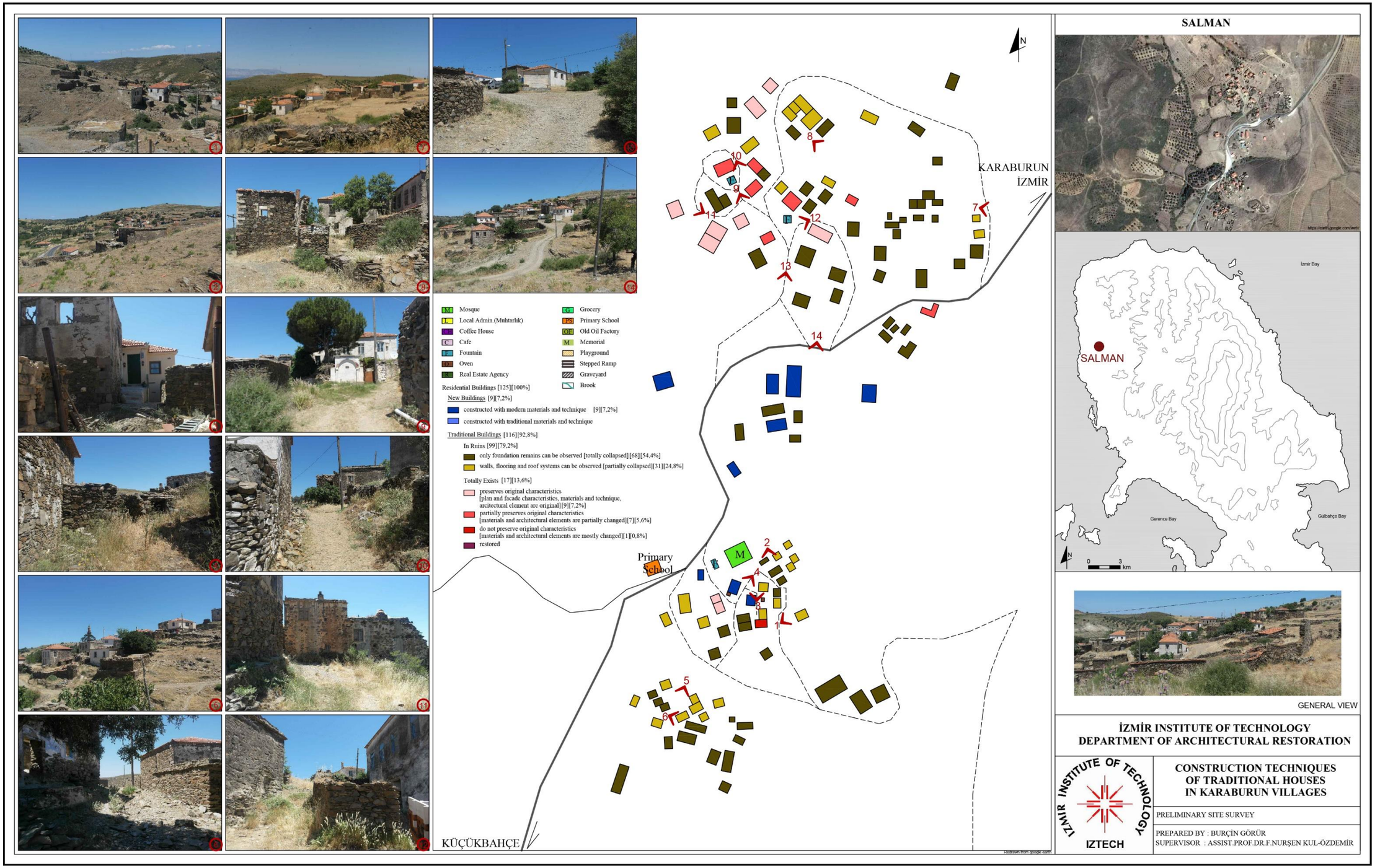
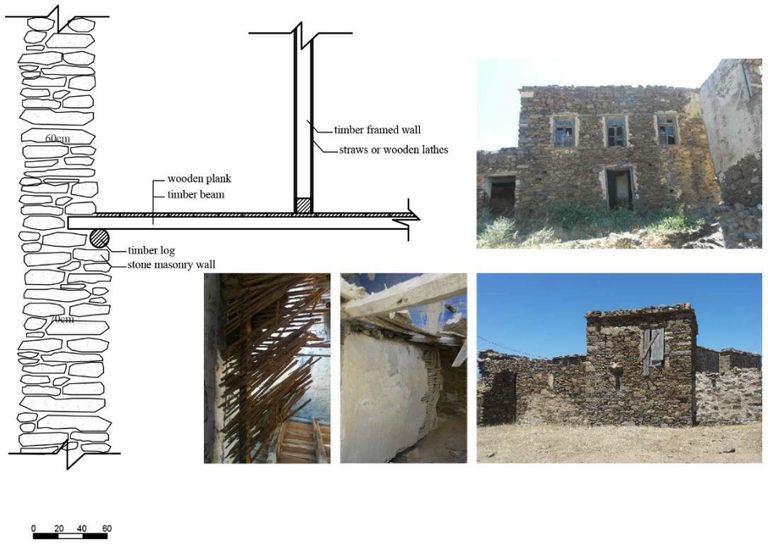


Figure 3.19. Building Category and Street Views of Salman.

WALL SYSTEM

The traditional houses are generally one- or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. Inner walls couldn't be observed.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and reeds on both sides are nailed in horizontal directions. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.



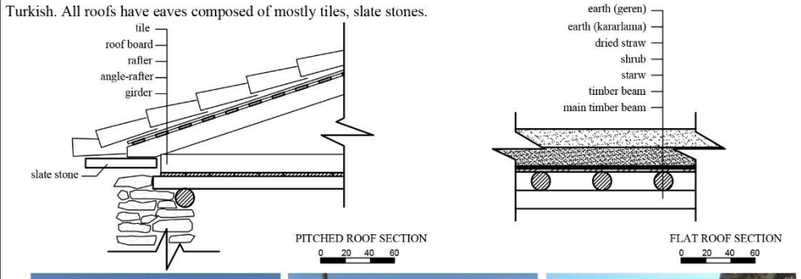
FLOOR SYSTEM

The ground floor system cannot be observed because of debris layers on floors.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, timber flooring boards are nailed to the beams in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are applied on thick wooden beams have round section and the beams are covered with pieces of thick shrub (kalın çalı), then thin shrub (ince çalı) and compressed by laying 30-40 cm clayed soil on them. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "geren". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called 'loğ taşı' in Turkish. All roofs have eaves composed of mostly tiles, slate stones.



ARCHITECTURAL ELEMENTS

Door Doors are generally one winged timber doors and they sit on the outer edge of the door opening.
Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

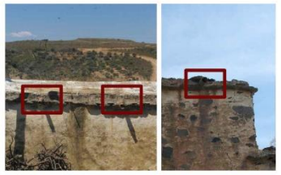
Staircase Timber stairs are used in two story houses in which first floor is accessed through an entrance door in the ground floor. Use of stone is seen at the outside of two-storey houses where an entrance to the house at the second story is.

Cupboard & Niche Cupboards are simple timber skeletons in rectangular prism shape where two vertical sides of it on edged either by wall or wooden plates.

Luminaire There are stone projections in some houses. They were probably used as luminaire shelve.

Fireplace & Chimney Fireplace is one of the main elements in the houses. They are generally located at the firsts floor. The wall that has the Fireplace has no opening. Chimneys that could be observed were made of brick or stone.

Waterspout Terracotta waterspouts are observed on flat roofs in Salman.



OVERALL EVALUATION

There are total of 125 residential buildings in Salman. 9 of this 125 are new buildings which are constructed with modern materials and technique. This constitutes 7,2% of total building stock. There are 116 traditional buildings which are constructed with traditional materials and technique. This constitutes 92,8% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 79,2% of total building stock. Among these, totally collapsed ruins are 54,4% and partially collapsed are 24,8% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (7,2%); b. partially preserves original characteristics (5,6%) and c. does not preserve original characteristics (0,8%).

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SUPERVISOR : ASSIST.PROF.DR.F.NURŞEN KUL-ÖZDEMİR

Figure 3.20. Construction Techniques of Salman.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are composed of thick wooden beams that have round sections. These beams are then covered firstly with thick shrubs and then thin shrubs. Finally, 30-40 cm clayed soil is placed. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "*geren*". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called '*loğ taşı*' in Turkish. All roofs have eaves composed of mostly slate stones.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

The only timber door observed in the village is double winged. Windows are timber and single or double winged. The wooden shutters are parts of windows. Fireplace is one of the main elements in the houses. Two examples have been observed in the village. They are made of stone. Chimneys that couldn't be observed. Terracotta waterspout is observed on flat roofs. Only one niche is observed on the partially collapsed stone wall. It has one stone shelf inside. (Figure 3.22)

3.1.12. Tepeboz

Tepeboz is located at the north of Karaburun Peninsula. The village is 10 km away from Karaburun center. The main road ends with village square. The mosque, coffee house and two fountains are located around the square. The coffee house and local administration *(muhtarlık)* share the same building. The village settlement has been established through north-south direction around the road.

There are total of 85 residential buildings in Tepeboz. Among these; 16 buildings are new. New buildings in Tepeboz can be grouped under two categories according to their materials: a. new buildings constructed with modern materials and technique, b. new

buildings constructed with traditional materials and technique. New buildings consist 18,8% of total building stock. Among these, buildings constructed with modern materials and technique are 12,9% and constructed with traditional materials and technique are 5,9% in proportion.

There are 69 traditional buildings which are constructed with traditional materials and technique. This constitutes 81,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 64,7% of total building stock. Among these, totally collapsed ruins are 25,9% and partially collapsed are 38,8% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (11,8%); b. partially preserves original characteristics (3,5%) and c. does not preserve original characteristics (1,2%). (Figure 3.23)

The traditional houses are generally one or two-storey buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill *(bağdadi)*. The thickness of masonry walls changes between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.

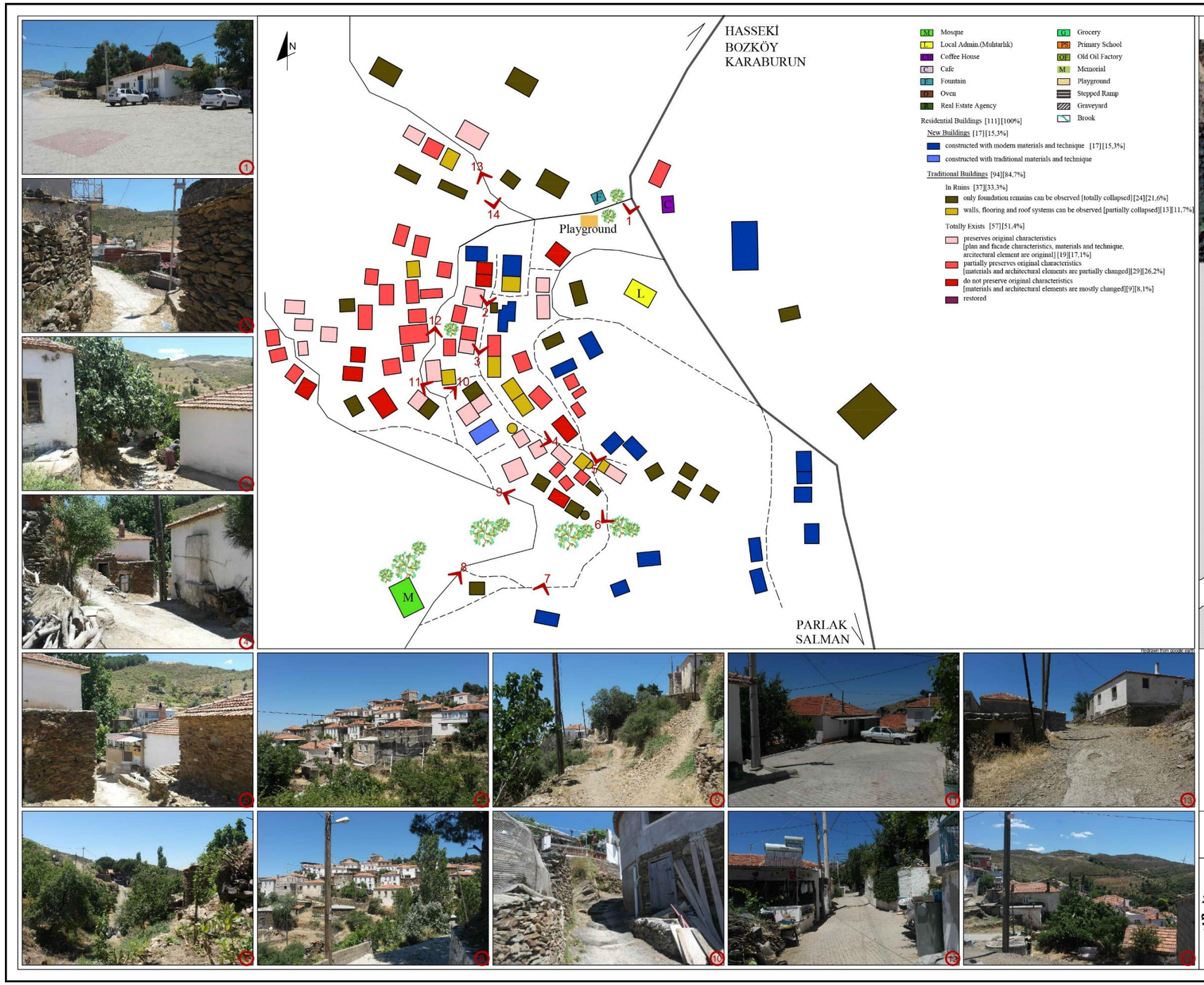
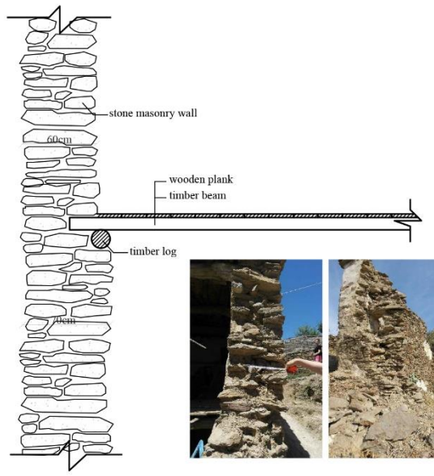


Figure 3.21. Building Category and Street Views of Sarpıncık.

WALL SYSTEM

The traditional houses are generally one- or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. Inner walls couldn't be observed.



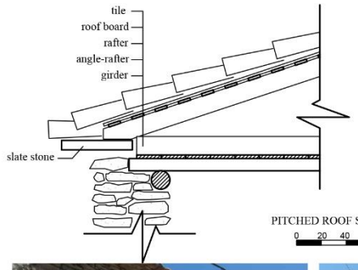
FLOOR SYSTEM

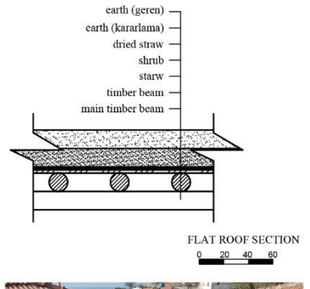
The ground floor system cannot be observed because of debris layers on floors.

Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are applied on thick wooden beams have round section and the beams are covered with pieces of thick shrub (kalın çalı), then thin shrub (ince çalı) and compressed by laying 30-40 cm clayed soil on them. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "geren". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called 'loğ taşı' in Turkish. All roofs have eaves composed of mostly tiles, slate stones.





ARCHITECTURAL ELEMENTS

Door The only timber door observed in the village is double winged.

Window They are timber and single or double winged. The wooden shutters are parts of windows.

Fireplace & Chimney Fireplace is one of the main elements in the houses. Two examples have been observed in the village. They are made of stone. Chimneys that couldn't be observed.

Waterspout Terracotta waterspout is observed on flat roofs.

Niche Only one niche is observed on the partially collapsed stone wall. It has one stone shelf inside.

OVERALL EVALUATION

There are total of 111 residential buildings in Sarpıncık. 17 of this 111 are new building which are constructed with modern materials and technique. This constitutes 15,3% of total building stock. There are 94 traditional buildings which are constructed with traditional materials and technique. This constitutes 84,7% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 33,3% of total building stock. Among these, totally collapsed ruins are 21,6% and partially collapsed are 11,7% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (17,1%); b. partially preserves original characteristics (26,2%) and c. does not preserve original characteristics 8,1%).

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PRELIMINARY SITE SURVEY

PREPARED BY : BURÇİN GÖRÜR
SUPERVISOR : ASSIST.PROF.DR.F.NURŞEN KUL-ÖZDEMİR

Figure 3.22. Construction Techniques of Sarpıncık.

The ground floor system cannot be observed because of debris layers on floors. Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

Hipped and pitched timber roofs are observed in the village. They are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in Tepeboz. In this system, first the main beams are placed for spanning. Then timber boards are placed at the opposite direction of the beams and timber boards. Timber boards are covered with two layers; the first layer is composed of reed or thin wooden lathes and the second layer is earth. The earth composed of dried straw and earth. All roofs have eaves composed of tiles, slate stones or bricks. Doors are generally one winged and they are installed on the outer edge of the door opening. Windows are timber and double winged. The wooden shutters are parts of windows. They are installed on the outer edge of a window opening. Stone stair remains is seen at one house. Fireplace and chimney are one of the main elements in the houses. They are generally located at the first floor. The wall that has the fireplace has no opening. Chimneys that could be observed are made of brick or stone. Only one terracotta waterspout is observed on flat roof. (Figure 3.24)

3.1.13. Yayla

Yayla is located at the middle of Karaburun Peninsula. The village is 15 km away from Karaburun center. The village is settled on hill between main road. Stepped ramped are built mostly in the village because of the slope. There is village square on the main road and there are mosque and local administration *(muhtarlık)* on the square. There is a primary school in the village, but it does not educate anymore. There is playground next to school.

There are total of 123 residential buildings in Sarpıncık. 17 of this 123 are new buildings which are constructed with modern materials and technique. This constitutes 13,8% of total building stock.

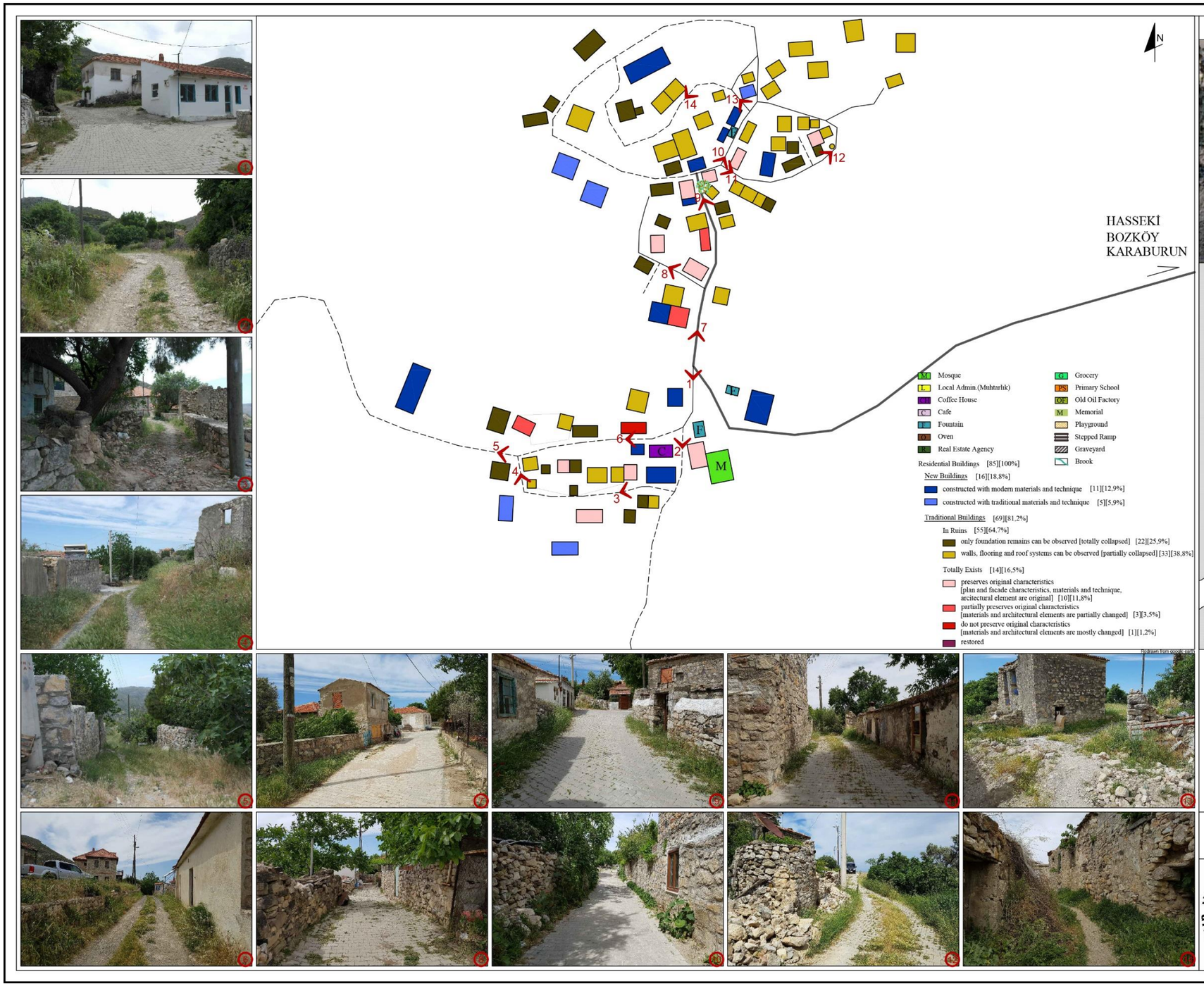
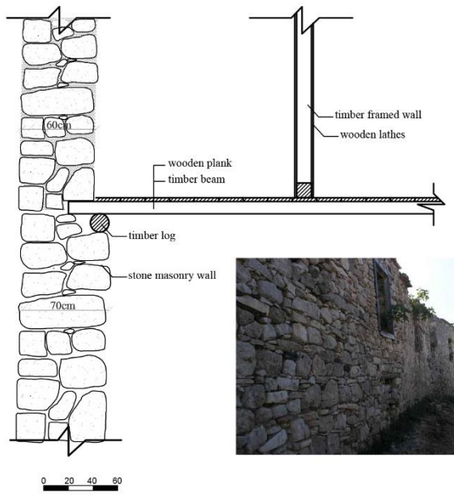


Figure 3.23. Building Category and Street Views of Tepeboz.

WALL SYSTEM

The traditional houses are generally one- or two-storey buildings. They are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (bağdadi). The thickness of masonry walls changes between 60-80cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone. The rubble stones are yellowish-white color. The binding material is mud mortar. Large gaps between different sizes of rubble stones are filled with small stones, brick and tile pieces. The corners of the walls are reinforced with relatively larger and shaped rubble stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash.

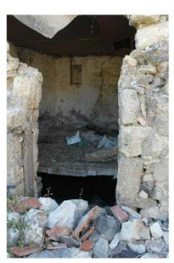
The thickness of timber frame walls is 15 cm. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between the surfaces left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm.



FLOOR SYSTEM

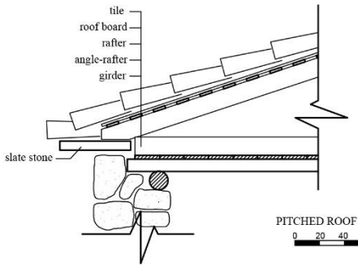
The ground floor system cannot be observed because of debris layers on floors.

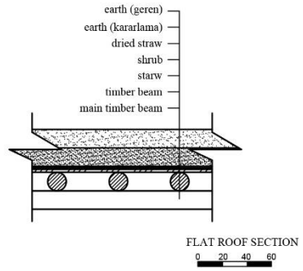
Timber frame floor system is observed on the upper floor. In this system floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. Floor beams are placed with approximately 40-50cm spacing. Finally, floor beams are covered with the timber flooring boards in perpendicular direction.

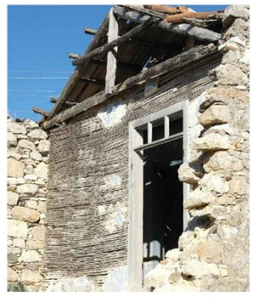


ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. They are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in Bozköy. In this system, the main beams are placed firstly for spanning. Then they are covered with timber boards vertically to the direction of the beams and timber boards are covered with firstly reed or small wooden lathes then earth. The earth composed of dried straw and earth. In Bozköy, main beams have been covered with directly reed then they have been covered with earth. All roofs have eaves composed of tiles, slate stones or bricks.







ARCHITECTURAL ELEMENTS

Door Doors are generally one winged and they sit on the outer edge of the door opening.

Window & Shutter Windows are timber and double winged. The wooden shutters are parts of windows. They sit on the outer edge of a window opening.

Staircase Stone stair remains is seen at one house.

Fireplace & Chimney It is one of the main elements in the houses. They are generally located at the firsts floor. All chimneys that could be observed are made of brick or stone.

Waterspout Only one terracotta waterspout is observed on flat roof.

OVERALL EVALUATION

There are total of 85 residential buildings in Tepeboz. Among these; 16 buildings are new. New buildings in Tepeboz can be grouped under two categories according to their materials: a. new buildings constructed with modern materials and technique, b. new buildings constructed with traditional materials and technique. New buildings consist 18,8% of total building stock. Among these, buildings constructed with modern materials and technique are 12,9% and constructed with traditional materials and technique are 5,9% in proportion. There are 69 traditional buildings which are constructed with traditional materials and technique. This constitutes 81,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 64,7% of total building stock. Among these, totally collapsed ruins are 25,9% and partially collapsed are 38,8% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (11,8%); b. partially preserves original characteristics (3,5%) and c. does not preserve original characteristics (1,2%).

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PRELIMINARY SITE SURVEY

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SUPERVISOR : ASSIST.PROF.DR.F.NURŞEN KUL-ÖZDEMİR

Figure 3.24. Construction Techniques of Tepeboz.

There are 106 traditional buildings which are constructed with traditional materials and technique. This constitutes 86,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 56,9% of total building stock. Among these, totally collapsed ruins are 17,1% and partially collapsed are 39,8% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (17,9%); b. partially preserves original characteristics (9,8%) and c. does not preserve original characteristics 1,6%). (Figure 3.25)

The traditional houses are generally one or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and finished with lime wash.

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are composed of thick wooden beams that have round sections. These beams are then covered firstly with thick shrubs and then thin shrubs. Finally, 30-40 cm clayed soil is placed. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "*geren*". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called '*loğ taşı*' in Turkish. All roofs have eaves composed of mostly slate stones.

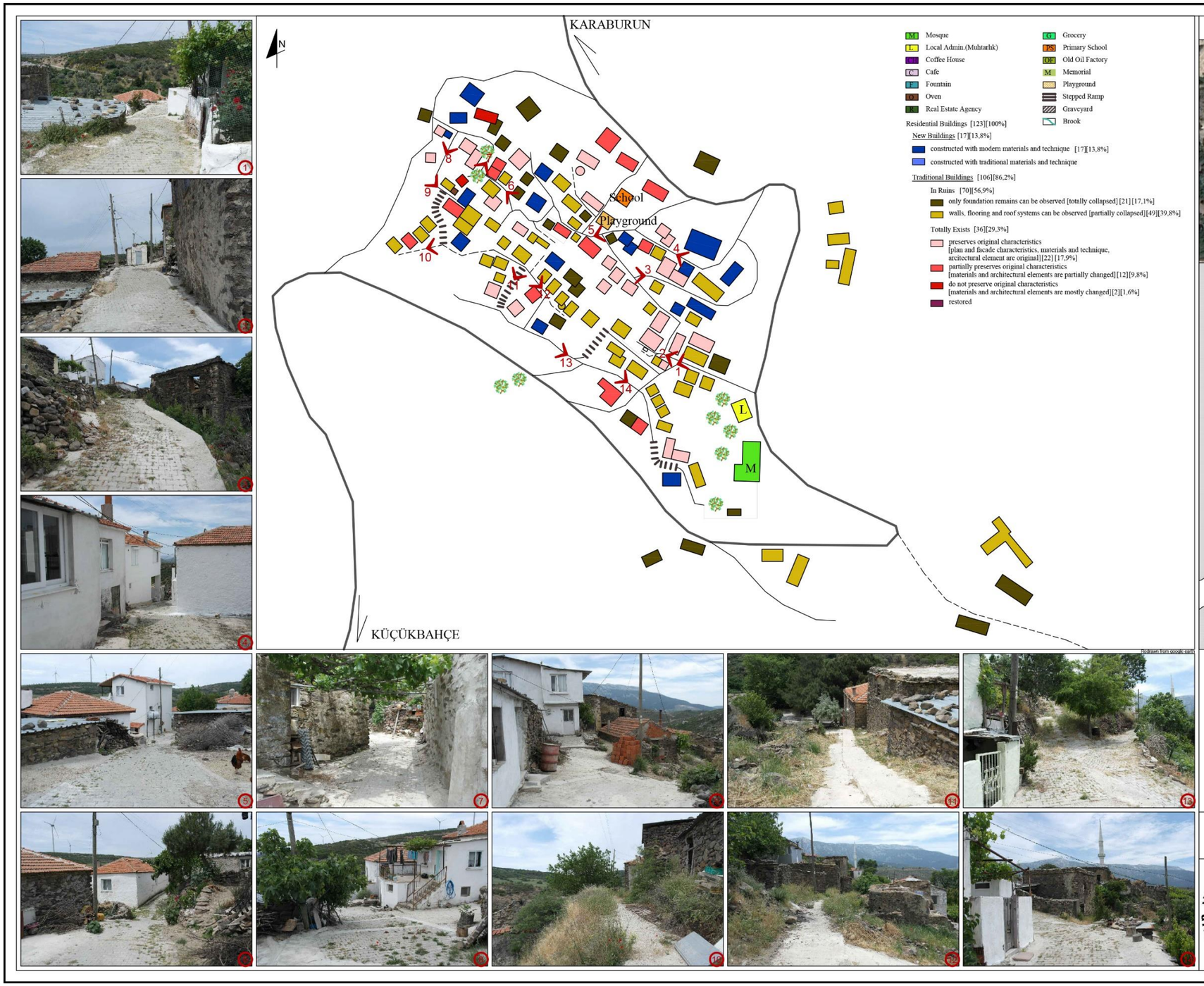
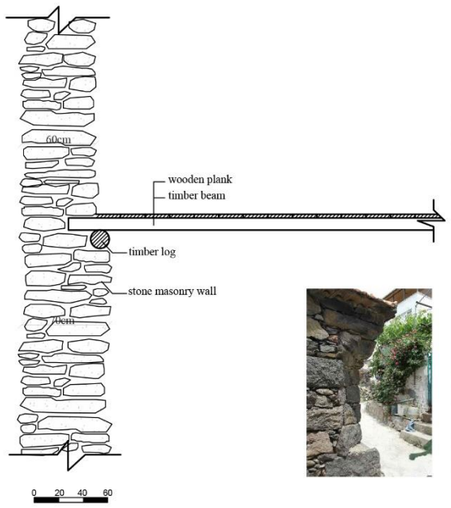


Figure 3.25. Building Category and Street Views of Yayla.

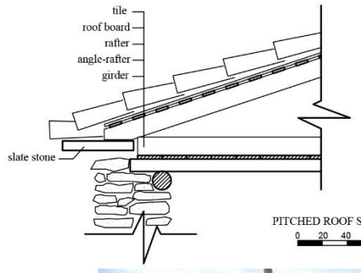
WALL SYSTEM

The traditional houses are generally one- or two-storey buildings. The exterior walls of the buildings are stone masonry. The main material of the masonry walls is flat stone. The flat stones are grey-black color. The binding material is mud mortar. Large gaps between different sizes of slate stones are filled with small stones and tile pieces. The corners of the walls are reinforced with relatively larger and shaped slate stones. Mud mortar is used for the binding material. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. The corners of the walls are reinforced with relatively larger stones. Mud mortar is used for the binding material. Timber tie beams are observed in some masonry walls at different intervals. Timber lintels are used in masonry walls to span door and window openings. Some masonry walls are plastered with mud mortar and washed with lime wash. Inner walls couldn't be observed.

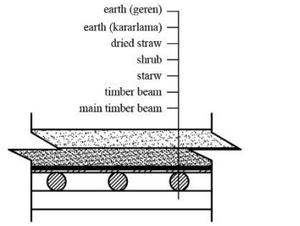


ROOF SYSTEM

Hipped and pitched timber roofs are observed in the village. Roofs are covered with tiles. Over and under type tile is original roof covering material. Marsilya type tiles are observed in altered roofs. Flat roofs are also observed in the village. The flat roofs are applied on thick wooden beams have round section and the beams are covered with pieces of thick shrub (kalın çalı), then thin shrub (ince çalı) and compressed by laying 30-40 cm clayed soil on them. On the soil, the clay is formed by the mixture of soil, water and straw, which has higher clay content and is called "geren". Geren is the specific name given to clay dense soils in the region. When it rains, this soil is waterproof due to its oily structure. Lastly, the soil is compressed by moving a cylindrical stone called 'loğ taşı' in Turkish. All roofs have eaves composed of mostly tiles, slate stones.



PITCHED ROOF SECTION



FLAT ROOF SECTION

ARCHITECTURAL ELEMENTS

Door The only timber door observed in the village is double winged.

Window They are timber and single or double winged. The wooden shutters are parts of windows.

Fireplace & Chimney Fireplace is one of the main elements in the houses. Two examples have been observed in the village. They are made of stone. The only chimney observed is made of brick.

Waterspout Only one terracotta waterspout is observed on flat roof.

OVERALL EVALUATION

There are total of 123 residential buildings in Sarpıncık. 17 of this 123 are new buildings which are constructed with modern materials and technique. This constitutes 13,8% of total building stock. There are 106 traditional buildings which are constructed with traditional materials and technique. This constitutes 86,2% of total residential building stock. The traditional buildings can be grouped under two categories according to their state of preservation: a. in ruins, b. totally exist. Ruins can be grouped under two according to state of their remains: a. totally collapsed (only foundation remains can be observed), b. partially collapsed (walls, flooring and roof systems can be observed). Ruins consist 56,9% of total building stock. Among these, totally collapsed ruins are 17,1% and partially collapsed are 39,8% in proportion. Totally existing buildings can be categorized into three as a. preserves original characteristics (17,9%); b. partially preserves original characteristics (9,8%) and c. does not preserve original characteristics 1,6%).

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Figure 3.26. Construction Techniques of Yayla.

Timber doors observed in the village is single winged. Windows are timber and single or double winged. The wooden shutters are parts of windows. Fireplace is one of the main elements in the houses. Two examples have been observed in the village. They are made of stone. The only chimney observed is made of brick. Only one terracotta waterspout is observed on flat roof. (Figure 3.26)

3.2. Evaluation of Construction Features and Selection of Case Villages

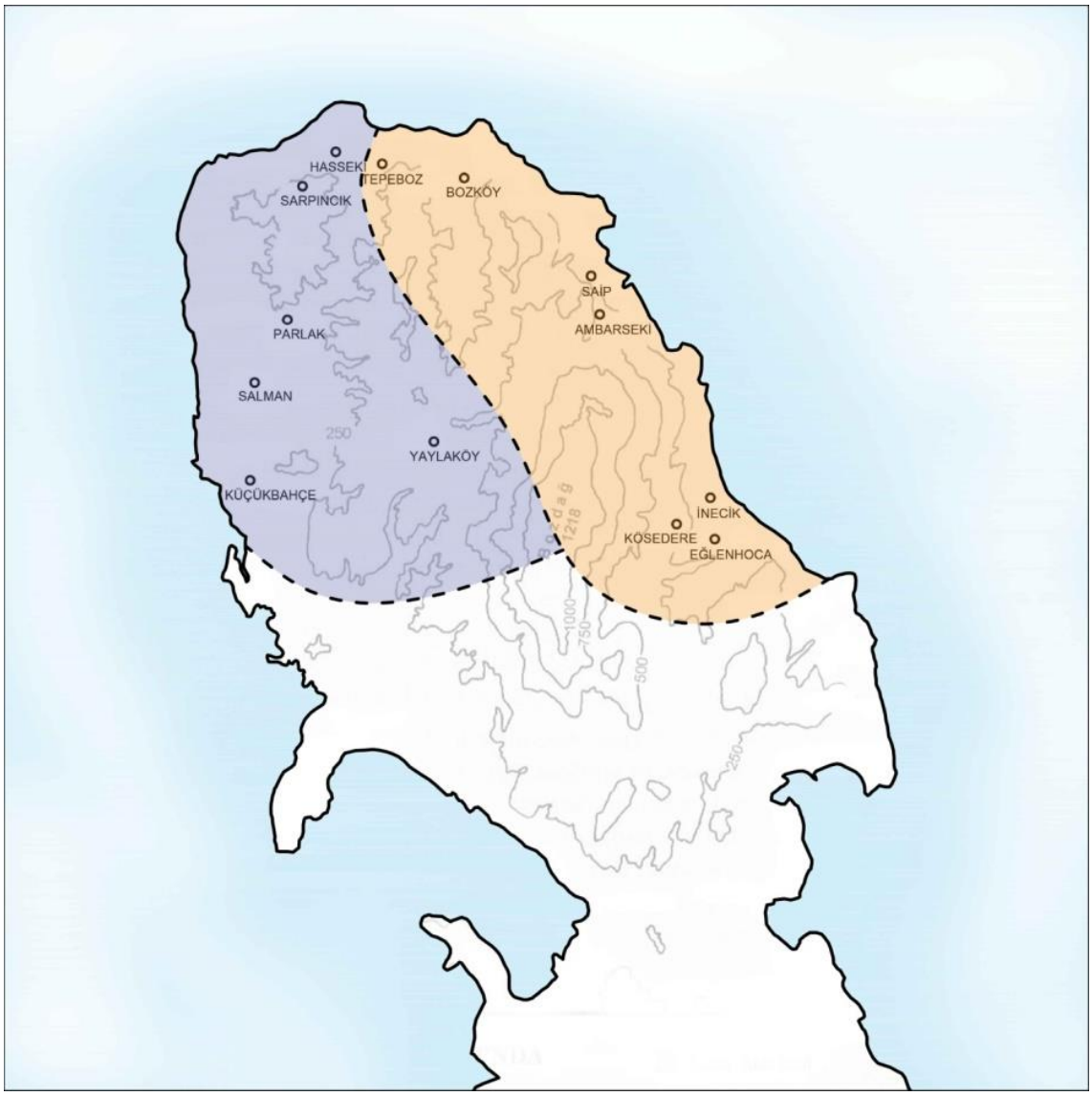
The results of the preliminary survey showed that although the building technique is quite similar; there is difference in shape/size and color of stone material between east and west of peninsula (Figure 3.27). The interviews with locals clarified the reason of this difference as two different stone quarries. While the stone used in the villages in the eastern part is white and yellowish color and round form; the stones used in the western villages are thin, flat and gray-black color.

(a) (b)

Figure 3.27. (a) White and yellowish color and round form stone from Ambarseki, (b) Thin, flat and gray-black color stone from Salman.

In addition to the use of stone, the use of reed was mostly observed in the west of the peninsula except for the wooden elements for the flat roof. In the eastern part, mostly wooden elements were used for flat roofs. It is also known that a soil named '*geren*' was used for the flat roofs at the west.

Accessibility is another factor divided the region. Accessibility to the west is more difficult. The roads are old and curved. Newly established territories are almost nonexistent. The villages are almost empty. For these reasons, the peninsula is divided into two regions in the first stage (Map 3.1).



Map 3.1. Zoning of the area as east and west.

One village from each zone is selected and studied in detail. These villages are selected considering the criteria's of:

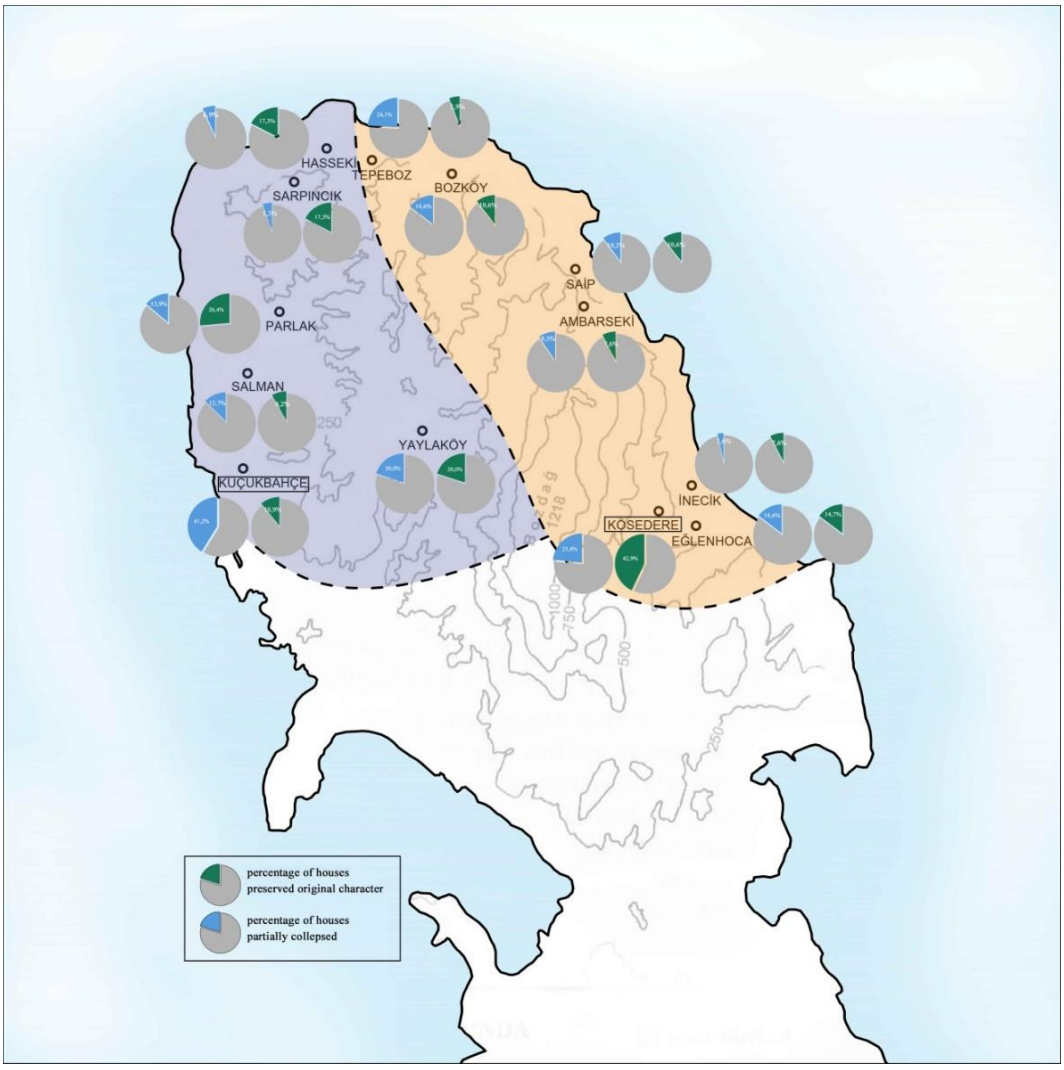
- Having traditional building reservoir
- Representing differences between the zones
- Giving information about materials and construction technique (collapsed or ruined buildings are preferred since they give more information)

Table 3.1. The preservation degree of the residential buildings (Number of houses).

		Residential Buildings								
		New Buildings		Traditional Buildings						
				in ruins		totally exist				
		constructed with modern materials and techniques	constructed with traditional materials and techniques	only foundation remains can be observed [totally collapsed]	walls, flooring and roof systems can be observed [partially collapsed]	preserves original characteristics [plan and facade characteristics, materials and technique, architectural element are original]	partially preserves original characteristics [plan and facade characteristics, materials and technique, architectural elements are partially changed]	do not preserves original characteristics [plan and facade characteristics, materials and technique, architectural elements are mostly changed]	restored	total residential buildings
villages	east zone									
	Ambarseki	56	-	3	13	13	18	14	-	117
	Bozköy	39	-	27	20	18	4	7	-	115
	Eğlenhoca	125	-	9	20	25	30	8	-	217
	İnecik	14	14	-	5	13	14	3	11	74
	Kösedere	115	-	20	32	73	60	15	-	315
	Saip	56	2	8	14	18	19	7	-	124
	Tepeboz	11	5	22	33	10	3	1	-	85
	west zone									
	Hasseki	20	1	57	17	19	5	6	-	125
	Küçükbahçe	16	-	28	101	12	3	2	-	162
	Parlak	9	-	47	34	29	11	5	-	135
	Salman	9	-	68	31	9	7	1	-	125
	Sarpıncık	17	-	24	13	19	29	9	-	111
	Yayla	17	-	21	49	22	12	2	-	123

In the table, the preservation degrees of the residential buildings can be seen. In this context, it is seen that the number of the buildings in Eğlenhoca and Kösedere is higher than the other villages in east zone. However, partially collapsed buildings are most effective ones in terms of reaching the techniques and materials, so the most informative buildings are in Kösedere and Tepeboz among east zone. Both in terms of the quantities and the quality of the houses observed in the villages, Kösedere has been chosen to be examined from the eastern villages.

If it is looked at the western zone, there are more informative buildings compared to the east zone. According to the comparison between the western villages, the quantity of the partially collapsed buildings in Küçükbahçe is pretty much. So Küçükbahçe has been chosen to study in detail (Map 3.2).



Map 3.2. Percentage of houses category among east and west of the peninsula.

CHAPTER 4

CONSTRUCTION TECHNIQUES OF TRADITONAL HOUSES IN KÖSEDERE AND KÜÇÜKBAHÇE

This chapter is devoted to the examination of constructional features of the structural components, such as; the foundations, walls, floors and the roofs of the traditional houses in Kösedere and Küçükbahçe villages. Although, the Chapter is concentrated on Kösedere and Küçükbahçe, some details that cannot be traced in these two villages are clarified from nearby villages since all construction techniques and materials used throughout the Karaburun Peninsula are based on the same rules. The findings are given in an order from foundation to the roof comprising the architectural elements.

4.1. Foundations

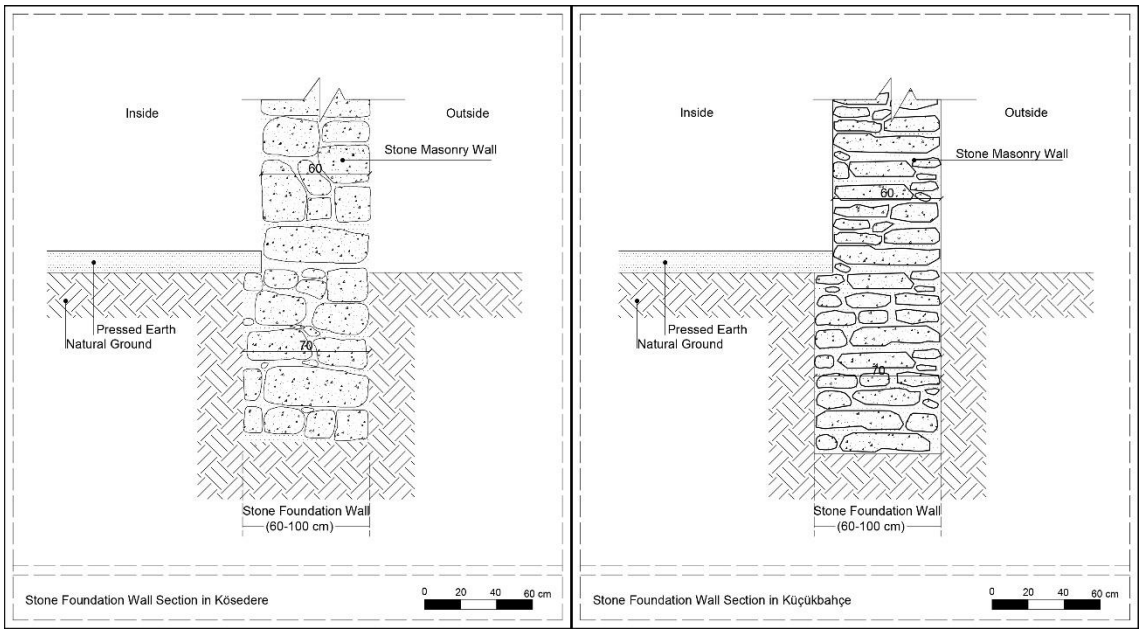
The information about foundation structure in Kösedere and Küçükbahçe villages is rather limited like all over the peninsula. Even no foundation was observed during site study in these villages. However, there are some foundation walls could be observed in nearby villages (Figure 4.1, 4.2). According to reached information gathered from the site and the interviewed with local people around the peninsula, it can be said that the foundation is consisted of continuous stone masonry around the peninsula. The bigger size of stones is used for foundation walls. The thickness of foundation walls changes between 70 and 90 cm. Mud mortar is used as binding material. According to the observed collapsed structures, there is not any joint between the superstructure and foundation. The only difference between Kösedere and Küçükbahçe is type of the stone. The main material of the masonry walls is rubble stone in Kösedere. The rubble stones are yellowish-white color. The main material of the masonry walls is flat stone in Küçükbahçe. The flat stones are grey-black color. (Drawing 4.1)

(a) (b)

Figure 4.1. Stone masonry foundation (a) in Eğlenhoca (By author, October 2016), (b) İnecik (June 2016).

(a) (b)

Figure 4.2. Stone masonry foundation (a) in Salman (By author, May 2017), (b) Sazak (October 2016).



Drawing 4.1. Drawing of the Foundations.

4.2. Walls

The walls are constructed with hybrid system in which the walls of the ground floor and the exterior walls of the upper floor are stone masonry; and the inner walls of the upper floor is timber frame without infill (*bağdadi*).

4.2.1. Masonry Walls

The walls of the ground floor and the exterior walls of the upper floor are stone masonry in Kösedere and Küçükbahçe. The thickness of masonry walls changes between 60-80 cm at the ground floor and 50-60 cm at the upper floor. The main material of the masonry walls is rubble stone in Kösedere. The rubble stones are yellowish-white color. The stone used in Küçükbahçe is thin, flat and gray-black color. (Figure 4.3) (Drawing 4.2) The gaps between the different sizes of stones are filled with small stones and pieces of brick and roof tile. However, the use of brick and roof tile on the masonry wall has rarely seen in Kösedere. Mud mortar is used as the binding material. It is composed sand and thin straw pieces.

(a) (b)

Figure 4.3. Stone masonry wall (a) in Küçükbahçe (By author, April 2017), (b) in Kösedere (April 2017).

Relatively large stones with regular shapes overlap each other locking the two joined wall faces in the corners (Figure 4.4, 4.5, 4.6).

(a) (b) (c)

Figure 4.4. Overlapping stones at the corners (a) Kösedere (b) Bozköy (c) Saip (June 2016).

Figure 4.5. Overlapping Stones at the corners in Küçükbahçe (April 2017).

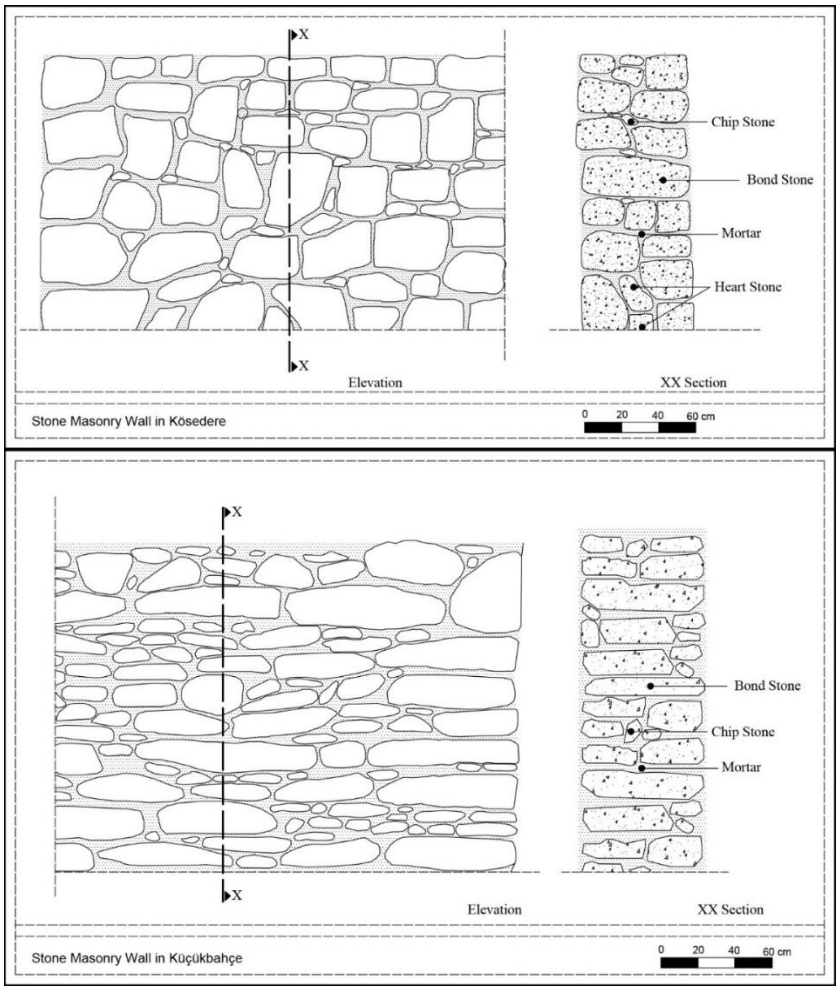
(a) (b) (c) (d)

Figure 4.6.Overlapping Stones at the corners in (a) Parlak (April 2017), (b) Yayla (April 2017), (c) Sarpıncık (November 2016), (d) Salman (May 2017).

In Eğlenhoca, one example is different from the general approach; the corner of the house is chamfered (Figure 4.7). However, it is not known whether the original

treatment or not. It is understood that the implementation is new treatment from the concrete grout used between stones as mortar.

Figure 4.7. Chamfered Corner in Eğlenhoca (October 2016).



Drawing 4.2. Stone Masonry Wall Drawing.

The usage of wood lintel is observed in some buildings. There is not a system in usage of lintel. It is especially observed in two-story buildings. It is observed in Küçükbahçe between the ground floor and first floor while it is placed spontaneously in Kösedere (Figure 4.8, 4.10). Stone masonry walls are strengthened with wooden lintels. They are placed interior and exterior surfaces of the walls. Some wooden lintels overlap each other at the corners (Figure 4.9).

Figure 4.8. Lintel Usage in Kösedere (June 16).

Figure 4.9. Lintel Overlapping at Corner in Ambarseki (April 17).

Figure 4.10. Lintel Usage in Küçükbahçe (May 2017).

Inner surfaces of stone masonry walls are plastered and washed in both villages. Thickness of the plaster is 2-3 cm. However, there is not an exact judgment for outer walls. Some of the houses are plastered and washed with white lime wash while some of them are not plastered but washed; even there are some non-plastered examples in the village. (Figure 4.11, 4.12, 4.13, 4.14) The plaster applied on the stone wall is composed sand and thin straw pieces.

Figure 4.11. Plastered and Lime-washed Examples in Kösedere (June 2016).

Figure 4.12. Non-Plaster and Lime-washed Examples in Kösedere (April 2017).

Figure 4.13. White lime-washed outer surfaces examples in Küçükbahçe (April 2017).

Figure 4.14. White lime-washed interior places examples in Küçükbahçe (April 2017).

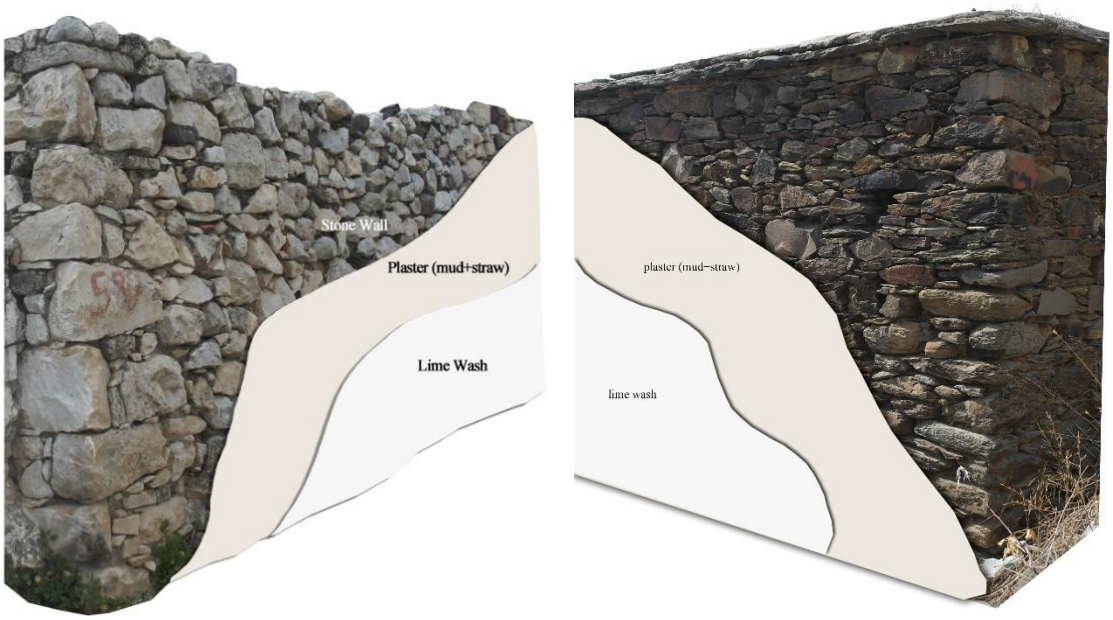


Figure 4.15. Layers of stone wall coverings in Kösedere and Küçükbahçe.

Wood lintels are also used for the openings on the masonry wall. In masonry walls, stone or wood lintels and arches are used for spanning. (Figure 4.16, 4.17, 4.18, 4.19) Lintels are laid side by side through the cross-section or longitudinal section of the opening. Plates or coarse wood blocks are used as lintel. The number of plates changes from three to five depending on wall thickness and cross-sections of plates. In some cases, they are extended till the corner of the wall. Around the openings, the use of cut stones and bricks to obtain a fine, clean-cut opening has been observed. And in some examples, wood lintels are placed in the short direction of the openings.

(a) (b) (c) (d)

Figure 4.16. Brick and wood usage for openings in (a) Kösedere (b) Eğlenhoca (c) Ambarseki (d) Tepeboz (April 2017).

Figure 4.17. Spanning Openings in Kösedere (June 2016).

Figure 4.18. Spanning opening examples in Küçükbahçe (April 2017).

Figure 4.19. Spanning opening examples in Salman (October 2016).

In Eğlenhoca, another treatment is observed to obtain clean-cut openings. Irregular shaped wooden lintels are covered with wooden laths of 2 cm thickness (Figure 4.20). These lathes are nailed to the lintels and plastered and washed. Thus, clean perpendicular openings could be obtained. Lath usage for the openings is also observed in Küçükbahçe and Salman with same technique.

Figure 4.20. Spanning Openings in Eğlenhoca (March 2017).

Figure 4.21. Spanning Openings in Tepeboz (April 2017).

Figure 4.22. Spanning Openings in İnecik (April 2017).

Beside the rubble stone, brick usage is also observed in the villages. In one house in Kösedere, brick is the only material of the vertical structural elements and architectural elements such as fireplaces and chimneys (Figure 4.23). Brick walls are thinner than stone masonry, but the other features are similar. Bricks are 5x19 cm in size. Brick masonry walls are not only observed in exterior walls but also as interior walls. Mud mortar is also used for binding and it is plastered and washed with white lime. Brick is also used for obtaining clean-cut openings corners in both villages; window openings, corners of railing walls of stone stairs. And niches are constructed out of brick for obtaining fine shaped architectural elements (Figure 4.24, 4.25).

Figure 4.23. Brick Usage in Kösedere (June 2016).

Figure 4.24. Brick usage examples in Küçükbahçe (April 2017).

Figure 4.25. Brick usage examples in Küçükbahçe (November 2014).

4.2.2. Timber Frame Walls

Inner walls of upper floors are constructed with timber frame system. In this system, firstly a frame is installed with posts (5x10 cm) and wooden lathes on both sides are nailed to these posts in horizontal directions. The laths are at closed intervals approximately 3 cm. The space between two lath surfaces are left empty. The surfaces are covered with plaster that is composed of mud and straw. Thickness of the plaster is approximately 2-3 cm. This type of timber walls is called as '*bağdadi*' in Turkish. Reeds usage have been observed besides the use of lathes in Küçükbahçe.(Figure 4.26, 4.27, 4.28, 4.29, 4.30) (Drawing 4.3, 4.4)

Figure 4.26. Timber Framed Wall Examples in Kösedere (June 2016).

Figure 4.27. Timber Framed Wall Example in İnecik (June 2017).

Figure 4.28. Timber Frame Wall in (a) Ambarseki (b) Tepeboz (June 2016).

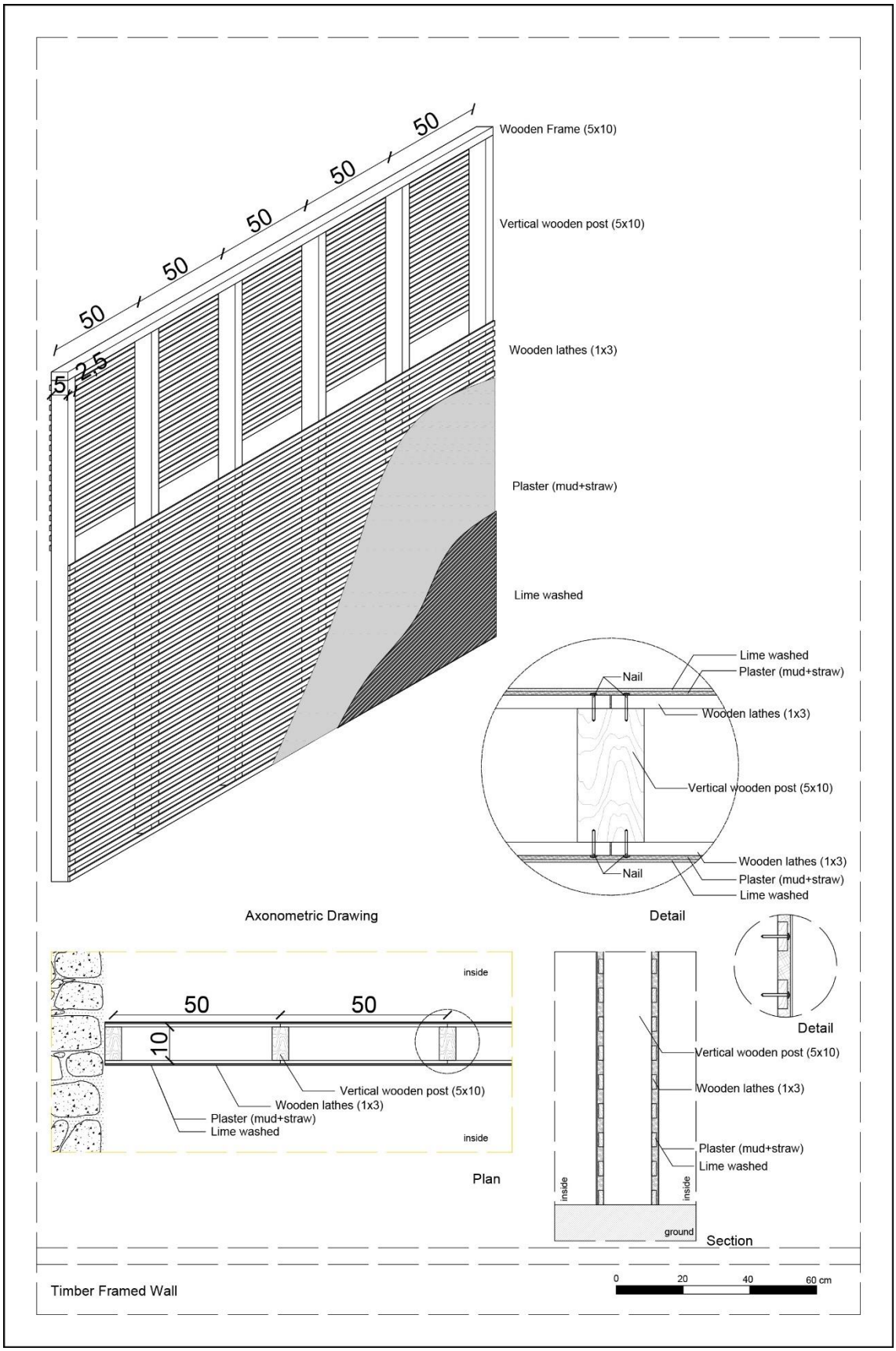
Figure 4.29. Timber Framed Wall Examples in Küçükbahçe (April 2017).

Figure 4.30. Timber Framed Wall Examples in Salman (May 2017).

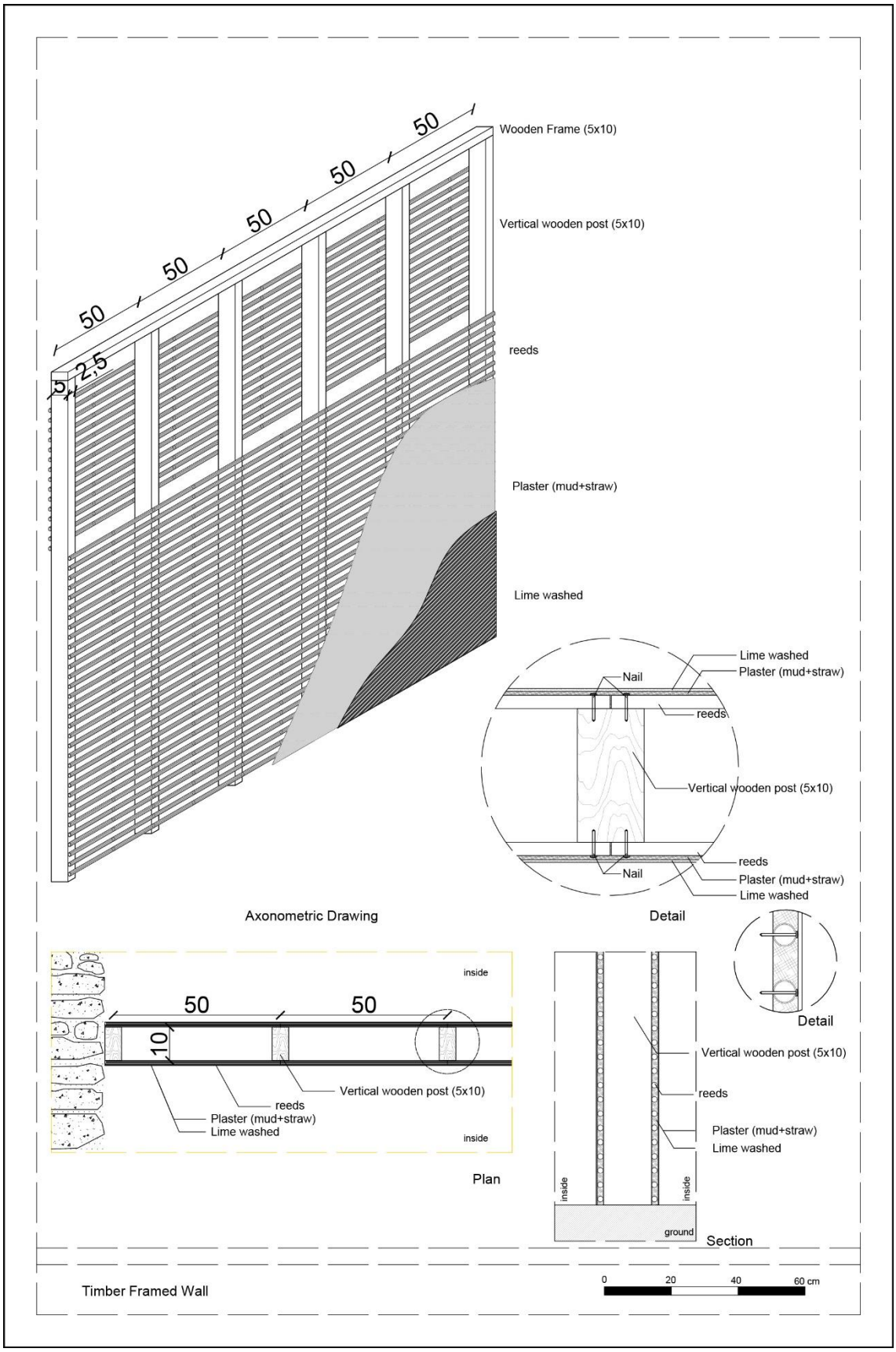
Except for the timber framed wall, wooden panel partition walls have been observed in İnecik and Tepeboz (Figure 4.31). In this system, firstly posts (5x10 cm) are placed and then wooden panels are nailed to posts in horizontal directions on one side. The surfaces of wooden panels have been left empty; there is no any plaster on them.

(a) (b)

Figure 4.31. Wooden Panel Partitions (a) Tepeboz (b) İnecik (June 2016).



Drawing 4.3. Timber Framed Wall with Lathes Drawings.



Drawing 4.4. Timber Framed Wall with Reeds Drawings.

In Kösedere, a wooden post is observed in one house (Figure 4.32). Timber post is vertical load-bearing element that is used for the transfer of loads to the ground. It has been used in both ground and first floors. It has been used at the first floor for carrying the main beam of the roof structure in Kösedere. It has rectangular cross-section and ornamented heading. The head part's section is wider to get more loads. The post has been observed in Saip and Bozköy also (Figure 4.33). The post has been used at first floor has also wider head however the post has been used at the ground floor is simple. Most of the structures have it at ground floor. One of the structures has it at first floor. The post is simple in this example.

Figure 4.32. Wooden Post Carrying the Main Beam of the Roof in Kösedere (2016).

Figure 4.33. Wooden Post in (a) Saip (b) Bozköy (April 2017).

4.3. Floor Construction

The ground floor system cannot be observed because of debris layers on floors in Kösedere. However, the floor pavement of the ground floors is covered with pressed earth in nearby east villages like İnecik (Figure 4.34) and wooden floor covering has been observed on ground floor in some examples in these villages (Figure 4.35). (Drawing 4.5)

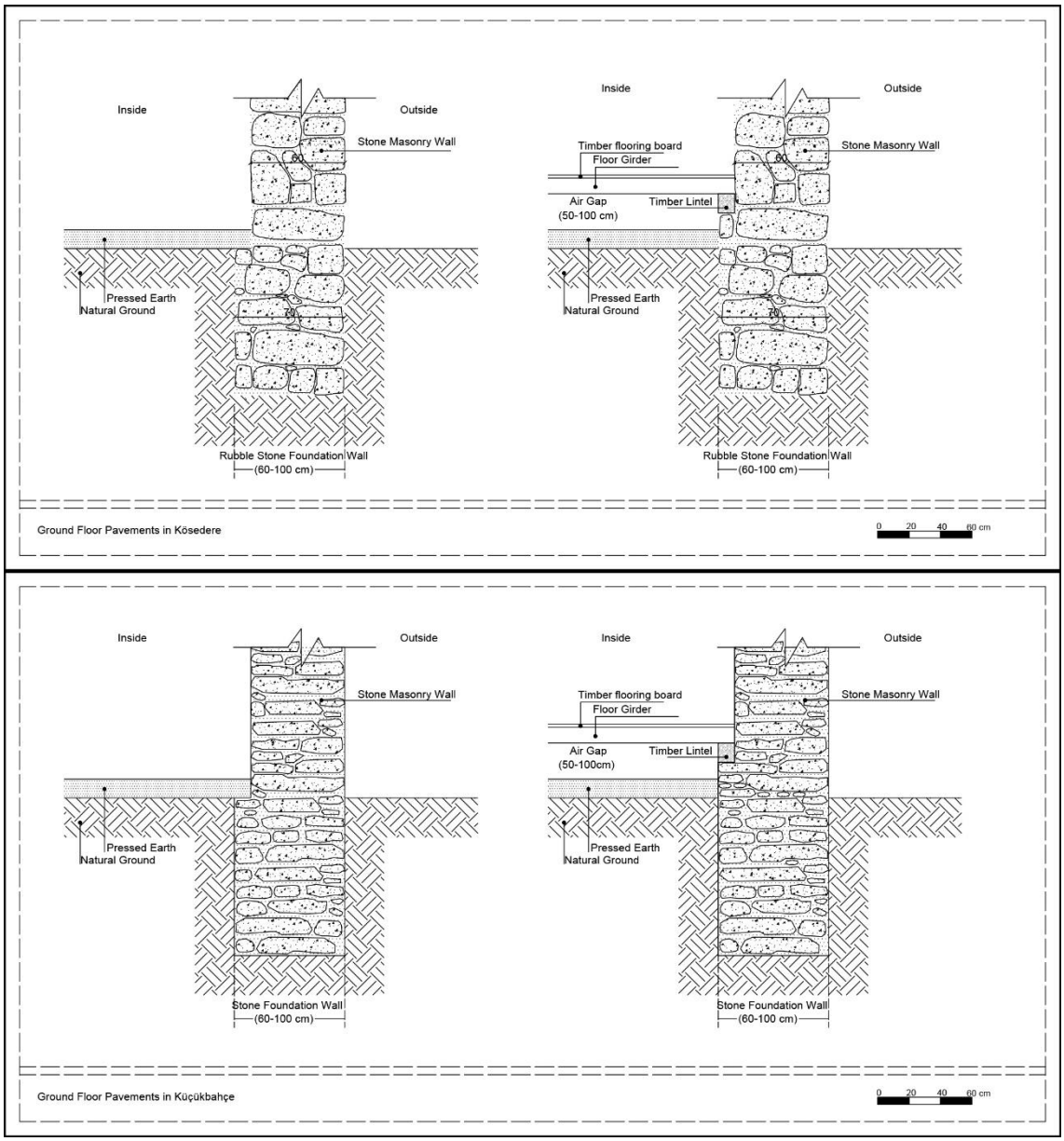
Figure 4.34. Pressed Earth Floor Pavement Example on Ground Floor in İnecik (June 2017).

Figure 4.35. Wood Panel Covering Example on Ground Floor in İnecik (June 2017).

The ground is covered with pressed earth and there is also raised floor system example from ground level in Küçükbahçe (Figure 4.36, 4.37). The system is covered with wooden boards. In this system, a space of 50 - 100 cm is left between ground level and wooden coverings for ventilation.

Figure 4.36. Ground Floor Coverings in Küçükbahçe (April 2017).

Figure 4.37.Raised Ground Flooring System Trace in Salman (May 2017).



Drawing 4.5.Ground Floor Pavement Drawings

Timber floor system is used for the first floor in Kösedere and Küçükbahçe. Floor beams are laid on a main girder, which is usually placed in the middle of the room, in the opposite direction of the floor beams. The cross section of this main girder can be 18 / 18-20 / 20cm size. These main beams are often roughly processed or not processed at all. Floor beams are wooden elements with a smaller cross-section (6 / 12-8 / 12-8 / 15cm cross section depending on the width of the openings and the work piece), which are placed with approximately 40-50cm spacing. The floor beams are usually placed between two floors with the wooden wall plate being seated on the beam element. Finally, floor beams are covered with the timber flooring boards in perpendicular manner. Their sizes are almost 2x20 or 2x30 cm. (Figure 4.40, 4.41, 4.42, 4.43, 4.44) (Drawing 4.5)

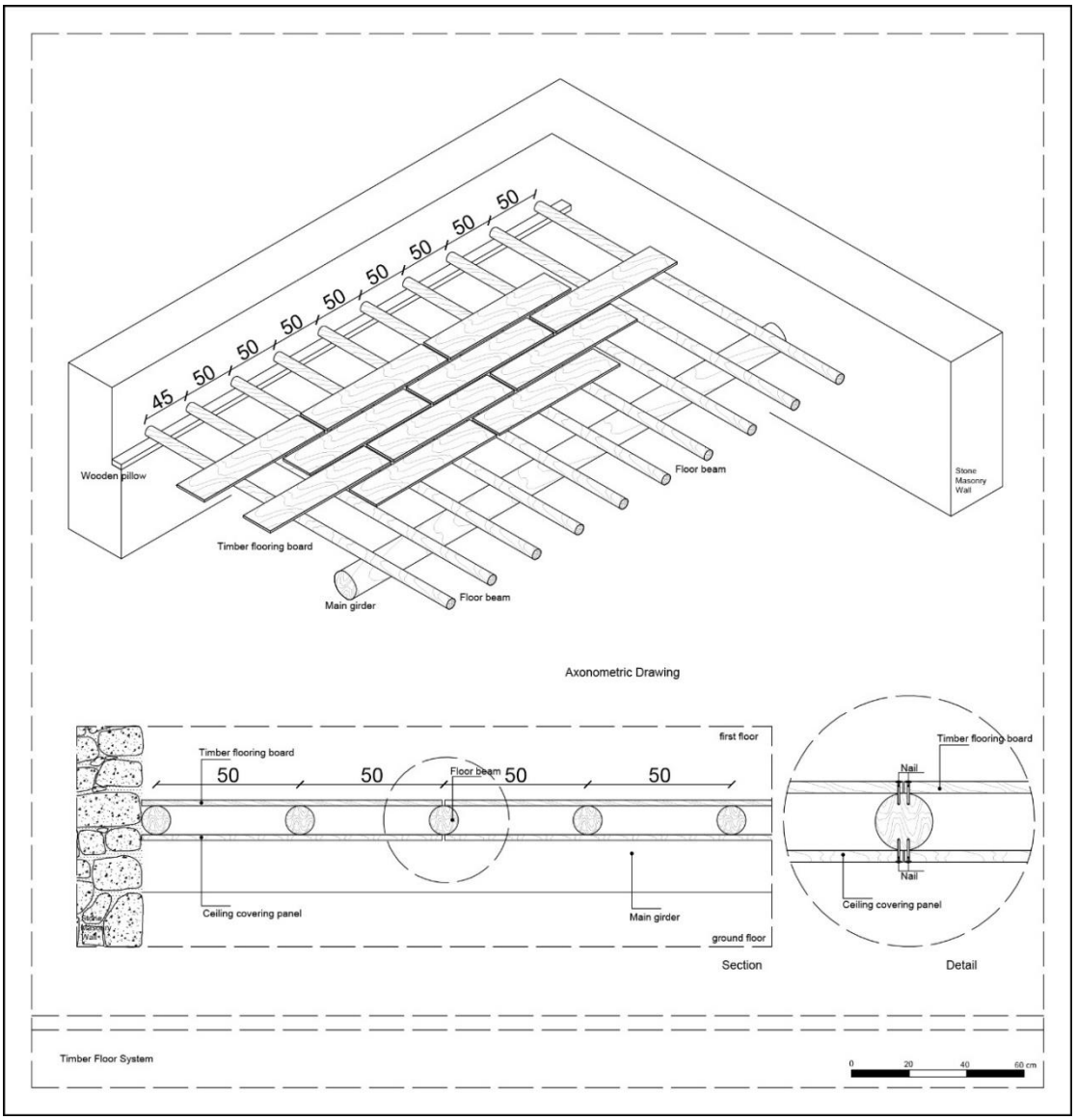
Figure 4.38. Floor Construction (a) Kösedere (June 2016) (b) İnecik (November 2016)

Figure 4.39. Floor Construction (a) Bozköy (b) Tepeboz (June 2016)

Figure 4.40. Floor Construction example (a) Eğlenhoca (b) İnecik (June 2017)

Figure 4.41. Floor Construction in Küçükbahçe (April 2017).

Figure 4.42. Floor Construction in Salman (May 2017).



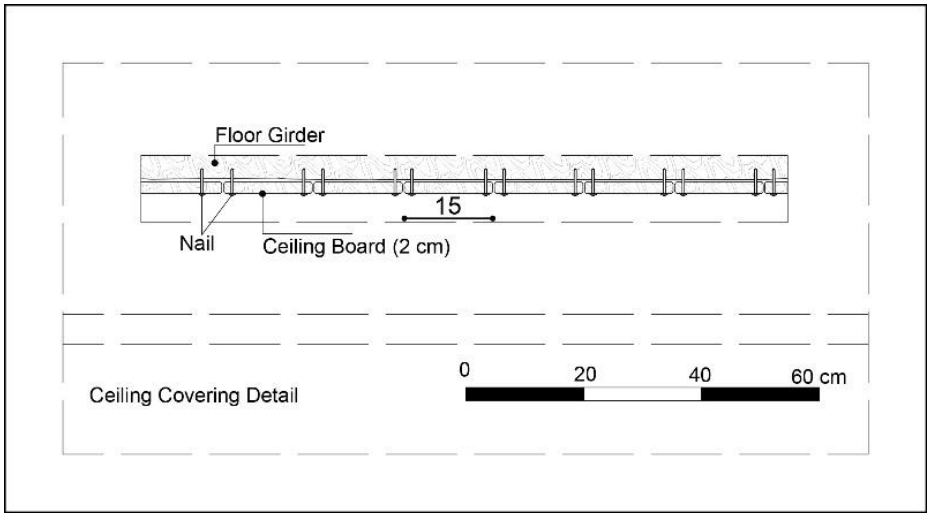
Drawing 4.6. Timber Floor System Drawings.

4.4. Ceiling Structure

It is observed that the ceilings of the ground floors are not covered in Kösedere and Küçükbahçe. In these spaces, the floor girders of the upper floor are left open. In the first floor, some of the ceilings are covered with wooden panels and some of them are also left open like ground floor ceiling. In these examples, roof structures can be seen. 15 cm wide ceiling boards with rectangular cross-section are set next to each other and nailed on floor girders in perpendicular direction for covering ceiling. (Figure 4.43, 4.44, 4.45) (Drawing 4.7)

Figure 4.43. Ceiling Structure Examples in Kösedere (June 2016).

Figure 4.44. Ceiling Structure Examples (a) Eğlenhoca (June 2016) (b) Tepeboz (June 2017).



Drawing 4.7. Ceiling Covering Detail Drawing.

Figure 4.45. Ground Floor and First Floor Ceiling Structures in Küçükbahçe (April 2017).

4.5. Roof Structure

Hipped and pitched timber roofs are observed in the Kösedere (Figure 4.46, 4.47). Flat roof hasn't observed in this village. Hipped, pitched and flat roof types are observed in Küçükbahçe (Figure 4.48, 4.49). Structures of hipped and pitched roofs are similar to each other. Pitched roofs are formed with two surfaces sloped towards to opposite directions and the purlin which is usually presents at the central axis of the plan. These two surfaces sloped through the longitudinal edges of the roof and gable walls took place at the shorter edges. Hipped roofs are formed with three or four surfaces sloped; it changes according to the location of house; if the house stands alone, the hipped roof is formed with four surfaces; if it stands next to another house, the hipped roof is formed with three surfaces. The roof system is composed of posts, purlin, angle rafters, collar beams, angle braces, and rafters (Figure 4.50, 4.51) (Drawing 4.8). Timber posts are placed in every 100 cm, on the girders, placed between roof and upper floor. Posts transfer the load through to the girder to lower stories. Their thickness changes between 10-15 cm. Posts are supported by angle braces. The dimension is 5-10 cm in rectangular cross-sections and 8-8 cm if it has circular cross-section. Angle rafters are placed on the posts. They transfer the load to posts and girders. The thickness is change between 8 -15 cm. Purlins are placed between the angle rafters in the perpendicular direction to the roof slope. Purlins transfer the load to posts. The size of these elements is approximately 10 cm x 2-2.5 cm. The purlin placed at the top point of the roof, on the line where the roof slope changes is called ridge purlin; and the farthermost one placed directly on the girder is called end purlin. Rafters are placed on purlin in perpendicular way, one in every 50-70 cm. The cross-sections of these purlins are approximately 5-10 cm. Roof boards are placed on purlin in perpendicular way. These boards are 2 cm thick, 10-15 cm wide. The

roof boards are covered with over & under tiles *(Alaturka)* in the parallel direction to the roof slope. *'Alaturka'* type tile is the original tiles; newer structures are covered with *'marsilya'* type tile. Besides, some of the Alaturka type tiles were repaired with '*marsilya'* type tiles.

Figure 4.46. Examples of Pitched Roofs in Kösedere (June 2016).

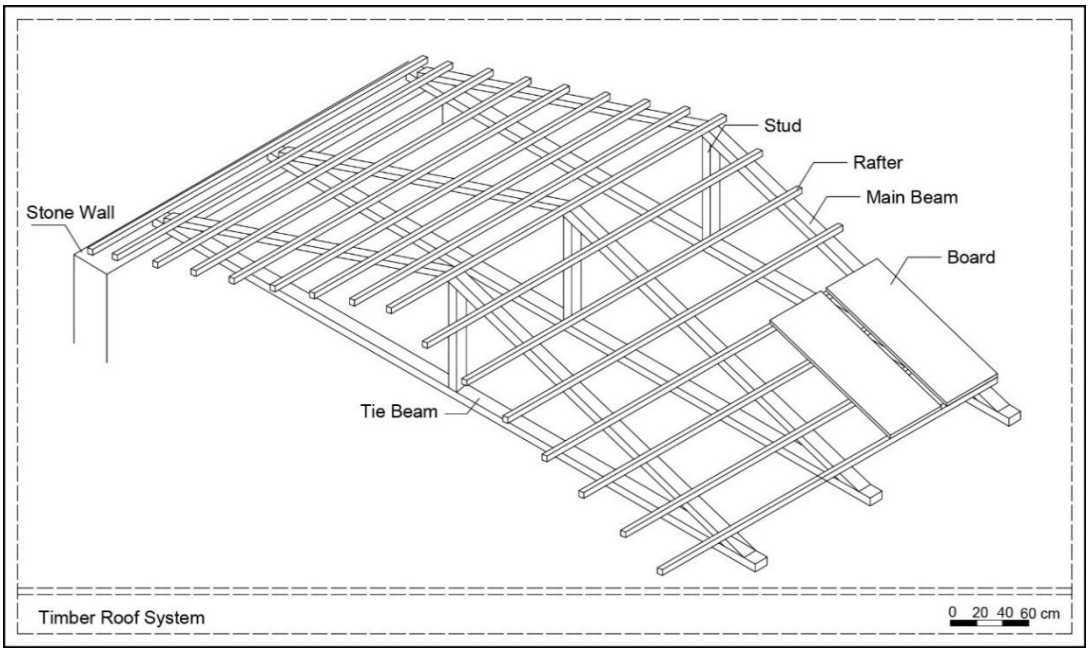
Figure 4.47. Examples of Hipped Roofs in Kösedere (June 2016).

Figure 4.48. Hipped and Pitched Roof Examples in Küçükbahçe (April 2017)

Figure 4.49. Hipped and Pitched Roof Examples in Küçükbahçe (April 2017).

Figure 4.50. Hipped Roof Components in İnecik (June 2017).

Figure 4.51. Rafters, Boards and Roof Tiles Relation in Kösedere (June 2016).



Drawing 4.8. Components of Timber Roof Structures.

In the eastern zone of the Peninsula, flat roof examples are observed in Saip, Tepeboz and Bozköy (Figure 4.52, 4.53). These examples represent the very original roof type of the whole buildings in the villages. This original roof type is converted into hipped or pitched types due to difficulties in taking care and maintenance. In this very original flat roof type; firstly, the main beams are placed for spanning. These beams have circular cross-sections with approximately 20cm diameters. Then they are covered with timber boards to the vertical direction of the beams and timber boards are covered with a bottom layer of reed or small wooden lathes and top layer of earth and dried straw mixture. In Bozköy, on the other hand, main beams are covered with reed and then with earth and dried straw mixture.

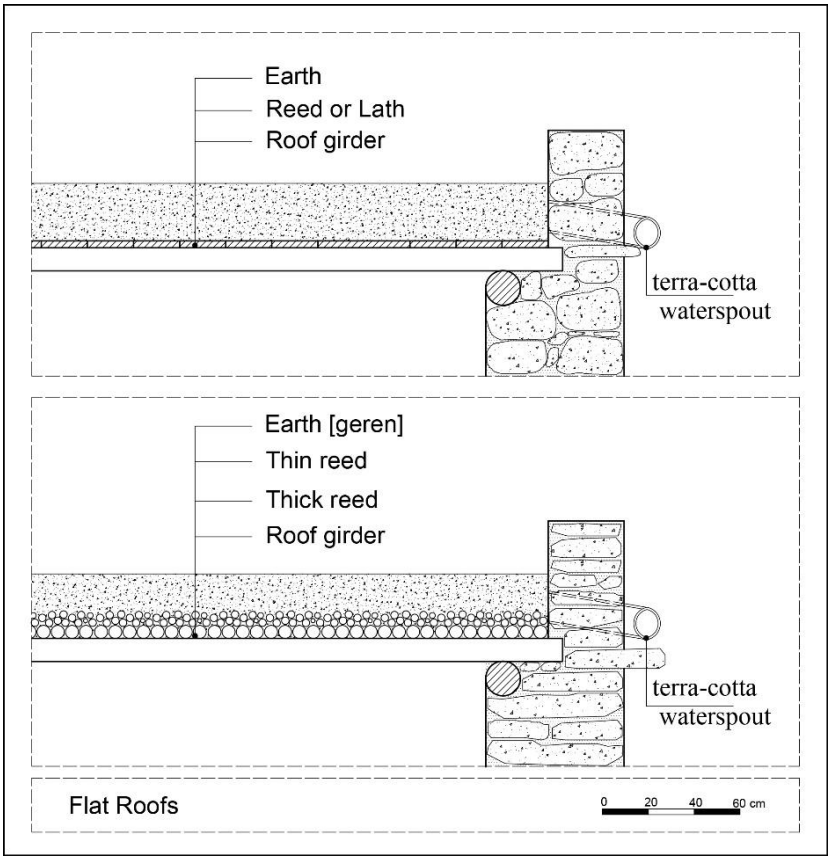
Figure 4.52. Fat roof examples in Saip (June 2016).

Figure 4.53. Fat roof examples in Bozköy (June 2016).

Minor differences are observed on flat roofs between two zones. In Küçükbahçe, round sectioned wooden beams are covered with two layers of shrub. The bottom layer is composed of thick sectioned shrubs whereas the top layer is composed of thinner sectioned shrubs. Finally, a 30-40 cm thick earth layer is applied. This layer is composed of a mixture of soil, water and straw which has high clay content and called “geren” by the locals (Figure 4.54, 4.55) (Drawing 4.9). Every year, this soil is feeded if necessary. The soil mixture is pressed with a cylindrical stone called ‘*loğ taşı*’ to increase its water-proof capacity. The flat roofs have slate stone eaves projecting about 10-15cm from the masonry walls.

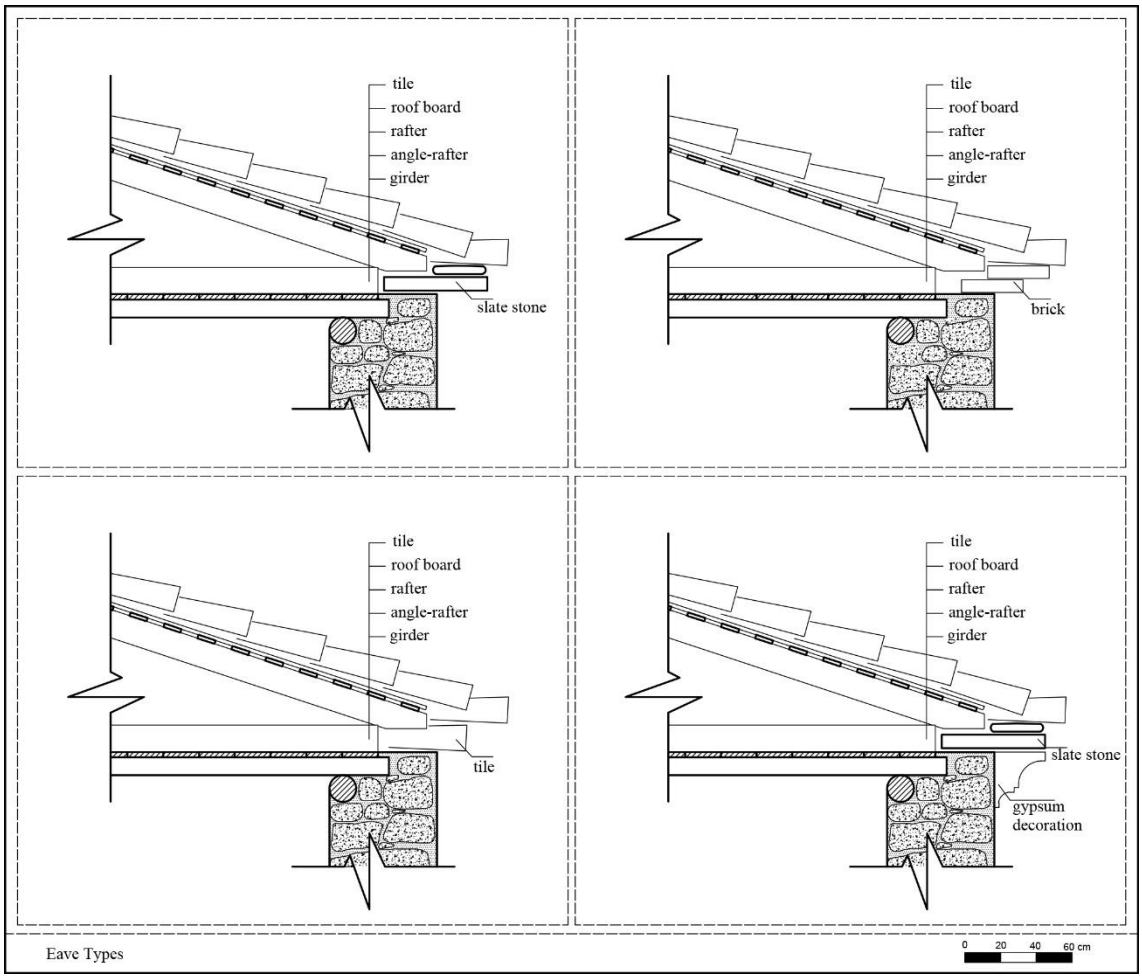
Figure 4.54. Flat Roof Examples in Küçükbahçe (April 2017).

Figure 4.55. Flat Roof Examples in Küçükbahçe (April 2017).



Drawing 4.9. Flat Roof Drawings.

All roofs have eave composed of mostly over and under type tiles and slate stones in hipped or pitched roofs and slate stone in flat roofs. Brick is also used for the eave in Kösedere. Beside these eaves, one of the houses in Kösedere has gypsum sill under its eave. (Drawing 4.10) (Figure 4.56, 4.57, 4.58)



Drawing 4.10. Drawings of eave types.

Figure 4.56. Examples of Eave Types in Kösedere (June 2016).

Figure 4.57. Examples of Eave Types in Kösedere (June 2016).

Figure 4.58. Tile and Stone Eave examples in Küçükbahçe (April 2017).

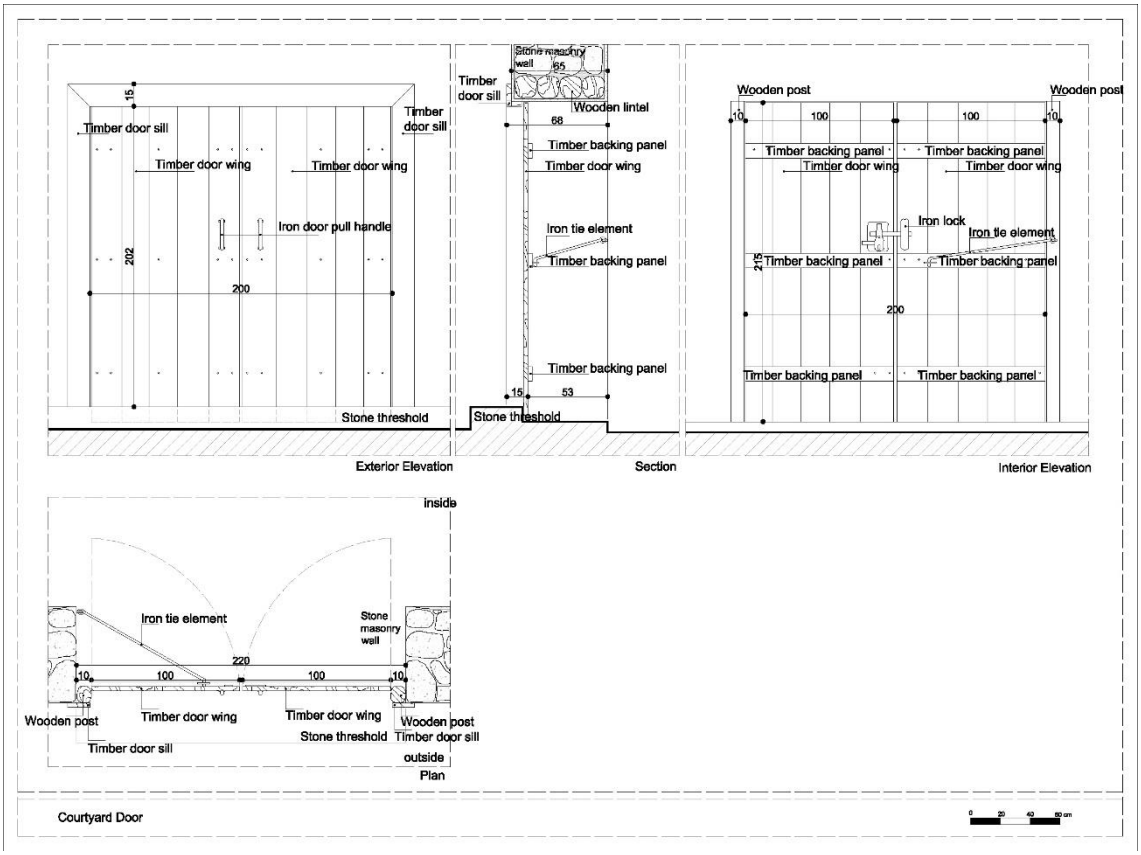
4.6. Architectural Elements

4.6.1. Doors

Doors can be grouped according to their place; on exterior and interior walls. Exterior doors can be grouped into two as courtyard doors and main entrance doors. It is understood that most of the houses had courtyards in the past in Kösedere; however, their walls had been partly or totally collapsed today. However, some of the original courtyard doors could be observed and they are two-wing wooden panel doors (Figure 4.59). Most of the houses in Kösedere have courtyard but they are new structure and their doors are made by iron. Dimensions of courtyard doors are approximately 220x215 cm. The door opening is spanned by flat timber beam in one example, and concrete lintels at the others. It is obvious that the original timber lintels are replaced with concrete. However, the original wooden doors are kept. They are placed on the outer edge of the door opening of the courtyard wall. The wooden door wings are made up of vertical wood pieces 20-25 cm wide and they are nailed to horizontal backing panels at the back side of the doors. (Drawing 4.11)

Figure 4.59. Courtyard Doors in Kösedere (June 2016).

Figure 4.60. Metal Element (a) Saip (b) İnecik (June 2016).



Drawing 4.11. Timber Courtyard Door Drawing.

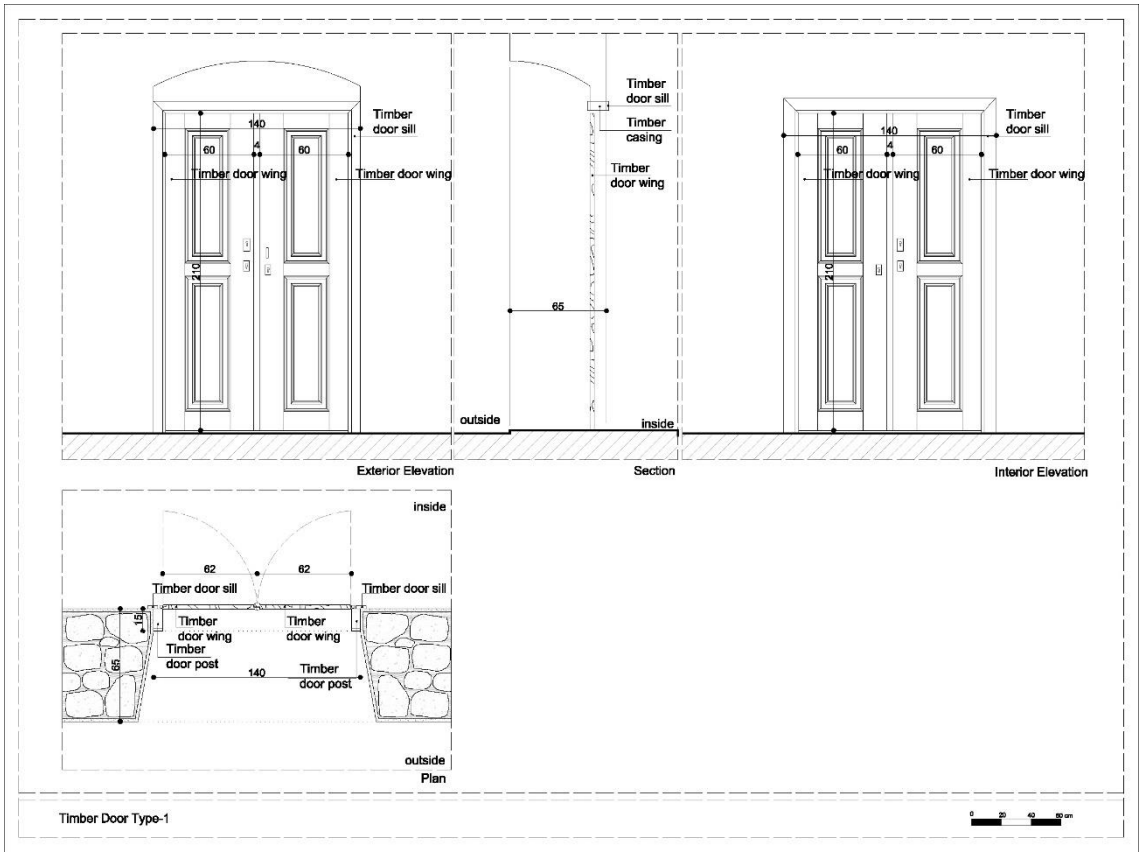
The main doors are located between house and courtyard or between house and street. The main doors are generally two-wing panel doors in both villages (Figure 4.61, 4.62, 4.63). Dimensions of the two-wing doors change 200x220cm to 220x250cm. For spanning door openings not only flat lintels, but also semi-circle arches and depressed arches are used. In two examples, door wings fit in these arches with circular shaped, but at the others, the doors are rectangular shaped in these spanning. These doors are made from pieces of solid timber panels and their place in the masonry wall is various; some of

them sit on the inner edge of the opening and some of them sit in the middle and some of them sit on the outer edge of the wall. (Drawing 4.12, 4.13, 4.14)

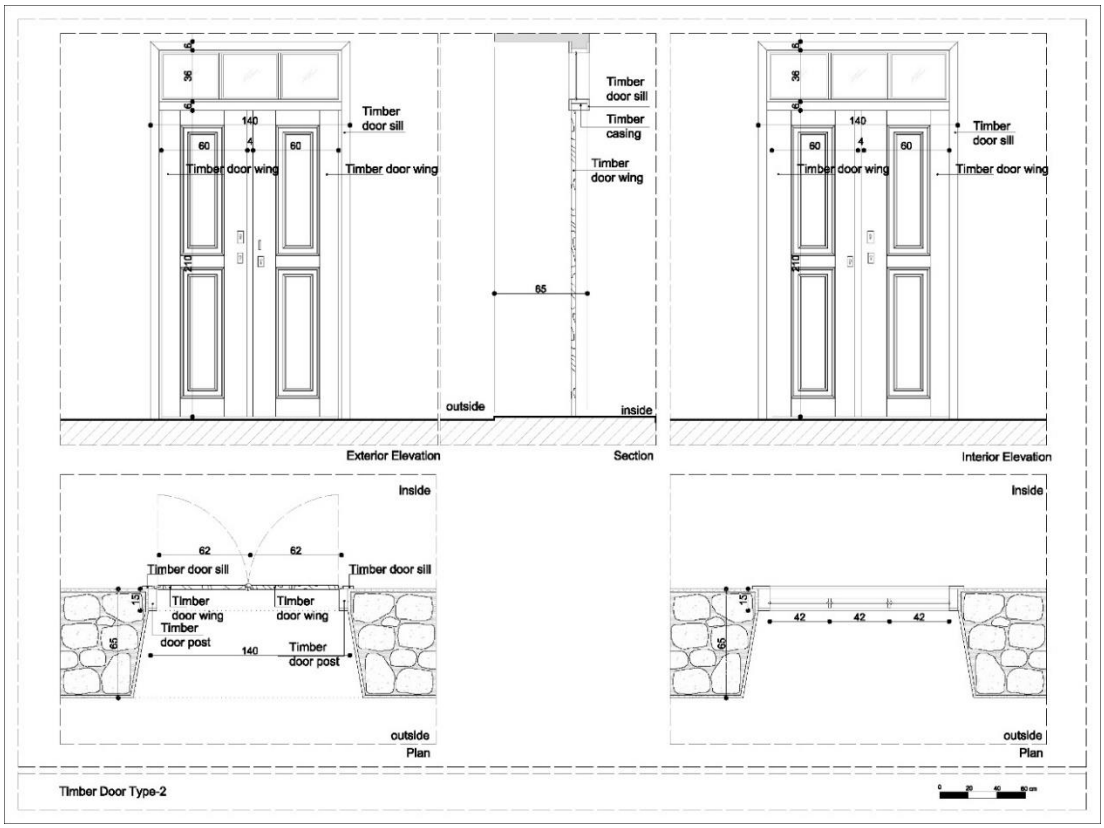
Figure 4.61. Exterior Door Examples in Kösedere (June 2017).

Figure 4.62. Entrance Doors Examples in Küçükbahçe (April 2017).

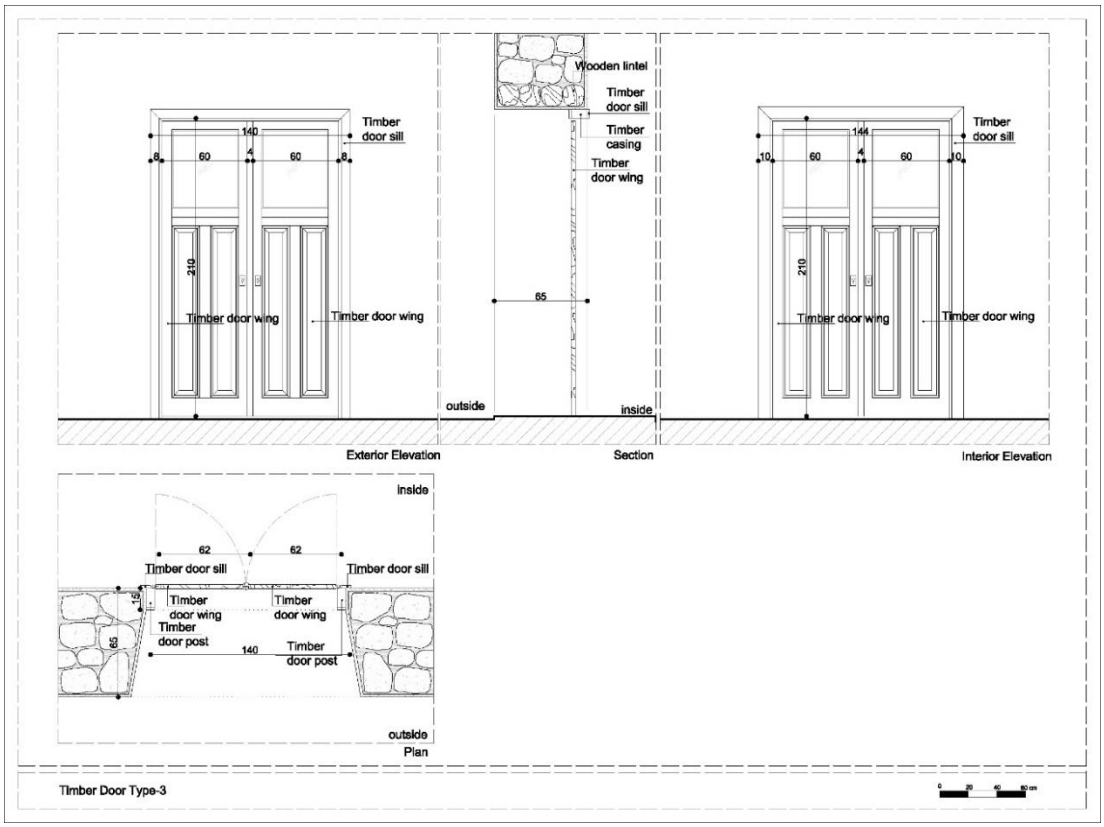
Figure 4.63. Entrance Doors Examples in Salman (May 2017).



Drawing 4.12. Timber Door Type-1 Drawing.

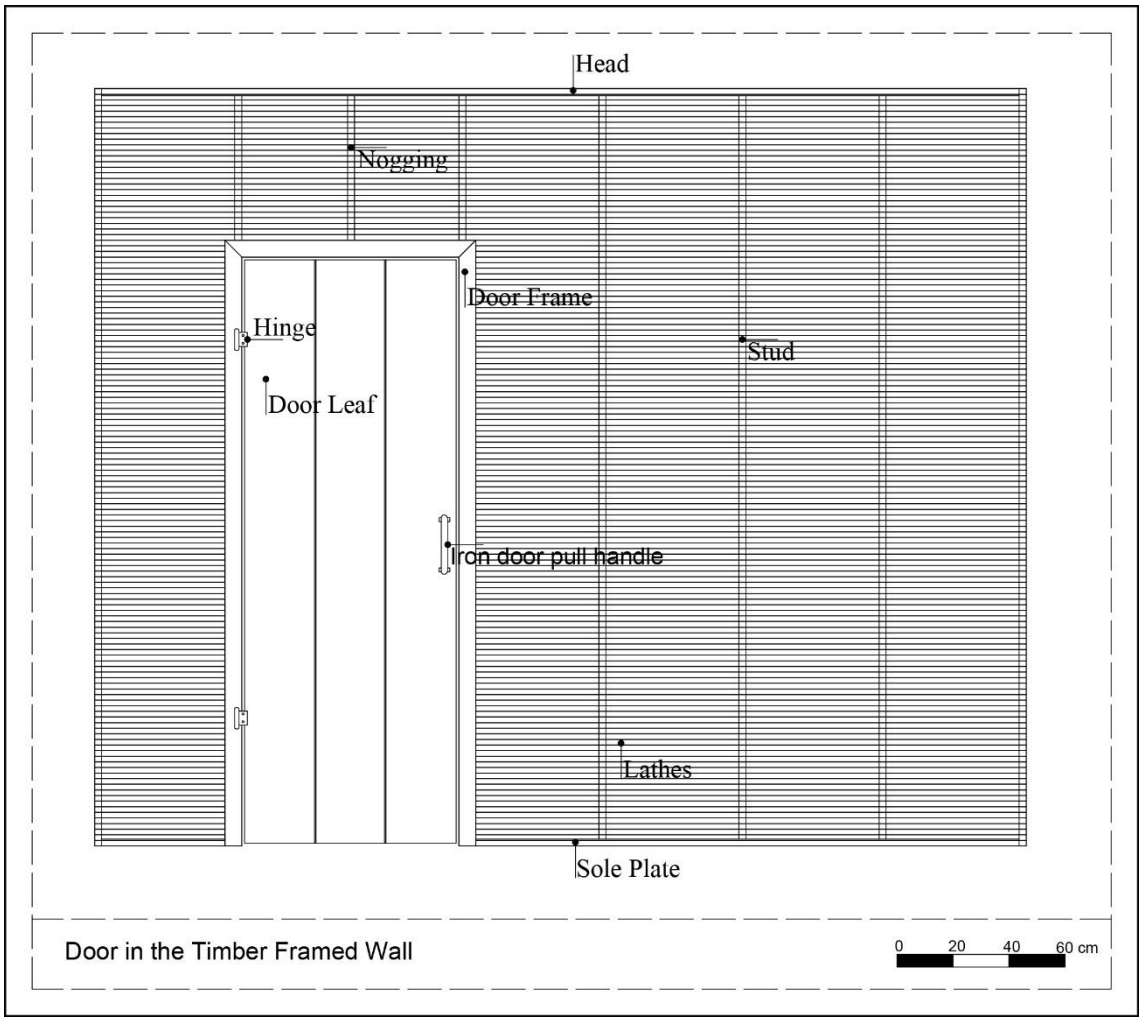


Drawing 4.13. Timber Door Type-2 Drawing.



Drawing 4.14. Timber Door Type-2 Drawing.

Inner doors are placed on inner timber framed walls. They are generally one-wing panel doors (Drawing 4.15). Firstly, the studs are placed according to the door opening width. Horizontal timber beams are placed between door studs. Noggins are placed on this timber beam. The door leaf made from pieces of solid timber panels. The door casings are 5-15 cm wide and composed of 2 timber posts with rectangular cross-sections. Nailing and lapping technique are used in door leaves. Timber thresholds placed in some doors between door posts on the ground and they are 5-10 cm high and 5-15 cm wide. (Figure 4.64, 4.65, 4.66, 4.67)



Drawing 4.15. Door in the Timber Framed Wall.

Figure 4.64. Doors in Timber Framed Wall in Kösedere (June 2016).

Figure 4.65. Doors in Timber Framed Wall (a) İnecik (b) Tepeboz (June 2016).

Figure 4.66. Inner Door Examples in Küçükbahçe (April 2017).

Figure 4.67. Inner Door Examples in Salman (May 2017).

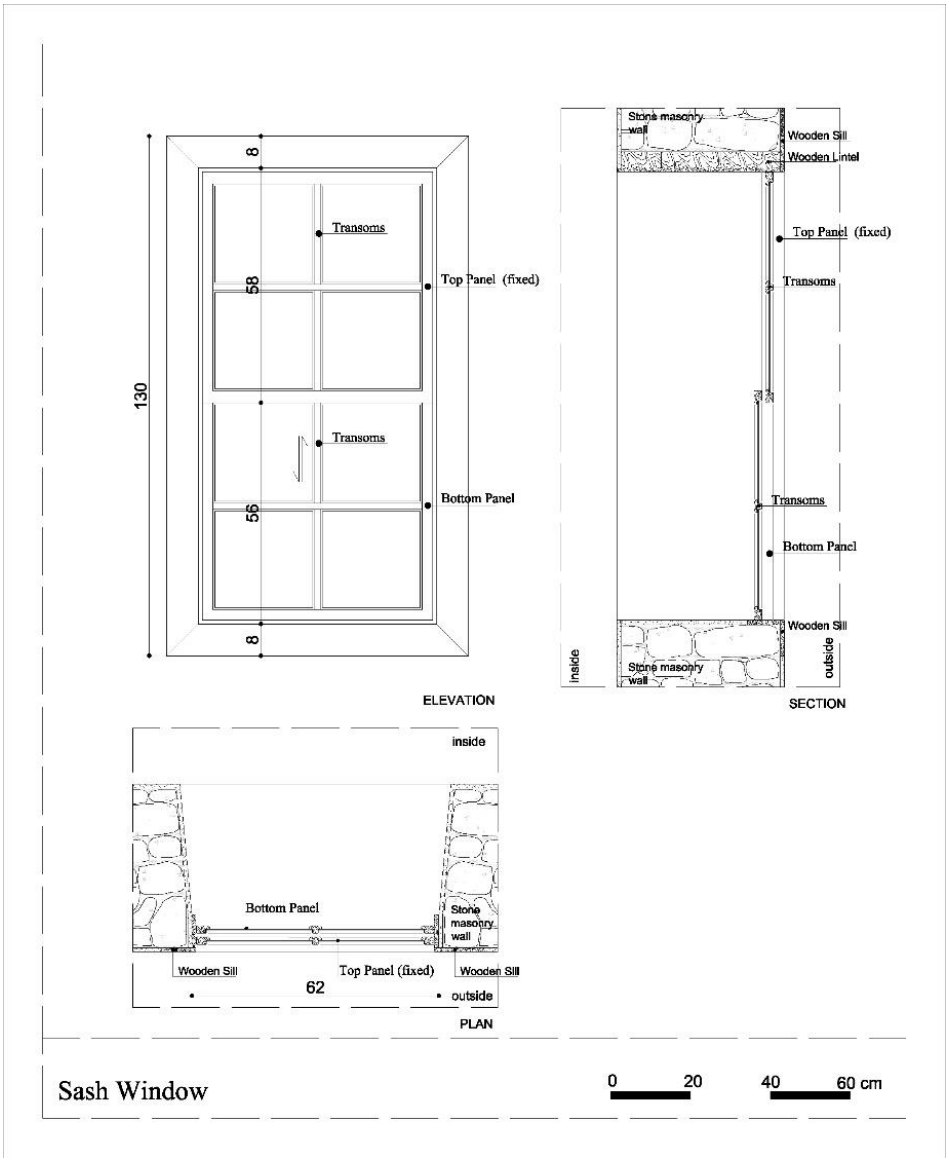
4.6.2. Windows & Shutters & Balustrades

Window openings are placed located on both floors in both villages. The openings have been created by using stones and bricks that have straight edges and stone or wooden lintels have been used for spanning the openings. Besides, stone window casings have been observed in one house in the Kösedere. The opening size change between 60 to 90 cm horizontally and 115 to 160 cm vertically.

Three types of windows have been observed in the village; double casement window, sash window, and single-winged window. Wood has been used as a framing material for original windows. Metal usage has been also observed in the village for framing, which is a later intervention.

Sash windows have been observed in both villages (Figure 4.68). They have one movable panel at the bottom and one fixed panel at the top. Panels are sub-divide horizontally and vertically with transoms. The panels fit to the wooden frame with hinges. It is seen that there are wooden window sills at the outside of the window. The windows have wooden shutters. (Drawing 4.16)

Figure 4.68. Sash Window Examples in Kösedere (June 2016).



Drawing 4.16. Sash Window Drawing.

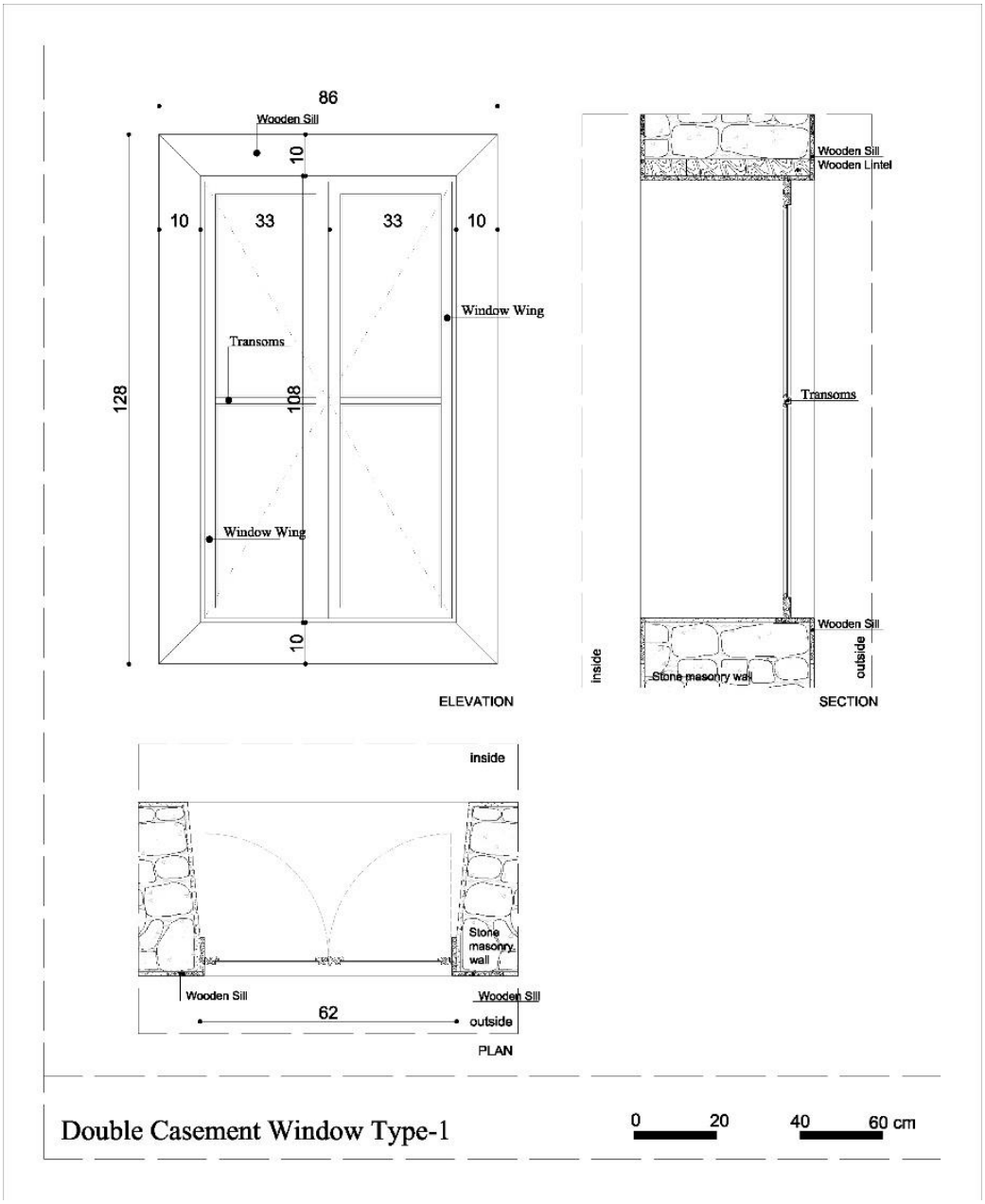
Another window type is double casement window (Figure 4.69, 4.70). This is the most common type observed. They are inward opening type wood or metal windows. One of the examples has fixed glass top; the others have only two wings. Casements sub-divide horizontally with transoms and they fit the frames with hinges. Windows located on the ground floor have balustrade and one of them in Kösedere has been more ornamented. Also, that window opening has fine cut stone window casing. Wooden windows have no color, but metal ones have painted blue in the village. (Drawing 4.17, 4.18, 4.19, 4.20)

Figure 4.69. Double Casement Window Examples in Kösedere (June 2016).

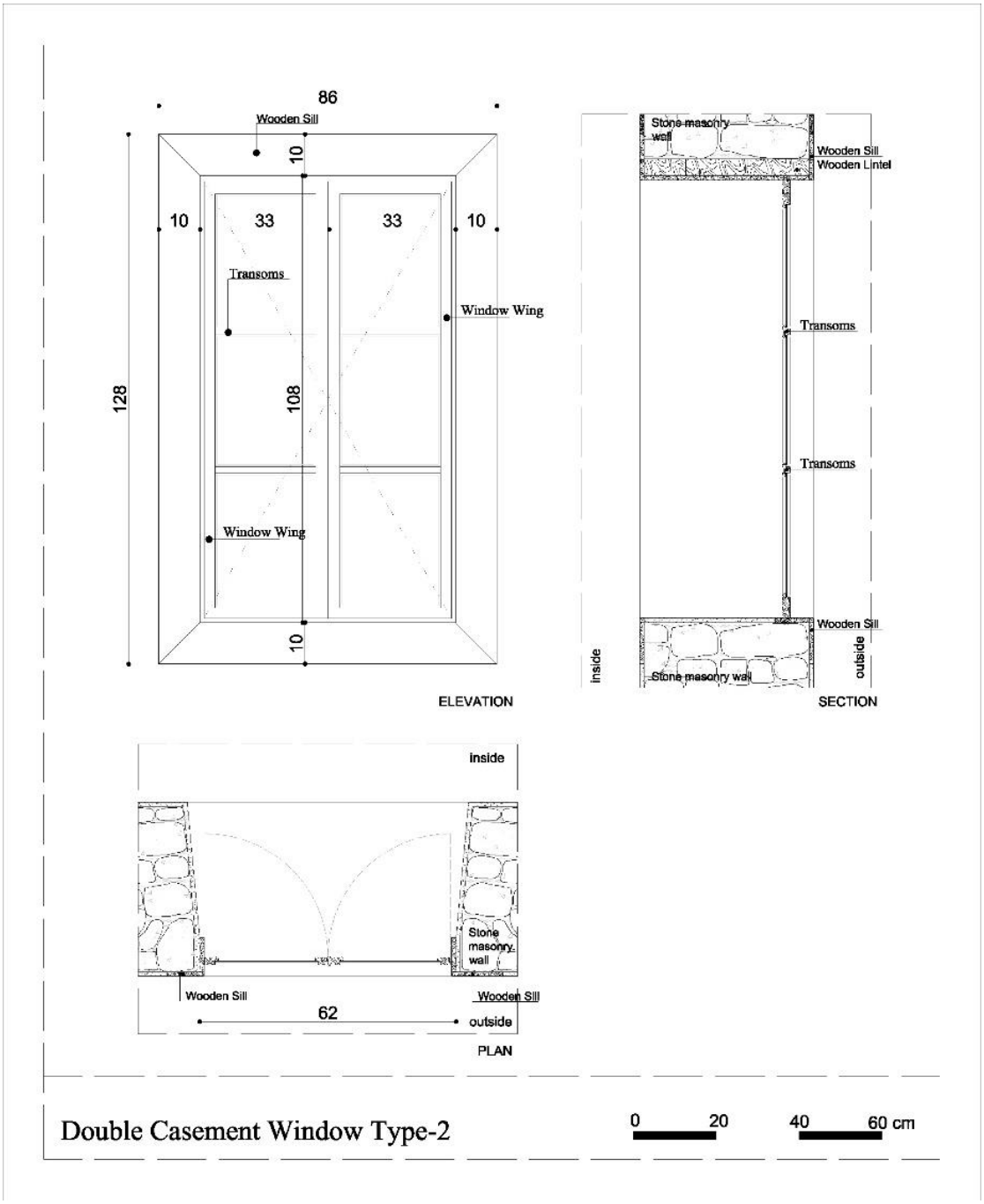
Figure 4.70. Double Casement Window Examples in Küçükbahçe (October 2016).

Figure 4.71. Window Examples in Salman (May 2017).

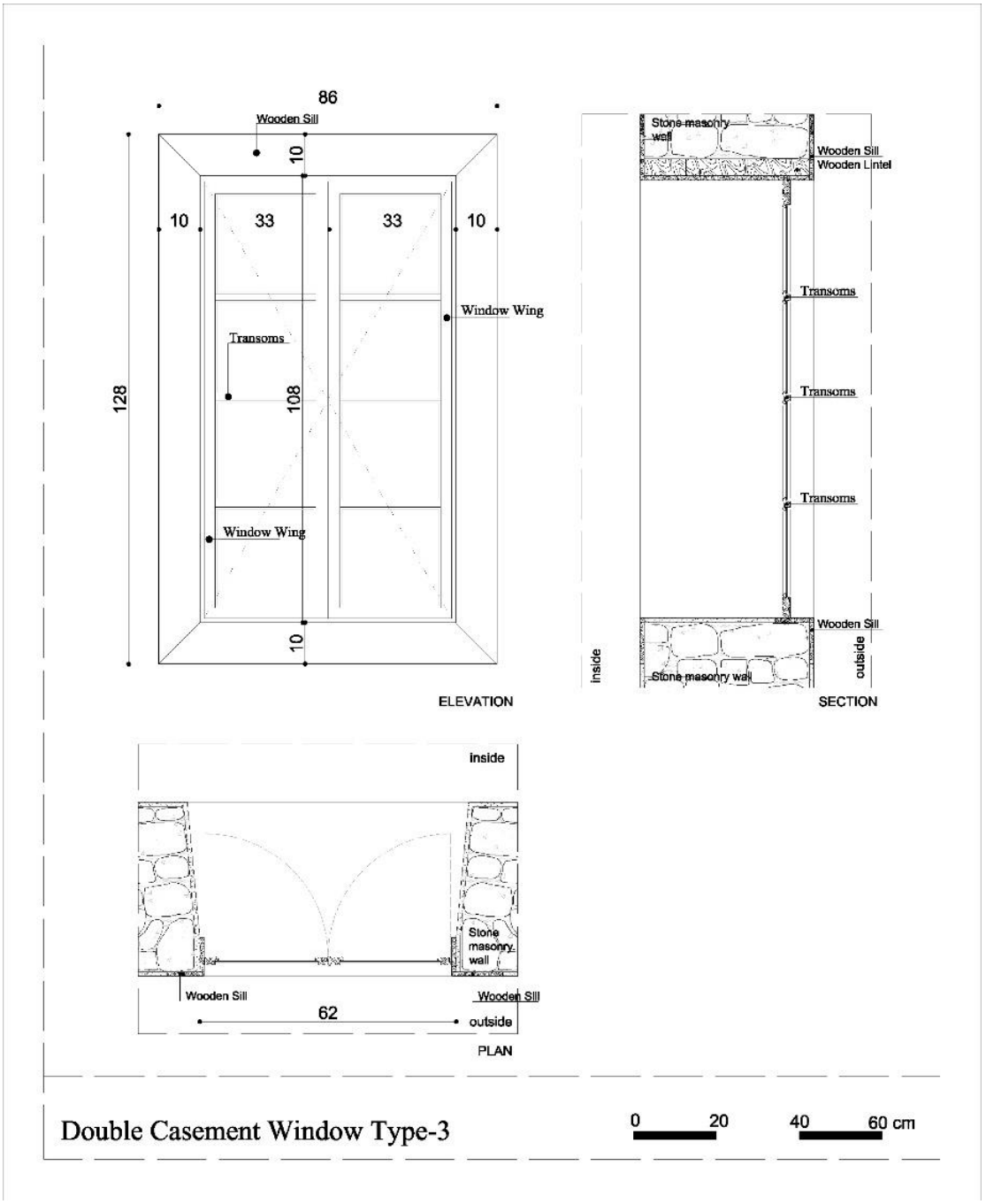
Figure 4.72. Window Examples in Salman (October 2016).



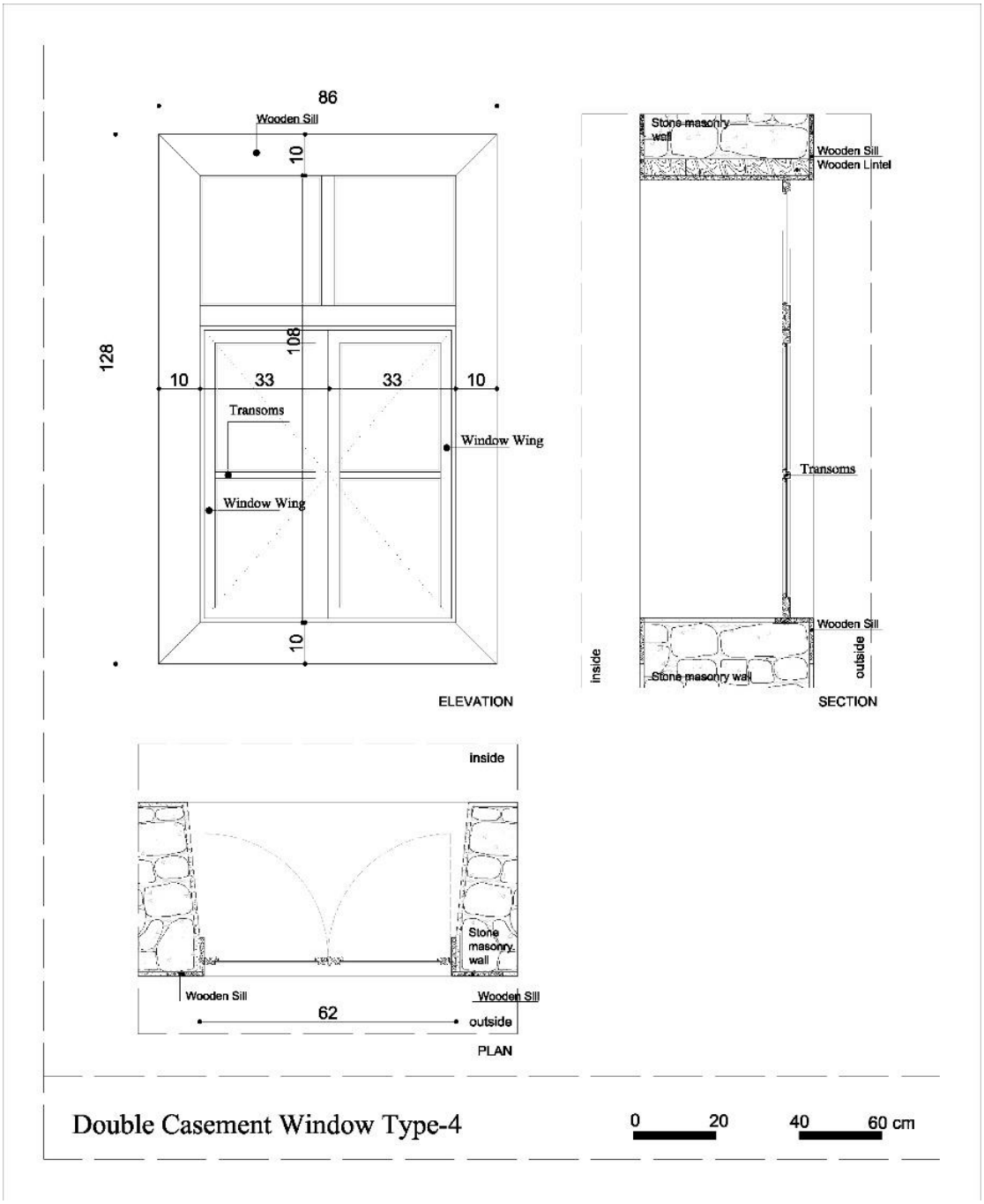
Drawing 4.17. Double Casement Window Type-1 Drawing.



Drawing 4.18. Double Casement Window Type-2 Drawing.



Drawing 4.19. Double Casement Window Type-3 Drawing.



Drawing 4.20. Double Casement Window Type-4 Drawing.

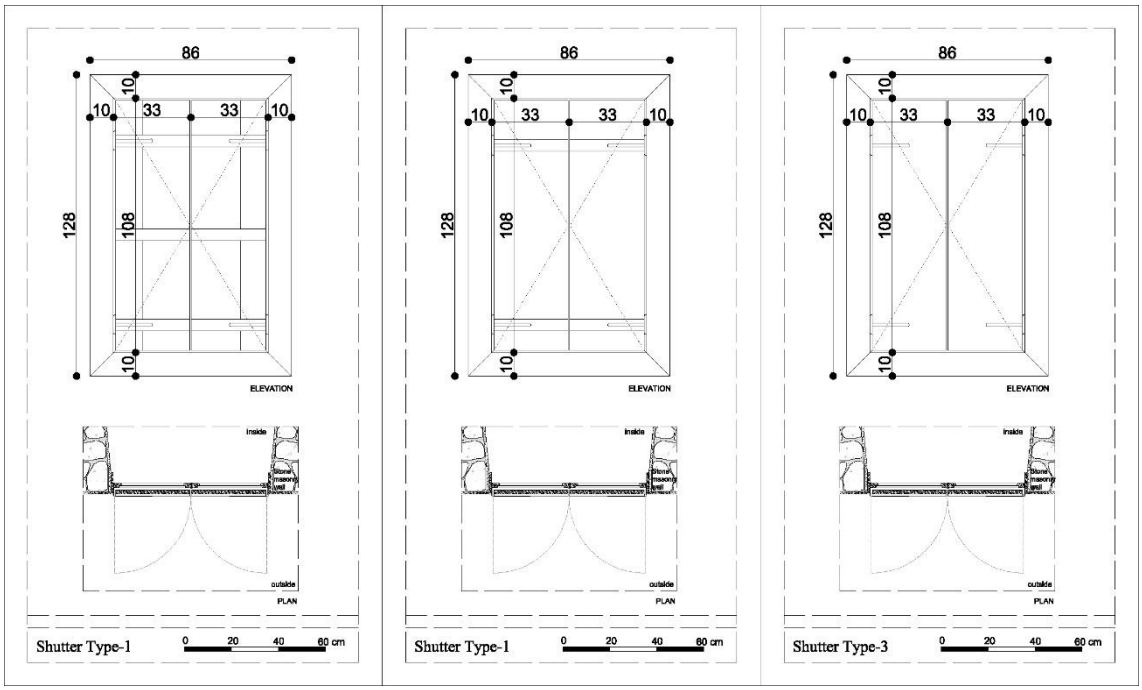
The shutters are observed in both villages (Figure 4.73, 4.74). Their wings are made of 2- 2.5 cm wide timber elements. Then they nailed to 2 cm wide timber boards at the back side of the shutters and they hinged to the sills or they hold together by iron elements and directly hinged to sills. They are outward openings shutters. A few houses in İnecik and one house in Küçükbahçe have ornamented shutters (Figure 4.75, 4.76).

Figure 4.73. Shutters in Kösedere (June 2016).

Figure 4.74. Shutter Examples in Küçükbahçe (October 2016).

Figure 4.75. Shutters in İnecik (June 2016).

Figure 4.76. Shutter Examples in Küçükbahçe (April 2017).



Drawing 4.21. Shutter Drawings.

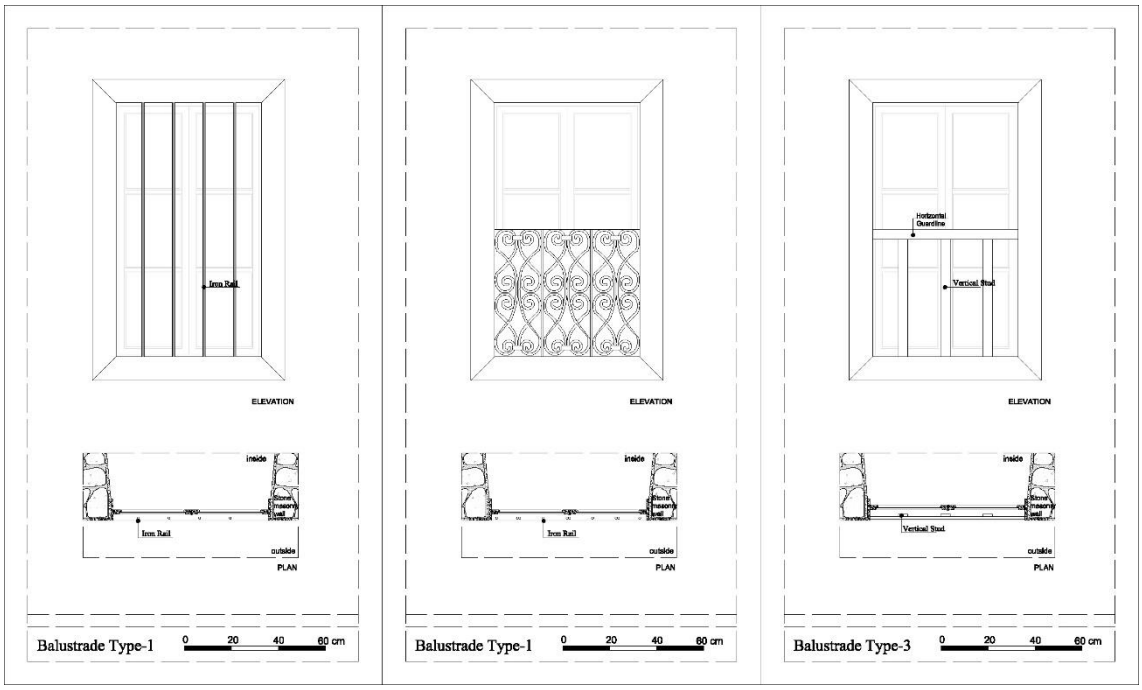
Windows located on the ground floor in Kösedere have balustrades and one of them has been more ornamented. Also, that window opening has shapely stone window casing (Figure 4.77). Wooden windows have no color, but metal ones have painted blue in the village.

Figure 4.77. Balustrades in Kösedere (June 2016).

There is observed wooden balustrade in only one structure in Küçükbahçe (Figure 4.78). Its height is half of the window height. They composed of horizontal guardrail and vertical studs stick to guardrail. They have rectangular cross-section. Wooden balustrades have been also observed in İnecik among east zone (Figure 4.79).

Figure 4.78. Wooden balustrade example in Küçükbahçe (April 2017).

Figure 4.79. Wooden Balustrade Example in İnecik (June 2016).



Drawing 4.22. Balustrades Drawings.

4.6.3. Stairs

Stairs are divided into two according to materials as stone and timber. Timber stairs are used at the inside of the all two-storey buildings and stone stair is use at the outside; when the entrance of the house at first floor.

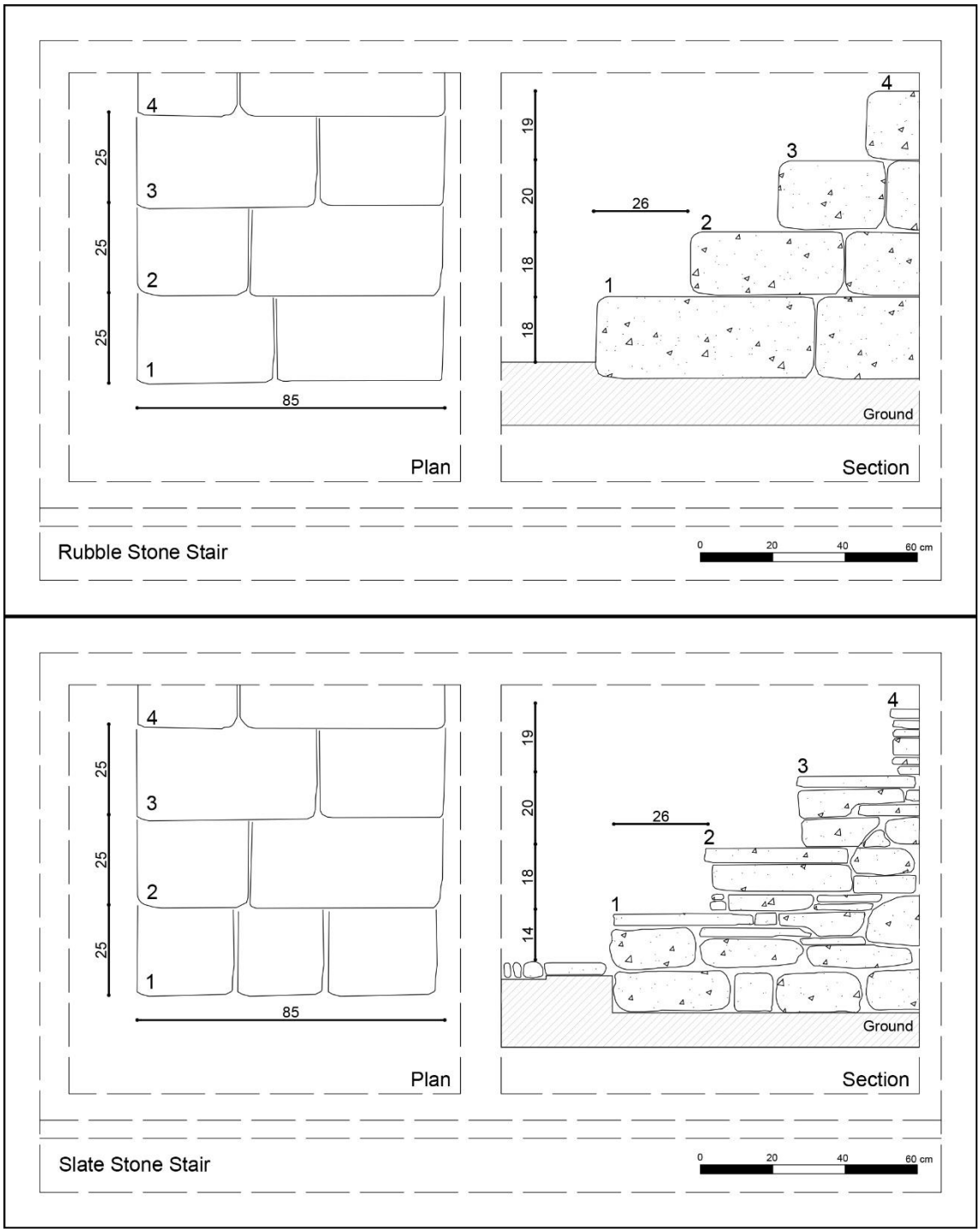
4.6.3.1. Stone Stairs

In the stone masonry stairs, rounded rubble stones and mud mortar are used in Kösedere (Figure 4.80) and thin, flat and gray-black color stones and mud mortar are used in Küçükbahçe (Figure 4.81, 4.82, 4.83). The stairs width generally changes between 80 and 140 cm, the width of steps between 25 and 50 cm, height of the step risers between 17 and 25 cm. (Drawing 4.23)

(a) (b)

Figure 4.80. Stone Stair in Kösedere (a) (June 2016) in Ambarseki (b) (May 2017).

Figure 4.81. Stone Stair Examples in Küçükbahçe (April 2017).



Drawing 4.23. Stone Stair Drawings.

Figure 4.82. Stone Stair Parapet Wall Example in Küçükbahçe (April 2017).

Figure 4.83. Stone Stair Examples in Salman (May 2017).

4.6.3.2. Timber Stairs

Only one timber stair observed in Kösedere (Figure 4.84). However the other villages have timber stair examples around the peninsula (Figure 4.85, 4.86, 4.87, 4.88) The stairs width changes between 70 and 100 cm, the width of steps between 20 and 27 cm, height of risers between 15 and 26 cm. Stairs have been constructed using solid timber

stringers as support for the treads and risers. The treads are placed on the stringer and held in place by wedges. If the stair has been built between wall and stringer, in this case the stringer is attached to the wall and transfers the stair load directly to the wall. Handrails have square or rectangular cross-section of 3-6 cm, have been placed and nailed on balusters and between newels. Handrail height changes between 60 and 80 cm. In the cases where one side of the staircase is adjacent to the wall, newels and balusters are used on one side only. (Drawing 4.24, 4.25)

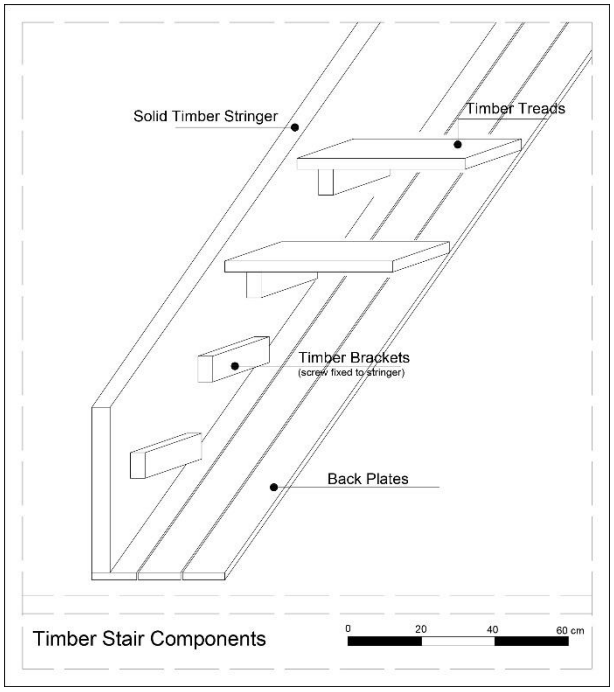
Figure 4.84. The Only Timber Stair Observed in Kösedere (June 2016).

Figure 4.85. Timber Stair Examples in Küçükbahçe (June 2017).

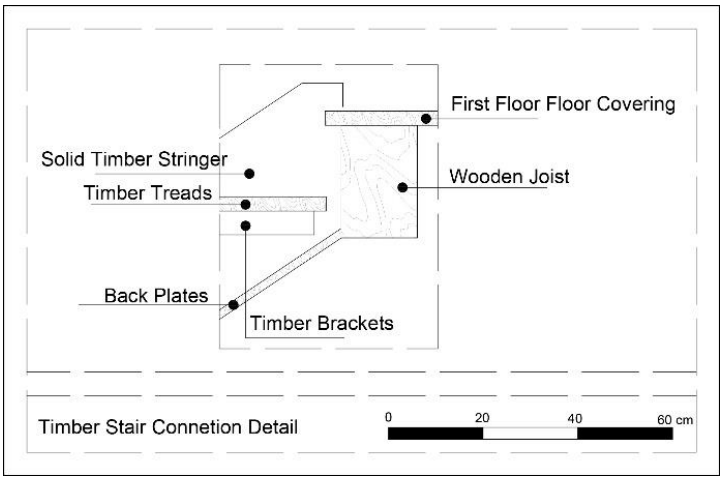
Figure 4.86. Timber Stair Example in İnecik (June 2017)

Figure 4.87. Timber Stair Examples in Küçükbahçe (November 2014)

Figure 4.88. Timber Stair Examples in Salman (May 2017).



Drawing 4.24. Timber Stair Components.



Drawing 4.25. Timber Stair Connection Detail to the Upper Floor.

4.6.4. Fireplaces & Chimneys

Fireplace is one of the main elements in the houses in both villages. They are generally located at the firsts floor. Fireplaces are constructed as a part of the masonry walls. The wall that has the fireplace generally has no openings. However, one of the fireplaces in Kösedere has been located on the ground floor and built by brick while the others have been located at the first floor and built by stone.

Fireplaces have been composed of two parts where the fire is placed, and smoke is discharged. First part is the main area where fire is found inside the wall. The niche is rounded or has rectangular surfaces. It is observed that depressed arch or flat wooden lintels have been used for spanning the opening. The interior faces of this space have been covered by mud mortar. In the examples, lime plaster traces have been observed. (Figure 4.89, 4.90, 4.91, 4.92, 4.93)

Figure 4.89 Fireplace Examples in Kösedere (June 2016).

Figure 4.90. Fireplace Examples in Küçükbahçe (April 2017).

Figure 4.91. Fireplace Examples in Küçükbahçe (October 2016).

Figure 4.92. Fireplace Examples in Salman (May 2017).

(a) (b)

Figure 4.93. Fireplace Examples in (a) Haseki (June 2017), (b) Sarpıncık (October 2016).

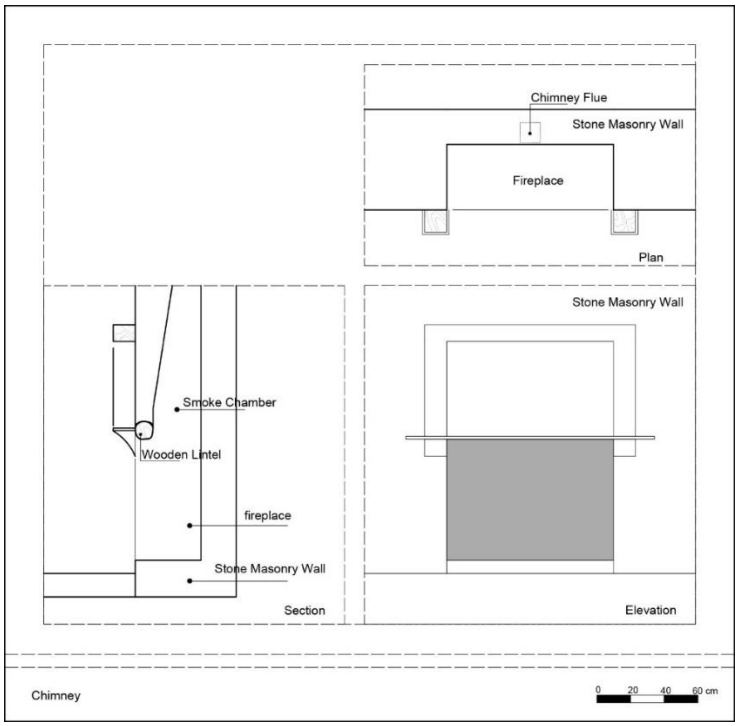
The other part is used for the collection and discharge of smoke. This system has a section, narrowing from the smoke collection area to the discharge point. The upper part of the system projected from the roof level; almost 40-50 cm. It is observed that they have been built by stone or brick. It is known that the interior faces of these parts are unplastered, and the main structure can be read. Chimneys have been covered by tiles in two directions on the top as cap. It is good for protection against heavy rainfalls in the region and wind blow from different directions. In some examples, there are different application on chimney as a capping for protection against heavy rainfalls in the region and wind blow from different directions in Küçükbahçe. (Figure 4.94, 4.95, 4.96, 4.97)

Figure 4.94. Chimney Examples in Kösedere (June 2016).

Figure 4.95. Chimney Examples in Küçükbahçe (April 2017).

Figure 4.96. Chimney Examples in Küçükbahçe (October 2016).

Figure 4.97. Chimney Examples in Salman (May 2017).



Drawing 4.26. Fireplace Drawing.

4.6.5. Niches

Niches usually exist in the walls where the fireplace takes place. Similar to the door or window openings in stone masonry walls; the openings of niches are formed by using wooden lintels. Their sizes are almost same with window openings; they change between 60 to 90 cm horizontally and 50 to 100 or 100 to 160 cm vertically. Some of the niches have a shelf in the middle; and some of them have wooden shutters. The interior surface of the niches is plastered and painted or covered by timber boards. (Figure 4.98, 4.99, 4.100, 4.101) (Drawing 4.27, 4.28)

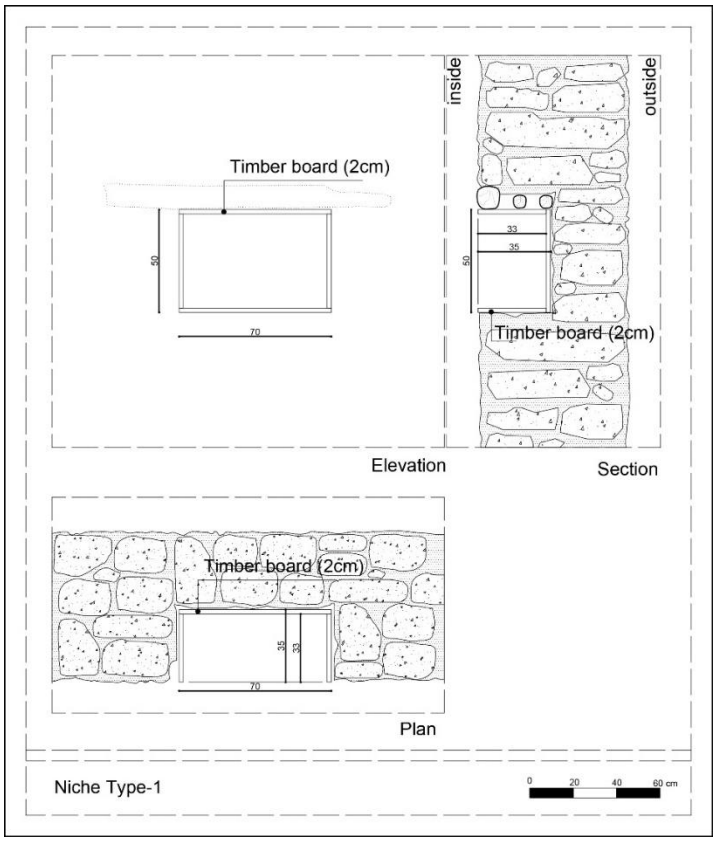
Figure 4.98. Niche Examples in Kösedere (June 2016).

Figure 4.99. Niche Examples in Küçükbahçe (April 2017).

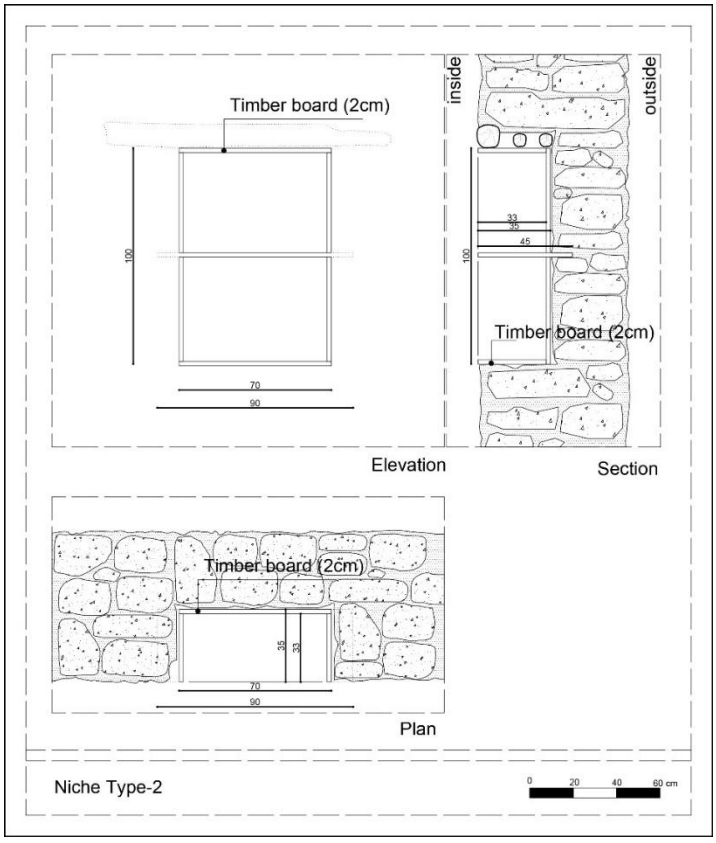
Figure 4.100. Niche Example in Eğlenhoca (October 2016).

(a) (b) (c)

Figure 4.101. Niche Examples in (a) Sarpıncık (October 2016), (b-c) Salman (October 2016).



Drawing 4.27. Niche Type-1 Drawing.



Drawing 4.28. Niche Type-2 Drawing.

4.6.6. Cupboards

Cupboards are placed on both the ground and the upper floor walls. They are formed by using wooden panels. They are shaped rectangular prism that has two vertical sides and horizontal wooden plates. Shelves are altered about 60 to 90 centimeters. The width of the horizontal plate is mostly around 40 to 60 centimeters. The height changes between 40-120 centimeters when the cupboards are placed on the wall; the height is equal to the dimensions of the niches when they are in the niches. They have 35-40 centimeters depth. (Figure 4.102, 4.103, 4.104, 4.105, 4.106)

Figure 4.102. Example of Cupboard Placed in a Niche; View of Back Side (June 2016).

Figure 4.103. Example of Cupboard in İnecik; (June 2017).

Figure 4.104. Cupboard example in İnecik (June 2017).

(a) (b)

Figure 4.105. Cupboard example in (a) Küçükbahçe (April 2017), (b) Cupboard trace in Küçükbahçe (October 2016).

Figure 4.106. Cupboard Examples in Salman (May 2017).

4.6.7. Closets

Three closets have been observed in Küçükbahçe (Figure 4.107). One of them is located in the ground floor, ant the others are located in the first floor. Their depth changes between 65 and 75 cm. The closet where is located in the ground floor is built by brick. It has timber sill around it and the surfaces are covered with mud-mortar and lime-washed. Other two closets are located in the corridor in the first floor and they use for the storage for mostly bedding staffs. They have timber board elevated almost 70 cm from the ground. It is called as *'yüklük'* in Turkish.

Figure 4.107. Closet Examples in Küçükbahçe (April 2017).

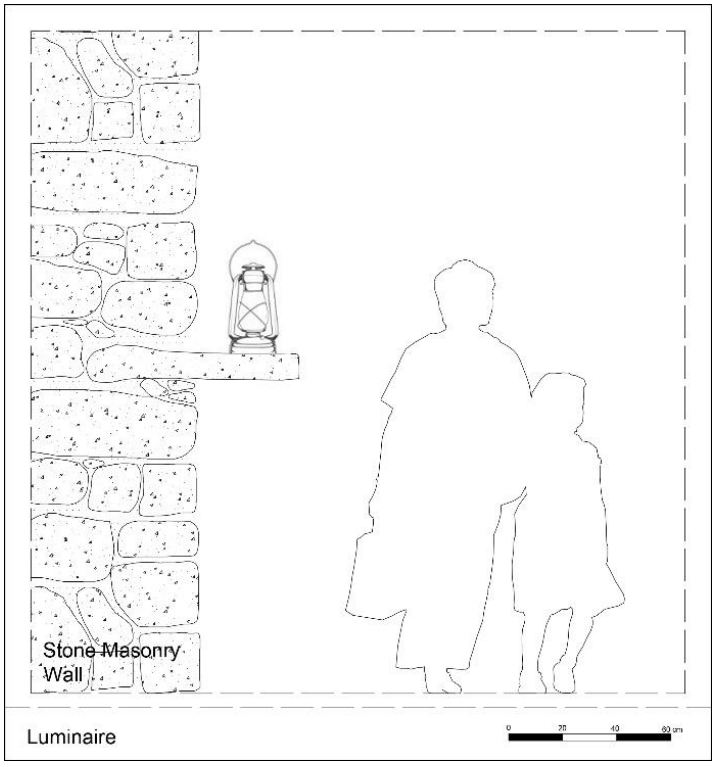
4.6.8. Luminaires

They were used for the lightening the roads; when there was no electricity in the village. Because of that, they are located on the street facades of the houses. Luminaries are formed by flat stones extending from the masonry walls. Locations of the luminaries on the masonry wall diversify. Most of them are located between ground and first floors. One of them is located bottom sides of the wall; close to the ground and one of them located at the middle of the first-floor level. It is important that they are easily accessible in any cases. (Figure 4.108, 4.109, 4.110) (Drawing 4.29)

Figure 4.108. The only luminary in Küçükbahçe (April 2017)

Figure 4.109.Luminaries in Kösedere (June 2016)

Figure 4.110. Luminary Examples in Parlak (May 2017).



Drawing 4.29. Drawing of the Luminaire.

4.6.9. Waterspouts

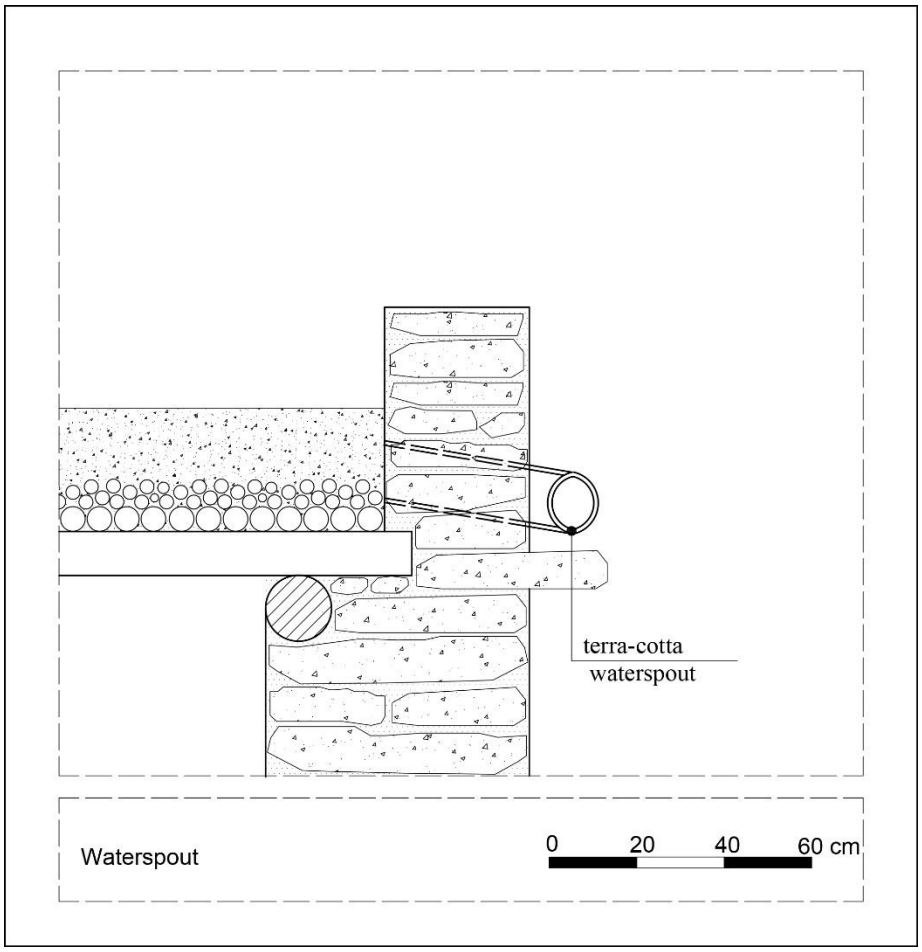
Waterspouts are observed in west zone villages. Only one waterspout is observed in Küçükbahçe (Figure 4.111). They are used for removing rain water from flat roof to prevent penetrate water to walls. It is made by terra-cotta. They have circular-section. (Figure 4.112, 4.113, 4.114) (Drawing 4.30)

Figure 4.111. Waterspout in Küçükbahçe (April 2017).

Figure 4.112. Waterspout Examples in Parlak (May 2017).

Figure 4.113. Waterspout Examples in Salman (October 2016).

Figure 4.114. Waterspout Examples in Yayla (April 2017).



Drawing 4.30. Waterspout Drawing.

CHAPTER 5

CONCLUSION

Karaburun Peninsula has an active background due to the geographical region it is placed in. Stated geography has been a living area for different social groups hence this is the main reason of Karaburun Peninsula having diversity in cultural heritage. On the other hand, the same activeness led some of the settlements being abandoned and destroyed in the near past. In a part of the settlements living nowadays, constructing with less sensitivity shown to the historical areas and migrations to the city due to economic reasons are causing destruction. Especially in the last half century, the growing tourism and the request of summerhouse accelerated the destruction of rural settlement texture and the nature. This situation necessitates a study on the whole peninsula. For this purpose, the study initially aimed to understand construction techniques of Karaburun Peninsula in the scope of the Kösedere and Küçükbahçe villages for being a base for further studies. Therefore, the general settlement pattern of the villages and documentation of construction techniques and materials of houses in the light of the case study villages have been analyzed from foundations to roof.

As a result, the materials and construction techniques used is similar around the peninsula. Stone and timber are the main materials for structures. Hybrid construction system is used in both villages. The exterior walls are stone masonry; the inner walls are timber frame without infill. Floor and roof systems are also timber. Architectural elements are mostly comprised of timber, stone, brick or terra-cotta elements. Doors, windows, shutters and balustrades are made of timber. Stairs are made of stone or timber. Fireplaces are placed in stone masonry walls. Chimneys are comprised of stone or brick around the peninsula. Cupboards and closets are made of timber. Waterspouts are made of terra-cotta.

Although the whole system is similar, there are slight differences in materials choices. The stone material used in two villages is differs in shape, size and color. The main material of the masonry walls is rubble stone in Kösedere. The rubble stones are yellowish-white color. The stone used in Küçükbahçe is thin, flat and gray-black color. Another difference observed in Küçükbahçe is the common use of reed instead of timber laths in timber frame walls. Timber flooring system is similar in both villages. The

original flat roof system has slight differences related with the availability of materials. Reed is used instead of timber elements in Küçükbahçe. The soil type is also different. The soil type, that is called "*geren*", used in Küçükbahçe has higher clay content.

The reason of these slight material differences is the location of villages. There are two different stone quarries serving their vicinity at east and west zones of the Peninsula. The usage of reed is also related their accessibility from the villages. Geren is the earth type of the west zone of the peninsula. So, it can be said that the material usage is related with their accessibility.

REFERENCES

Aktüre, Z., Çil, E., & Kul, F. (2013). Exploring the Sense Of Place For Immigrants Resettled in Abandoned Greek Villages in Western Anatolia After 1920s.

Akurgal, E. (1979). *"Erythrai" An ancient Ionian city.* İzmir.

Akurgal, E. (1989). *Anadolu Uygarlıkları.* İstanbul.

Aytüre, S. (2017, Mayıs). Helenistik Dönem'de Panionion/Ionia Birliği. *Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*(27).

Bayburtluoğlu, C. (1975). *Erythrai, Coğrafya-Kaynaklar-Kalıntılar.* Ankara: Türk Tarih Kurumu Yayınları.

Baykara, T. (1999). *Osmanlı'larda Medeniyet Kavramı ve 19.yy'a Dair Araştırmalar.* İzmir: Akademi Kitapevi.

Boyana, H. (2011). Panionische Union. *A.Ü. DTCF Tarih Araştırmaları Dergisi*(49).

Cöcen, Ö. N. (2007). Identifying the Values of Küçükbahçe Village Through its Architecture an Collective Memory.

Çetin, N. (2010). 1914 Osmanlı-Yunan Nüfus Mübadelesi Girişimi. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*(24).

Çil, E., & Kul, F. (2015). Ildırı: Yerleşilemeyen Köy. *Mimarlık Dergisi* (381).

DAUM (Deprem Araştırma ve Uygulama Merkezi). (2017). Dokuz Eylül Üniversitesi : http://debis.deu.edu.tr/DEUWeb//Icerik/Icerik.php?KOD=9561 adresinden alındı

Elçi, H., Türk, N., & İşintek, İ. (2015). Investigation of the Concrete Aggregates and Dimension Stone Properties of the Mesozoic Carbonate Rocks in the İzmir Karaburun Peninsula. *MÜHJEO'2015: Ulusal Mühendislik Jeolojisi Sempozyumu.* Trabzon.

Erdal, İ. (2006). Türk-Yunan nüfus değişiminde Türk mübadillere yapılan yardım faaliyetleri. *Tarih Araştırmaları Dergisi*, 203-214.

Genç, U. D., & Levi, E. A. (2016). Turizm Karaburun için Tehdit mi Şans mı? *Mimarlık*(392), 71-76.

https://en.wikipedia.org/wiki/Administrative_divisions_of_the_Ottoman_Empire. (2017). Retrieved from https://en.wikipedia.org.

Işık, Ş. (2002). *Karaburun Yarımadası'nın Tarihsel Coğrafyası.* İzmir: Ege Üniversitesi Edebiyat Fakültesi Yayınları No:120.

İZKA. (2013). *Urla, Çeşme, Karaburun Yarımadası Sürdürülebilir Kalkınma Stratejisi Mevcut Durum Analiz Raporu.* İzmir: İzmir Kalkınma Ajansı (İZKA).

Kütükoğlu, M. S. (2010). *16'ncı Asırda Çeşme Kazasının Sosyal ve İktisadi Yapısı.* Ankara: Türk Tarih Kurumu Basımevi.

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

Sannav, S. C. (2004). 1881 Sakız Depremi ve Adanın Yeniden İmarı. *Tarih Dergisi*, 125-137.

Sarıbey Haykıran, A. (2014, Haziran). Aydın Vilayet Salnameleri'nde Birgi. *Tarih Okulu Dergisi (TOD)*(18), 478.

Satılmış, S. (2012). Osmanlı'da Bir Afet Yönetimi Örneği: 1883 Çeşme ve Urla Depremi. *History Studies*.

Satlmış, S. (2014). 19. Yüzyılda Bir Büyük Felaket: 3 Nisan 1881 Sakız ve Çeşme Depremi . *Tarih İncelemeleri Dergisi*, 605-624.

Savaş-Yavuzçehre, P. (2016, August). The Effects Of The Law No. 6360 On Metropolitan Municipality System In Turkey. *European Scientific Journal*, 291-303.

Sintaç, B. (2000). *Karaburun Yarımadası'nın Kırsal ve Köysel İncelenmesi.* İzmir.

U.S. Department of the Interior National Park Service Cultural Resources. (1989; Revised 1999). *Guidelines for Evaluating and Documenting Rural Historic Landscapes*.

UDİM. (2005). *17-21 Ekim 2005 Sığacık Körfezi - Seferihisar (İzmir) Depremleri Ön Değerlendirme Raporu.* Boğaziçi Üniversitesi. Kandilli Rasathanesi ve Deprem Araştırma Enstitüsü.

Uran, H. (2007). *Meşrutiyet, Tek Part, Çok Parti Hatıralarım (1908-1950).* İstanbul: Türkiye İş Bankası Kültür Yayınları .

Varlık, M.Çetin . (1991). Anadolu Eyaleti. T. D. Vakfı içinde, *TDVİA,(Türkiye Diyanet Vakfı İslam Ansiklopedisi)* (Cilt 3, s. 143-144). Ankara: Ali Rıza Başkan Güzel Sanatlar Matbaası.

www.izmirkulturturizm.gov.tr. (2018). Retrieved from www.izmirkulturturizm.gov.tr/TR-77455/karaburun.html

Y. Altinok, B. Alpar, N. Ozer, C. Gazioglu. (2005). 1881 and 1949 earthquakes at the Chios-Cesme Strait (Aegean Sea) and their relation to tsunamis. *Natural Hazards and Earth System Science*, 717-725.

Yanardağ, A. A., & Yanardağ, M. Ö. (2009). *İzmir'de Turizm Çeşitleri ve Turizm Yatırımları İhtiyaç Analizi.* İzmir: İZKA.