YAŞAR UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES

MASTER THESIS

LEARNING FROM THE ARCHITECTURAL CHARACTERISTICS OF 19TH CENTURY TRADITIONAL BORNOVA MANSIONS

Elnaz TAGHIZADEH ALAMDARI

Thesis Advisor: Assist. Prof. Dr. Eray BOZKURT
Co-Advisor: Assist.Prof. Dr. Ali AFSHAR

Department of Architecture

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I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and in quality, as a dissertation for the degree of master of science.

Assist. Prof. Dr. Eray BOZKURT (Supervisor)

I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and in quality, as a dissertation for the degree of master of science.

Assist. Prof. Dr. N. Ebru ALAKAVUK

I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and in quality, as a dissertation for the degree of master of science.

Assist. Prof. Dr. N. Ebru KARABAĞ AYDENİZ

I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and in quality, as a dissertation for the degree of master of science.

Assist. Prof. Dr. Ayşe ARKON

I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and in quality, as a dissertation for the degree of master of science.

Assist. Prof. Dr. Yakup EGERCİOĞLU

Prof.Dr.Cüneyt GÜZELİŞ
Director of the Graduate School

ABSTRACT

LEARNING FROM THE ARCHITECTURAL CHARACTERISTICS OF 19TH CENTURY TRADITIONAL BORNOVA MANSIONS

TAGHIZADEH ALAMDARI, Elnaz
MSc in Architecture
Supervisor: Assist. Prof. Dr. Eray BOZKURT
Co-Supervisor: Assist.Prof. Dr. Ali AFSHAR
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The study investigates the architectural attributes of Bornova Levantine mansions of the 19th century. Alongside ruin and destruction of the buildings, paternity, and inherency of the inhabitants defunct as well as the character of inert relief. Different ways of assumption with life conditions in past time decay, and flux during time passage. Figure out and record the architectural characteristics of the Bornova Levantine mansions on 19^{th} century used as the methodology of this survey. The study organised on two principles of the query; one is the narrative study of past literature and review the documents and the second assumption is to prepair the case studies according detected mansions which undisturbed. The study has both qualitative and quantitative research methods. The research contains the general research question and its specific questions, as well as illustrate on the quantitative case study research methodology. Selected six traditional mansions as case studies have been evaluated in detail. The materials, built details, design strategies, important factors in the design and other sights are subsumption in this thesis. Through this study, besides considering the preservation of the existing structure, it is helpful to contribute and promote the future planned renovation or conversion schems. To emphasize the particular architectural features of the region in terms of cultural heritage protection is intended to be a guide for future generations.

Keywords: Architectural characteristics,Traditional home, Levantine, Houses, Bornova, Case study.

ÖZET

BORNOVA'DAKI 19 YÜZYIL EVLERININ YEREL MİMARİ ÖZELLİKLERININ İNCELENMESİ

Elnaz TAGHIZADEH ALAMDARI
Yüksek Lisans Tezi, Mimarlık
Tez Danışmanı: Assist. Prof. Dr. Eray BOZKURT
İkinci Danışmanı: Assist. Prof. Dr. Ali AFSHAR
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Bu çalışmanın amacı, 19. Yüzyıl Bornova Levantin köşklerinin mimari özelliklerini araştırmaktır. Bornova'da günümüze kadar ulaşabilen köşklerin yanında konut dışında başka işlevlere dönüştürülerek mimari özellikleri bozulmuş bir konut bölgesi bulunmaktadır.Zamanın ağır etkisi altında harap olan veya yıkılmış birçok konut yenilenmeyi beklemektedir. Bu yüzden, geçmiş döneme bu konutların sağlıklı bir yenileme geçirmeleri için mimari özelliklerini hakkında akademik çalışmalara ihtiyaç duyulmaktadır.Araştırma, öncelikle 19. Yüzyıl dönemine ait Levanten konutlarının mimarı özelliklerini malzeme kullanımı, tasarım stratejileri ve tasarımını ilgilendiren önemli koşulları kapsamına almaktadır. Çalışma, iki akademik yaklaşıma ayrılmaktadır. Birinci yaklaşım geçmiş döneme ait kaynakların incelenmesi ve ikinci aşama ise tespit edilen sağlam köşkler ile ilgili vaka çalışması hazırlamaktır. Süreç boyunca hem nicelik hem de nitelik araştırma yöntemleri kullanılmıştır. Çalışmayı yönlendirmek açısından araştırma sorusu ve ona ait detaylı sorular değerlendirmeye alınmıştır. Seçilen altı eski konutlar ile ilgili vaka çalışması detaylı bir şekilde değerlendirilmiştir. Bu çalışma sayesinde, mevcut yapıların korunmasına faydası olması yanıda gelecekte düşünülmesi planlanan yenileme veya dönüştürme çalışmalarına katkı sağlaması düşünülmektedir. Özellikle kültürel mirasın korunması yönünde bölgenin mimari özelliklerinin vurgulanması gelecek kuşaklar için bir yol gösterici olması öngörülmüştür.

Anahtar sözcükler: Mimari ozellikleri, geleneksel ev, Levantine, Evler, Bornova, Vaka çalışması.

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Elnaz TAGHIZADEH ALAMDARI
İzmir, 2016

TEXT OF OATH

I declare and honestly confirm that my study, titled ‘Learning From The Architectural Characteristics of Bornova Mansions in Izmir” and presented as a Master’s thesis, has been written without applying to any assistance inconsistent with scientific ethics and traditions, that all sources from which I have benefited are listed in the bibliography, and that I have benefited from these sources by means of making references.

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1 INTRODUCTION

The study covers the houses from the 19th century at the district of Bornova in the city of Izmir. The selected mansions surveyed from different aspects and documented with the support of frequent site visits. During these site visits, numerous houses reviewed and among them six buildings selected for further investigation and detailed for more accurate sampling. For this purpose, the details indicate the characteristics, such as building design, building elements, construction materials, construction systems and site planning of buildings analyzed by considering selected design fundamentals.

The research focused on buildings specifications of Turkey, Izmir and Bornova houses from the past. The important factors, such as doors, walls, windows, building orientation are considered. The inhabitants and their improvement in Bornova explored considering their culture, lifetime, design strategies, chosen materials, ornaments, and interior design.

1.1 The Aim of the Study

The aim of this study is to investigate the architectural properties of the Bornova Levantine mansions of the 19th century to obtain experiences about their design characteristics. According to extant structures, it is clear that vast considerable part of buildings extinct in advertently and numerous of them remains. These residual are using in various intention such as public fields used by office sections, educational zones, restaurants, cafes or private spaces like residential buildings of grand children of inhabitants or bought by others.

By destroying and vanishing the buildings identity and reality of the dwellers will extinct likewise character or patterns of lifelessness convenience divergent ways of adoption with life conditions in preterit time fade and dissolve during the passing of time. All build strategies in buildings for protectively against catastrophically events and in contrast to hot weather or cold weather. Controlling polarization avoiding corruptibility of food, privacy of buildings against external attacks kind of vegetation and planting style, build materials and methods are an exhibitor of competency of inhabitants in region to deal with existence condition.

Obtaining information about building and learning their unique solutions for construction besides using native architectural methods by combining them with their own schemes is another purpose for this study. By study about the related subject, it will be helpful to protect them and preserving their personality or nature to conserve them lively. It is possible to modification this buildings usage without changing their entity and saving the spirit of past times and shifting it to the present and future.

As Humeyra Birol Akkurt mentioned in her Ph.D. thesis the whole value of the cultural heritage must use for necessary needs of community development beside this the spatial identity protected and transmitted to today and future providing sustaining cultural diversity is essential. The manager, executive designer, and planner which having role in consisting of the physical environment and transformation must be aware of these relationships lineup and keep the eye while determining is required.

The identity of the layered structure that forms the historical environment detected from whole sides involved be protected, holistic perception of past time to provide information about the different social structures of sections by projecting future fiction the Past experience in significant and indispensable means to show the way. Given these points to get information and get familiar with the mansions analyzing the characteristics of mansions is required. (Akkurt, 2004)

1.2 The Objective of the Study

Inhabitants of Bornova in the 19th century were Turks, Greeks, and Levantines. This diversity in the nineteenth century causes mixing styles developed in the structure of buildings, but construction materials did not change local timber and stone used as essential materials in the structure of Levantine houses. Despite the occupants came from different countries they have common parts in building strategies with native inhabitants. In some cases, the buildings obey region's architecture rules, but mostly they built according to their countries rules and structure.

In this chapter, the discussion will point to know about the buildings of Bornova, including how these houses built, where the patterns for these constructions

originated. The idea considered by local inhabitants or the Levantines use their architectural design methods with themselves. In order to achieve the aim of this thesis, the houses design characteristics, evaluated by considering their methods. The buildings' interior space organizations, plan layout, common and private areas, their design principles, circulation areas, the paraphernalia and furniture studied for further documentations.

The floor covering used in houses interior and outdoor researched through design evaluation and elegance specifications. The building's interior elements and ornaments documented considering 19th-century conditions. Firstly the locations of houses studied and among numerable remained houses classified according to accessibility, interior space organizations, façade details, plan designs and material choices analyzed at each building also the lighting and ventilation systems research in buildings.

1.3 The Scope of the Study

This study conducted on characteristics of Levantine houses of Bornova in Izmir such as houses construction plans, materials, the size of doors, size of windows, and location of entrances, orientation, and neighborhoods. The key parts for analyzing architectural characteristics of houses classified into four sections with their specific subdivisions. In the first part, site planning of buildings are surveyed; this section contains various information about organization, layout, vegetation, balcony and projections. In the second part, the building elements are described with its subdivision elements such as opening and their specifications, transitional spaces, shading devices, architectural elements, and ornaments. Building design mentioned in part three the form of buildings, number of stories, and height of stories, climatic solutions, and privacy are sorted in this section. In the last part the construction is discussed, it is related subjects resembling materials, foundation, floors construction methods, inside and outside walls materials and build strategies, roofs, and ceilings used methods describe in detail.

1.4 The Methodology of the Study

The methodology of this study is to understand and record the architectural properties of the Bornova mansions observing from their exterior and interior spaces. A typological chart that covered the important characteristics of these buildings designed for the classification of information about them. The materials, built details, design strategies, important factors in the design and other aspects are shown in these charts. In another chart, all of selected buildings are compared with each other, and find out similarities in between.

The study was conducted based on two principles of inquiry; literature review and case study. It contains both qualitative and quantitative research methods. In planning the research process and methodology, two types of sources have been reviewed; the theories of research methodology contain previous research and practices concerning the present study. Meanwhile, two main strategies were considered for the research content one is the case study and other is literature review which comprise techniques of data collection and analysis.

1.5 The Limitation of the Study

The limitations of the study are those components of design or methodology that beat or impressed the explanation of the detections from research. They are the limitations on popularity, request to practice, and/or usefulness of findings that are the result of the ways in which at first chose to design the study and/or the procedure applied to establish interior and exterior validity.

According to study design limitations, there are certain limitations to what possible results may come of efforts on this survey. The available procedures or specific restrictions on this study may conclusively affect what outcomes can achieve. During destruction in different years, and various casualties some of the specifications of selected buildings are not available so this causes limitations in obtaining correct knowledge and to reach an exact result. Another type of limitation in this study emergent from statistical or data limitations. Sometimes collecting as much or as good data as intended, or perhaps registration was more difficult than

expected, under powering the results. These Statistical limitations additionally originated from study design, producing more serious limitations in terms of understanding the findings.

Always houses are the most difficult buildings to conserve. The reason is that the change of the lifestyle that reflects on the building becomes very sharp. It is not possible to develop without knowing about our current position, but most of the mansions during years and new constructions also abandoned by their inhabitants are demolished. A few of them were protected, by the government and numerable residents which inherited from their family. There were no chances to choose more houses in this analyzing to consider to some problems such as lack of information, inadequacy to reach the correct data and in some cases the buildings were not reachable, so all of the mansions are not chosen.

In this thesis according to information about Bornova mansions 43 houses remain, by searching for them the use of some of the mansions changed, some still have inhabitants, the small quantity of them used as government sectors, and several of them changed to the cafes and restaurants. Getting information about some of the mansions needs special permission and it was hard to get, in others there is no plan and architectural data, few amount abounded and are empty, at last, a few of the houses selected and surveyed in this study.

2 LITERATURE REVIEW

Conducting a literature review is a means of demonstrating an author's knowledge about a particular field of study, including vocabulary, theories, key variables and phenomena, and its methods and history. Conducting a literature review also informs the student of the influential researchers and research groups in the field. Finally, with some modification, the literature review is a "legitimate and publishable scholarly document" (LeCompte, M. D., Klinger, J. K., Campbell S. A., & Menke,D. W, 2003). The data yielded by the study provides in this literature review according to Cooper's (1988) Taxonomy of Literature Reviews classified according to five characteristics: focus, goal, perspective, coverage, organization, and audience.

The first characteristic is the focus of the review. Cooper (Cooper, March 1988) identifies four potential foci: research outcomes, research methods, theories, or practices or applications. Literature reviews that focus on research outcomes are perhaps the most common. In fact, the Educational Resources Information Center (1982) defines a literature review as an "information analysis and synthesis, focusing on findings and not simply bibliographic citations, summarizing the substance of the literature and drawing conclusions from it". (Randolph, June 2009) The literature review of this study focus on three main part, first of all, describes about history of settlements in general, how did the civilizations began and established then the history of settlements in Turkey considers the advancement of life according to decades these databases explain Izmir's inhabitants and the essential reasons and elements causes the dwellers reasons to choose Izmir's Bornova region for residing.

The goal of many reviews is to integrate and generalize findings across units, treatments, outcomes, and settings; to resolve a debate within a field, or to bridge the language used across fields. Meta-analysis, for example, is an often-used review technique in which the primary goal is to integrate quantitative outcomes across studies. In other reviews, the goal may be to critically analyze previous research, identify central issues, or explicate a line of argument within a field. A dissertation review often has multiple goals (Randolph, June 2009). For obtaining the information both quantitive and qualitative methods used different theories about settlements, immigration, practice about Bornova region and various studies are peruse and diverse ways helped to gather the information about the subject. The aim of the study is to reach the necessary information about characteristics of the Bornova mansions,

these data will give a perspective of character, design, material, culture and so on, about the selected buildings which conduct us to get instruction and find the best way to preserving and saving the history of selected field.

In qualitative primary research, review authors often decide to reveal their own pre existing biases and discuss how those biases might have affected the review. Or, as is often the case in quantitative primary research, authors can attempt to take a neutral perspective and present the review findings as fact and the perspective was taken depends largely on whether the review is conducted in the quantitative or qualitative traditions (Randolph, June 2009). For this study, the findings of the mansions are real information that attaches to research about the subject. Since secondary research methods parallel to primary research methods, it makes sense for the author of a qualitative review to follow the qualitative tradition.They reveal biases and the author of a quantitative review to follow the quantitative tradition and claim a neutral position. This decision will be dictated by the particular case (Randolph, June 2009).

Deciding how wide to cast the net is a critical step in conducting a review. Cooper proposes four coverage scenarios. In an exhaustive review, the reviewer promises to locate and consider every available piece of research on a certain topic, published or unpublished. However, finding every piece of research could take more time than is available. The key to the exhaustive review is to define the population in such a way that it is bounded and the number of articles to review is manageable. Cooper calls this an exhaustive review with a selective citation. A third coverage approach is to consider a representative sample of articles and make inferences about the entire population of articles from that sample. However, random sampling is far from foolproof. A perhaps more certain approach is to gather evidence that demonstrates that the representative sample is actually representative. The soundest approach may be to do both. Cooper's fourth article selection approach is to take a purposive sample in which the reviewer examines only the central or pivotal articles in a field. The key here is to convince the reader that the selected articles are, in fact, the central or pivotal articles in a field, and just as importantly that the articles not chosen are not central or pivotal (Randolph, June 2009). For this thesis both the first and third way are used, most of the articls, web pages, information, and other sources used, also samples are chosen and discuss a small group of mansions that are surveyed.

There are many formats in which to organize a review. Three of the most common are the historical format, the conceptual format, and the methodological format. In the historical format, the review is organized chronologically. Clearly, this is preferred when the emphasis is on the progression of research methods or theories, or on a change in practices over time (Randolph, June 2009). Historical choose as an essential method for this survey, the history of settlements from early times is analyzed and develop to the 19th century. Because of thesis topic, other formats are not used in this study

The final characteristic of Cooper's (1988) Taxonomy of Literature Reviews is the audience. For a dissertation, the supervisor and reviewers of the dissertation are the primary audiences. The scholars within the field that the dissertation relates to are the secondary audience. Avoid writing the dissertation literature review for a general, non-academic audience. What constitutes a good book is probably not what constitutes a good dissertation, and vice versa (Randolph, June 2009).

2.1 Houses in Izmir

This part of the study including general information about initials settlements in the world, then the history of dwellers in Turkey and characteristics of their houses, history of settlements in Izmir and houses specifications. Afterward, the study explains Bornova mansions in detail of the history of settlements, nationality of dwellers and Levantines of the 19th century.

2.1.1 History of Settlements in General

A human settlement is a formed grouping of human dwelling. Settlements can involve lots of people, or just a few of them. According to Yurekli the history of civilizations, it is obvious that settling results in the acceleration of the formation of every kind of accumulation such as knowledge and art. Settlement and accumulation are associated with permanency, when the growth rate is high it becomes more difficult to move. As a result, changing places becomes temporary and individual. (Hulya Yurekli, Ferhan Yurekli;, January 2005) The Early human did not know how to construct buildings so they lived in the open, occasionally taking shelter in the top of the trees to protect themselves from the wild animals. Later on, humans began to

live in caves by the side of rivers, lakes and springs. They preferred sites protected by rivers, swamps or elevated terrain.

Building construction is an anciently human activity. It began with the purely functional need for a controlled environment to moderate the effects of climate. Constructed shelters were one means by which human beings were able to adapt themselves to a wide variety of climates and become a global species. Human shelters were at first very simple and perhaps lasted only a few days or months. Over time, however, even temporary structures evolved into such highly refined forms as the igloo. Gradually more durable structures began to appear, particularly after the advent of agriculture, when people began to stay in one place for long periods. The first shelters were dwellings, later other functions, added such as food storage, were housed in separate buildings. Some structures began to have both symbolic and functional value, marking the beginning of the distinction between architecture and building. (Swenson, 2014)

Early men chose locations that could be defended against predators and rivals. The shelters were shielded from inclement weather. Such locations could be found near rivers, lakes, and streams, perhaps with low hilltops nearby. Since water can cause erosions and change landscapes quite drastically, because it is hard to find any records many of these campsites have been destroyed. Caves were not used as places for fixed residence because food gathering forced humans to move to other areas in the vicinity. When it became difficult to find food, early man moved to another location. Eventually they learned to practice cultivation in order to stay at one place and produce sufficient food supply. Humans began to settle down near fields, they cultivated and chose fertile lands that were available, and they learned to build huts and mud houses. Some of the earliest settlements began to take shape in these fertile areas that consisted of groups of houses built by the side of agricultural fields with a shrine and a burial ground.

Though some inhabitants continued to live in caves and wander around, others were organized as a community under a recognized leader and began to provide examples of civilized living. These inhabitants started to provide for themselves the three basic necessities of life: food, clothing and shelter. As early as 380,000 BC, humans were constructing temporary wood huts. Other types of houses existed; these were more frequently campsites in caves or in the open air with little in the way of

formal structure. The oldest examples are shelters within caves, followed by houses of wood, straw, and rock; a few examples exist of houses built out of bones. (2015)

Figure 2-1 A temporary wood house, based on evidence

In Siberia, a group of Russian scientists uncovered a house or tent with a frame constructed of mammoth bones. The great tusks supported the roof, while the skulls and thighbones formed the walls of the tent. Several families could live inside, where three small hearths, little more than rings of stones, kept people warm during the winter (Figure 2.2). (2015)

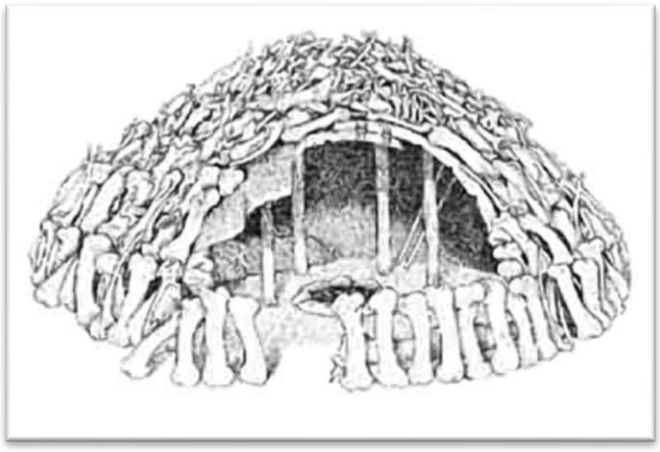


Figure 2-2 The first houses were constructed out of Mammoth bones

Later mankind started to erect against one wall of cave by define in at base by stones, the curtain used as skin and for covering roof draped over posts, this structure may have two compartments, each having an entrance on the longer side (Figure 2.3). After experiencing a decrease in fertility caused by successive cultivation, early people began to shift locations. When they discovered that the land regained its fertility after having been left uncultivated for few years, they began to cultivate fields by rotation. Thus they manage to stop shifting practices and settled down at one place. They learned to make manure out of night soil and animal droppings which greatly increased food production. As food become abundant, the health of people improved, the death rate dropped, and the birth rate increased causing population of many settlements to multiply rapidly through these natural processes.

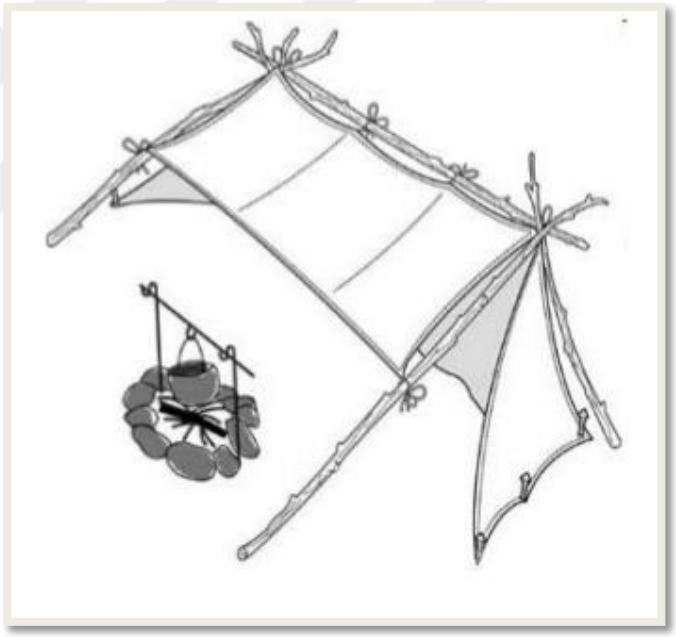


Figure 2-3 First Housing Ideas

The most favorable environment for human existence and survival includes a mild climate, infrequent epidemics, fertile land, and plenty of good quality water. River valleys were popular places for settled habitants. The land was fertile and good for farming, water and food were extracted from rivers, and soft clay was good for constructing huts. Rivers were used later on as a means of transportation.

Nomadic tents were larger than most modern tents, having two separate sections, front and back.

1. The front section was used for work. It was the public area of the tent, open to visitors. The men of the family lived here, gathered here with family members or friends, and conducted business if necessary. The men ate their meals in this area. The front part of the tent would be left open in warm weather.

2. The second or rear part of the tent was private. A dividing curtain separated it from the front area. It was here that the women, children and babies lived and slept.

Houses largely replaced tents in most parts of the world as agriculture and settled villages replaced the nomadic way of life. But tents continued in use throughout biblical times - and right up until modern times. (Fletcher, 2012)

2.1.2 **History of Settlements in Turkey**

Archeological settlement layers from different periods were found in the Hacilar settlement, which is about 26 kilometers southwest of Burdur. As well as the first settlement layer dating back to 8000 B.C. from the aceramic Neolithic age, another settlement layer from the Chalcolithic age dating back to 4750 B.C was found. Hacilar is a settlement attracting attention, especially by its ceramics. Architecture in the late Neolithic period, adjoining houses with stone foundations and adobe walls were built. These were the dwellings whose walls and floors were plastered and had flat soil covered roofs. In the first Chalcolithic period, other than dwellings, houses and temples, a new type of structure, the pottery workshops appeared. This is important in terms of architecture being directed to different functions. (2012).

History of Turks settlement in Anatolia date back to the period of the Great Seljuk Empire in the early 11th century, at first relevant to Yurekli the houses of the nomadic Turks who last settled in Anatolia are built with temporal materials. In the Seljuk architecture the Hans, baths, mosques and madresses are built with permanent materials such as stone and, therefore, some examples survived until today. On the other hand the palaces built of timber that does not exist today show that the reason for this temporality is not only pragmatic but is also related to the philosophy of life

(Hulya Yurekli, Ferhan Yurekli, 2005) . The relationship between the Islamic and Christian words started with the encroachment of the ottomans into the Balkans in the fourteenth century (Onur, 2006) .

2.1.3 **Characteristics of Turkish Houses**

Turkish house, the *Turk Evi,* according to some scholars can be rooted back to the tent architecture of the nomadic Turkish tribes (S, 1984). In this case, it has the past that precedes the Ottoman Empire through the Beylik's and Selcuk's period. Therefore, naming the *Turk evi* as the *Osmanli Evi* (Ottoman House) is not sensible (Kuban, 1995). The *Turk Evi* first developed in Istanbul and diffused to Anatolia (Tanyeli). The ottoman-period house that has come to be referred to as the Turkish house or the traditional Turkish house is a timber-framed house found mainly in Istanbul, Anatolia, Greece, and the Balkans. The earliest works on the Turkish house itself are specifically architectural, especially the monumental and pivotal studies done by the architect and historian Sedat Hakki Eldem, who documented and typologies them. Sibel Bozdogan's work on Turkish architectural culture, however, is one that crosses disciplines (Bertram, 2008).

In order to realize and understand more and better about Turkish houses, first of all it is essential to improve our knowledge about characteristics of Turkish house from all sides. During decades Turks lived in variety of houses and their settlement areas are diversified. In total traditional Turkish house has based on some general specifications: rooms, sofa, multistory, similar roof form and same construction materials. According to studies which documented by some writers they are various information about Turkish house. Peker wrote Turk Evi in Anatolia has a very simple layout; on the other hand, the houses that are referred to Istanbul have 'harem' and 'selamlik' and many variations in their layouts (Peker). Conrads says Traditional Turkish houses have outer sofa. The basement floor is masonry, and the upper floor is a wooden frame. Facing to courtyard for integrating with nature is characteristic of the structure. The clear and plain plan layout of the *Turk Evi* resemble the modernist abstract articulation of the plan layout, the functionalism concept is somewhat different (Conrads).

In Yurekli's book the main plan layout of Turk evi is a combination of three elements, the *eyvan* (symbolic) the room (functional) and the *hayat* (functional). The

Turk Evi is modular and is extended by inserting new modules and capacity to expand is an important property of *Turk evi*. The room number of the main floor, which then frames the *eyvans* and the *hayat*, regulate the plan. (Hulya Yurekli, Ferhan Yurekli , 2005). In Bertram's writings these houses varied according to local building materials, as well as according to the wealth and size at the families they housed, and they all shared a basic architectural vocabulary (Bertram, 2008).

Open sofa plan type is one of the important plan types are seen in Turkish house, Guney writes the most characteristic plan types are those with outer or open sofas, using projections and *eyvans*. The authentic aspect of these plan types is the independent nature of the room, which instead of being adjacent is separated from the others by extensions of the sofa. Plan types with central sofas emerged in the periods (Guney, 1998). The hayat is a semi-open, transitional space, with a rectangular or square shape, which sometimes extend between the rooms of the (Eldem, 1955). *Eyvan* as another important factor describes in Ogel idea as an element of the main floor plan that is not functional in the practical sense (in some cases the stairs are located here) but makes the layout strongly readable and helps to strengthen the volumetric effect of the building (Ogel, 1984). Also Yurekli says the most important function of the *eyvan* is to add to the *hayat*'s integrity as an in-between area. Especially in the four-room house type, the relation of the *hayat* with the garden and street is achieving by the *eyvans* (Hulya Yurekli, Ferhan Yurekli , 2005).

Relevant to Cambridge dictionary room is a part of the inside of a building that is separated from other parts by walls, floor, and ceiling. It is one of the most significant elements in Turkish house. In Turkish house the room has multipurpose function and furniture-free area. Guney mentioned in his book it is possible to sit, recline, wash, eat and even cook in each room. All rooms have similar characteristics, the size may change, but fundamental characteristics do not. These are strictly related to a way of life which has not changed much over time. Consequently, the room has also remained the same. An arrangement which allows for change has been developed, so as to meet the prerequisites of all the different functions mentioned above. This arrangement is based on the prevailing customs of nomadic times. The tent, which was the living unit then, has now been replaced by the room. The tent also has areas which are not strictly delineated, allocated to different functions.

In the room, areas are separated from one another by partitions or semi-partition levels. The interior of the room has been shaped in dimensions necessitated by human activities. The room can serve different functions as needed, with the very few pieces of movable furniture it contains. These are immediately put away once there is no more use for them. Beds are kept in built-in closets. They are laid out when it is time to go to bed and put away again in the morning. When it is time to eat, the tablecloth, table base and copper tray or wooden table top are taken out of the cupboard and put away after dinner. Thus, the center of the room was always left free. The divans used for seating are placed near the walls the arrangement for eating and sleeping is the same both in palaces and in tents (Guney, 1998).

The rooms are distinguished from the rest of the house with the adjacent open hall and *eyvans*. This effect is strengthened by the jetties. The arrangement of the windows is also helpful to understand where the rooms are situated in the building. The jetties are elements that allow increasing the length of the timber beams, by reducing the momentum. The number of rooms rather than the dimensions determines the size of the building (Hulya Yurekli, Ferhan Yurekli, 2005). The jetties where the timber structure rests on one another (*bindirmeli cikma*) that rises under the sedir is a very good example of the integration of layering's such as structure, function and art (Hall, 1966).

Walls are important elements that characterized the room in Yurakli's *Turk Evi* book each wall has its own specification, one of the walls contain the entrance, the threshold (*seki*) and the continuation of this wall house the storage (*yukluk*) of beds and pillows (and the washing unit (*guslhane*) if there is one); one wall is the fireplace wall which contains a fireplace at the middle and two accompanying on both sides; one or both of the remaining walls have windows with a sedir in front of them. The plan of the room is close to a square and it can vary between 3-4 m. Another factor that determines the room dimension, are the dimensions of available timber and the length it can surpass (Yurekli, 1977).

Turkish houses are multi-story buildings; they have at least two stories, the ground floor was planned to adjust to the street and the topography of the land. The walls of the ground floor were made of stone or rubble and were windowless (or had ventilation windows) on the street side. In neighborhoods that were not overly dense, these walls extended to become the street-sided garden wall that gave complete

privacy to the garden and also defined the urban plot. Usually, gate was cut into this wall, giving access to the garden or courtyard first, and then to the house. This lower floor area, windowless to the street, was often completely open to the garden, as a sheltered place either for animals or for household activities such as food preparation. Its floor was paved with polished river stones or pebbles and was therefore called the *taslik* (stone floor area, pronounced *tashlik*).

These shining stones could easily be cleaned with water, and during the hot months, they held the moisture of water that was poured on them, cooling the breeze that passed over them. In many houses, especially those of Istanbul, this stone-floored *taslik* area became an enclosed entry courtyard with a high ceiling and stairways leading to the rooms above. In dense urban areas where there was no land for a garden, the *tahtani* might even be entered through a door to the street, but weather enclosed by four walls or open to the garden, the *tahtani* entry area of large houses often had a room suspended within it and open to it, a type of mezzanine or large low loft called the *asma oda* (suspended room) that was uses by the housekeeper of even the grandmother as a type of extra room during the day (Bertram, 2008).

One story high garden walls that are a continuous plane along the street also help to unify the appearance of the street. Yet another reason why the harmony of the street is conserved is the scale. The rooms being similar in size give a unity of scale through the streets. At last but not least important reason is the similarity of the materials and colors of the buildings. The buildings rise over the garden walls that follow the lines of the spontaneously developed streets, which are not shaped orthogonally. In this case the mezzanine and upper floor plan layouts are supported with triangular or trapezoid jetties to consequently form an orthogonal main floor plan. The application gives a unique character to the building and the street (Hulya Yurekli, Ferhan Yurekli, 2005).The last floor is the main floor of the building in Turkish House which has a typical plan and determines the house plan.

The building materials, which are used for the construction of traditional houses of Turkey, come from local sources. The main structure of the building is timber and the wall envelope is adobe. The floor and ceilings structure are mainly hidden with timber. In some proper place the *eyvan* floor is covered with ceramic floor tiles. Interior walls and most of the outside walls are plastered and white washed with lime. The lattice work for visual privacy, bars for security and the water basins can be

timber. The ground floor entrance hall is a continuation of the garden with it is illuminate earth floor. The roof is covered with Turkish tiles. There are no water channels at the eaves of the roof.

By rising higher in floors in the *TurkEvi* lightness increases; walls get thinner, the number and size of windows increase. Using timber lattice work and timber fence on the upper floors reinforce the feeling of lightness. Setting and a nomadic life which is merged in the *Turk evi* are reflected in a heavy structure and thick walls on the lower stories and a light timber structure the upper stories. In the *Turk evi* the cantilevered beams help to reduce the moment of the beam, and consequently this helps to increase the span of the beams or reduce the thickness of the beams. The literal lightness of *Turk Evi* is emphasized with jetties (*bindirmeli cikma*), thin and long braces open halls thin timber latticework and flying roofs (Hulya Yurekli, Ferhan Yurekli , 2005).

The transparency between the floors of the *Turk Evi* is related to the existence and non-existence of the material. The ground floor hall is the continuation of the garden with its surface cover and this produces a phenomenological transparency. The transparency between the ground floor and mezzanine and if the mezzanine does not exist the transparency between the ground floor and the main floor is by the design of the stairs it is orientation and by the motion of the people through the building. The hayat and other open spaces some designed galleries and elements that introduce transparency in the section (Watson, 1985).

Turkish privacy by minimum openings such as *kafes*, *cumbali kafes* elements is reflected in architecture, despite Turkish houses that have detached rooms, there is the transaction between rooms in examples of Izmir's houses. *Yukluk* and guslhane are seen in them. Service areas are located in courtyards and separated from the main body of houses. Garden of each house has one or more than one element such as well, fountains, pool (Akyuz, 1994). The fireplace is an important element in the *Turk Evi* that organizes life in the house and consequently the spaces it has a symbolic meaning related to the continuation of life in the house. The fireplace was located in the first-floor hall, either on a side or an end wall, and sometimes there was a small fireplace in the private room. The entrance was normally by means of an outside staircase on the front wall (Hulya Yurekli, Ferhan Yurekli, 2005).

As has been mentioned Turkish house has a very simple layout and have many common points with each other. Turkish house normally have two floors, ground floor used as service areas and second floor as living area and main part of the houses. These houses are modular and by increasing new modules are extended. In basement heavy material and in upper floor light material used for construction, also size of the windows increase in upper floors. There are three main plan layout *eyvan*, room and *hayat*. Because of outer sofa type of Turkish house rooms are separate from each other. The rooms are used for daily life and despite of room's size, characteristics are same. Rooms in Turkish house used as multy purpose spaces and normally are furniture-free. *Hayat* located between street or garden and rooms, and daily life goes on in it. The *eyvan* has in-between function and all equipment's in Turkish house have functional purpose.

2.1.4 **History of Settlements in Izmir**

Izmir in Roman time lived the most brilliant period and in Byzantine period regressed, during the Ottoman era started its revival new array. In the 17th century (XVII) become the most important trade ports of Asia Minor. So becoming one of the world-famous international cities causes that many travelers and businessmen have begun to arrive, from every corner of the word. It also influenced architecture, and Levantine architecture has emerged. Residential architecture in Izmir includes three periods, prior of Hellenistic, Hellenistic, Roma-Byzantine, and Ottoman –Turkish.

Before Hellenistic Term: Hellenistic period includes three types of houses, prostate, pastas and peristyle. Pastas houses in western coast of the Aegean Sea and prostate homes are developed on the east coast. Hellenistic's peristyle house is the late pastas ones which formed and completed the development and comes from the western Greece to the Asia Minor. Peristyl houses are seen in Izmir in Hellenistic period, these are examples of colonnaded rooms which located around the central garden which is fashionable in Western Anatolia structures. In Roman period at the (IV) 4th B.C century the prostas Anatolia's oldest residential houses, are the characteristics of the houses in Western Anatolia, in this period the type of houses are houses with an atrium. Against this, peristyle house is continued.

Western Anatolia peristyle house types with the same layout and arrangement is the Hellenistic and Roman periods. Courtyard and terraced type are used from many

years ago in Asia Minor, Aegean coasts and Greece and these types are suitable for the region's climate. As a result of this information in Izmir at Hellenistic period prostas houses, in Roman period peristyl houses with atrium and in the Byzantine eras houses with terraces and colonnaded with inner yards are used. (Akyuz, 1994) There were two main reasons for the lack of construction in Izmir first the Constantinople became the capital city so western Anatolia lost its importance, another reason for the lack of construction in Izmir was attacks of the Arabs and other tribes (Inal, 2006). Apart from epidemics two major disasters, earthquake and fires have affected the residential architecture on a large scale. During this period because of natural disasters such frequently fires and earthquakes many of houses disappeared so only some of the houses belonging to the period between 18-20 centuries have succeeded in reaching our day. (Akyuz, 1994)

The main reason for Izmir's destroying on 1688 was that the houses were filled with too many stones and extra weight of them causes to have no resistance in recurrent earthquakes. After the earthquake, during the renewed of the city founded a solution against this inconveniences. Foundation of houses made by stones in a height of 15-20 feet, the other parts is wooden, *karkas*, brick and *dolgu*. These causes the houses are more resistors against powerful swinging because of severe earthquakes (Akyuz, 1994). The fire was another important reasoning of Izmir's destroy, there were two catastrophic fires in Izmir, the first one happened on 1864 and the second one which began on 13th September 1922 and continue to 22nd of September. At the beginning, the houses are made of wood for resistance to earthquakes but the narrow roads and jetties and eaves (*sacaklar)* caused in large and huge damages. That's why no longer timbered houses construction was stopped and, brick one replaced. (Akyuz, 1994)

Another main reason for changing the settlements built system in Izmir happened after building regulations rules renewed. Because of often seen fires in Istanbul in the 13th century the construction of housing against the damage was done according to certain regulations. For a purpose of obeying the special rules in building and reconstruction on 1848 in the Ottoman period, some rules still exist. The development of Turkish architecture has gained a new momentum after the conquests. It became apparent that the mobile groups of architects and artists involved in architecture during Selcuklu, Beylikler and Early Ottoman Periods are not going to be sufficient on the new lands where sultanates have become states and the states evolved into

Empire. In order to meet the Empire's needs, more comprehensive and organized institutions were required. For this purpose, first, "*Hassa Mimarlar Ocagi*" (Hassa School of Architects) was opened in the capital. Then sub-organizations were opened in provinces. New activities of Hassa School of Architects started after 1453 and joined with the growing wealth of the empire lead to the first steps of "Classic Ottoman Architecture Period" in the beginning of the 16th century (2012).

On 1831 *Hassa mimarlar ocagi* changed to *Ebniye-i-hassa mudiriyeti* and on 1831 alternated to *Ebniye Nezamnamesi*. The rules dispose of in thirty articles about streets and roads (width of streets and roads), build materials, quantity of stories, and specification of different parts of buildings, also focus on announcing about the fire was in the first stage. At the same year, an article in the name of *Ebniye beyannamesi* adjusts to *Ebniye-nizamnamesi*. On 1849, a new workbook in 33 article with new rules and made some changes in the previous workbook and some parts added to articles. These two workbooks prepared within one year and named number one and number two.

On 10th October 1863 *Turk ve Ebniye nizamnamesi* was formalized then on November eleventh changed to *Ebniye Kanun*. The first workbook contains 49 articles and second one had 98 articles which consist of rules about: width of streets and direction of them, streets and houses numbers, places in risk of fire and schemes to control the fire, excrescence in facades which faces to streets, height of buildings strategies and repairmen's, obtaining authority for building. For adjustment of workbook rules France, Belgium, Austria, and some other west countries are used and for a long period in Istanbul and other cities of Turkey used as main Rules.

Regulations in this manner were also valid in Izmir too. According construction methods applied in 18th century the wooden roofs with extrusion were not allowed to structure. In the middle of the 19th century, in the streets with width of 8 yards (544 cm) and in alleys with width of 6 yards (408 cm) in the upper parts of the houses could be done extrusion (*cikma*) and *cihannuma*. Izmir was one of the defining qualities of the regulations as a city with this situation, which has often catastrophic fire. Constructions in Izmir on 1882 was adopted and carried out of the Ottoman Empire's the pattern of the first zoning regulations according to the law. These regulations covered roles as not to construct closed streets, road width classified in

five groups, building height and *cikma* qualifications and counter measures fire. Value of the land was depending on height and road width. (Akyuz, 1994)

The brief history of Izmir is listed in below:

3000 BC - Izmir foundation

1200 BC – Tribes that fled from the Aegean coast erase the Hittite kingdom

7th Century – Lydian kind Gyges ruled the city

605 BC – Lydian king Alyattes II conquered the city

541 BC – Persian king Cyrus II (546-333 BC) in 333 BC Alexander comes

4th – Alexander the great (for protecting the city on Roman time the city moved to Kadifekale)

276 BC – Galata people came to Anatolia

195 BC – Rome ends Hellenistic period

133 BC – Izmir was most important city of Asia province of the Roman Empire

1081 AC – Byzantine presence end by Cakabey

1204-1261 AC – Latine Empire (important base of navy and center for international trade)

1317 AC – Seljuks captured the city

14th AC – Relationship between Islamic and Christian word began

1402 AC – Mongols (Timorlemk) ruled for four years then again Guney bey, Aydin ogullari family captured the cityBetween 1317-1402 the city roled by both Christian and Muslims

1426 AC – Ottomans seized the city

1688 AC – Totally demolished by earthquake

17th AC – Was the biggest city – important port of Asia Minor and east

1764 AC – Some of the houses were built some others abounded

18th AC – Two storey houses built

1844 AC – Fire in Izmir

1864 AC – Catastrophic fire

1890 AC – Building the Quay

1922 AC – Catastrophic Fire

1923 AC – Turkish republic foundation

1923-1932 AC – Greece and Italians left the city

1932-1938 AC – Except remaining houses other houses built according foreign items

2.1.5 **Characteristics of Izmir Houses**

Izmir's houses known as mansions which have a basement, two stories, *cumbali*, symmetric or asymmetric facades. Courtyards and jetties (*cumba*) are the main characteristics of Izmir's houses. As a conclusion the architecture of houses in recent 100 years in Izmir are influenced by the previous cultures and type of housing in these lands. But these effects are not marked and continually. Regeneration and constantly re-establishment of the city after frequent earthquakes and fires are the possible definitions. Levantine and Greek houses include two-story, narrow facade and usually reflecting the effects of Western culture they are very similar to each other in terms of plan and façade regulation. In Levantine houses, the basement is made of masonry and the upper floor is a wooden frame, basement contains some

service areas, also, it has the tendency from the bottom part. Entrance floor mostly acts as halls and covers living areas. Service areas placed against the staircase beside the room adjacent to the courtyard. The function of the hall in upper floor is as a conductor to the rooms. There is a transition between rooms and the bay window (*cumba*) usually takes place in the middle of façade.

Houses which resulting by effects of east and west have some of the specifications of both houses. They are the result of the interaction of Turkish and Levantine houses. Generally, houses have a rectangular plan, two-story, in this kind of houses directly entering inside; doors and staircases are connected to the central hall. Carrier system is half masonry and neoclassic ornaments are seen in façade. In Izmir, *Namazgah*, *Tilkilik*, Arab oven, two *cesmelik*, *Dönertaş* which has seen in Turkish neighborhoods, are found rarely in Bornova and Buca.

During decades different travellers visit Izmir and wrote about some specifications of houses structures in Izmir, Akuyz in her paper documented the writings of the travellers: Milter denotes that in ancient times, adobe walls and wooden roofs are seen in hills (Milter, 1931). Evliya Celebi who came to Izmir in 1671 said the houses in port on the coast are bases on the sea shore with fewer stories. Then when Pitton de Tournefort cam to the city at 1702 and specifies that the Izmir's houses in Aegean coast in comparison with other cities houses structured better (Toumefor, 1717).

According to the Pockocke notes top part of the houses usually made by *himis* and filled with brick. The lower floors as shops and the upper floors used as homes, vessels unloaded their wares to the pier into the galleries on the side of the garden reached by the pavilions (Pockocke, 1773). Likewise Frank Richard Chandler came in 1764 to Izmir, he mentioned that traces of great fire in three years ago detected houses, some of them demolished, some made new and some are being done well. Houses which located in pier have large shops and warehouses in basement floor and in the upper floors there are long galleries and terraces (Chandler, 1825).

Another traveller Charles Texier (1836) says due to; too narrow streets, the windows of upper floors are so close to each other, almost is touching each other. Because of wide *sacaklar* (eaves) people could not use the sunlight inside of the houses, also to be more resistant against earthquakes mostly the structure of wooden frame are used in houses (texier1862page302). Also according Andres writing in

1838in Alsancak region brick and wood or just wooden houses with fewer stories are built (Andres 1846page 213-215). In addition by using wooden structure, with majority and often seen fires in Izmir, the city seen too many damage, traveler Xaxier Marmier (1845) mentioned that because of high rate of combustible materials the houses were not so safe against fires. (Marmier 1891 pages 148-149)

After 1844 fire the houses made by best materials and restored. Gustave Flaubert (1850) had talked about the red roofs and white houses in city. (Flaubert 1925 236-238). Furthermore houses of Izmir generally have fewer stories, basement floor, and first floor with *cikma* the color of houses is white and contains ornaments with motifs of flowers and palmet. By these ornaments on facade houses shown new and look like England porcelain. (Gautier 1885 page 102) (Ege mimarlik) and the houses of Bornova exceptional of other cities houses in east made so close each other; they are located in roadside and have comfortable spaces. (arc1931, page 259) more over at the beginning of 20th century's Turks and Armenians houses were made by wood. (Camte derocguingny du fayel 1876 pages 420-427) Also Rumie's houses were two stories (Akyuz, 1994).

To sum up houses in Izmir divided into three categories. Houses made by Turkish inhabitants, Levantine houses and houses resulting in effects of Turkish and Levantine houses. The main characteristics of Izmir houses are courtyards and jetties. In Levantine houses basement used as common area and private area are located on the upper floor. According to traveller's notes, there are different information about houses aspects such as material, plan type, windows, the layout of plans and other parts that indicate distinct characteristics of houses in Izmir.

2.2 Bornova Mansions

The Bornova mansions are chosen because of their divergent in plans, forms, and inhabitants. In this section mainly the history of settlements in Bornova, then the importance of settlements in Bornova and cause of move to this district, also, the nationality of inhabitants and at last part history of Levantine's of Bornova on 19th century will explain.

2.2.1 **History of Settlements in Bornova**

The socio-economic development in the Ottoman Empire in the late eighteenth and early nineteenth centuries stimulated the flow of Western merchants to the coastal areas along the Mediterranean. The cities in the Levant emerged as significant commercial centers. Besides their economic significance, they also played the role of multicultural border cities between the "East" and the "West". South of the town of Bornova, or Bournabat, as old residents still call it, was the old European quarter (Kalcas , 1978). In the nineteenth century, Bornova was a small village to the east of Izmir. In 1891, it had only 2,152 inhabitants (Beyru). Its name originates from the word Birun-u Abad or Burunabad, which means "outer city" in Persian.

There were two connections between Izmir and Bornova.The connection by land was through the Caravan Bridge (today's Kemer) and it took two hours to reach Bornova on horseback. The main road was opened later in 1861 (Doger 25). Another connection was by sea to the bay of Bornova (Ersoy, 2006). A small pier in Bornova was constructed in 1846 and steam ships started to play between Izmir and Bornova. In 1865, railways connection was provided with the construction of the Izmir- Kasaba line Two years after the construction of the first railway line the property law was issued. The railway line and the new property law allowed the Levantines to settle permanently in Bornova.

Most of the existing mansions of the Levantines were built after the railway connection. The railway allowed the Levantines reach easily their offices or warehouses at the quayside in the Frank quarter. During the heyday of the Levantines, there were many villas or mansions in Bornova. Due to the rapid urbanization in the second half of the fourteenth century, some of these mansions have disappeared. The Edmund Giraud Mansion, the Kanalaki Mansion, the Lane Mansion, the Offley Mansion, the Reggio Mansion, the Baltazzi Mansion, the Bioni Mansion, the De Cramer Mansion, the Reggio Mansion are such examples which have been replaced by the modern apartment blocks (Inal, 2006)

2.2.2 **Importance of Settlements in Bornova**

Because of the frequent recurrence of summer epidemics, several of the more wealthy Frankish families' bought lands outside the city on the outskirts of villages

such as Bornova, Buca, Cumaovasi and Hacilar. There they build large homes and started beautiful gardens. Bornova had apparently become popular very early with the foreign merchant colony, as a site for summer residences (Kalcas , 1978). Another intensive for the building of homes far out in the country was to escape from the repeated raids of pirates and many are the tails that are told of brigands who kidnapped local residents. Bornova, or Bournabat, as it was then usually referred to, was often termed the "French Village" although many English and other foreign families also had summer homes there. Another name was the "Ville d'eau" (Kalcas, 1978).

2.2.3 **Nationality of Inhabitants in Bornova**

The French were the first of the western powers to establish political and trade relations with the Turks. These agreements or capitulations were first obtained from the Sultan Suleyman the magnificent in 1535. All Europeans in Turkey were called Franks probably because the French ere the first of the Western powers to establish political and trade relations with the Turks. Both the Dutch and the English were keen competitors in trade with the Levant, as the region was then called. During British trade boom at Smyrna for every ship that went to Constantinople then came to Smyrna (Kalcas , 1978).

Izmir known as a multicultural city because of different nationalities which were living together, it was the second biggest city on eighteenth and nineteenth centuries. The Turks were the majority group of people, and then the Rums (local Greeks) were the second largest community in the city. The Armenians were the smallest ones; this multy community disappeared with the emergence of Turkish republic.

2.2.4 **History of Levantines on 19th Century in Izmir**

The term Levantine, or Levanter derived from the word Levant, which referred to the territories or countries bordering on the Eastern Mediterranean from Turkey to Egypt, and was used to describe the European people who inhabited in the region ("Levantine"; "Levant"; "Levant" and "Levantine"; "Levant" and "Levanter"). (Inal, 2006) In all languages, Levantine means an individual, mostly a Frank, who was born and has lived in the *Memâlik-i Osmâniyye* (Ottoman territories) (Inal , 2006) Most of the Levantines in Izmir were descendants of these Genoese merchants in Chios, who

merged to local Greeks there. The British, Italian, Dutch, and Germans were added to the established communities of the city and each formed a part of a whole. Bornova was called the "French Village", although many other Levantine families of British, Dutch or Italian extraction also settled there (Inal, 2006).

Levantines were influenced by the architectural and artistic trends of Europe, and reflected them in their residences and to a certain extent on their communal buildings. As a physical outcome of the Levantines' lifestyle and culture in between these two worlds, there appeared a unique architecture, which is contrary to the patterns and general characteristics of the domestic architecture in Izmir. It's difficult to determine a clear example of Izmir's most vernacular or traditional buildings. However, 19th Century Izmir's built environment has unique architectural characteristics mentioned in various literatures. Buyukkilic et al. writes about the late 19th century Izmir houses with its architectural characteristics (Buyukkilic, et al., 2011). Arsan mentions about the changes in building characteristics resulting from the transformation of Izmir into a cosmopolitan city of wealthy traders in the second half of the 19th century. It concludes with the construal of the merging of the old and new architectural preferences as a sign of modernization (Arsan, 2006).

Akyuz's research is about the history of dwellings in Izmir among decades, she highlights about the materials, disasters such earthquakes and fire in city and cause of building changes. Cikis outlines that the 19th century houses have traditional elements as it may seem at first glance, however these unique qualities were influenced from on-going large scale constructions like the railway constructions, traditional elements from the Chios Island, Malta and Britain (Çıkış, 2009). Akkurt (Akkurt, 2004) describes about the different parts of buildings, materials, stories, courtyards, facades, size of the houses, in Bornova. The inner and façade of the buildings reflects the owner's specifications and separate the houses from other buildings.

3 RESEARCH METHODOLOGY

The methodology of this study is to obtain and understand the architectural aspects of Levantine mansions in Bornova district of Izmir. In this survey both exterior and interior of mansions are considered. Literature reviw helped to build the form area of the title. Case study over mansions provided valuable data to understand 19th century architectural characteristics of Bornova mansions. In this chapter, the researcher asks the general research question and also specific questions, it explains using the qualitative and quantitative case study research methodology.

3.1 Research Approach

This chapter aims to describe in detail the methodological approach adopted in this study. This study employed both qualitative and quantitative research methods. In the words of Atkinson (Paul Atkinson,Sara Delamont, Amanda Jane, John Lofland, Lyn Lofland, 2007), a qualitative research is an “umbrella term” and a number of different approaches exist within the wider framework of this type of research. The research used a qualitative research methodology to identify the features of the Bornova’s mansions architecture as well as to find the relationship of vernacular architecture of Izmir and the mansions. The research also utilized the quantitative method in the process of the study to support the qualitative methods and for the selected units of analysis.

Among 43 houses which have remained till today in Bornova region of Izmir city, some of them according to existing information selected. The houses are listed in a table and various data that gathered from different parts and administrations are mentioned in it. Between the mentioned mansions in table some important factors for obtaining data are considered. At first tried to select the houses in the common district, then quest in different administration such as *Rolove ve Anitlar Mudurlugu,* Municipality of Bornova, the cultural and tourism office of Izmir city, *Izmir 1 numarali kultur varliklarini koruma bolge kurulu mudurlugu* to know how many information they have about the mansions.

Some of the wanted info was gain from these sections. Other information was gathered by visiting the site and gets a help of who were worked in the restoration of the mansions. But in many cases, the mansions were abandoned or settled by people

that did not want to bother by the others. So there was no chance to choose many of them, and the small group of them selected according to availability, orientation, permit to visit and existing related information about them. In below table five mansions of De Andria, Witthall, Sari, Murat and Kuyulu (Kuyulu mansion divided to two building) have the better condition in getting information and accessibility in relation to the others, in consequence, selected as the case study of this thesis.

#	Name of Mansions	Addres	Now	Plan	Kultur Va..	Other info	Orientation	
1	De Andria	80th Alley	Pie Café	No	Yes	Yes		x
2	Witthall	83th Alley	Allin's Café	Yes	Yes	Yes		x
3	Charnaud	78th Alley	Hotel	No	Yes	No	x	
4	Peterson	Mustafa Kemal Cad	Under Restoration	No	No	No		x
5	Balli ani (Charton J.Giraud) evi	83th Alley	-	No	No	No		x
6	Barry	Kazim Karabekir	Ege university lokali	No	Yes	No		x
7	x	Fevzi Cakmak Street	Ethnography Museum	Yes	Yes	Yes		x
8	Godferey Giraud	Genclik street	-	No	Yes	No		x
9	Donald Giraud	Genclik street	-	No		No		x
10	Pierre Pagy	Genclik street	-	No	Yes	No		x
11	Kuyulu	Genclik street	-	Yes	yes	Yes		x
12	Mattey	Genclik street	-	No	No	No	x	
13	Victor Whittal	80th Alley	-	No	No	No	x	
14	Fernand Pagy	83th Alley	-	No	No	No		x
15	Charnaud	80th Alley	-	No	No	No	x	
16	Murat	Genclik street	Part of Ege University	Yes	No	Yes		x
17	Sari	-	E.Ü. İKTİSADİ VE İDARİ BİLİMLER FAK. DEKANLIĞI	Yes	No	Yes		x

3.2 Case Study as a Research Methodology

This research adopted Yin's (Yin, 2003) case study research methodology. Yin (Yin, 2003) believes that a case study research is the most appropriate when researchers are interested in learning how or why something occurs, or when the research focuses on contemporary events, and when control of behavioural events is not necessary. In addition, questions starting with what, why and how are best addressed by case study, as pointed out by Yin (Yin, 2003). According to Yin (Yin, 2003), a case study approach provides a specific and in-depth analysis of phenomena in the inhabitants' everyday context in a particular place at a given time. He also note that the case study approach concentrates on trying to gain rich and deep information concerning the complexity of the studied context rather than attempting to separate all the relevant factors out independently. Thus, a study in a single location like Bornova provides not only the opportunity for an in-depth exploration on the evolution of the physical forms and elements of the mansions, but also permits the exploration of often 'invisible' information on the users' requirement. This research employed case study as the main strategy that led the process of investigation.

Yin (Yin, 1994) noted six sources of evidence for data collection in the case study protocol and these include documentation, archival records, interviews, direct observation, participant observation and physical artefacts. Nonetheless, not all are needed in every case study. According to considered assessments of many researchers, a combination of methods provides appropriate checks against the weaknesses of each, while enabling the benefits to complement each other (Linda Groat, David Wang, 2002). Therefore in this study, the mixed-methodology model was chosen so as to allow each technique to examine the strengths and to minimize the weaknesses of each design (Linda Groat, David Wang, 2002). In the research, a systematic observation as the quantitative method was combined with the qualitative methods which included the archival study and semi-structure interview to investigate the phenomena.

3.3 Unit of Analysis

According to Yin (Yin, 2003), the units of analysis can vary from a place and an object to a person or an individual, depending on the content and topic of the research. In this research, the units of analysis are six mansions that were selected

based on the methodological process. Yin (Yin, 2003) proposes that "selecting the cases for a case study should not simply be a matter of finding the most convenient or accessible site from which you can collect data". Furthermore, Schwandt (Schwandt, 1997) notes that the selection of unites is based on a mixture of criteria including "availability, accessibility and theoretical interest". As for the present study, there are two main factors involved in selecting the units of analysis. First, selecting and accessing mansions to be studied involved two methods, self-selection and the 'snowballing' approach (Seidman, 1991). Second, the criteria for the selection of second home areas were mainly based on the physical appearance of the mansions, which in turn was based on the significant body of literature.

3.4 Background of the Study and the Conceptual Framework

The first stage of the study reviews the background of the research as well as describes the primary issues of the local architectural design and the mansions development in general and at Bornova, in specific. The resources for this review are both English and Turkish documents, which include books, internet, research articles from related journals and previous thesis in the study area.

3.5 Research Design

The second stage of the research developed a methodology approach to examine the findings of the first stage. This stage designed the procedure for data collection and the analysis to link the theoretical and conceptual findings to the empirical findings of the research.

3.6 Data Collection

In the third stage of the research, the process of data collection was conducted at Izmir. This section discusses the methods used in collecting relevant information to achieve the research objectives and to answer the research questions. In this study, data collection was carried out in two different phases; the preliminary and the final. Groat and Wang (Linda Groat, David Wang, 2002) suggest that case study research frequently uses multiple sources, typically distinct research design. In this research, archival study, being in field, semi-structure interview with professionals, and observation also provide and confirms the materials for the final finding.

Primary phase of data collection is the features of the Izmir Vernacular Architecture and b) Architecture of Bornova and its relation to Izmir architecture. Yin (Yin, 2003) considers archival records as one of the suitable methods to collect evidence, while Groat and Wang (Linda Groat, David Wang, 2002) introduced it as a proper method in architectural research. This research applied archival study to investigate the architectural records in relation to features of Izmir vernacular architecture. The archival study in this research reviewed the vernacular architecture in Turkey and the Egeian region, as well as examined the quality of that in Izmir. The resources for this review were the Turkish and English documents which include books and internet, as well as research articles from related media in the study area.

In the final phase of data collection, all the previous findings were employed to recognize the Bornova mansions architectural characteristics. It is a response to the third objective of the research. The physical appearance of the mansions could be investigated through physical observation, while an understanding of their characteristics to the Bornova's architectural conditions required information that could be revealed. Thus, in order to recognize the mansions, two categories of data collection were developed; physical observation and interviews with owners and professionals.

At the end of the data collection process, the selected conducted in a physical observation programme which examined the physical characteristics of the cases in relation to the Izmir architecture, obtained in previous stage. However, it was necessary first to document the physical appearance of the mansions through photographs as well as through free-hand drawings and note taking. Besides the primary documentation, the secondary data were necessary for the development and structuring of the understanding of the relationships between the owners' experiences of their homes.

Interview was used as a technique for revealing the often invisible but crucial data about the owners' relation to the architectural conditions. The interview questions were set in a semi-structured form to examine the previous founded data.

4 CASE STUDY: SELECTED BORNOVA MANSIONS

The study is generally based on limited-scale in research site, which contains the documentation of six mansions (Figure 4.1). These buildings are some of the remain ones from the period of the 19th century. In this part of thesis first the current situation of mansions described, with details of their locations and relationships between the street and adjacent buildings. Then selected mansions are listed in brief information about history and people who lived in, common spaces, private spaces, building elements, building design strategies, location in site and construction materials.

a.

b.

c.

d.

e.

f.

Figure 4-1 (a) De Andria Mansion (b) Whitthal Mansion (c) Kuyulu-1 (d) Kuyulu-2 (e) Sari Mansion (f) Edward Mansion (Murat Mansion) (Alamdari archive)

4.1 Introducing the Site

In the 19th Century, Bornova District was a residential area located separately from the central part of Izmir in function of summer houses for habitants because of its mild climate. According to literature survey, the construction materials and methods strongly followed the local architecture specifications. Related information was collected among the books especially about the Levantines and writings of the travellers, observation and interview with habitants, photography, old sketches and photos, private specialists' information, renovation projects, websites, and archives of historical organizations of Izmir. The selected houses for the case study are located on the Southern edge of Bornova, on Erzene district (Figure 4.2) and all houses surrounded by vast gardens with different kind of trees and vegetation's. Mostly pine and magnolia trees planted on the street walls and acts as a separator and barrier. The houses distinct narrow curved streets covered by stone paving with high stone walls. All sites are neighboring each other.

Figure 4-2 Location of Mansions (Alamdari Work)

4.2 The Mansions

There is not one to one correlation between typology and built examples, there is no ambiguity that the typologies and the existing examples are related to the same architecture. The trait of the mansions of Bornova that is formed in our minds by diverse examples, cannot be traced in each of the buildings completely. To illustrate these ideas, six mansions were selected as a case study to indicate the typological characteristics of Bornova mansions. These items selected among houses were repaired and available to access.

4.2.1 House No. 1: De Andria Mansion (Café Pie)

The De Andria mansion is located at the intersection of 83rd and 80th streets; in the 1830, the Gypsy family of Bornova built it. Much later the house was sold to Richard Mattheys, director of the Credit Lyonnais Bank, who sold it to Charles Balladur about 1928. Denise De Andria inherited it from her father and resided there with her husband Remo De Andria, until her death in 1973 (Kalcas, 1978). The De Andria family, who are connected with the carpet trade, came from Karshiyaka to settle in Bornova. The mansion is enclosed with high walls. The distinctive feature of the mansion is the lacy border around the eaves. Garden furniture of white cast iron was made in the Midlands, England, presumably in the nineteenth century (Figure 4.3).

FigureAlamdari 4-3White Cast Iron (Alamdari archive)

While most windows on the Levantine mansions are rectangular, in this example the arches are segmental. There is not much information regarding the interior decoration of the building (Figure 4.4) while Neo-Baroque elements on the lintels and a wooden lattice-work belt around the eaves are visible (Figure 4.5) (Inal, 2006).

Figure 4-4 Interior Decoration (Alamdari archive)

Figure 4-5 WoodenEaves (Alamdari archive)

The mansion is located in a vast garden. Extensive tall stone walls on the south, east, north and some parts of west sides define the boundaries of building between streets and adjacent buildings. The typology of the site is stepped terraces. It is oriented in east-west axes and organized in semidetached type. From west part connected to the street and other facades face to garden. The building has two storeys and a basement floor. In layout of mansion the private part is located in second floor and common part is in first floor, the kitchen and workers area in basement floor.

Entrance to the basement floor is from south and east part and entrance of first floor is from stairs in north façade by entering via vast projection (Figure 4.6)

Figure 4-6 De Andria Mansion (Alamdari archive)

The projection area has wooden frames and glasses in octagonal shape. This projection acts as transitional space. The plan of the house is in rectangular shape. Spaces of first floor are connected by corridors, or directly connected to each other. A staircase in east part leads to the second floor (Figure 4.7). The second floor just covers half of the first floor.

Figure 4-7 Staircases on East Part (Alamdari archive)

Three rooms are in second floor. One small balcony has seen in second floor's south façade. Fire places just located in common parts (Figure 4.8).

Figure 4-8 Fire places

Windows are mostly on north and south façade, type of windows is casement with transom window on top of them (Figure 4.9) for more ventilation, just windows of services areas in first and second floor are single hung, all of the windows have movable shadings devices (Figure 4.10). Transom window is a glazed or solid panel over a door or window usually hinged and used for ventilation. The transom and bar may be removable for passage of large objects, It is narrow window that can be either operating to let in air or non-operating (stationary) and mounted above a door or window to let in more light.

Figure 4-9 Window Type (Transom Window)

Figure 4-10 Movable Shading Devices

The building materials are used stones, timber and mortar. Roof type is various, first floor's roof is gable roof, and the projection's roof is flat, but the second floor's roof is combination of pyramid and gable roof (Figure 4.11).

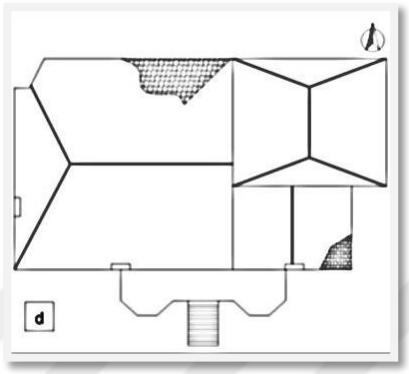


Figure 4-11 Roof Type of De Andria Mansion

	Floors	Door	Window			
			Casement	Single hung	other	Shading
North Facade	Basement	No	No	No	No	No
	First floor	No	3	2	No	Yes
	Second floor	No	No	1	No	Yes
South Facade	Basement	3	3	No	No	Yes
	First floor	2	4	No	No	Yes
	Second floor	1	No	2	No	Yes
East Facade	Basement	1	1	No	No	Yes
	First floor	No	1	No	No	Yes
	Second floor	No	1	No	No	Yes
West Facade	Basement	No	No	No	No	Yes
	First floor	1	2	No	No	Yes
	Second floor	No	No	2	No	Yes

Table 4-1 Openings of Mansion No.1

The data generated by Table 4.1 shows that doors are located mostly on South façade, just one door seen in east façade. South façade has the maximum number of windows, then north and west façade has the least windows and openings. Windows types are mostly casement (Figure 4.12). Just services areas and bath are single hung with three curtains to prevent in lose temperature of inside (Figure 4.13).

Figure 4-12 WindowType in De Andria Mansion (Alamdari archive)

Figure 4-13 Single Hung Window (Alamdari archive)

Site Planning

Organization	Layout		Vegetation	Balcony	Projection
	Orientation	Aspect Ratio			
Semi-Detached	East-West	1.90	East and South	One on South facade	One in first floor entrance

Building Elements

openings				Transitional Spaces	Shading Devices	Architectural Elements	Ornaments
door		window					
size	protection	size	protection				
Normal	Normal	Normal	Normal	Entrance of first floor	On all façade openings	-	White iron works

Building Design

Form	Stories	Ceiling Height	Climate Solutions	Privacy
Rectangular	2	3.50	-	Shading devices/high walls

Construction

Materials	Foundation	Floors	Ceiling	Building Envelop	
				Wall	Roof
Adobe-stone-timber	Stone	First floor mosaic/ second floor timber	Timber	First floor adobe stone-second floor filled timber	Combination

Table 4-2 Architectural Characteristics of mansion No.1

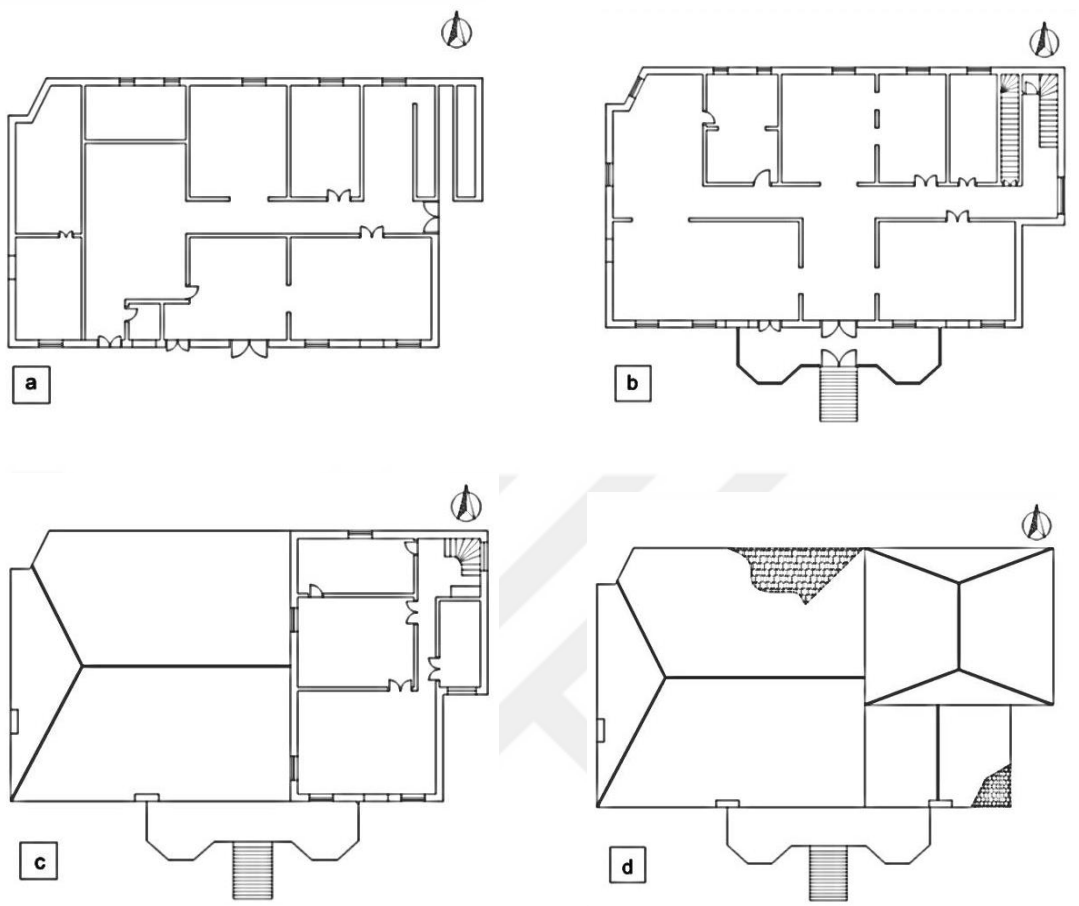


Figure 4-14 a) basement floor plan b) first floor plan c) second floor plan d) roof floor plan (Alamdari Works)

As shown in Figure 4.14 the basement floor divided into various rooms that are service areas, servants resting rooms and kitchen. The main living area is shown in figure (b); this floor is connected to the other parts by the staircase in east façade. The first floor used as common space also fireplaces are located in this section. Figure c indicates the second floor, this part covered just half of the first floor and contains bedrooms and is the private part of the mansion. Figure 4.15 shows the facades of the De Andria mansion.

Figure 4-15 a) south façade b) west façade c)east façade d)west façade e)east façade (Alamdari archive)

4.2.2 **House No. 2: Whithall Mansion**

This building has two stories and a mezzanine between two floors on the east façade with rectangular plan type, but there is not much difference between long and short axes. The mansions longer façade is typically oriented east-west; the organization of building is semidetached which connected to the adjacent buildings from north and east façades. Green areas are located in west and south part of the building and help to smooth the air during hot summer. Main entrance of the building is on the south façade via a timber framed walls filled with rubble (*ahsap catkili molaz tas*) structure with two timber frame window on south part (Figure 4.16). Projection's part floor filled with special mosaic and helps to separate the building from the garden (Figure 4.17). The first floor is the continuation of the garden. Three

windows are in south façade and one single hung on both west and east façadeof projection.

Figure 4-16 Main entrance (Alamdari archive)

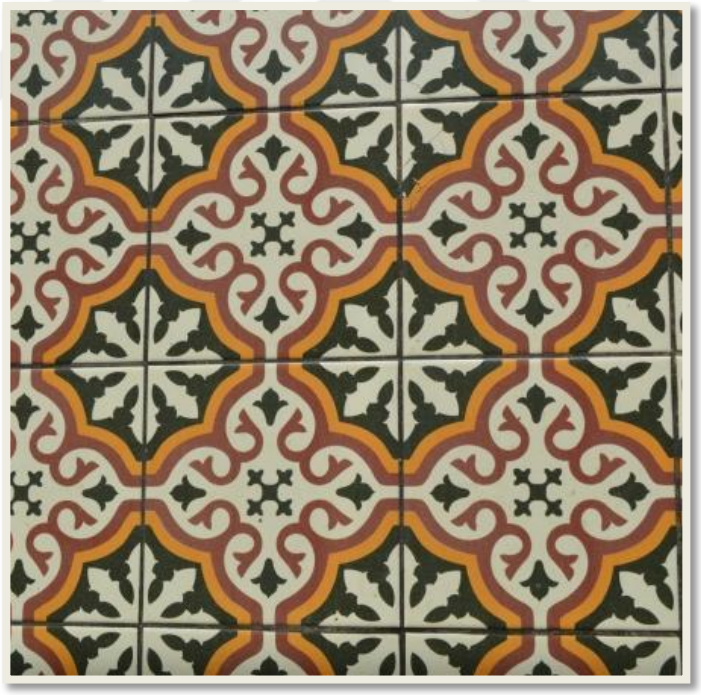


Figure 4-17 Entrance floor covering (Alamdari archive)

A remarkable marble and brick fireplace being placed on the left wall of a large hall (Figure 4.18).

Figure 4-18 marble and brick fireplace (Alamdari archive)

Large hall divided to two parts with a load bearing stone wall in the width of 80 cm. At the right side a room, timber staircases and kitchen is located, the room has a marble fireplace that surrounded by the ceramic covered wall (Figure 4.19).

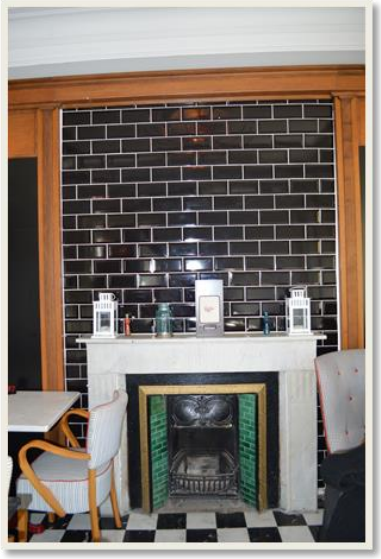


Figure 4-19 Marble Fireplace (Alamdari archive)

The small part that located between two stories is service area. This part is in a middle of staircases.When climbing up the stairs a small hall is seen, transparency of this hall and staircases is provided by a window on top of staircases open to the roof (Figure 4.20).

Figure 4-20 Window providing privacy (Alamdari archive)

Five rooms and a small storing room open to this hall. One of the room's which is located in the south façade is connected to a terrace that opens to view and the front yard. Terrace reaches to the garden by staircases on the west façade (Figure 4.21).

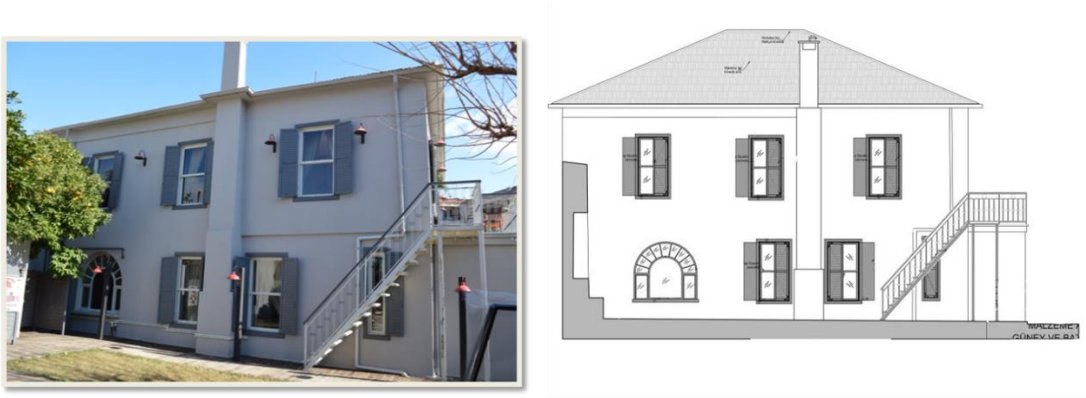


Figure 4-21 South Façade Terrace (Alamdari archive)

Openings are mostly on south and west sides, except one arched window (Figure 4.22) in west façade all of the windows are single hung type just two windows of

south façade inside projection is the combination of casement and double-hung window (Figure 4.23).

Figure 4-22 Arched Window (Alamdari archive)

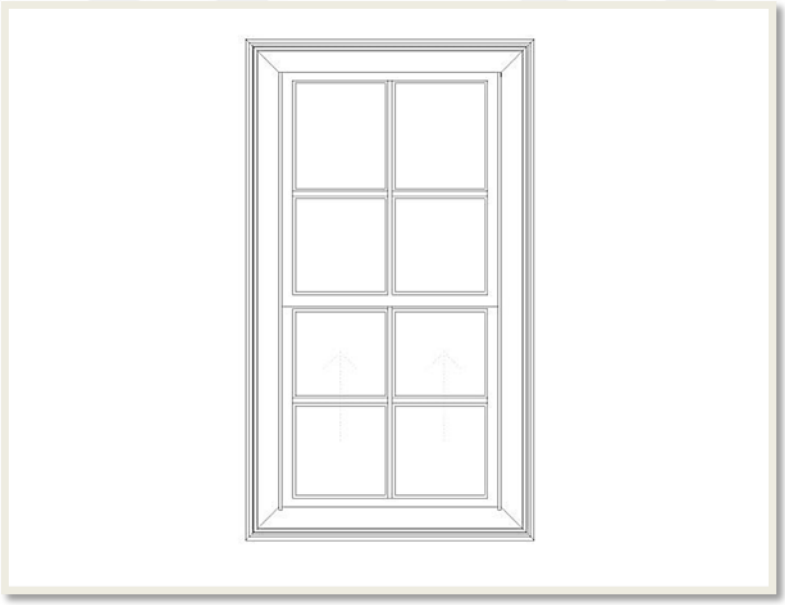


Figure 4-23 Second Floors Single Hung Window (Alamdari Works)

Protections of windows are external wooden shutters divided into two parts and both two parts are fixed. Used materials in first floor walls are stone and adobe in the width of 80 cm, all first floors walls are load bearing. The floor is covered with special mosaics (*karo siman*) (Figure 4.24) and marble, in the first floor. Second floors outer walls materials are stone and inner walls are timber structure filled with rubble with 20-30 cm width. Floor and ceiling covering of the second floor is timber and roof type in this building is pyramid type.

Figure 4-24 Special Mosaics (Alamdari archive)

	Floors	Door	Window			
			Casement	Single hung	other	Shading
North façade	First floor	No	No	No	No	No
	Second floor	No	No	2	No	Yes
South façade	First floor	3	2	1	2	Yes
	Second floor	1	No	3	No	Yes
East façade	First floor	No	No	No	No	No
	Second floor	No	No	No	1	No
West facade	First floor	No	No	3	Arched	Yes
	Second floor	No	No	3	No	Yes

Table 4-3 Openings of Mansion No.2

Site Planning

Organization	Layout		Vegetation	Balcony	Projection
	Orientation	Aspect Ratio			
Semi-Detached	East-West	1.19	west and South	One on South facade	One in first floor entrance

Building Elements

openings				Transitional Spaces	Shading Devices	Architectural Elements	Ornaments
door		window					
size	protection	size	protection				
Normal	No	Normal	Timber shutters	One projection in entrance	External wooden shutters	-	Two marble fire place – timber cover on walls

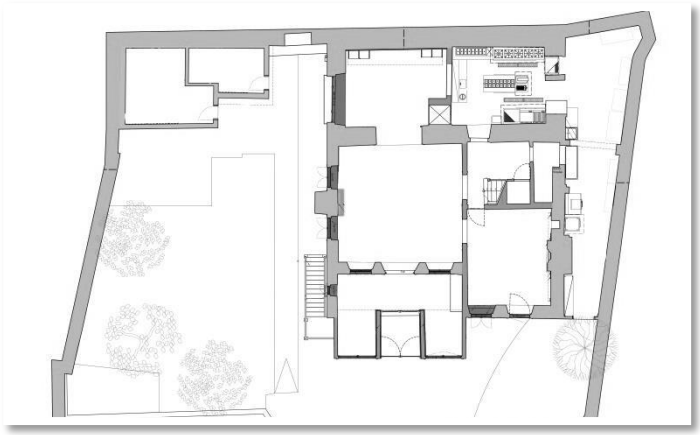
Building Design

Form	Stories	Ceiling Height	Climate Solutions	Privacy
Rectangular near to cube	Two with an extra adjucent between first and second floor on east facade	2.65	One small opening on east façade top of the stair cases	Wooden external shutters on windows

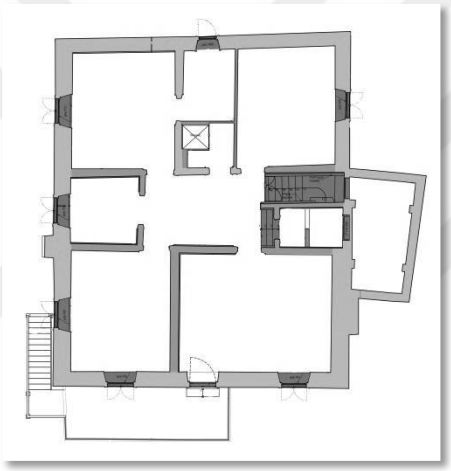
Construction

Materials	Foundation	Floors	Ceiling	Building Envelop	
				Wall	Roof
Stone-timber-adobe	Stone	First floor mosaic and marble/second floor timber	Timber	First and second floor's outer walls adobe and stone – second floors inside walls rubble filled timber structure	Hip roof

Table 4-4 Architectural Characteristics of mansion No.1



a.



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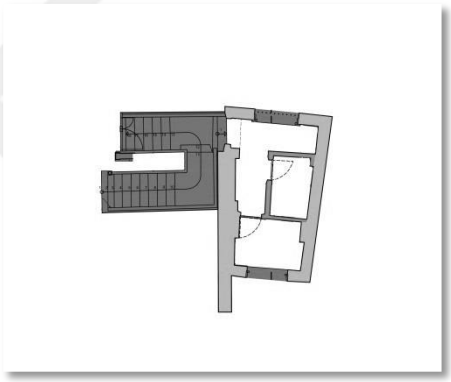
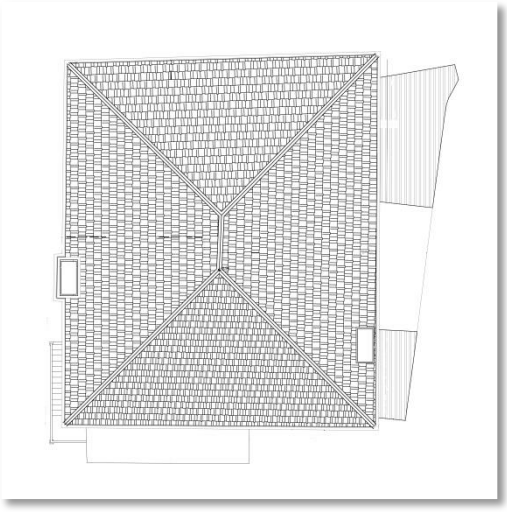


c.



d.

Figure 4-25 a) first floor plan b) second floor plan c) middle floor plan d) roof floor plan

First floor plan contains common spaces and kitchen; fire places are located in entrance hall and one of the rooms. Mezannine section is reached by stair cases in west part and includes service areas. Second floor have bedrooms and connected to the terrace on South façade (figure 4.25).

4.2.3 **House No. 3: Kuyulu – 1**

The Well House was a property of Charlton Whittall until its transformation to the English Club. The English club was very popular with the Bornova English community. The columns, where a horse was placed around to rotate the bucket wheel to draw water from the well are still standing (Figur 4.26).

Figure 4-26 Columns Around Well in Kuyulu House No.2 (Alamdari archive)

The building was transferred to Ege University in the 1980s and started to be used as the Center for Izmir Studies. The Well House consists of two buildings. The building facing the street has two-storeys with a plain façade (Figur 4.27). The main building is concealed from the street and has a single-storey. The main building has an arched entrance (Figur 4.28). A pebble mosaic way at the entrance of the main building is still standing (Inal, 2006).

Figure 4-27 Kuyulu House No.2 Facing to Street (Alamdari archive)

Figure 4-28 Arched Entrance of Kuyulu House No.1 (Alamdari archive)

Kuyulu house No.1 is a detached dwelling with compact geometry and extensive garden on the south-east and west part, from the north part is facing to Kuyulu house No.2 and a small yard is used in common by this two building. This building has quadrangular shape with one story and oriented in east-west axes. Just two small parts in the south part are added and reached by staircases from the inside of the south part. High ceilings in the first floor are useful to cooling the inside in warm weather of Izmir. Main entrance of the building is from the north facade within a veranda (porch), four columns in front and two columns in back side that half of these two

columns are inside the stone wall made the porch surrounding, the arched structure is between columns. In entrance a large hall with high ceiling exists (Figur 4.29)

Figure 4-29 Large Hall With High Celing in Kuyulu House No.1 (Alamdari archive)

Two rooms in the right side, kitchen and services in left side located around this hall, at the south part by marble stairs enter to a vast area that connected to the back yard (Figur 4.30). Common spaces are located in the first floor and two small rooms are in two corners of the south façade. By two staircases in both west and east side, these two parts are reachable.

Figure 4-30 Marble Sstairs Connect Two Buildings (Alamdari archive)

Inside doors are casement doors in small sizes. Windows are seen in all facades, but number of them on the east façade are the least one (Figure 4.31).

Figure 4-31 East Facade With Less Window (Alamdari archive)

First-floor windows are casement type with Iron protection beams (Figure 4.32) and the second floor has single hung windows. Walls of the first floor are adobe and stone around 50 cm; the second floor is a wooden frame with rubble filling with 20 cm width.

Figure 4-32 Casement Windows of First Floor in Kuyulu House No.1 (Alamdari archive)

Floor covering in the first floor is special mosaic (*karoplak kaplama*) (Figure 4.33) and in the second floor is timber. The roof type is the combination of cross gabled and pyramid.

Figure 4-33 First Floor Covering in Kuyulu House No.1 (Alamdari archive)

	Floors	Door	Window			
			Casement	Single hung	other	Shading
North façade	First floor	3	3	No	Arched	Yes
	Second floor	No	No	No	No	Yes
South façade	First floor	3	5	No	No	Yes
	Second floor	No	2	2	No	Yes
East façade	First floor	No	2	No	Arched	No
	Second floor	No	1	No	No	No
West facade	First floor	1	6	No	Arched	Yes
	Second floor	No	No	2	No	Yes

Table 4-5 Openings of Mansion No.3

Kuyulu house No.1 has one story but in adjacent part on south part has two stories (Figure 4.34). Services and bed rooms are located in this part.

Figure 4-34 Kuyulu House No.1 (Alamdari archive)

Site Planning

Organization	Layout		Vegetation	Balcony	Projection
	Orientation	Aspect Ratio			
Detached	East-West	1.30	West - East and South	No	In north facade

Building Elements

openings				Transitional Spaces	Shading Devices	Architectural Elements	Ornaments
door		window					
size	protection	size	protection				
Normal	Iron	Normal	Iron	One porch in north facade	No	-	Iron Beams

Building Design

Form	Stories	Ceiling Height	Climate Solutions	Privacy
Rectangular near to quadrangular	One	3.78	-	Iron beams on windows

Construction

Materials	Foundation	Floors	Ceiling	Building Envelop	
				Wall	Roof
Adobe stone - timber	Stone	First floor mosaic/second floor timber	High	First outer walls adobe and stone – second floors outer walls rubble filled timber structure	Combination

Table 4-6 Architectural Characteristics of mansion No.3

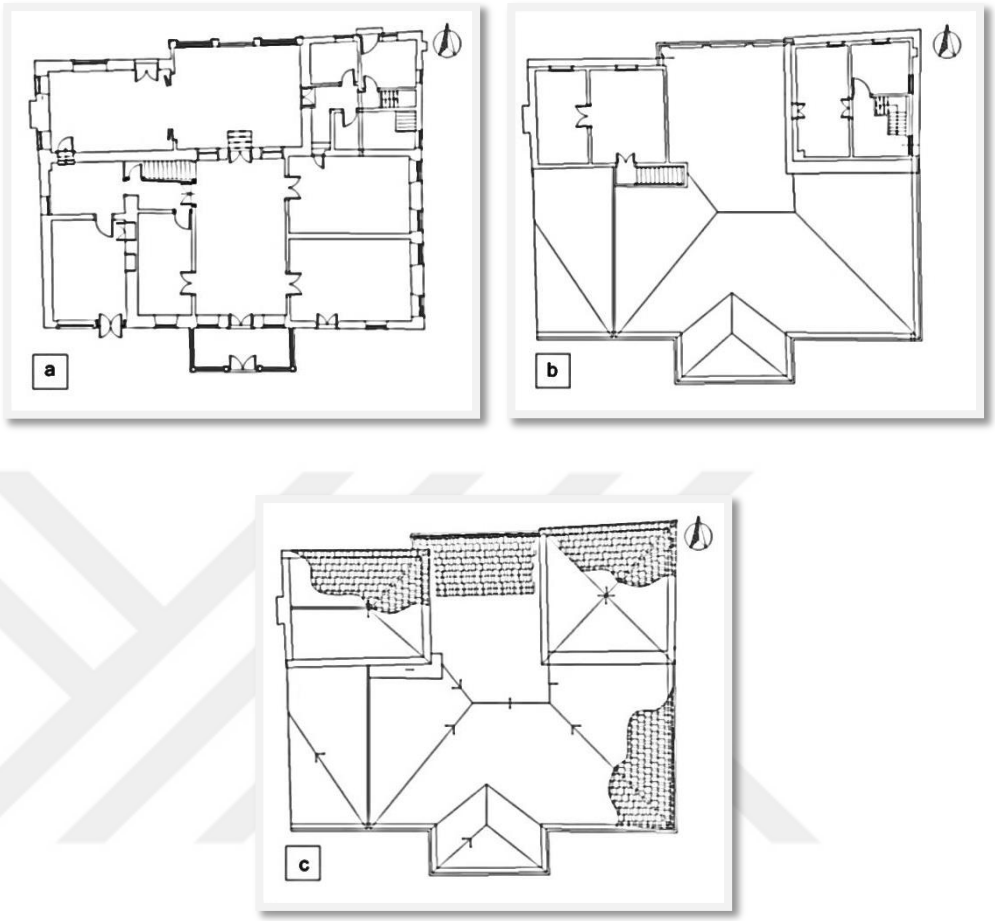


Figure 4-35 a) basement floor plan b) first floor plan c) roof floor plan

First floor's main entrance is from North part, during past time some parts added to this building so the roof type gets combination form. Via two stair cases in west and south part reaches to the second floor. Two section of second floor are separate from each other (Figure 4.35). There is another entrance, face to a vast garden in south part (Figure 4.36.f); also a small door from service area opens to this garden. Like most of the mansions in Bornova to prevent the wind breeze there are not more openings on west façade (Figure 4.36.h).

Figure 4-36 f) south facade g) west façade h) east façade (Alamdari archive)

4.2.4 **House No. 4: Kuyulu – 2**

Kuyulu house No 2 is a semidetached building on east-west direction which faced to the street from north façade and from south façade to a small yard that is common in use with *kuyulu* house No.1. This building has L shape plan with two stories. Entering to the building is via arched door (*Bursa kemerli*) to a hall. In left side around a small corridor three separate rooms are seen, two rooms in right and left side of this corridor are small and the third one is big and have a fire place. This room connected by wooden door to another room in right part which added to the building in later period. After entering to the right part from a door staircase seen in right side. Staircases by stone materials reach to the basement floor and by timber material connected first floor to the second floor. Kitchen and a room are located in two side of narrow corridor after staircases .bath is inside of the kitchen and at the end of the corridor door guidance to the west part.

	Floors	Door	Window			
			Casement	Single hung	other	Shading
North façade	First floor	No	No	No	No	No
	Second floor	No	No	No	No	No
South façade	First floor	2	3	No	No	Yes
	Second floor	1	No	2	No	Yes
East façade	First floor	1	2		No	
	Second floor	No	2	1	No	Yes
West facade	First floor	No	No	3	Arched	Yes
	Second floor	No	No	3	No	Yes

Table 4-7 Openings of Mansion No.4

Climbing up the stairs lead to a narrow corridor on second floor. At the right part of staircases a large room with fire place is located. From left part of stair cases reach to the roof. Three rooms are located in left side of the narrow corridor, right side of the corridor face to the back yard and north façade of *Kuyulu* house No.1; end of corridor by a wooden door separated from another hall which has two rooms in both north and south sides. Just one balcony is attached to the building on west façade (Figure 4.37).

Figure 4-37 Balcony of West Facade (Alamdari archive)

First floor walls are stone and adobe with 60 cm width and in single, two or different rows bricks are used between stones. The floor is covered by mosaics and the ceiling is timber. Inner walls of the first floor are timber filled by rubbed stones. Timber is the essential materials of walls in second floor's inner walls, these walls have 20 cm width but the outer walls of the second floor are stone (Figure 4.38).

Figure 4-38 Structure of Walls in Kuyulu House No.2

All of the windows in first floor have stone frames which are called *tas sove*. Window types in first floor are casement. The shutters of windows in north façade are thick iron plates to prepare more privacy (Figure 4.39). The roof type is cross gabled.

Figure 4-39 Tas Sove & Iron Plate Shutters (Alamdari archive)

Site Planning

Organization	Layout		Vegetation	Balcony	Projection
	Orientation	Aspect Ratio			
Semi-Detached	East-West	1.90	East and South	One on South facade	One in first floor entrance

Building Elements

openings				Transitional Spaces	Shading Devices	Architectural Elements	Ornaments
door		window					
size	protection	size	protection				
normal	Iron	normal	Iron	-	Iron plates	-	-

Building Design

Form	Stories	Ceiling Height	Climate Solutions	Privacy
L type	Two	4.08	-	Iron plates on windows and doors

Construction

Materials	Foundation	Floors	Ceiling	Building Envelop	
				Wall	Roof
Adobe stone - timber	Stone	First floor mosaic/second floor timber	High	First outer walls adobe and stone – second floors outer walls rubble filled timber structure	Cross hipped roof

Table 4-8 Architectural Characteristics of mansion No.4

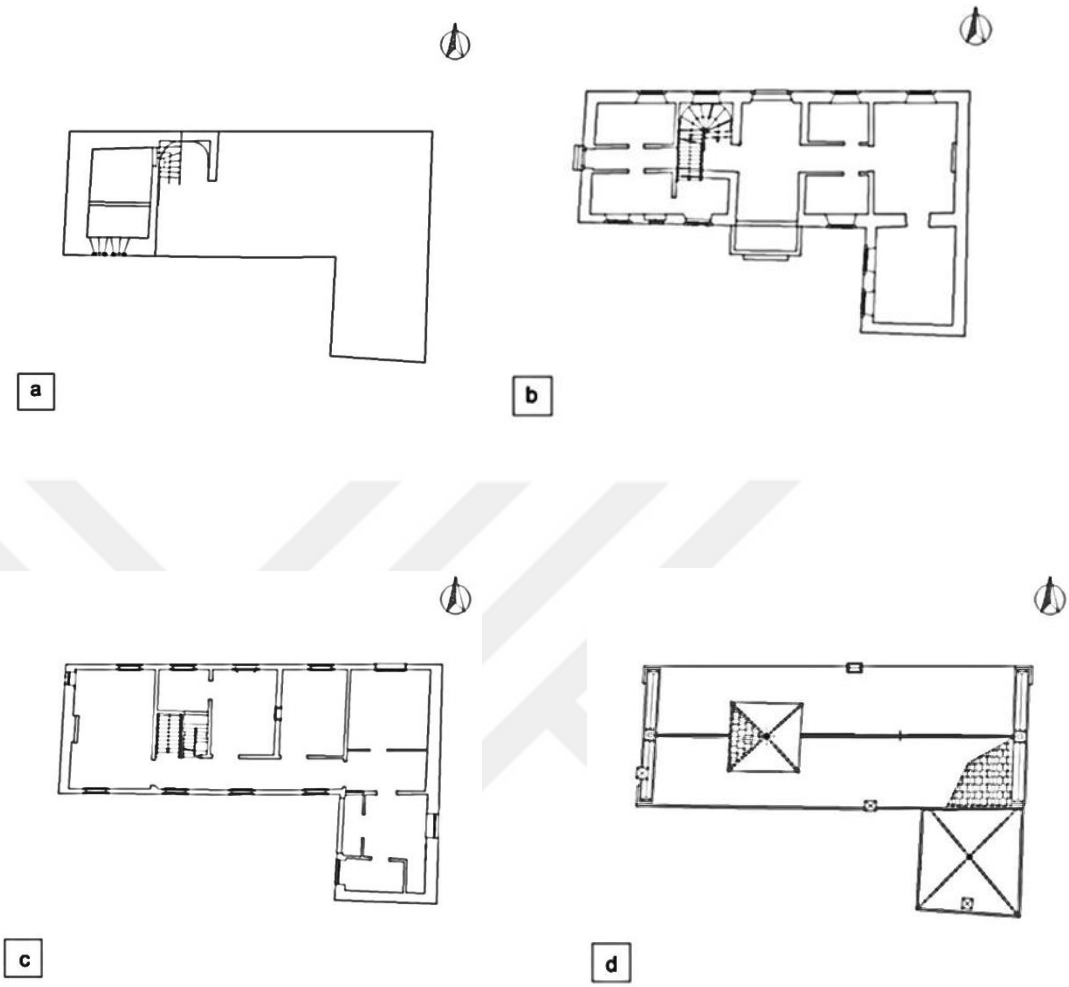
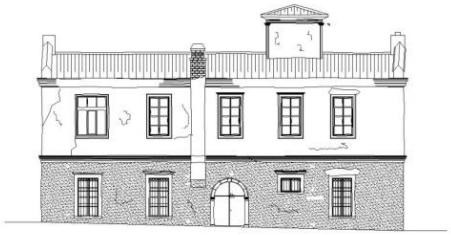


Figure 4-40 a) basement floor plan b) first floor plan c) second floor plan d) roof plan

There is a small basement with two tiny windows to the north façade. At first, this building has rectangular plan type, then a small part on north façade added to the building and its shape changed to L type, so the roof type is changed too. First floor contains kitchen and common spaces. Two main doors on north and south façades located on one axis (Figure 4-40). Second floor has the bedrooms and a large hall.

N.F



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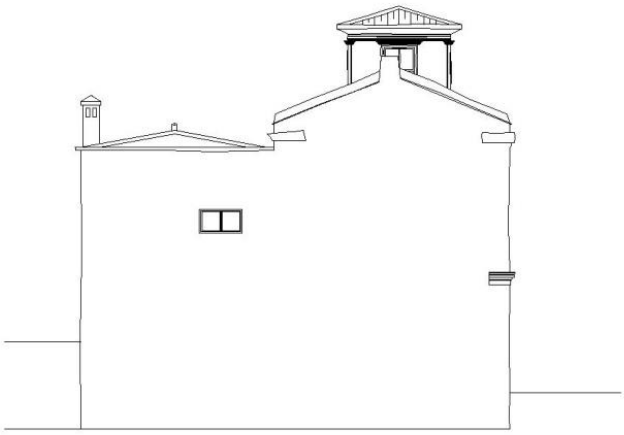


h

Figure 4-41 e) north facade f) south facade g) west facade h) east facade

4.2.5 **House No. 5: Sari Kosk**

This mansion is located in opposite side of Bornova metro station; it has rectangular plan shape with 19.5 meter lenight and 12 meter width, in detached form and has two stories. Basement floor have six windows, with short ceiling. It is impossible to enter the basement floor from north part and other parts are not reachable. Main entrance to the mansion is from west façade via a casement door to a corridor that covered by 60X60 black and white quadrangular marbles, (Figure 4.42) and gets narrow at the end. Five rooms, kitchen, service area and two timber structure staircases are located around this corridor. One of the staircases is in north, and the other one is in east side with decorative railings. First floor is covered by decorative tile mosaics, timber and marble.

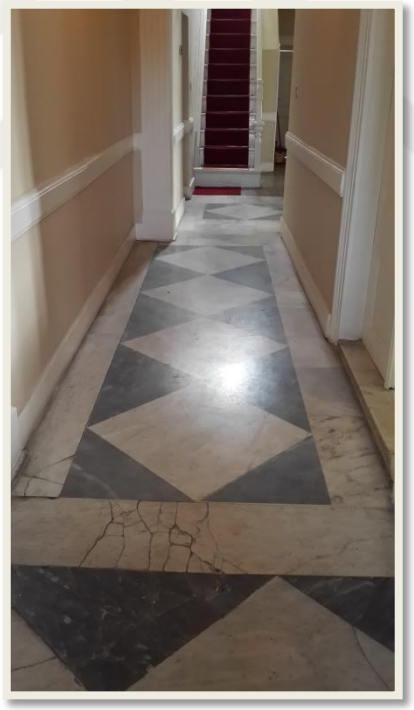


Figure 4-42 Black and White Quadrangular Marbels (Alamdari archive)

The second floor has nine rooms located around a corridor, there is an L shape balcony on west and south façade with 7 columns in width of 30 cm, the columns are connected to each other and structure with wide beams (Figure 4.43).

Figure 4-43 L Shape Balcony (Alamdari archive)

Floor of second floor is timber; the roof structure is timber too in both floors. Five fire places are in this mansion, two of them are in first floor and three in second floor. All fireplaces tray table's material is timber and all other parts are made from cast iron and wood. The roof of the building is cross gabled but the west parts roof is bigger and higher than east part (Figure 4.44).

Figure 4-44 Fire Places

Outer walls are around 40-45cm with materials of stone and mortar. Like other mansions of Levantines in Bornova the first floors inside walls and second floors walls are timber structure filled with rubble. All of the windows have stone frame (*tas sove*) in casement type that divided to two parts upper parts are small and lower parts are long. Just on North façade one of the windows where the staircases located is in double hung type with a transom window on top of it (Figure 4.45).

a. b.

Figure 4-45 a)Window Type b)double hung type with a transom window on North Façade

There is no shading elements on windows, but the hinge pines are remain on first floors north and south facades windows. First floor doors and windows have stone frame (tas sove) and for providing protection of windows in first floor are wrought iron. These kinds of protection have ornamental purpose too (Figure 4.46).

Figure 4-46 Wrought Iron of Openings of Mansion No.5

	Floors	Door	Window			
			Casement	Single hung	other	Shading
North Facade	Basement	No	2	No	No	No
	First floor	No	4	No	No	No
	Second floor	No	4	1	No	No
South Facade	Basement	No	2	No	No	No
	First floor	1	5	No	No	No
	Second floor	1	3	No	No	No
East Facade	Basement	No	1	No	No	No
	First floor	1	3	No	No	No
	Second floor	No	3	No	No	No
West Facade	Basement	No	1	No	No	No
	First floor	1	3	No	No	No
	Second floor	No	4	No	No	No

Table 4-9 Openings of Mansion No.5

Site Planning

Organization	Layout		Vegetation	Balcony	Projection
	Orientation	Aspect Ratio			
Detached	East-West	1.62	North, East, SouthWest	L shape on west and south facade	-

Building Elements

openings				Transitional Spaces	Shading Devices	Architectural Elements	Ornaments
door		window					
size	protection	size	protection				
Normal	Wrought Iron	Normal	Wrought Iron		No	-	-

Building Design

Form	Stories	Ceiling Height	Climate Solutions	Privacy
Rectangular	2 with basement	4.46	-	Wrought Iron

Construction

Materials	Foundation	Floors	Ceiling	Building Envelop	
				Wall	Roof
Stone, timber, marble	Stone	Marble, decorative tile mosaics	Timber	First and second floor's outer walls adobe and stone – inner walls rubble filled timber structure	Combination

Table 4-10 Architectural Characteristics of mansion No.5

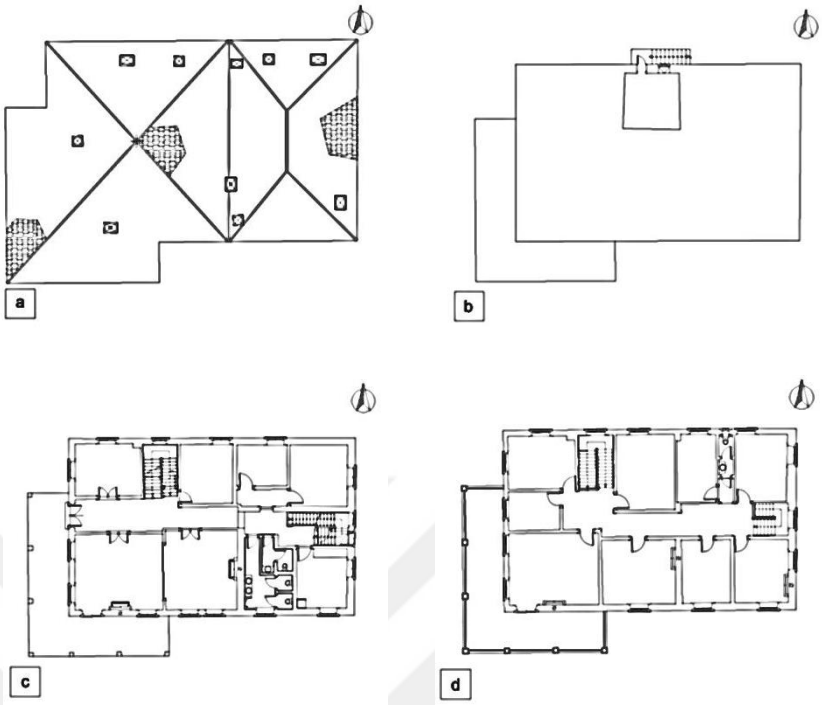


Figure 4-47 a) roof plan b) basement floor plan c) first floor plan d) second floor plan

Figure 4-48 e) north facade f) south facade g) west façade h) east facade

4.2.6 **House No. 6: Murat (Edwards) Mansion**

The Murat (Edwards) Mansion is located in intersection of the *Genclik* and *Kazim Karabekir* Street of Bornova. It was constructed on 1880 and now isusing as Ege University Social club and restaurant. It was built by a member of the Edwards Family. After the emigration of the Edwards Family to Switzerland, the building was used by the Murat Family (Marie and Rodolphe Murat) until the recent past; and therefore known as the Murat Mansion, another name is the "Fairy's mansion" (*Perili Köşk*) since many witnesses affirm having seen the ghost of a young girl carrying things to the house at nights. In the 1970s, the building was used as an orphanage. In 2001, the building was restored by the Municipality of Izmir.

The Murat Mansion has two storeis and a basement. With its symmetrical façade, the building has some features of the Italianate Neo Classicism of the period it was built. The veranda on the first floor is supported with eight slender Ionic columns. It is integrated with the main hall and can be reached through staircases from both sides. Over the veranda, there is a terrace presumably for sun bathing (Figur 4.49).

Figure 4-49 eight slender Ionic columns (Alamdari archive)

The entrance in the rear is emphasized with a canopy. There are some decorative elements in the interior. The ceilings of the main hall and rooms in the first floor are decorated with various floral motifs and landscape scenes within Baroque cartouches

(Figur 4.50).Iron cast works are seen around terraces (Figur 4.51). Next to the building, there is a bath (*hamam)* which is presumed to be added later. (OnurInal)

Figure 4-50 Decoration of Entrance (Alamdari archive)

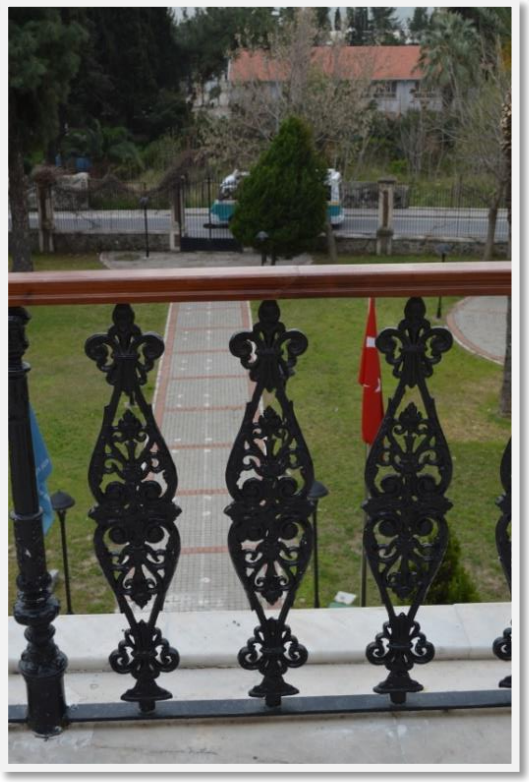


Figure 4-51 Iron Cast Works Around Terrace (Alamdari archive)

	Floors	Door	Window			
			Casement	Single hung	other	Shading
North Facade	Basement	No	4	No	No	Yes
	First floor	1	2	No	No	No
	Second floor	No	5	No	No	Yes
South Facade	Basement	1	No	No	No	Yes
	First floor	1	6	No	No	Yes
	Second floor	1	6	No	No	Yes
East Facade	Basement	No	3	No	No	Yes
	First floor	No	2	No	No	Yes
	Second floor	No	3	No	No	Yes
West Facade	Basement	1	3	No	No	Yes
	First floor	No	3	No	No	Yes
	Second floor	No	3	No	No	Yes

Table 4-11 Openings of Mansion No.6

Staircases which lead to the basement are made by stone but staircases that connect first floor to the second floor have timber structure (Figure 4.52).

Figure 4-52 Staircases of Murat Mansion (Alamdari archive)

Openings are in casement type in both floors with wooden shutters (Figure 4.53).

Figure 4-53 Doors and windows of Murat Mansion (Alamdari archive)

Site Planning

Organization	Layout		Vegetation	Balcony	Projection
	Orientation	Aspect Ratio			
Semi-Detached	East-West	1.35	North, East, SouthWest	One on South facade	-

Building Elements

openings				Transitional Spaces	Shading Devices	Architectural Elements	Ornaments
door		window					
size	protection	size	protection				
Normal	External wooden shutters	Normal	External wooden shutters		External wooden shutters	-	Iron cast Paintings onentrance cieling

Building Design

Form	Stories	Ceiling Height	Climate Solutions	Privacy
Quadrangular	2 with basement	3.50	-	Iron plates on basement windows, External wooden shutters on other windows

Construction

Materials	Foundation	Floors	Ceiling	Building Envelop	
				Wall	Roof
Timber, stone,	Stone	Marble, timber	Timber	First and second floor's outer walls adobe and stone – inner walls rubble filled timber structure	Hip roof

Table 4-12 Architectural Characteristics of mansion No.6

Basement floor devided to different parts used askitchen, storage and servants resting area.This part has stone walls with bricks rows inside them (Figure 4.54).

Figure 4-54 Basement Floor of Murat Mansion (Alamdari archive)

First floor used as common space and second floor as private part of house. The roof type is in hiptype and covered by clay tiles (Figure 4.55).

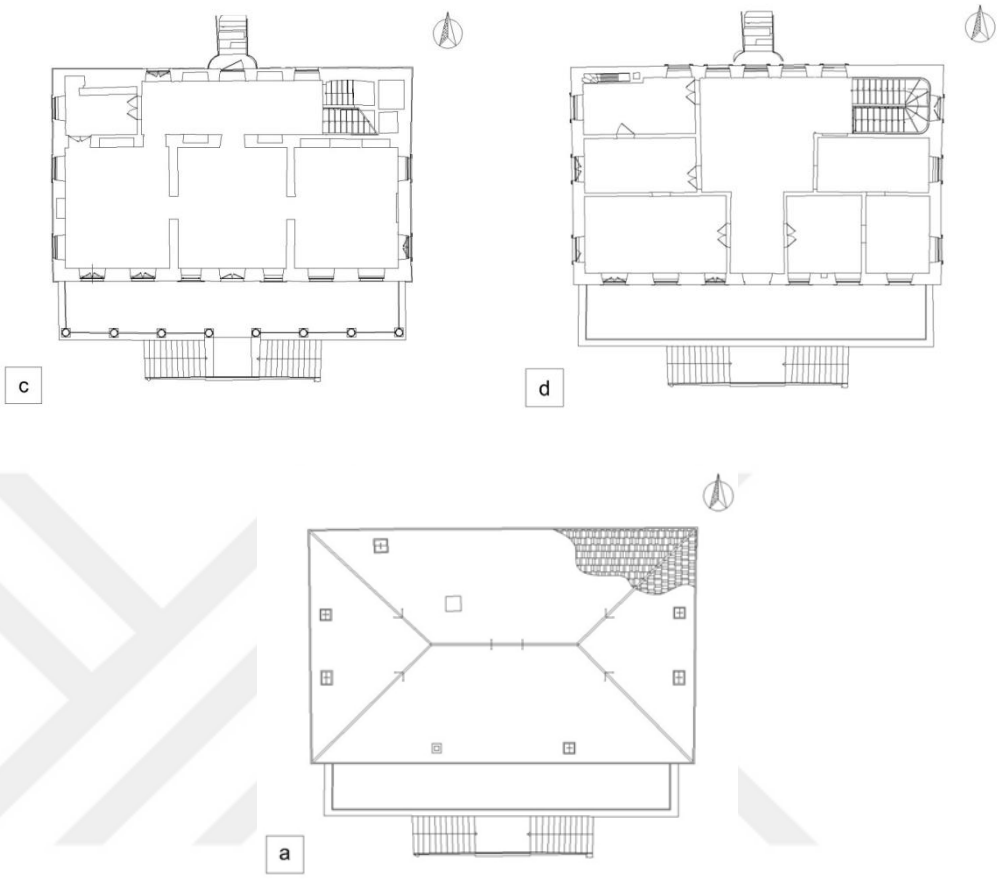


Figure 4-55 a) roof plan b) basement floor plan c) first floor plan d) second floor plan

Windows are seen in all facades. It is possible to enter the building from all sides, but doors of first floor are via staircases on south and north (Figure 4.56).

Figure 4-56 e) north facade f) south facade g) west façade h) east façade (Alamdari archive)

In chapter four six houses contains 1. De Andria mansion, 2. Withal mansion, 3. Kuyulu 1, 4. Kuyulu 2, 5. Sari mansion 6. Murat mansion, are selected for the survey. The selected mansions are located near each other and at the same climate condition, for these houses, different aspects are considered. At first about the history of inhabitants and then architectural characteristics of selected houses described in detail via pictures and according to tables. In one of the tables, numbers of floors, kind of doors and windows are defined. And at the other table information about site planning, building elements, building design and details of construction are sorted. The result of this study for all six houses specifics will represent in chapter five.

5 ARCHITECTURAL CHARACTERISTICS OF LEVANTINE MANSIONS IN BORNOVA

The most important function of buildings is to provide shelter with appropriate thermal and visual indoor comfort for its occupants. A comfort level in a building depends upon the designs in combination with the outdoor climate (Olgyay, 1963). The buildings able to respond to the needs of their inhabitants, the climatic conditions and the topography, because of the simplicity of the building processes, the techniques and the local materials employed (adobe, stone and timber) (Vissilia, 2009). The traditional builders were concerned with a varity of parameters that effected a building as well as with the quality of the building itself. Traditionaly designed buildings are often considered as the predecessors of modern bioclimatic design (Coach, 1996).

The aim of this thesis in this chapter is to evaluate the Bornova Levantine mansions in terms of their architectural characteristics and the building physics, because traditional houses are disappearing and the knowledge about their construction practices is slowly forgotten. Therefore, the need to document this knowledge of traditional constructions practices is evident (Susanne Bodach, Warner Lang, Johannes Hamhaber, 2014). For this purpose four tables designed to research data, concerning the evaluation of the built environment like the site planning, building elements, building design and construction. Also the evaluations of specific methods for response to the climate are presented.

Mahony indicators are one of the important factors are used for preparing these tables. The climatic data has been incorporated in the Mahony tables which provide preliminary design recommendations. They are grouped under eight headings: Layout, spacing, air movement, opennings, position of openings, protection of openings, walls and roofs (Vissilia, 2009). Also asset of building features are considered to analyse the design and construction techniques of the mansions, this research has selected the following features to access the characteristics of houses of Levantines in Bornova: Building form and orientation, building stories and internal arrangments, design and construction materials of walls, roofs, foundation, floors, ceilings and openings.

5.1 Site Planning

Mansion	Organization	Layout		Vegetation	Balcony	Projection
		Orientation	Aspect Ratio			
House No.1	Detached	East-West	1.90	East and South	One on South facade	One in entrance of south facade
House No.2	Semi-Detached	East-West	1.19	west and South	One on South facade	One in entrance of south facade
House No.3	Detached	East-West	1.30	West - East and South	No	In north façade entrance
House No.4	Detached	East-West	1.60	East and South	One on West Facade	One in entrance of south facade
House No.5	Detached	East-West	1.62	North, East, South,West	L shape on west and south facade	No
House No.6	Detached	East-West	1.35	North, East, South,West	One on South facade	No

Table 5-1 Site Planning of Mansions

5.1.1 **Organization**

In analysing the mansion according building organization two type of detached and semi detached are considered. A detached building is a stand-alone, while a semi-detached house is one that is joined to another by a common wall that they share. In this survey the mansions organized in either detached or semi-detached type. Because of using these buildings as summer houses, they placed inside vast gardens, so most of them are detached just one of them is connected to the adjusent buildings from two sides.

5.1.2 **Layout**

Layout is one of the site planning part and divided into two group’s orientation and aspect ratio in this part.

a. Orientation

Orientation used as a concept in building design, orientation in housing means the position of building respect to the sun and play an important role in saving energy, but in Bornova mansions, this factor did not observe and mentioned so much, because the inhabitants used this mansions as summer houses and orientation did not play an important role in the building of mansions, their private gardens were used for daily activities, only sleeping took place inside and also the more or less constant weather conditions make orientation less important. In selected mansions the longer façade are mostly oriented east-west which reduces the absorption of sunlight but it is not true for all of the mansions, also the surrounding streets dose not mentioned too much, the streets located in different sides of the mansions.

b. Aspect Ratio

Choosing a good building shape is one of the most important elements in building design to make it functional and energy saving. Aspect ratio is the ratio of the longest dimension of the building footprint to the narrowest dimension. An aspect ratio of 1.0 represents a square building footprint. However, in the presence of solar radiation, the ideal aspect ratio becomes a balance of heat loss and gain. As seen from aspect ratio of the cases, they vary between 1.19 and 1.90. The case one walls height is around 3.40 and the aspect ratio of it is 1.86. In Case 2 there are two stories with aspect ratio of 1.36 and walls height in first floor is 2.70 and in second floor is 3.65 meters.Walls heights in Kuyulu house -1 case No.3 varies between 3.35 and 3.78 m, the aspect ratio of building is near 1.32. The longer axis is not much longer than short axis. In Kuyulu house - 2 walls are 4.80 meter height in first floor and 3.70 meter height in second floor, the aspect ratio of building is 1.60. The longer axis is much longer than short axis. Case 4 heights of walls vary between 4.5 and 3.75 m. The aspect ratio of building is around 1.62. Murat mansion aspect ratio is about 1.5. The building's aspect ratio determines the amount of surface area from which heat will be transferred to and from the environment. Minimizing the amount of surface area reduces energy transfer (Philip McKeen, Alan S. Fung, 2014). When the aspect ratio is near to one it shows the building is more energy efficiency.

5.1.3 **Vegetation**

Vegetation and plants have important impact over buildings, the main effects are absorbing solar radiation, decreasing earth temperature, reducing dust, causes air movement and air filtration, decreasing soil erosion, increases water amount in soil, provided soil with organic fertilizers, absorb gasses and also causes humidity. Bornova mansions are surrounded by gardens which are planted with ornamental trees, decorative plants and shrubs of all kinds (Figure 5.1).

Figure 5-1 decorative plants (Alamdari archive)

5.1.4 **Balcony**

Balcony is not as important factor in Bornova mansions; there are not too much balconies in Bornova mansions, due to locating houses in vast gardens and open areas in different side's number of balconies are not too much and according table 5.1 balconies are seen just in south and west facades. Just one of them is in L shape balcony and covers south and west façades in others they are in small sizes.

5.1.5 **Projections**

Projections as an extra part added in entrances are seen in three of mansions. In houses No one and two on south façade and in house No three on north façade. These parts have wooden frame or stone columns that covered by glasses. Projections have green house effect; placing these glassy parts in entrances helps to prevent the heat lose in cold weathers and control the ventilation of inside.

5.2 Building Elements

In building elements openings of the buildings which contain doors and windows in size and protection type, also transitional spaces, shading devices of mansions last kind and place of ornaments are listed in table No 5.2.

Mansions	Openings				Transitional Spaces	Shading Devices	Ornaments
	door		window				
	size	protection	size	protection			
House No.1	Normal	External wooden shutters	Normal	Timber shutters	Yes	External wooden shutters	Ornmants on ceiling
House No.2	Normal	No	Normal	Timber shutters	Yes	External wooden shutters	Two marble fire place – timber cover on walls
House No.3	Normal	Iron	Normal	Iron	Yes	External wooden shutters	No
House No.4	Normal	Iron	Normal	Iron	Yes	Iron plates	No
House No.5	Normal	Wrought Iron	Normal	Wrought Iron	Yes	No	Iron wrought
House No.6	Normal	External wooden shutters	Normal	External wooden shutters	Yes	External wooden shutters	Iron wrought Ornments on cieling

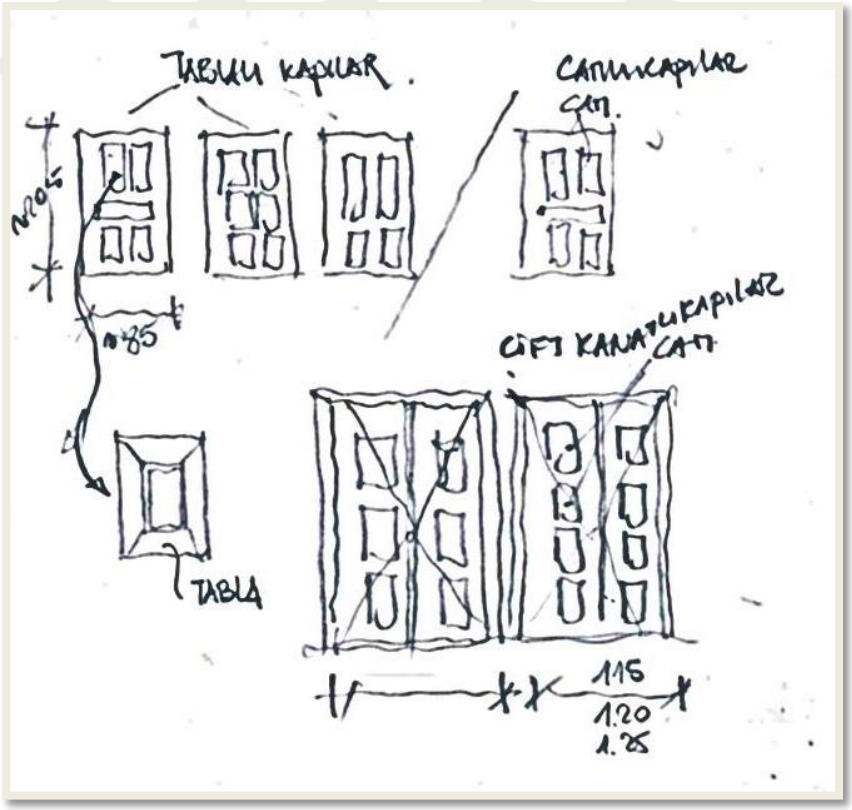
Table 5-2 Site Building Elements of Mansions

5.2.1 **Openings**

In this part openings includes doors, windows and shutters. Openings are main elements of buildings in controlling sunshade, wind breeze, controlling hot or cold weather.

a. **Doors**

Doors in Bornova mansions named '*tabellali*' doors. They are made in two types: whole wood or a combination of wood and glass. Glass just used in upper part of doors. There is no special format for making doors. Folding door sizes are not much bigger than conventional doors, and they used in inside parts to prevent the heat loss from the rooms while opening and closing (Figure 5.2).



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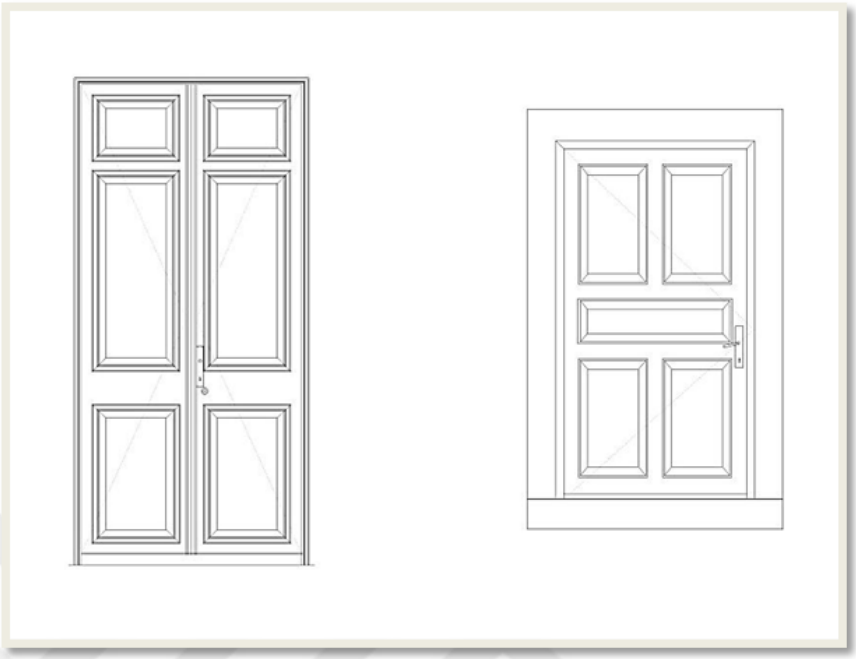
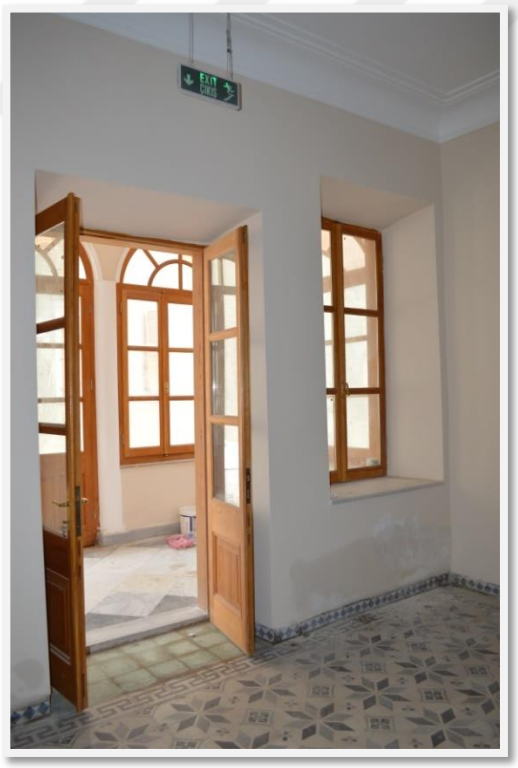




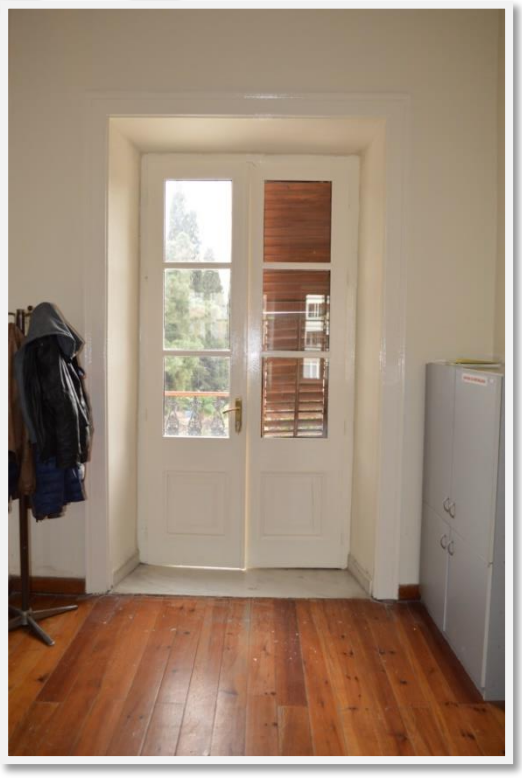


Figure 5-2 Doors of Mnsions (Alamdari archive)

For placing doors in buildings and connecting to the stone walls a piece of wood is placed inside a carved out space in the stone. This wood is then nailed it to the outer frame of the wall (Figure 5.3).

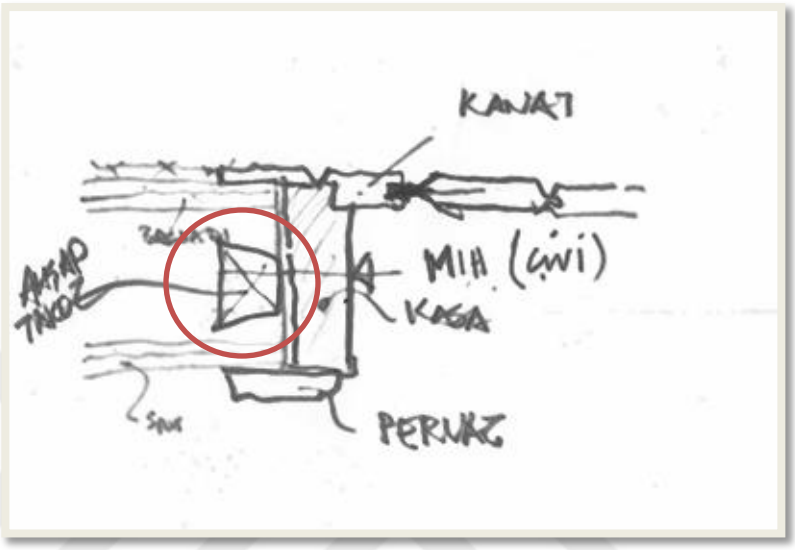


Figure 5-3 Piece of Wood Inside the Stone Wall (M.Gurcal Works)

Doors in rich inhabitants houses connected to the wall like (Figure 5.3) a pice of wood (*parvaz*) used to hide the dificency of wall and door conection part. If the habitant was not wealthy the frame made in simple ways, without *parvaz* (Figure5.4).

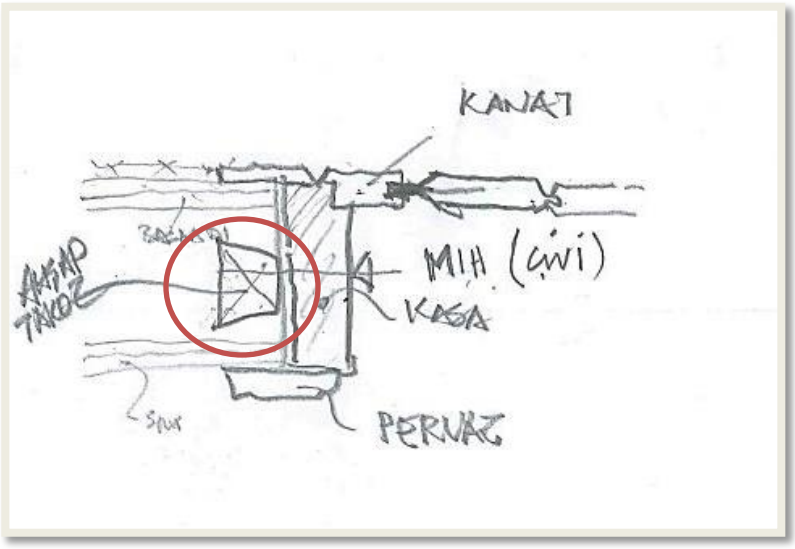


Figure 5-4 Doors in rich inhabitants houses (M.Gurcal Works)

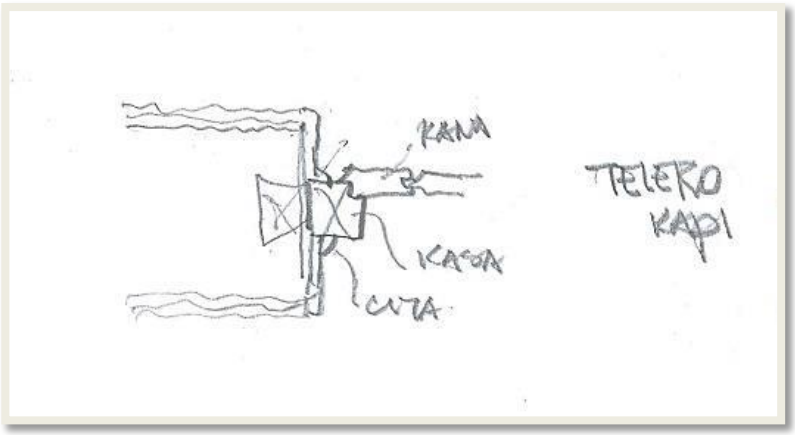
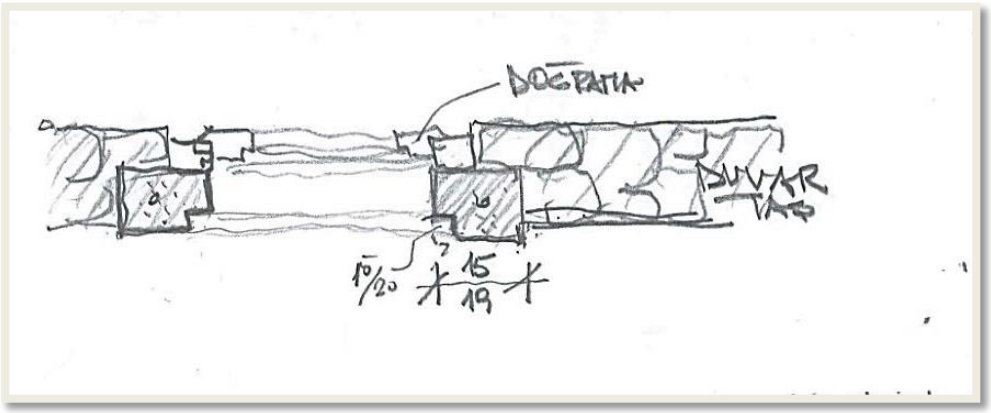


Figure 5-5 Doors in habitant was not wealthy(M.Gurcal Works)

b. **Windows**

Windows of buildings are made in different types in floors. On the first floor encasement windows open in wards because there is enough width in first floor walls so that there will not be a problem in opening into the occupied space and *sash* windows do not use because of walls width it is hard to open **(**Figure 5.6). Parvaz used for hiding the mortar objection in part of connection with door or window frame.



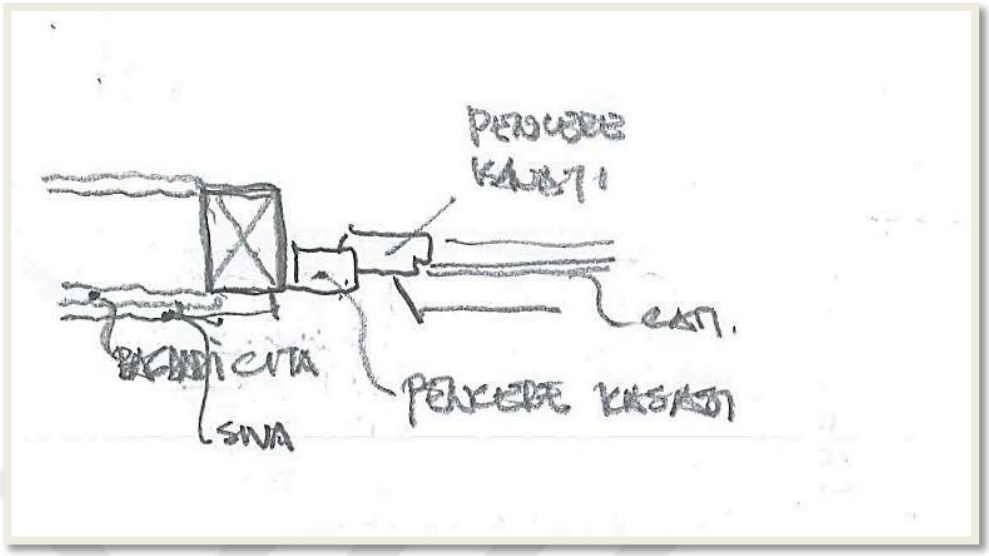
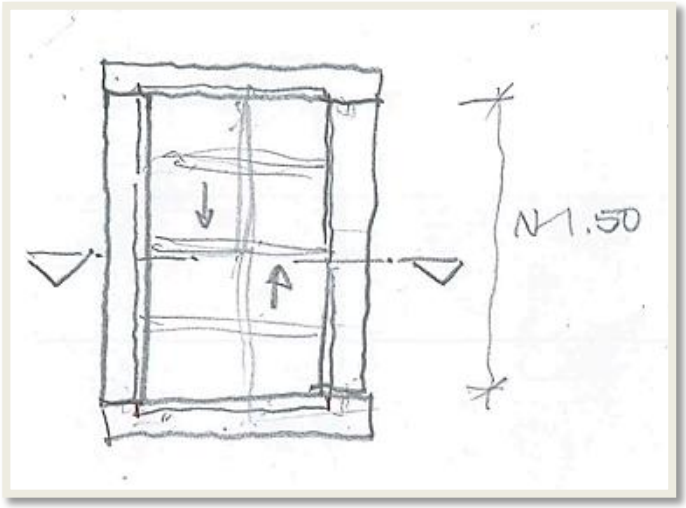


Figure 5-6 Window Detail (M.Gurcal Works)

On second floors, instead of stone jambs frame (*Tas sove)*, a wooden frame outside of the windows called *parvaz* is used to decrease the load bearing of the building. Upper windows are *sash* types that take up less space while being open, and that have the ability to control the amount of wind inside the building. Stone jambs (*Tas sove*) is a specific part of Bornova houses which are made for foreigners. All of the stones used for Stone jambs (*Tas sove*) are integrated (monolith). If the length of the window is high, two integrated stones are used, and these stones are only used for first floors windows. (Figure 5.7) The joint of the *sove* are hinged.



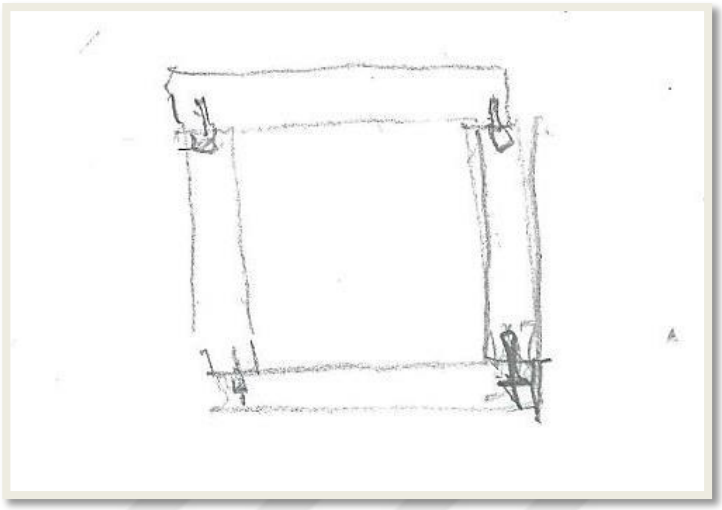


Figure 5-7 Stone Frame (*Tas Sove*) (M.Gurcal Works)

Windows made for habitants need not be big not small for the purposes of protecting those inside against intruders and also for keeping warm air inside. For conjunction of stone jambs in windows: after making holes about 10 cm in depth, the holes are filled with fused lead. Then the pipe is replaced in having a pin inside it, and used just on the sides of the construction. Lead is a soft metal and in both cold and warm weather, it prevents the stones from cracking during contraction and expansion conditions. Cylinder shafts or cube shafts are used as pins for conjunction of both vertical and horizontal stones. (Figure 5.8)

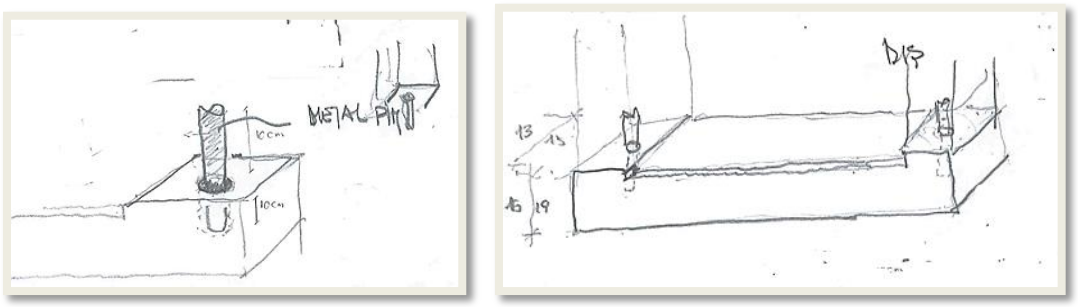


Figure 5-8 Cylinder Shafts Connect Frames (M.Gurcal Works)

5.2.2 **Transitional Spaces**

Transitional Spaces contains Corridors and terraces. In all selected mansions corridors in first floor connected the interance hall to the other parts and staircases, except *Kuyulu* house No.1 other houses have terraces in small sizes.

5.2.3 **Shading Devices**

Shading devices used for different purpose. In some of mansions shading devices are vary in first and second floor. Shutters in first floors are the casement these shutters named angel iron (*Lama*), in shape of cube strips. Inside of casement is filling by metal plates (*sac*), while this shutters closed totally covered the windows in purpose of protecting. The shutters joint to the *sove* by hinge (Figure 5.9).

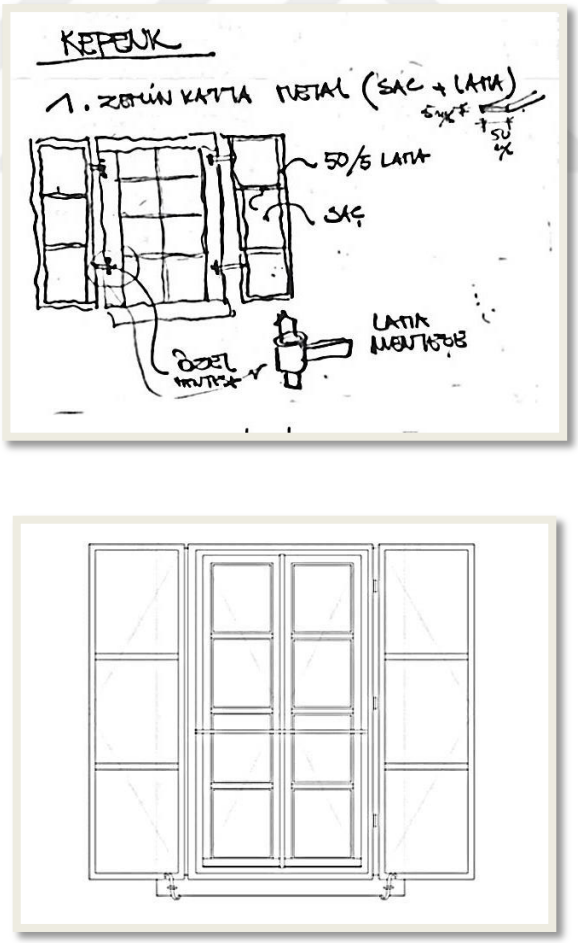


Figure 5-9 Shutters in First Floors (M.Gurcal Works) (Alamdari Works)

Second floors shutters are made of pine wood, the casement is a narrow pine strip and inside of it fill by wooden jalousie (thin strips).This windows divided to two part upper part is fix and the down part is flexible, to control the light, wind breeze and privacy of inside (Figure 5.10).

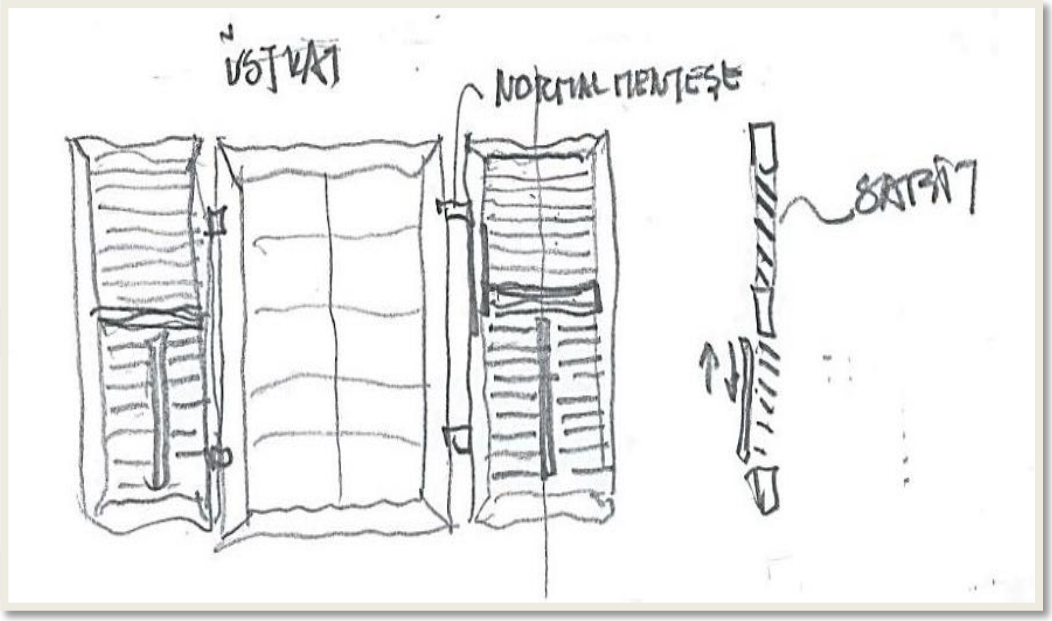
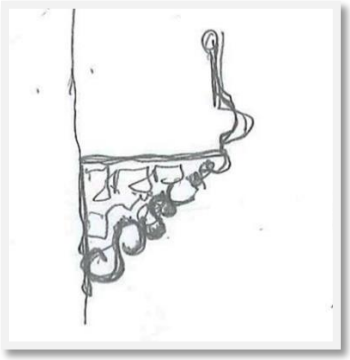


Figure 5-10 Shutters of Second Floors (M.Gurcal Works)

5.2.4 **Ornaments**

There is not much ornments in Levantine houses, just some simple acrography are seen on ceilings and where the ceiling and walls are connected. In fireplaces marbel and bricks used as decorative elements. Iron cast works in outer sides and motifes seen in balconies design (Figure 5.11).



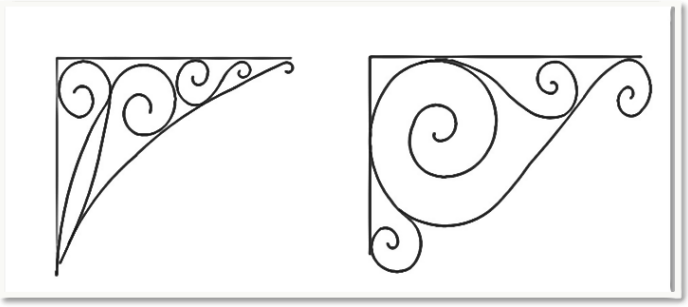


Figure 5-11 Ornmentsin Mansions (Alamdari archive)

5.3 Building Design

Building design separated to five parts that describes the form of the building, number of stories, height of the ceiling in floors, used methods for solving climatic solutions and ways for provide privacy of buildings in case of openings and environmental spaces.

Mansions	Form	Stories	Ceiling Height	Climate Solutions	Privacy
House No.1	Rectangular	Two	3.50	Transom windows	Shading devices/high walls
House No.2	Rectangular	Two with an extra adjacent between first and second floor on east facade	2.65	One small opening on east façade top of the stair cases	Wooden external shutters on windows
House No.3	Rectangular near to quadrangular	One	3.78	Casement windows	Iron beams on windows
House No.4	L type	Two with basement	4.08	-	Iron shuttersin First floor openings
House No.5	Rectangular	Two with basement	4.46	-	Wrought Iron
House No.6	Quadrangular	Two with basement	4.5	-	Iron plates on basement windows, External wooden shutters on other windows

Table 5-3 Building Design of Mansions

5.3.1 Form

All of the houses have rectangular or quadrangular floor plans that surrounded by high and thick stone walls; this form of the building helps for saving energy and when the long façade face to south can absorb more sun and light. Just one of the buildings (Kuyulu No.2) has L shape.

5.3.2 **Stories**

Houses mostly have two floors with a small basement floor, with high ceilings. Mostly First floor contains; kitchen, depot, garner, living room, guest rooms, entrance. Second floor contain; bedrooms, services and a small hall. Case No.1 De Andria with two stories has one basement. The basement use as storage and servant's rest area and kitchen. First floor has different rooms which uses as common areas for gathering family together. Second floor covered half of first floor and used as family's bedrooms. Case No.2 has two stories; first floor contains sitting area and kitchen. The second floor reachable from inside of the building and staircases of west façade. A small mezzanine used as service area placed between two floors in middle of inside staircases. Case No.3 with one storey has two entrances located on south and north façade on same axis, main entrance is on North façade and entrance of south façade opens to back yard. Inside area divided to five spaces and placed around a big hall. Two parts are located in corners of south façade that can reach by separate staircases from inside.

Case No.4 has two stories and one small basement floor connected to the first floor by stairs from inside. The main entrance is located on north façade and facing towards to the street, another door is on south façade which connected inside to the yard and back building. Two doors are in same axis like case one, first floor spaces are located around a circulation corridor joins the sitting room, kitchen, and bedrooms in second floor. There is an erratic room, with two windows face to the backyard. Case4 has a basement which used as storage and kitchen. First floor has a sitting area and second floor used for bedrooms. Case 5 has two story's and a basement floor but all parts of basement is not reachable; the entrances are located on four facades and open to vast garden the main entrance is on south façade.

5.3.3 **Height**

The height of ceiling is an important factor in circulation of inside air in hot and humid weather. The heights of the walls are varying between 2.70 and 4.50. Second floors are shorter than first floors. The second floors mostly used as sleeping areas and needs to be warm in night times, because there were no fire places in bed rooms, so the ceiling height is not much high.

5.3.4 **Privacy**

Visual privacy is one of the important aspects of the lifestyle. The garden walls are higher than human being so providing privacy for the garden and ground floor of the house, the interior of the houses because of the different levels of the street with main and upper floors cannot be seen easily. Shutters of windows are divided into two parts. The upper part is fixed and the lower part is flexible, made to control light, wind, and the privacy of inside (Figure 5.12)

Figure 5-12 Shutters as Privacy Factors (Alamdari archive)

Fencing in Levantine mansions are different from Turkish houses in Bornova the difference is in iron ornomants shape. (Figure 5.13) Because of safty resoans the walls of first floors are made width and with stones to provide protection.

Figure 5-13 Fencing in Levantine Mansions (Alamdari archive) (M.Gurcal Works)

5.4 Construction

In construction chapter used materials for building also type of materials for foundation and ceiling and methods of construction in walls and roofs and floors covering are described.

Mansions	Materials	Foundation	Floors	Ceiling	Building Envelop	
					Wall	Roof
House No.1	Adobe-stone-timber	Stone	First floor mosaic/ second floor timber	Timber	First floor adobe stone- second floor filled timber	Combination
House No.2	Stone-timber-adobe	Stone	First floor mosaic and marble/second floor timber	Timber	First and second floor's outer walls adobe and stone – second floors inside walls rubble filled timber structure	Hip roof
House No.3	Adobe stone - timber	Stone	First floor mosaic/second floor timber	High	First outer walls adobe and stone – second floors outer walls rubble filled timber structure	Combination
House No.4	Adobe stone - timber	Stone	Marble, tile mosaics	Timber	First and second floor's outer walls adobe and stone – inner walls rubble filled timber structure	Cross hipped roof
House No.5	Stone, timber, marble	Stone	Marble, decorative tile mosaics	Timber	First and second floor's outer walls adobe and stone – inner walls rubble filled timber structure	Combination
House No.6	Timber, stone,	Stone	Marble, timber	Timber	First and second floor's outer walls adobe and stone – inner walls rubble filled timber structure	Hip roof

Table 5-4 Construction of Mansions

5.4.1 **Materials**

The most common building method in Bornova mansions is a mixed manner of construction, with stone used for whole ground floor, and timber filled with stones for above floors. The main building materials in the region are stone and timber. The stone and brick are used in outside walls of the buildings at first floor, in upper floors outside walls construction is wooden frame that filled with stone and mortar (Figure 5.14). In inner walls used wooden frame with lash woods that placed horizontally on them (Figure 5.15).

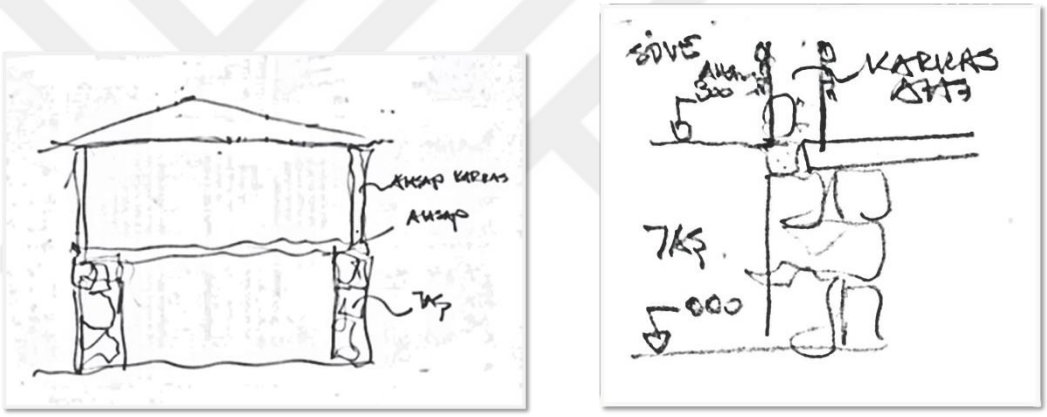


Figure 5-14 Walls Structure in Mansions (M.Gurcal Works)

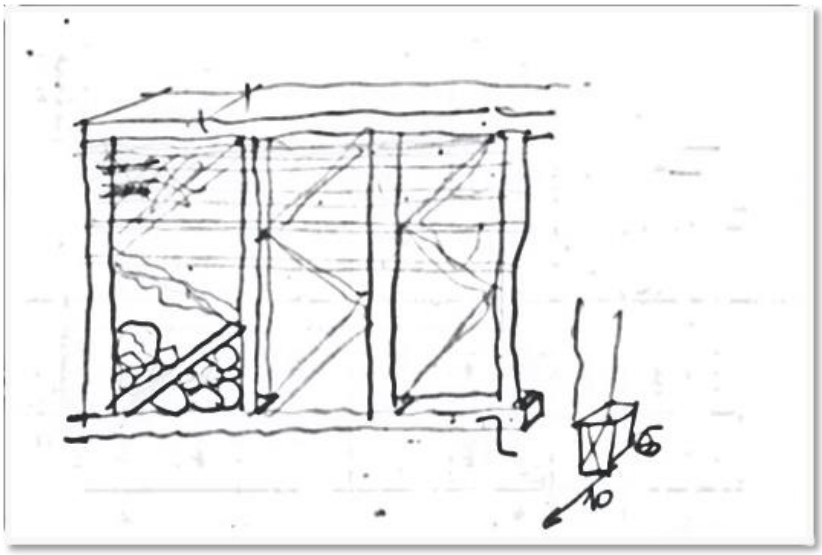
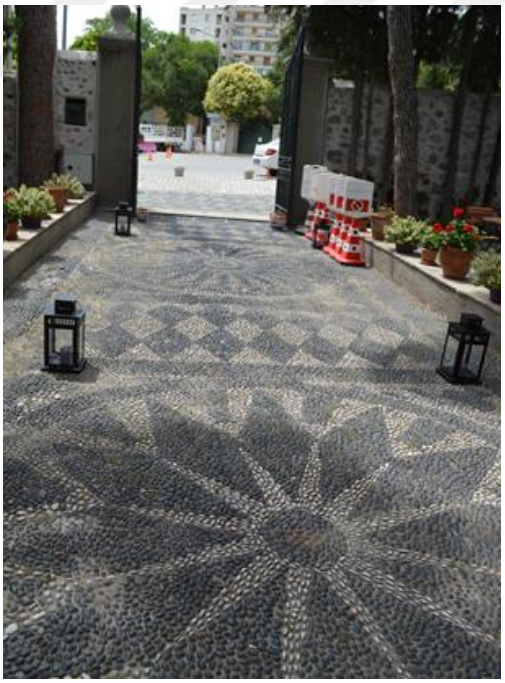


Figure 5-15 Inner Walls and Second Floors Walls (M.Gurcal Works)

Black and white pebble mosaic called Rhodian mosaic used for paths and patios (Figure 5.16).



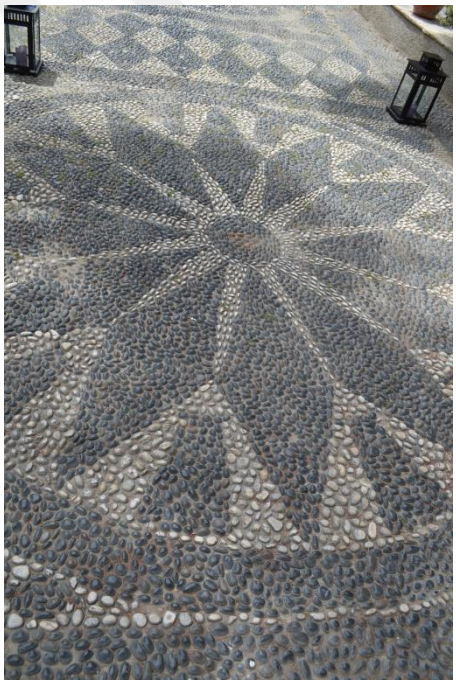


Figure 5-16 Black and White Pebble Mosaic (Alamdari archive)

Parvaz, pieces of wood, was used for hiding mortar in order to beautify the indoors around the door or window frame. Stone is mostly used as a structure material; it is also used for ornaments. Stones are brought from *Bergama*, *Korkuteli*, *Canakkale*, and named according to the place they came from.When we think of architecture, we usually think of stone, steel, concert and glass. But plants have always played an important role. Centuries, man has used natural resources, not just to build but as inspiration of design. Pine (*cam*) wood is used for making bagdadies, window sills, and in all other parts of structures on the second floor. Pine is a native tree of the Aegean region. Pine tree is a softer wood but a very fast growing one, pine provides a good sustainable building material.

5.4.2 **Foundation**

Types of foundation in buildings structure based on the type of soils and loads from the buildings. Traditional houses of Bornova despite of light structure in upper floor has heavy structure in their first floors, and all of them located on ground. So for more resistancy stone used as an important element for foundation (Figure 5.17).

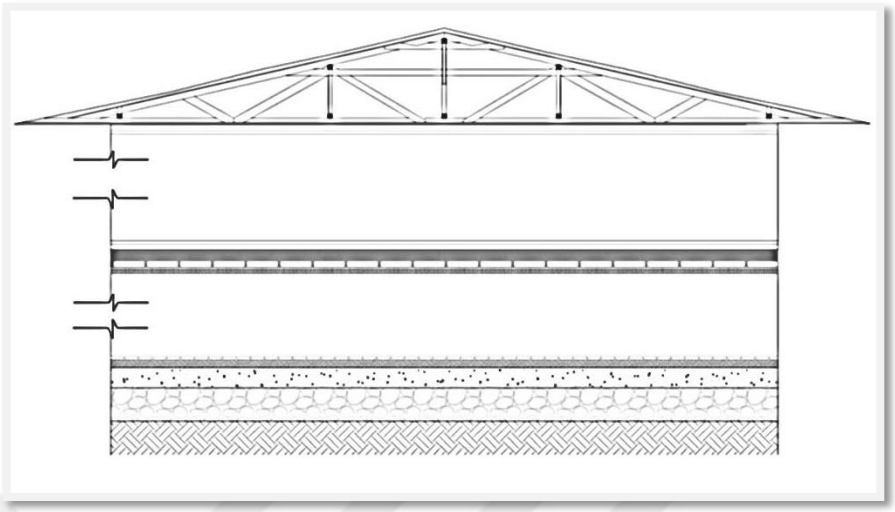


Figure 5-17 foundation structure (Alamdari Works)

5.4.3 **Floors**

Special kind of mosaices used for covering the first floor in different colors and designs. Sizes of them are 20x20 cm, which fix to each other (Figure 5.18). For more light in upper floors timber used for covering (Figure 5.19).

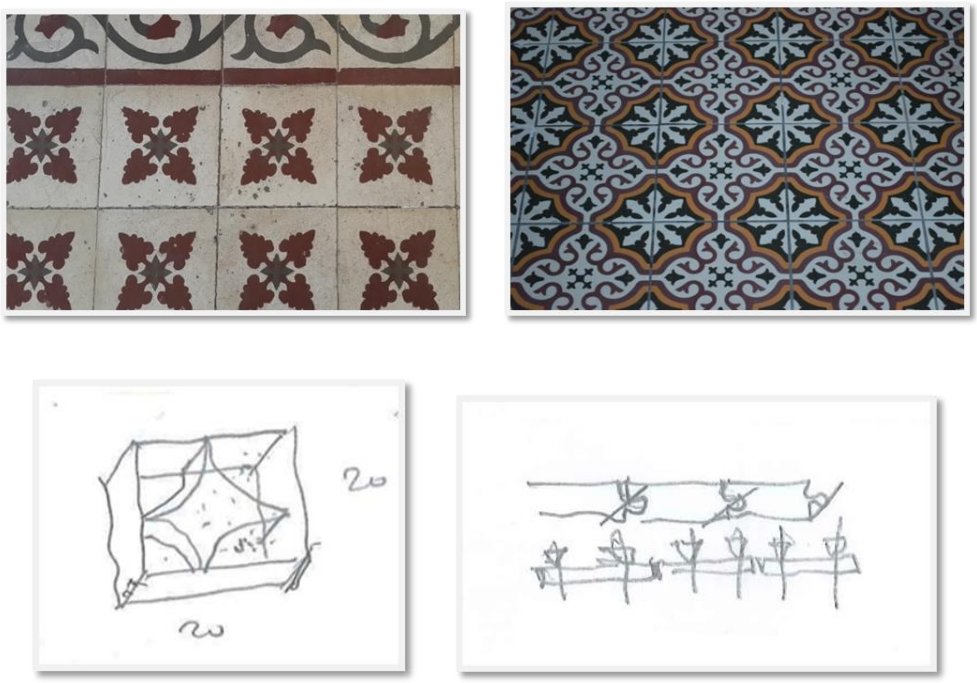


Figure 5-18 First Floor Covering Mosaics (M.Gurcal Works)

The structural elements of upper floor are light. For constructing floor in upper floors, it rests on the down floor walls and other supporting structures (headers and beams). Wooden beams place upon the below floor walls, these framework is made up mostly of wooden joints that run parallel to one another at regular intervals. Then by thick wooden board structures these beams covered from up and down part (Figure 5.19).

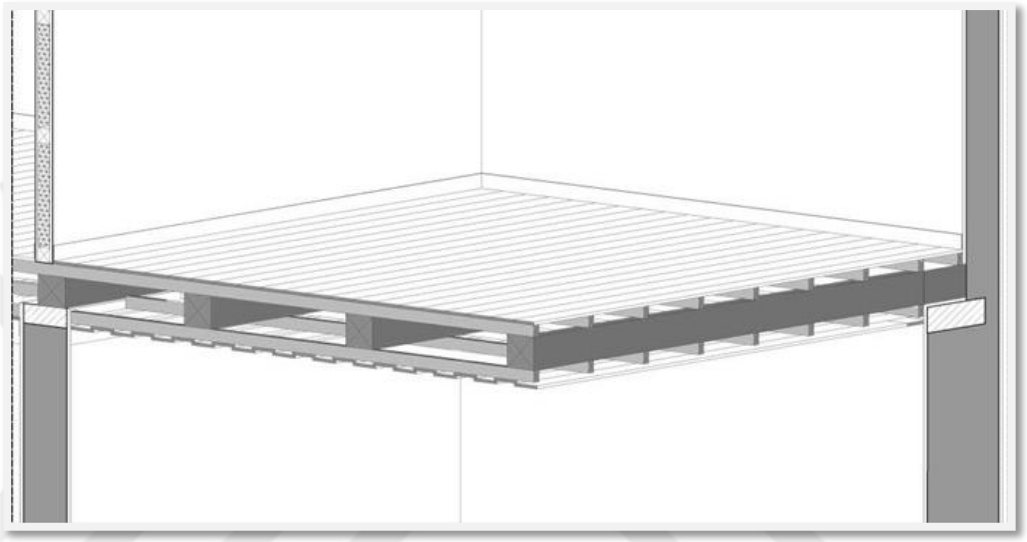


Figure 5-19 Upper Floors Floor (Alamdari Works)

5.4.4 **Walls**

Covering lath (*bagdad*i's) with mortar, a special method was used; instead of using rabits on the surface of *bagdadis*, thick nails were hammered into them at random distances near each other; in which case, one centimeter of the nail would protrude from the wood, then heavy thread was wound over the nails all over the whole wall. This thread created an extra surface that helped to increase the adherence of mortar to wood. Mortar was made from (*horasan harc = kirec saman karisimi siva*) lime and straw (Figure 5.20).

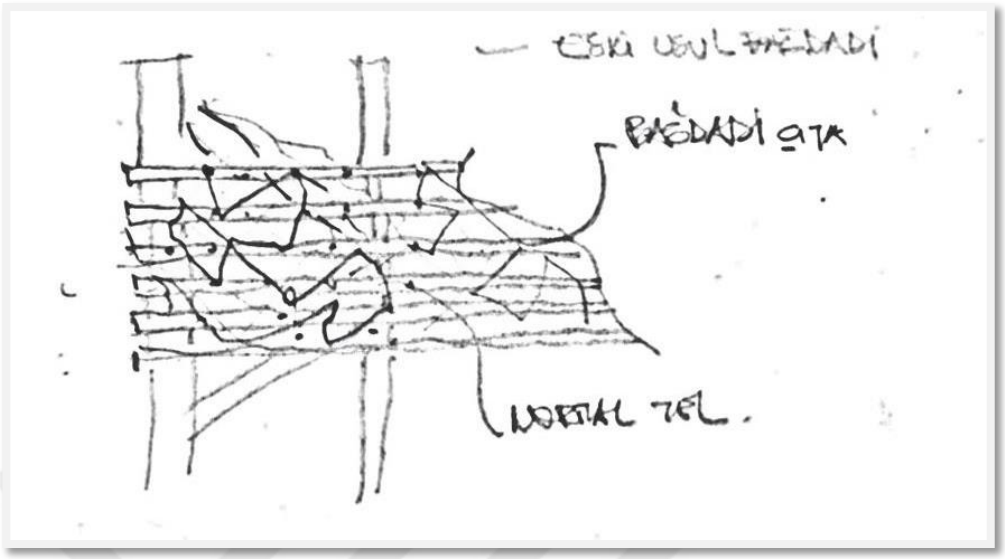


Figure 5-20 Strips For Covering Walls (M.Gurcal Works)

The width of walls varied according to the user's wealth. The walls on the first floor have windows and doors angled more than 90 degrees made possible by the width of the walls. This construction also helped to bring more light inside (Figure 5.21).

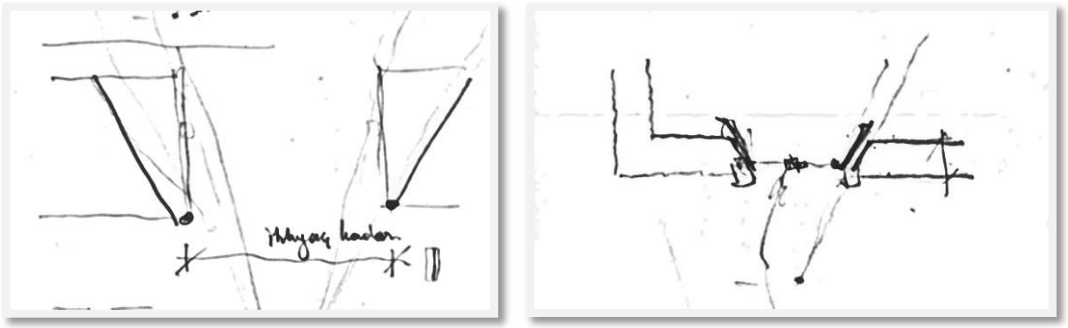
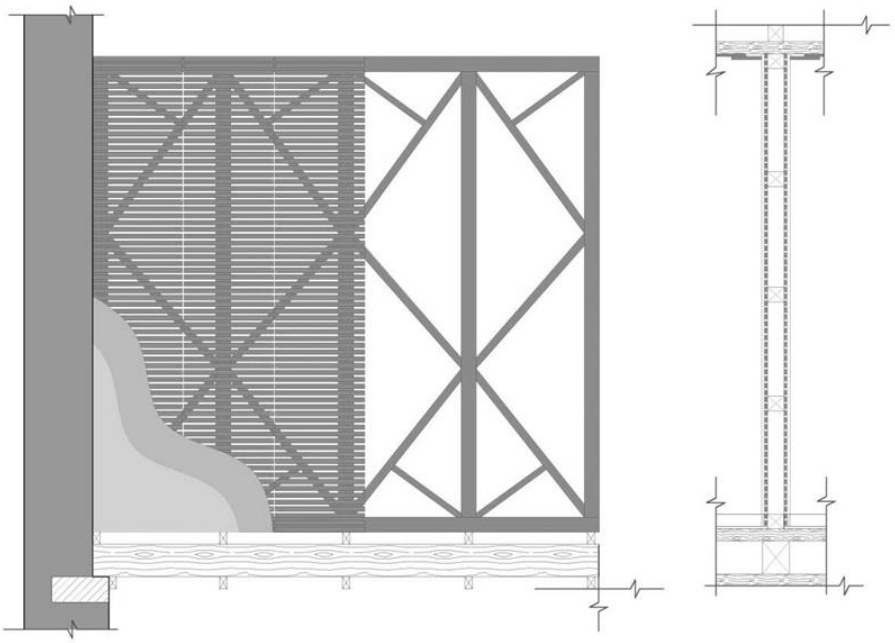


Figure 5-21 Design Strategy of First Floors (M.Gurcal Works)



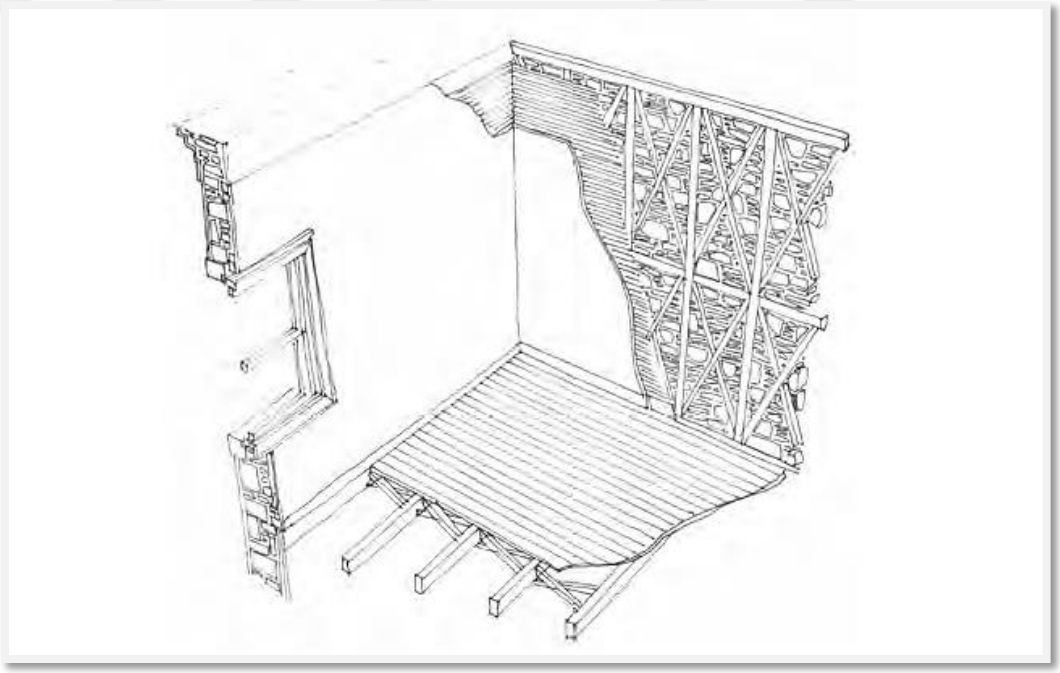


Figure 5-22 Second Floors Wall Construction (Bagdadi) (Alamdari Work)

5.4.5 **Roofs**

The ceiling of mansions covered by timber. The Wooden structure used for the construction of roofs. For this purpose wooden beams placed upon the upper floor exterior walls. Above the partition walls, wooden trusses are constructed with vertical and diagonal beams. These trusses support horizontal elements. These elements support the final layer of the roof, which comprises of wooden boards, and anchored clay tile. Type of the roofs are different in mansions, some are combination and some are gable one. The combination roof is emerging because of some additions during years to the buildings. This factor author to change the form of the buildings and consequently changes the type of the roof type (Figure 5.23)

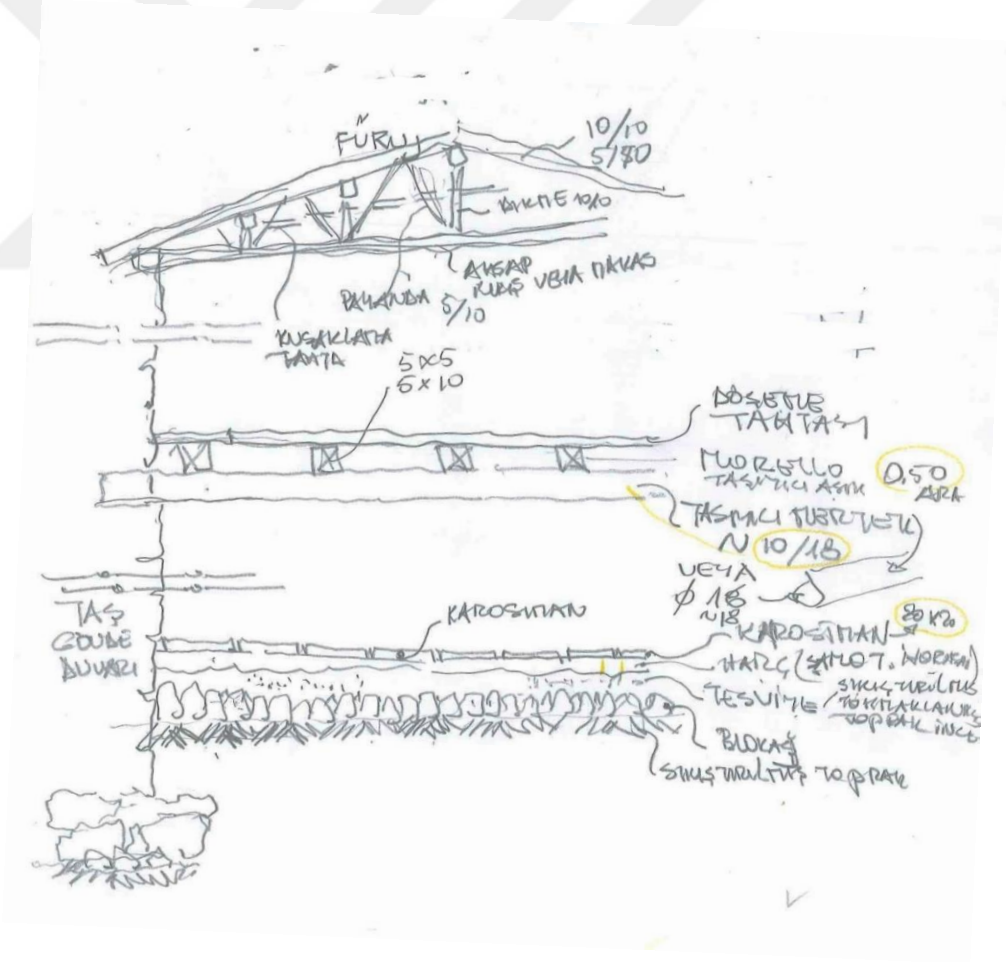


Figure 5-23 Roof and cieling structure (M.Gurcal Works)

In chapter five architectural characteristics of mansions described in detail. According to site planning part, all six houses have the semidetached or detached organization. They are oriented east-west side and their aspect ratio varies between 1.30 and 1.90. Vegetation is an important factor and all of the mansions surrounded by trees and different kind of flowers. Balconies are mostly in small sizes and in one façade. In general entrances to the mansions are via projections. In building elements the doors and windows are in normal size not big and not small, their protection is timber shutters or wrought irons especially in first floors wrought iron used for more protection. Ornaments are not seen mostly in these mansions, just simple mouldings on middle of ceilings and around ceiling and walls junctions draw attention. According building design aspects form of the mansions are the rectangular or quadrangular shape with two stories and high ceilings. In general, local materials are used in construction of mansions; adobe, stone, and timber are main material of the mansions that used in different parts of buildings both outer and inner.

6 CONCLUSION

At last to terminate the study, articles are written in this thesis all in all eventually reconsidered to obtain the wanted conclusion. The subject of study attended on characteristics of Levantine mansions in the 19th century in Bornova district of Izmir. Specifications such as plans, materials, the size of doors, size of windows, and location of entrances, orientation, and neighborhoods are considered. According to surviving constructions, it is clear that vast extensive part of houses carelessly abolished and numerous of them remains. By the destruction of the buildings, identity and reality of the dwellers will disappear.

Inhabitants of Bornova in the 19th century were from various countries so mixing styles matured in the structure of buildings, but construction methods and materials did not change, local timber and stone used as essential materials in the structure of Levantine houses. There were common ways with native buildings for constructing the mansions. Way the houses were building, methods of construction, materials, design strategies and so on surveyed.

Configure the study about Learning from the architectural characteristics of Bornova mansions, the prepared outline started from generic information and concludes by itemizing about the subject. As it is clear from the title this thesis topic is about aspects of Bornova mansions in Izmir. For assembling the information for obtaining the wanted result at first in introduction part the aim of the study and the wherefore of this survey with objective and scope of the study explained. The methodology of the subject that contains both qualitative and quantitive method is defined briefly and at last, the limitation of study are considered, why some other sides of the subject did not mention in this thesis.

In continuation of the survey, Literature review part started with describing the houses of Izmir. This section's subtitles cover the history of settlements in general, Turkey and Izmir and their houses characters. And then a little more specific talks about Bornova mansions and their particular information. The information about Bornova contains the history of settlements, nationality of dwellers and their reason to move to the Bornova.

The third section is related to the methodology and ways to reach the involved conclusion. The selected methodology for this thesis has both qualitative and quantitative methods. At first, the research questions are considered. The questions are about the architectural characteristics of Izmir houses, then Bornova houses and at last aspects of Levantine's mansions. For answering to this questions and achieving the proper results, analysis and researches are done according to different ways of inquiries like literature review, photography, interview, visiting the site, and so on.

Getting more familiar with the mansions and collecting the characteristics of mansions, some of the buildings selected according to their availability. These selected ones are located near each other but the inhabitants nationalities were from variety countries. These mansions are studied and at first get information about their history. The interior and exterior specifications of the selected mansions are reconsidered. The added information is listed in two tables. This table shows the different aspect of mansions like a number of openings, orientation, privacy and other ones. The obtained data guidance to achieve the thesis aim.

The part five divided into four sections. Each part at first summarized in a table. In each table, all six mansions are listed then according to each section the details of mansions are listed. At first section, the site planning is considered. This table has details about organizations, layout, vegetation, balcony and projections. In the table of building elements, the essential parts of mansions such as openings, transitional spaces, the shading devices, and ornaments are described. Building design talks about the methods used in the structure of mansions. This section gives information about form, stories, building height and how to provide the privacy of them. Last part details are about construction style and materials of mansions particular parts like roofs, walls, floors. At last, the conclusion parts indicate the aim and consequence of the study.

Fpr finding the information of the thesis to obtaining the wanted results, at first, the aspects of Izmir houses are surveyed. For this goal, the research of different writers is studied. Eventually, the Izmir houses according to some reasons stricken to many changes. The catastrophic events such as fires and earthquakes also attack of brigands causes these transformations. Changing in building regulations rules was another important factor that influences the construction in Izmir.

Izmir city advanced rapidly and then become one of the most important trade ports of Asia Minor. This causes that many travelers and businessmen have begun to arrive, from every corner of the word. So it changed the architecture of the city, and Levantine architecture has emerged. It can be seen the houses in Izmir divided into three categories. Houses made by Turkish inhabitants, Levantine houses and houses resulting in effects of Turkish and Levantine houses. Courtyards and jetties are the significant characteristics of Izmir houses. In Levantine houses structure of the first floors are masonry and heavy material but in upper floors the materials are light. Basement used as a common area upper floor is used as private part of the house. The third type of the houses is the result of the combination of the west and east methods.

Finally conclusions are below in order to outline the design principles, which characterized this architecture. The dwellers for more comfortable living conditions, tried to build their houses according to their needs, while at the same time understanding the similarities and differences between these newly constructed houses and local ones. The newly constructed mansions show the accommodation of western architecture and Turkish architecture in the Aegean area and the impressionability from the environment.

Vegetation is so important in Bornova mansions, decorative plants are planted in vast gardens. Gardens provide shady and cool places that become the main living units of the summer months. The use of gardens along with their associated land scape features (trees, flowers, bushes, pounds) and their appropriate placing serves as an additional climate modifier, ensuring human comfort both indoors and outdoors. All of the mansions located inside vast gardens, they are mostly in detached and some in semidetached type.

Despite Turkish houses there are not more balconies in Bornova mansions because they are located between vast gardens and they can get enough light inside of houses just one or two small balconies are seen in mansions. Openings are not too big and too small they are in normal sizes. Main entrance doors located in north or south facades. Inside door type is casement with divided to two small parts for avoiding the exhaust of the warm weather. Windows of first floors are casement type because the walls of first floors windows are so thick and it is hard to open the hung type and second floor is single hung type to control the enter and exit of weather. The number of windows on east façade is in minimum, windows of other facades have shading

devices and iron beams or iron shadings on first floors. Aspect ratios of all of them are less than two.

Mostly the mansions have two floors with a small basement. In construction heavy materials used in first floors and second floors are made by light materials. Load bearing walls used in these mansions. Stone and timber are essential materials. Transitional spaces of first floors are which contains common spaces are larger than second floor. The first floor is the main living area, and storage and services, the private part is contains rooms and bedrooms are located in second floors.

The finding of this thesis could be used to improve the residential building regulations of the area in adaptation to the specific characteristics of Bornova and also, Izmir. The results can reveal some recommendations for new construction such as improving the regulations of the openings in order to increase the use of natural light, to specify the location of the balconies, to encourage the use of colour and texture of the traditional architecture in the façades and finally, to correct and omit some national policies affecting local architecture. Moreover, as many of professionals and designers ignore the potentials of the traditional architecture because they lack this knowledge, educating professional architects to lead them to appreciate the values of the traditional architecture. Therefore, it is suggested that the architects and other related professionals are engaged in understanding the values of the traditional architecture in relation to contemporary design.

An important achievement of the survey about characteristics of buildings is for designers, the designers without getting information about the categorization of one region and specification of the buildings in the related area and just with some details like dimensions of the windows or doors, … proceeding to design a traditional or adjustable building with the region. This study about the characteristics of houses helps us to understand the methods and techniques of building mansions and to know that the new inhabitants try to adapt themselves to the locale.

Additionally, the findings can help the application of the traditional architectural characteristics in new buildings development. The current study covered Bornova mansions as the very important potential tourism destination of Izmir. Thus, it is recommended that future studies can be defined for the application of the traditional architectural characteristics in other similar areas in the city and the region. Thus,

future research can employ the conceptual findings of the current research to define the architectural characterizes of the buildings in those areas. Future research also can be done on the operating procedures in other field related to mansions such as the economy and building engineering. Meanwhile, the collaboration of the findings of this kind of study with other related fields can improve the architecture of new development in the city and provide comprehensive knowledge about the field. As an example, proposing economic models which are accommodated with the application of the traditional architecture or suggesting a system for thermal comfort and energy saving extracted from the traditional architecture can be future-oriented research.

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