A STUDY ON CONSERVATION AND REHABILITATION PROBLEMS OF HISTORIC TIMBER HOUSES IN ANKARA

-VOLUME I-

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ABSTRACT

A STUDY ON CONSERVATION AND REHABILITATION PROBLEMS OF HISTORIC TIMBER HOUSES IN ANKARA

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This study is developed to fill a gap in historic house preservation, which forms a majority within the present cultural heritage of Turkey. The timber framed houses which are the subject of conservation and rehabilitation studies have some common problems, related to the characteristics of the physical environment in which they are located. However, they also have some peculiar technical and practical conservation problems which were not studied earlier. The diagnosis of these technical and practical problems is stressed as a necessity to develop proper materials and techniques to be used in the processes concerning the rehabilitation and conservation of historic timber framed houses. Seeing the present gap, this thesis aimed to define these technical and practical conservation problems of historic timber framed houses and to propose some techniques and materials for their preservation and rehabilitation.

In this context, the comprehensive extend of the conservation problems were pointed out regarding the traditional houses while defining the historic development of conservation issues in Turkey. The formation of historic urban fabric in Ankara, the processes in which Ankara houses were developed, the evolution of the housing tradition and the developments in the construction tradition were studied and interpreted with reference to historic sources on Anatolia in general and on Ankara in particular. The architectural, structural characteristics and the construction process of timber framed Ankara houses were defined, extensively studied and documented in this study. These particular subjects were not discussed in this detail in earlier studies.

The main objective of the thesis, which is the definition of rehabilitation problems deriving from new uses and interventions practiced on Ankara houses is described with particular emphasis to the original structure, material and spatial characteristics which were based on those examples studied and documented for the thesis.

The critics on current restoration processes, the importance of developing *standards for the preparation of restoration projects* and *code of practices for conservation* is emphasized to define *an accurate preservation process* referring *to* deficiencies in the current procedures.

Finally, the proposals that aim at the rehabilitation and conservation of timber framed houses for contemporary requirements by using proper techniques and materials which are compatible with the original fabric of the buildings, were introduced thorough a comprehensive research which reviews the experience practiced in Europe on rehabilitation. However, specific recipes which can be used in repairs, were especially not recommended on types and mixtures of original materials since there are no detailed surveys on these materials used in historic houses yet.

Key words: Timber framed houses, Rehabilitation, Ankara houses, Conservation, Conservation Techniques.

ÖZ

ANKARA'DAKİ TARİHİ AHŞAP KARKAS KONUTLARIN KORUMA VE SAĞLIKLAŞTIRMA PROBLEMLERİ ÜZERİNE BİR ÇALIŞMA

ŞAHİN, Neriman

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Tez Yöneticisi: Prof. Dr. Ömür BAKIRER

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Bu çalışma, Türkiye'deki mevcut kültür mirası içinde oldukça yaygın bir grubu oluşturan tarihi konutların korunması ile ilgili bir eksikliği tamamlamak amacıyla geliştirilmiştir. Koruma ve sağlıklaştırmaya konu olan ahşap karkas konutlar, içinde bulundukları fiziksel çevrenin koşullarına bağlı olarak bazı ortak sorunlar sunarlar. Bunun yanısıra, bu konutların koruma açısından teknik ve pratik sorunlarının tanımlanması onların korunma ve sağlıklaştırılması için ertelenemeyecek bir süreçtir. Bu tez, ahşap karkas konutların korunması ve sağlıklaştırılması için bu konutlarda gözlenen teknik ve pratik koruma sorunlarını tanımlanmayı ve bu sorunların çözümünde kullanılabilecek teknik ve malzemeye yönelik öneriler getirmeyi amaçlar.

Bu kapsamda, Türkiye'de koruma olgusunun gelişim süreçleri tarihi konutlar özelinde irdelenmiş; Anadolu'da geleneksel konutun evrimi, yapı geleneğinin gelişimine koşut olarak Ankara'daki geleneksel dokunun oluşumu ve Ankara konutunun gelişim süreçleri incelenmiştir. Ankara konutları mimari ve strüktürel özellikleri açısından mevcut kaynaklar ve bu çalışmada sunulan diğer veriler özelinde detaylı olarak tanımlanmış, daha önceki çalışmalardan farklı olarak, burada ahşap karkas yapım tekniği ve inşaat süreci ayrıntılı olarak incelenmiştir.

Ankara'daki geleneksel dokuyu oluşturan yapılar arasından seçilen, farklı dönem ve mimari özelliklere sahip yirmi örnekte: özgün strüktür, malzeme ve mekan özelliklerine bağlı olarak izlenen ve kullanım ve/veya yanlış müdahalelerden kaynaklanan koruma ve sağlıklaştırma sorunları gözlem yoluyla tespit edilmiş, tespit edilen sorunların çözümü ve bu konutların uygun teknik ve malzemelerle onarılarak korunması ve sağlıklaştırılması için, özellikle Avrupa'da uygulanan onarım teknikleri örneklenerek tanıtılmış ve bunlar arasında ahşap karkas yapılara uygun teknikler avantaj ve dezavajları ile birlikte tartışılmıştır.

Ahşap karkas yapıların onarımı için geliştirilmesi gerekli uygulama kuralları; *restorasyon projelerinin hazırlanması*, *koruma uygulamalarının niteliğini tanımlayan standartların geliştirilmesi* gibi, mevcut uygulama süreçleri eleştirilerek tartışılmış ve bu sorunların disiplinler arası çalışmalara dayalı olarak geliştirilmesi gereği vurgulanmıştır.

Anahtar kelimeler: Ahşap Karkas Konutlar, Sağlıklaştırma, Ankara Evleri, Koruma, Koruma Teknikleri.

To the memory of my father and my brother Murat

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LIST OF ABBREVIATIONS

AH	*Avarız* Household
*AH*N	*Avarız* Household Number
*AH*s	*Avarız* Households
AOÇ	Atatürk Orman Çiftliği
AŞS	Ankara Şeriye Sicilleri (Ankara Şeriye Registers)
bldg	building
CCA	Copper, Chromium, Arsenic
dpc	damp proof courses
DPT	Dew Point Temperature
DİE	Devlet İstatistik Enstitüsü (State Statistics Institute)
GEEAYK	*Gayrimenkul Eski Eserler ve Anıtlar Yüksek Kurulu* (The High Commission of Historic Real Estates and Monuments)
HHH	Household Head
HMO/HAO	*Hassa Mimarlar Ocağı* (Hassa Architects Organization)
İA	İslam Ansiklopedisi
MPM	Milli Produktivite Merkezi (National Productivity Center)
PMP	Preservation Master Plan
Qu.	Quarter
RPC	Regional Preservation or Preservation Councils (*Bölge Koruma veya Koruma Kurulu)*
TAKS	*Taban Alanı Katsayısı* (Parcel Density Parameter)
TDK	Türk Dil Kurumu (Turkish Linguistic Association)
TRT	Türkiye Radyo Televizyon Kurumu (Turkish Radio and Television Institution)
TTK	Türk Tarih Kurumu (Turkish Historic Society)

CHAPTER I

INTRODUCTION

The definition of the actual problematic of conservation in Turkey necessitates an evaluation of the development process of conservation issues which might give some historical references to improve necessary means for conservation. The content of the first section of the introduction chapter is developed to clarify the origin of the existing problems and to give a cross-section from the current conservation problems of historic urban sites in Turkey[1]. In the second part of the chapter, the houses subjected to rehabilitation will be defined. This forms the main theme of the thesis and then, the reason of choice of Ankara and Ankara houses as the plot area of the thesis will be explained. Following this; the definition of rehabilitation will be discussed in relation to conservation problems and between the other attitudes in the field of conservation. Lastly, the methodology and the content of the thesis will be defined in the fourth section.

1.1 Current Conservation Problems of Historical Urban Sites in Turkey in a Historic Perspective

The actual city and conservation planning processes in Turkey had started as a part of the "westernization" tendencies during the Ottoman era and it was always maintained by the "elitist" and "centralized" authorities in all periods (Tekeli, İ., 1991a:2). The extrinsic development of these tendencies was inevitable in the imperialized Ottoman society who stayed behind industrialized Europe in the 19c. The effects of these Westernization tendencies on the built environment can be observed sometimes parallel and sometimes as contrary processes when the city planning and conservation regulations and acts are studied (Komisyon Raporu, 1973:7).

The Building Regulations -1848;1849 *Ebniye Nizamnameleri*; 1864 *Tarik ve Ebniye Nizamnamesi*- (Denel, S.,1982: XXXIV-LII) issued during the Ottoman period and the

Municipality Road and Buildings Act *-Belediye Yapı ve Yollar Kanunu-* (Act no: 2290, Date: 10.6.1933, Akçura, N., 1987: 327-366) issued during the Republican period were the first regulations introduced in this field. The regulations brought by these acts were based on city planning principles developed in the west to solve the new physical environment demands of the industrialized Western society. The organic structure of the Ottoman city, ownership pattern and the urban character defined by the Ottoman society's socio-cultural relations were not reflected and considered in these regulations which were usually symbolizing the "new developments" (for different cases see Aktüre, S.,1981; Denel, S.,1982). As a matter of fact, these regulations could not be implemented regularly; not only because of the limited economic sources but also because of the difficulties to adapt them into built up areas within the Ottoman city (Aktüre, S., 1989: 68-79). The penetration of the industrial products had also changed the urban growth in the second half of the 19c. For example, when the railroads reached Anatolian cities, they could not physically integrate with the compact structure of the cities, but for a functional integration the cities developed throughout the direction of the railroads (Ortaylı İ., 1984: 209-222). As a consequence of the reasons mentioned above it can be stated that, the physical references derived from the Ottoman city itself, were not seriously taken into consideration when the legal aspect of city planning procedure is concerned.

The first Archeological Museum established in 1880 and developed in the directory of Osman Hamdi Bey after 1881, has been accepted as the beginning of the conservation activities in Turkey (Cezar, M.,1971:166). The first preservation regulation dated 1874 - *H.*1290, *Asar-ı Atika Nizamnamesi-* (Can, N., 1948:1-5, or Akçura, N.,1987: 115-118) was aiming only to prevent the pillage of archaeological objects from Anatolia. So that, the act was quite limited at the beginning because, it was only based on the evaluations done by Westerners and could not bring definitions derived from the Ottoman society itself. But, two important definitions emerged in the second act dated 1884 *-H.*1299, *Asar-ı Atika Nizamnamesi-* (Can, N., 1948:6-12, or Akçura, N.,1987: 120-124). These were; "*all human-made objects from earlier periods are historic objects*" and "*the state is the owner of the all historical objects*" (for critiques about these acts and the period see Akın, N., 1992: 233-239). In the same period, in 1883, an academy (Sanayi-i Nefise Mektebi) was established for training people who would appreciate their own culture and who would preserve the national arts and crafts (Sakaoğlu, N., 1992:13-14). These parallel developments show that even though at the beginning, conservation activities started as a part of Westernisation tendencies, they turned in, to the values of the Ottoman culture within a short time. Because, they were originating from this culture. On the other hand the 1884 act had a progressive attitude for its period, yet it still did not cover the Turkish-Islamic buildings. The reason of this might be, that the functions of these buildings were still continuing and their repair and maintenance was still provided by their Foundations and this was quite developed system in the Ottoman state order. In the conservation regulation accepted in 1906 -*H.*1322, *Asar-ı Atika Nizamnamesi*- (Akçura, N.,1987: 126-133), Turkish-Islamic buildings were included in the content of the act. Also by this act a new organization system was introduced and the Ministry of Education was pointed out as the executor. Thus, from 1874 until 1906, the content of the act was extended from the archaeological ruins to cover also the Turkish-Islamic buildings. A new organization system which spread out in the scale of local administrations was initiated and the pillage of historical objects out of the country was largely inhibited.

By the establishment of the Republic (1923) all the mechanisms developed in the planning works were evaluated with a new understanding. The Republic was going forward, on the one hand with decisive steps towards Westernisation by using Western technology and civilization, and on the other hand it was looking for a cultural policy where all these new developments could be based. The establishment of some progressive organizations (such as Turkish Historic Society-TTK, Turkish Linguistic Association-TDK) in order to create a new, independent and scientific approach towards National history was the most apparent signs of this new Republican attitude. The Republic had inherited a developed conservation act and a quite "elitist" preservation understanding from the Ottoman Empire. When the Republic had been reconstructing all the Ottoman state order as a laic state; the symbolic buildings of the Ottoman state system; the palaces, the *madrasa*s, the tombs, the *tekke*s had been loosing their functions. By the laws accepted between 1924-1929 all these buildings symbolizing the Ottoman state, history and social institutions were transferred to different establishments in the new organized system (Akçura, N., 1973).

In this period up to 1930, by the break in the political life, the buildings that lost their functions deteriorated quickly. In addition, the collapse of the Ottoman foundation system caused a very big damage to these Turkish-Islamic period buildings. Moreover the transfer of these buildings to different institutions prevented their evaluation as part of a complex in their completeness[2].

In 1933, the first documentation and listing works for historic buildings were started by a newly established commission in the body of the Ministry of Culture. In 1935 in place of the old foundation system mentioned above, a new Pious Foundations Act was settled (*Vakıflar Kanunu*, Act no: 2762, Date: 5.6.1935). Then, the responsibility for the preservation of all

Turkish-Islamic buildings was given to this organization. Due to economical reasons this organization could not be effective during the first years of its establishment. But now, the General Directorate of Pious Foundations is continuing its works all over the country with the resources of a big bank instituted for this task.

To sum up, when we look to the planning and conservation history in Turkey; we see that these processes have developed separately from each other up to the 1940's. One item in the Municipality Road and Buildings Act (1933) "*the near surroundings of monumental buildings up to 10 meters should be kept empty*" was the only reference used in master plans. In most of the master plans prepared in this period; to bring standard roads, orderly parcels and keeping a free area around the monumental buildings were the basic design approaches. Usually the actual urban tissue was not taken into consideration (Akçura,T., Çapar,M., 1973: 8-10). So, in the 1950's master plans became the problematic of conservation.

By the new act, the Council for the Historical Real Estates and Monuments (*Gayri Menkul Eski Eserler ve Anıtlar Yüksek Kurulu, here onwards GEEAYK*) was founded in 1951 which had an autonomous formation (*Gayri Menkul Eski Eserler ve Anıtlar Yüksek Kurulu Teşkiline ve Vazifelerine Dair Kanun*, Act no: 5805, Date: 2.7.1951). But there were not any city planners in the body of the council because conservation was still not accepted as part of the city planning discipline (Çeçener, B., 1982: 263). In this period, the council was usually faced with the demands of reduction of the 10 meters limit around the monuments. Then, in place of a creative, a productive attitude, the council was obliged to be restrictive against these demands. In these years the conservation activities became intensive both in the developments in the cities and, in the extensive implementations of Pious Foundations.

The Preservation Act numbered 1710 was introduced in these circumstances in 1973 (*Eski Eserler Kanunu*, Act no:1710, Date: 25. 4. 1973). By this act the authority of the council was extended and "Site, Historic Site, Archaeological Site, Natural Site" definitions were brought. Then the planners and executives were practically obliged to be interested with the conservation issues for the first time. This act took many reactions not only from the private owners but also from the public bodies, because the conservation issues were still pretended to be owned by neither the private owners nor the public bodies. Though as a result of this act, discussions on the preservation master plans started. The preservation planning models proposed by the conservators or the council was not found realistic by the municipalities, planners and the private owners in those circumstances. However, to explain the circumstances we should clarify a few more points.

After 1960-70's, the big cities were faced with a fast rate of urbanization and pressures on the existing built up areas. The basic policies brought by master plans had been the opening up of new traffic arteries within the existing macro form which caused speculative increases in the rent of land. These policies were further supported by the increase of building heights. Because of the insufficiency of policies and economic sources to develop new lands, private developers entered the housing market in existing built up areas to tear down the older buildings for new constructions (Günay, B., 1992). So, the land speculation created by rapid urbanization increased the destruction of historic urban sites in the 1960-1970's. Because, the preservation of private estates was neither economic nor prestigious when the new building demands of the popular culture were concerned.

The housing demands of the middle and upper classes changed in this process. They preferred to live in new apartment flats which fulfilled their contemporary needs and requirements. The image of "modern" and "western" became a reality in an apartment flat for these social groups, and it also became the symbol of social status. Then the buildings of the old quarters started to be used by a different social group who were coming from the rural areas and who did not have much economical power. The historic urban sites became a "transition area" for this social group till they owned a private house for themselves. When they improved their economic conditions they built a squatter on the state land around the city. This process started in 1950 as a result of rapid urbanization which created the problem of squatter areas around the metropolitan cities. Now; almost 60% of the population in metropolitan cities are inhabited in these squatter areas which have no infrastructures and are poor in living conditions. The illegal formation of these squatter areas was legalized time to time by the politicians with the amnesty of unauthorized buildings.

While all these rapid changes were taking place, the approach of the politicians to conservation played an important role. As we mentioned before, the elitist tendencies were extrinsicly developed in Turkey because there is no continuity in cultural policies. According to their aim, the politic attitudes can be classified in four groups as Tekeli did earlier: (1991b:92-94)

a) Universalistic Approach: This approach aims the preservation of physical environment that symbolizes the actual existence of human beings and it looks to the symbols of the history as part of the world heritage. There is no political party yet which defends this quite elitist approach.

b) Nationalist Approach: This approach sees preservation as a tool to create a national identity; but it does not cover history as a whole; it has a selective attitude. It chooses the objects that symbolize the national ideology such as Turkish or Islamic. In the political parties in Turkey this approach has been defended by the fundamentalists and nationalists. For these groups a Christian church or a Roman bath is not important as a Turkish or an Islamic monument.

c) Selective Approach: This approach aims only to preserve the valuable ones, based to an eclectic evaluation according to some changing criteria's. This selective attitude has always been defended by the militarist groups in Turkey, who time to time became a superior force at the top of other political ideologies'.

d) Cultural-Touristic Approach: For this attitude preservation becomes the tool of tourism and its evaluation is based on the preferences of the tourists. Preservation becomes important for its economic potential. This approach has been defended by the capitalist liberal ideologies in Turkey.

These classifications are generally exaggerated in order to clarify the political approaches and they time to time overlap each other according to existing circumstances. These different political approaches always create a pressure and an evaluation problem for the decision makers in conservation activities in Turkey.

Within these circumstances from 1973 until 1983 the Council for the Historic Real Estates and Monuments, being the decision maker tried to continue its task but received many criticisms and reactions. The council with its autonomous formation was not under the direct pressure of any political ideology or any institution (about the problems in this application process see Alsaç, O.,1983; Akçura, T.,Çapar, M., 1973; Zeren, N., 1982). Moreover, this formation was a barrier for "*those who want to stay out of the councils' decisions*". This process that encountered the public and the council was to wear out the council's prestigious and effective position. Then, in 1980, after the break down in the political life in Turkey the formation of the council was changed. By the Act numbered 2863 (*Kültür ve Tabiat Varlıklarını Koruma Kanunu*, Act no: 2863, Date: 21.7.1983) the Regional Councils were established, where the local authorities were represented in the body of the councils.

In fact there were not enough specialists who could take place in the Regional Councils yet and the ones who were eligible were usually rejected to be in the body of these councils. Besides, with the new formation, the councils became open to local pressures as the decision maker. Even though, this new formation looks quite practical and democratic, the decentralization of the councils was an early decision when the popular conservation attitudes are concerned. Besides the continuity in the decisions which was created in the former system by the centralized, autonomous and lasting membership of the old council could not be carried out to the Regional Councils. This caused a break down in the decision making process in Turkey where a continuous cultural policy is still not settled. As a result of this, there came out different approaches in the decisions of the Regional Councils which now create critics and reactions. Today in 1994, the studies are still continuing to prepare a new preservation act to solve these conflicts. We hope that it will be put into action in the nearest future.

Up to now, we have given the developments in conservation activities in a historical perspective. Now let us have a look at the current administrative aspects of conservation. There are public and private organizations in Turkey that lead the conservation activities in practice.

The public bodies are the Ministries of Culture, Tourism, Public Works, Agriculture and Forestry, Defense, the General Directorate of Pious Foundations, the General Directorate of Roads and the General Directorate of National Palaces. The Ministry of Culture, besides the legal aspects of conservation is responsible from all the archaeological sites and museums. It also directly or indirectly supports some implementation projects in different scales, to create a public consciousness. The basic task of the General Directorate of Pious Foundations is to preserve all the religious and public monuments from the Ottoman and Seljuk periods, such as; mosques, khans, caravansaries, Turkish baths, fountains, tombs, *tekke*s, *imaret*s, schools, libraries, *arasta*s, shops, etc. The preservation task of most of the state buildings is given to the Ministry of Public Works (all town halls, schools, etc.). The General Directorate of Roads is responsible from the preservation of the old bridges. The General Directorate of National Palaces preserves the seven big palaces and kiosks in Istanbul from the Ottoman period on behalf of the parliament. The preservation and maintenance of the natural parks is carried by the Ministry of Agriculture and Forestry (Çeçener, B., 1984: 3-4).

As a summary, these public bodies are responsible from the preservation of the monuments owned by them on behalf of the state. Here we will not go into detail about the administrative formation of these bodies. Nevertheless, it should be said that these organizations are not much successful in practice when their implementations are concerned. Besides, the actual administrative formation spreads the responsibility to different institutions and this creates a problem from the point of view of conservation.

Apart from these public bodies there are some private or semipublic organizations (such as TAÇ, TURING, ÇEKÜL) who are busy in conservation but their activities are quite limited when the present cultural heritage is concerned.

Some numerical data might be helpful to give the extent of the preservation problems in Turkey. According to data taken from the Ministry of Culture, General Directorate for the Preservation of Cultural and Natural Estates (March 1995) now there are a total of 3392 Sites in Turkey. 2768 of these are Archaeological Sites, 310 are Natural Sites, 116 are Urban Sites, 51 are Historical Sites, 147 are others (no definition is given). Within these sites (except archeological and natural sites) there are 44921 registered objects. 30084 of these are residential buildings, 5009 are religious buildings, 4754 are cultural buildings, 632 are administrative buildings, 561 are military buildings, 382 are industrial and commercial buildings, 1582 are cemeteries, 179 are martyriums, 155 are monuments, 907 are natural objects and 676 are ruins (for source see App. A).

As it can be seen, since 1973 there have been rapid changes in the legal and administrative aspects of conservation. Besides some deficiencies, the system has reached to a quite developed and contemporary formation. To support these developments, since the 1960's, many training centers were also established in the body of Universities, which are training students in the different fields of conservation (Erder, C., 1971; Özdural, A., Üstünkök, O., 1972).

Nevertheless, in practice we still can not preserve our cities. Undoubtedly the legal and administrative tools, the trained personnel and available economic sources are the inevitable means of conservation but what we need is public consciousness in conservation. The public interest in the conservation issues also changed then, it became an "acceptable" task but it still did not become a "necessity" for the society. Because, the Turkish society standing between the East and the West could not produce a "cultural identity" throughout the Westernization process. As Kuban (1989) mentioned before "*the distorted images of contemporary urban environment, a debased cliché imported from the west*" formed our cities. That is why Turkish cities have a chaotic structure; they represent the chaos, the conflicts in the culture itself. Keeping in mind all the chaotic structure of the conservation fact now, lets have a look at the physical problematic of conservation of the historic urban tissue in Turkey.

In our country, the historic sites that exist within the boundaries of cities are the areas which are directly effected by the transformations that originate from rapid urbanization and industrialization procedures[3]. According to the scale and the character of the mentioned transformations, historic sites can be classified in three groups:

1. Historic sites in metropolitan cities,
2. Historic sites in small cities, towns and/or touristic settlements,
3. Historic sites in villages or settlements of rural character.

Historical sites located within metropolitan cities such as; Ankara, Istanbul, Bursa and İzmir, usually consist of an old religious and commercial center and the residential areas surrounding them. By the transformations that occur in these cities, such old commercial centers lost their priorities and they become commercial zones of secondary importance (Akçura, T., Çapar, M., 1984: 8-10). Meanwhile; the residential areas change, as well and are transformed, into "transition zones" functioning as an alternative to squatter areas which is mentioned before (Şahin, N., 1989).

The old part of Ankara can be taken as an example of this case. As a continuation of its original function, Ulus area has carried out its importance being a residential area as well as an administrative and commercial center up to the early Republican Period. But with the rapid developments that took place after 1930's and especially around 1950's the city spread towards south (see Chapter II). The administrative and commercial activities expanded towards Bakanlıklar and Kızılay areas. Thus, Kızılay became the new center of the city and Ulus lost its importance and started to serve to a lower income group. The residential areas, spread between the main commercial axis in Ulus, also lost their inhabitants by the changes in the social structure. These residential areas began to be used by the people migrating from rural areas and who are at a lower income level. Similarly, changes in the social structure of the area effected the physical character of Ulus district. Hence, in addition to the problems created by planning works, the changes in the social structure of these areas create new problems for their conservation.

In relatively small cities and towns, the speed of urbanization determines the scale and the type of the transformations that take place in historical sites and this resembles the case in large cities. If the speed of urbanization is low, the old commercial centers retain their significance but are confronted with the demand of "conversion", "reconstruction" and "new construction". Meanwhile, in the residential areas the houses are either sold to the newcomers from the villages, by their owners who want to live in apartment flats which fulfill their contemporary requirements, or they are left in empty.

In the case of establishing new industrial sectors in these cities or towns, which bring large scale transformations, the speed of urbanization increases, effecting the historic sites as in the large cities (Safranbolu-Karabük relation represent this case, see: Aktüre, S., Şenyapılı, T., 1976: 61-96; Okyay, İ, 1982: 209-224).

If the transformation of the city or town is due to the development of tourism, this situation increases land speculation as well as demands of "reconstruction", "conversion" and "new construction". When tourism is not directed and controlled as a means for the preservation and the rehabilitation of historic buildings, it becomes a dangerous obstacle. Because, the interventions brought to the historic buildings for touristic purposes are aiming at changes in the original function that creates important alterations and results in the loss of original features.

The major problem in rural areas is the interruption of the "continuity" of traditional construction technology. New construction systems and materials which exist in the construction market since 1960's have spread out all over the country including the smallest villages. Meanwhile, the traditional systems which were no longer used were thus forgotten. As a result of this; rural settlements gradually lost their local characteristics by the overall transformations in social, economic and physical conditions.

1.2. Definition of the Problem, Aim and Content of the Study

According to the classification given above, it can be seen that historic sites display some common problems that result from the size of the settlements in which they are located. Some of these problems are directly related to the actual planning and implementation systems and they can only be solved in relation to them. Though some others, for which it might be possible to develop some practical and technical proposals are direct causes of deterioration and decay in the structure and fabric of historic buildings. The factors that cause deterioration of houses within a historic site can be summarized as follows:

i. Problem of Ownership: In most of the historic sites and especially those located in big cities the users of the historic houses are the tenants and not the landlords. For example in Ankara, approximately 70-85 % of the historic houses are used by tenants (Altındağ Municipality, 1987: 212; Altınsay, B, et al., 1988: 42; Akçura, N., 1993a: 104). As mentioned above, the owners who have economic power to move to a better house prefer to live in apartment flats. These landlords prefer to rent their houses after dividing them into smaller units. The tenants, especially in big cities are usually villagers and/or people who are in a lower income level. They prefer these houses because of the low rents. For them these areas are "transition areas" which will be left when they improve their economic status (Altınsay, B., et al., 1988:43-44).

The structural and sanitary conditions of the houses used by the tenants are usually poor, as they have no economic means to repair them and the owners usually do not have the desire to repair either. Approximately, 30 % of the houses that are used by their owners, are structurally in a better condition. The owners who have no mean to move into better houses and who do not have much in contradiction with the social group living in these sites, comprise this 30 %. These owners try to do the periodical maintenance to their houses within limits of their economic means; and they also have a tendency to divide the houses for rent (Altınsay, B, et al., 1988:40).

These physical and social characteristics give these areas a "slum" image which negatively effects the formation of new demands of the tenants or the owners who want to live in such historic houses. Consequently, the problem of "ownership" becomes the first and the most important problem in the conservation and rehabilitation of historic houses.

ii. Change of the original functions: The houses that were originally designed for a single big family, are usually altered according to the current demands of the owners. These buildings are divided vertically and/or horizontally within their maximum capacity. The new functions are either residential or commercial, such as shops, storage, workshops etc., (especially if the location of the building is close to the commercial center). The needs resulting from the new functions are answered with unqualified and unconscious interventions made by the owners. They create many conservation problems such as:

-Overloading of the building and decay in structure,
-Disappearance of the original features of the building,
-Dense usage of the building in its spatial organization,
-Defects and deterioration in original material etc.

iii. Problems related to sanitary conditions and originating from dense usage: Dividing the building into small units, necessitates the addition of service spaces for each unit. The interventions done for this purpose are usually unqualified and give extensive damage to the original material and structure. They also do not respond to the contemporary space requirements of the dwellings (Altınsay, B, et al., 1988: 45).

The researches carried in Ankara show that 50 % of the dwellings placed in these houses have no bathrooms (Altındağ Municipality, 1987: 190; Altınsay, B, et al., 1988: 83; Akçura, N., 1993a: 92). Even if all the dwellings have a space used as a kitchen, these are usually physically insufficient and they are not technically equipped. There are also common toilets collectively owned by a few dwellings and they are in a very poor condition (Altınsay, B, et al., 1988: 81-85). As a result, in addition to the fact that these houses are not able to satisfy contemporary needs and especially sanitary conditions; they are technically and spatially deficient.

Dividing the buildings into small units creates a further problem, the problem of density. For example, in İstiklal Quarter in Ankara, 45% of the dwellings, the ratio of the people per room is 3 or more (Altınsay, B, et al., 1988: 42-44). According to contemporary standards half of the dwellings are much densely populated. The opposite of the former position that is a couple, or a single person using the whole dwelling or a house, this time creates a problem of "underuse" (Altındağ Municipality, 1987; Altınsay, B., et al., 1988; Akçura, N., 1993a).

Thus both "overuse" or "underuse" create important density problems. Furthermore, besides the changes in spatial organization, "overuse" of the buildings creates "overloading". The use of contemporary furniture resulting from the new demands brings about extra loads to these buildings which are not originally designed for such movable furniture. Thus all these extra loads effect the structural stability. However, there is no research done to study the structural stability and the loading capacities of these buildings. Besides these extra loads; new furniture also creates a contradiction with the original spatial organization of the rooms.

iv. Changes in the traditional construction systems and materials: Even though, they change according to the local characteristics, most of the existing building stock in Anatolia has pre-industrial period architectural characteristics that are completely different from the west. As it is known, the urban fabric preserved in the west usually consist of the buildings from the industrial period. They are usually constructed with contemporary materials and spatial organization. However, the Anatolian houses are generally timber framed structures and they originally do not have the service spaces inside the buildings. So; they need special treatment for their conservation.

Today, in practice, the new materials and techniques are used in the repairs and alterations performed by the owners. The materials used for this purpose are cement based finishing materials such as plaster, mortar or leveling concrete. The infill material is usually fired brick. The new additions of mass are briquette or brick masonry and/or concrete framed.

The use of original materials, especially for the interventions done inside the buildings are more common. Moreover, these are mostly reused materials taken from other timber buildings.

In these interventions the physical and chemical compatibility of the new as well as the old materials, are not considered which directly increases the speed of deterioration. One of the causes is limitation in choosing the materials for intervention because there were not alternative choices in the construction material market until 1980's. However, due to changes in the economic policies of the 1980's new choices have been added to the market.

On the other hand neither the consumers nor the manufacturers or those who import them into the market are still not conscious of the reasonable use of these materials for the conservation of historic buildings. For instance, according to a questionnaire made by the author, in 1988, it can be seen that the manufacturers are not fully aware of the use of their products in the conservation of historic buildings[4]. In this situation while choosing the relevant materials, the manufacturing firms do not seem to be totally dependable regarding their product. Moreover, there is no control mechanism testing the compatibility of these materials in question.

v. Problems of infrastructure: Preservation areas, do not usually have sufficient infrastructure which appears to be a planning problem. In fact that is one of the most important factors effecting the speed of deterioration of historic buildings.

It is clear that; the definition of conservation problems as a separate argument from the current planning and implementation procedures, from the interactions between the society and the popular culture and the problems originating from them, is not possible. A selective attitude would make it far more difficult to propose a sound and overall solution for the problems arising in conservation work. An outlook on the development of conservation in Turkey since 1970's clearly displays that; the environment, either natural or built and the "historic sites" as an element of this environment, have not attracted a sensitive approach or the required public support.

However, the solution for the actual and practical problems of the "historic sites and buildings" cannot be delayed anymore as conservation now arises as a "necessity" for the society. Within the realization process of this solution, the first step should be the definition of these actual and practical problems that we encounter in historic sites. In regard of the problems cited above, which explain the factors that cause deterioration of houses within a historic site, some hypothesis are derived below which form the main theme of this thesis:

i. As it is mentioned above 20-30 % of the houses, forming historic sites in big cities, are used by their owners who prefer to divide their houses into smaller dwelling units in order to rent them. The interventions done for this purpose are usually unsatisfactory and extremely harmful to the buildings. Because the poor quality of such interventions, which can be accepted as "repair" and "maintenance", results from the insufficient technical knowledge and the inadequate financial sources of the owners. If such interventions can be directed towards scientific conservation approaches this might help to the preservation of a fair amount of houses which can not be ignored.

ii. Even though the alteration of such buildings may cause a partial loss in their original features, at the same time it will also be the reason for the survival of their original functions. Independent of the quality of any alteration, the original spatial and structural formation of these buildings are suitable for being divided into smaller units.

iii. Spatial characteristics of the already existing spaces in these buildings, their hierarchy and interrelations, convertibility of their structures create potentials for preservation by "refunctioning", "conversion" and "rehabilitation". These possibilities can also be used for the creation of "contemporary and alternative life styles" housed in these buildings.

As a matter of fact, when we analyze the alterations already done to these buildings we can see that there are several dwellings in one building, each being different in size and having specific characteristics serving various people with differing demands (a family, a couple or a single). As a result of this spatial organization we can observe quite heterogeneous neighborhood relations in these areas. These relations can be taken as a positive value from the point of social planning which we can not find in our cities anymore because it was lost during the transformation procedure of the residential areas into apartment blocks of standard dwelling units.

iv. Changes in the original functions and related alterations create inadequate sanitary conditions as well as disturbing the comfort. The new added service spaces are spatially insufficient and technically unequipped. The interventions done for this purpose increase the speed of deterioration in the original structure as well as the materials of the buildings. Therefore for such interventions, proposing suitable techniques and materials which are compatible with the original ones are necessary for preservation and rehabilitation activities.

Under the light of the hypothesis explained above, the aim of the study is the definition of technical and practical problems related to historical houses followed by a search for and a proposal of techniques and materials for their preservation and rehabilitation. With this aim, the study will concentrate on:

a. The adaptation of houses for contemporary residential needs by keeping their original features,

b. The preservation of the original materials,

c. Developing technical details for application and improving these for use in historic buildings. Such as roof detailing, damp-proof courses, addition of new service spaces, the placement of installation systems etc.

d. The choice of new materials and techniques which can be compatible with the original fabric and especially the techniques in relation to case studies on Ankara houses.

In the light of the above mentioned criteria the study will be focused on a specific building group in Ankara Historic Site (comprising İstiklal, Erzurum, Ulucanlar, Kale, Samanpazarı Districts). The buildings selected for the study should have the common characteristics of being:

- half-timber structures,
- still functioning as "houses" but have been subjected to alterations in order to obtain more dwelling units,
- subjected to interventions whose cost would be paid by the owners,
- are structurally in relatively good condition.

The reason for the choice of half timber structures as the subject is because there aren't any detailed research studies concentrating on the structural systems and materials of these buildings which form a majority within the traditional vernacular architecture in Anatolia. The selection of historic houses in Ankara is mostly for practical reasons, such as;

- Ankara houses represent all the specific characteristics that are stated in the aim of the study,
- There are already some general studies made on the conservation of historic sites in Ankara which do not exist in such detailed scale on other settlements,
- These buildings are not studied on the scale of structure and material as mentioned above in the aim of the study,
- Studying in Ankara will be easy during the surveys of buildings.

1.3. What is Rehabilitation in Relation to Conservation Problems

The term "restoration" which is popularly used in Turkey to cover up all intervention types in conservation activities, is a misused concept. Whereas; the conservation practice, is quite new and it could not develop its own terminology yet. On the other hand, the in architectural terminology the word "conservation" is used commonly as the action taken to prevent decay. Though, it is valid in a general context; there might be an entire range of interventions for the conservation of a building in a technical sense extending from "indirect conservation" to "total redesign" (Fielden, B., 1982:8-12; Stephen, G., 1972:7-13).

Within the limits of this study it becomes necessary to define how we use the term "rehabilitation" as a type of intervention in conservation. The degrees of interventions for a building or and object subjected to conservation can be classified in seven groups as; "indirect conservation and/or maintenance (preservation), consolidation (direct conservation), repair, restoration, rehabilitation, reproduction and reconstruction". Theoretically, the minimum effective intervention is always the best one; but, one of these intervention types can be chosen according to the scale and condition of the case to preserve its values according to the evaluation of the object and the case. Here, the definition for each intervention degree was given below on which this was study based on to set up a common terminology.

Controlling the environmental external conditions of the building and/or the object by setting some cautions can be defined as "indirect conservation". The regulation of internal and external humidity, vibration, air pollution etc., all the weathering conditions that cause decay on the building have to be controlled and by maintenance the preservation of the object can be secured by "indirect conservation".

By keeping the original material in its place and by strengthening it with some chemicals and with minimum interventions, can be defined as "consolidation (direct conservation)". The aim in "consolidation" is not to complete the missing parts of the building but to preserve the existing parts of the building by preventing the deterioration. In these above mentioned two types of intervention, the refunctioning or the use of the buildings is not the main aim of conservation.

Small scaled interventions done to a building to ensure its continuation can be defined as "repair". "Repair" is a step further than "maintenance" and it contains the minimum interventions such as, painting, alteration of completely deteriorated some parts of an element (a beam for example) and so on.

"Restoration" is an intervention type where the aim is to revive the original spatial concept of the building for a suitable function. The conservation of the original fabric as much as possible is the aim of a true "restoration", besides the refunctioning with minimum intervention, while keeping the original spatial characteristics.

"Rehabilitation" is a type of intervention term generally used for houses, done to continue the original function of the building by additions according to contemporary needs and the function. "Rehabilitation" is a more flexible type of intervention on the one hand because it keeps the original function and the original fabric as much as possible; though, because of the change in the definition of the function in time brings new needs. So, it contains the modernization while keeping the original features of the building where the continuation of the function is as much as important as the preservation of the building. In other words the continuation of the function provides the continuation of the building itself. That is why "rehabilitation" is the most common term used in the preservation of historic urban sites.

The production of an object or a building as a whole or just some parts of it, is called "reproduction". In some special cases, "reproduction" might be the only way to preserve the image or the completeness of a space or an object where reproduction can be used as a type of intervention. If an object had to be removed from its original place, its original pieces are systematically taken to pieces and brought together in another appropriate place, this is called "reconstruction". For this intervention the documentation of each piece and its location in the building should be documented very carefully before the extraction of the pieces.

1.4. Methodology

Within the context of this study, the main theme is the survey and evaluation of the problems and characteristics arising from use, structural system and materials of timber framed houses in Ankara Historic Site and to propose practical solutions both for the owners and the experts in their repair and maintenance.

For recording the relevant information, a prototype building survey form that consist of information sheets and technical sheets, is used in the site surveys. This contains the documentation of the building, its spatial characteristics, present function and demands of the users, density originating from usage, structural character of the building, construction materials and their properties, the physical interventions done and their effects on the building. Besides that, some of the houses documented before, which are appropriate to the aim of the study are also used in these site surveys and included in the study. The catalogue, given as Appendix C, comprises the documentation of these 20 houses surveyed for the study.

Owing to the priorities mentioned above, within the context of the study the published sources on: rehabilitation and conservation, definitions, relations and standards; the city of Ankara, Ankara Conservation Area, Ankara houses; causes of decay in historic buildings; characteristics of half-timber houses; origin, types and properties of building materials used in these houses; rehabilitation and conservation techniques and materials used in timber framed structures and comparative studies are evaluated. A detailed reference to the sources, as well as the methodology followed in the preparation of the written and the illustrated material was given at the beginning of each chapter while the methodology used in the catalogue is given in at the beginning of Appendix C. Therefore below the content of the study is merely summarized.

Within this order in the first chapter of the thesis, with reference to the development of conservation activities in Turkey and actual conservation problems in historic sites the houses subjected to rehabilitation and their practical problems are pointed out as the main subject of the thesis. In the second chapter, the development of the urban fabric in Ankara is presented with reference to historic sources with the aim of evaluating the background of the traditional houses in Ankara. Then, the development of traditional construction technology and the use of materials that are the basis that form the traditional urban fabric specifically in Ankara and more generally in Anatolia are discussed. Afterwards, the Ottoman or Turkish house definitions, with reference to Ankara houses that might give some clues for the users of this thesis to evaluate the buildings with which this study is interested are mentioned. In the third chapter, the architectural and structural characteristics of Ankara houses are defined with special emphasis on construction process and with reference to the evaluations done in the second chapter.

The rehabilitation problems deriving from the new uses and interventions done to the Ankara houses are described with particular emphasis on original structure, material and spatial characteristics of the examples in the fourth chapter. In the fifth chapter; the proposals that aim at the improvement and conversion of the houses for contemporary requirements, are suggested by evaluating the spatial capacity of the building and the owners' demand. Besides, some technical details and materials proposed that are compatible with the original fabric of the buildings which needs more practical proposals and technical solutions apart from the legal and administrative aspects of conservation in Turkey.

NOTES

(1) Some parts of this section was presented as a paper entitled "A Cross Section from the Current Conservation Problems of Historic Urban Sites in Turkey", to the International Symposium titled "Innovations in Management, Maintenance and Modernization of Buildings" in Holland, in 28-30 October 1992, organized by the International Council for Building Research Studies and Documentation (CIB) in association with Stiching Bouw Research.

(2) About the transfer of these buildings to different institutions see the following acts: *Hilafetin İlgasına ve Hanedani Osmanının Türkiye Cumhuriyeti memaliki haricine çıkarılmasına dair Kanun* (No:431, Date: *H*, 3 Mart 1340, 26 recep 1342; Items: 5-11); *Şose ve Köprüler Kanunu* (No: 1525, Date:2.6.1929 publication date 12.6.1929, no: 1214); *Tekaya ve Zevaya Hakkında Kararname* (undated, see: Akçura, N., 1987: 168).

(3) The interrelations of conservation and present planning and implementation problems cannot be separated naturally from the activities of historic site preservation. But, within the scope of the study they are not discussed in detail in this chapter. For more specific examples see the references below: Anonymous, 1978; Çeçener, B., 1982: 251-270; Mimarlar Odası, 1973: 2-3; Tekeli, İ., 1988: 57; Tekeli, İ., 1983; Zeren, N., 1982:225-250.

(4) A questionnaire was given by the author during the exhibition of the Building Materials (YAPI'88) in June 1988, in Istanbul, to document the approaches and trends of the procedures related with conservation of historic buildings. It was found out that only the 3 % of the producers who worked in the field of restoration could give satisfactory answers to the questionnaire.

CHAPTER II

HISTORICAL REFERENCES ON ANKARA AND ANKARA HOUSES

In this chapter the historical, social and economic characteristics of Ankara will be studied with information gathered from a variety of sources. When examining the Ankara house within the housing tradition of Anatolia, the study of the historical perspective that have shaped these buildings, inevitably gains importance. Although the present study is geographically confined to Ankara, within the context of *city-quarter-house unit*, it is closely related to the development and evolution -change-[1] of the city of Ankara. On the other hand, since Ankara House as an integral part of the Anatolian House cannot be discussed independent of the historical problems that have formed it, the Anatolian house will be inevitably included within the contents of the present study.

Although we are more interested in the Ankara House within the context of its technical problems, in order to be able to go down to the roots of the re-evaluation and alteration problems, which are to be discussed later, it seems necessary to set the present study in such a broad context.

Therefore we can say that, in general the present study is closely related to these subjects within the context of the historical procedures that have shaped the city of Ankara and the Ankara House. However, our aim here is neither to discuss basic questions like the origins of the Ottoman House or the historical development of Ankara nor to define a chronological line concerning these matters but it is to understand the Ankara House better in the light of the previous studies on the subject. To this end the questions mentioned above are included in the discussions with respect to their connections to the formation of the Ankara House. Thus the urban development of Ankara in its historical aspect will be within the context of the present study parallel to the transformations of the traditional housing fabric within it.

In the light of these generalizations, it is important to define the periods in which we have limited the group of housing we name as the Ankara House. The definition of traditional/vernacular by Rapoport (1969:2-8) as built without architects before the industrialization process does define the contents, however does not bring a period limit to the subject. If we accept the beginning of the 20 c. or even the II. World War (Mimarlar Odası, 1973: 31) as the earliest period of industrialization of the Ottoman cities, for Ankara the early years after the Republic should be included within this study.

In fact the traditional construction techniques were continued to be used together with the new techniques brought about since the beginning of the Republic. Thus for the specific case of Ankara the early examples of squatter housing may be evaluated as well within the traditional context. Therefore, considering that the earliest examples of the modest housing fabric in Ankara can be dated back to the 17c., the period covered by this study will be the 17c. and the beginning of the 20c. when the traditional construction techniques were still practiced. At this point the formation processes of the buildings that we have defined according to their period characteristics gains importance. The questions concerning the specific subject of the housing fabric, within the context of the published work examining the urban transformation process of Ankara, in terms of urban history are as follows:

1. Are these buildings synchronic, if not by looking into scholarship and building characteristics what kind of processes can be defined?
2. What are the procedures within the urban history that transform the housing construction process or are we able to define specific periods of change or an increase in the housing construction process?
3. How were the housing construction procedures? In what ways did they change. How much were they affected by the technology in terms of workmanship and materials and what were the definitive elements of this technology?

These questions cover a broad context and are closely related to the overall settlement history of Anatolia in general and to the city of Ankara in particular. In the present study we will try to limit the subject by looking to the city through the aspect of the Ankara house. Therefore, in the section below on the specific case of Ankara, within the context of the questions stated above, we will concentrate on the changes related to the housing fabric and the housing construction procedures rather than examining all the physical changes of the city.

When we take the traditional house as the smallest unit of the quarter, we than need to define its place within the scope of discussions on traditional housing. This will inevitably bring us into the discussion of the Ottoman house tradition. This subject has quite an extensive content and it is still being widely discussed.

The Ankara houses, are located in the region from where the traditional houses, attributed especially to the Ottoman period have generated. They have gained an important status for those who have studied the origins of the Ottoman house. However this group of traditional houses are scarcely cited by the authors due to their modest qualities. Central Anatolia (Kuban, D., 1966; Aksoy, E., 1963; Tanyeli, U., et al., 1979; Eriç, M., 1979) is the region from where the typical Ottoman house, as defined by a group of researchers of Anatolian-Ottoman house[2], had generated (Eldem, S.H., 1968; Kuban, D., 1982; Aksoy, E., 1963; Küçükerman, Ö., 1973). The discussions on the Anatolian House which is evaluated in the section "The Specific Case of Houses" in order to be able to place the Ankara house within these discussions, is also related to our subject matter in terms of the methodology to define the characteristics of the houses, the effects of historical, local and cultural connections.

2.1. Transformation Process of the Housing Pattern in Ankara

The city of Ankara has always preserved its settled character although she continuously underwent functional changes with respect to the changes in the trade routes. As a town involved in commercial activities during the 16. century and a *sancak* town throughout the 17. and 19 c. like other provincial towns in Anatolia, has attracted the attention of those making research on the Ottoman city. Therefore in the scope of the history of the Ottoman towns, Ankara can be counted among the better known Anatolian towns. Because of this quality, besides its socio-economical aspects, the physical characteristics of the town were also studied.

Ankara, being the capital of Turkey at the beginning of the 20. century, is still important in the post-industrialization era in terms of the history of urbanization, as a city where planning efforts were applied systematically and in a deliberately organized manner. As a result of this historical development we encounter Ankara as a space where the socio-economical wavering of the Ottoman Empire is reflected upon.

The sources examined for the present study, were studied to understand the physical aspects of the Ankara house and to follow the transformation process of the urban pattern in relation to the houses. Thus the aim here is quite limited. Therefore, even though the author's evaluation of the data related to the town does follow a chronological line, it should be considered within this context. When trying to define the data related to the shape and procedure of the existence of the houses within the town, the following basic question for the town in general comes to mind: How did the transformation processes of the town effect the housing fabric in the town and the single houses as part of the Ottoman house tradition?

At this point, the -actual physical form of the- information given in the sources and the visual material that gives first-hand information about the town becomes significant. For this purpose, the descriptions that are already present in the existing sources but often squeezed between the lines were reevaluated and tried to be superimposed. As the tendency in the sources are to define the socio-economical life, it has been difficult to find specific information on the houses fit to the aim and scope of the study (in the desired scale). However, although the Ottoman towns with the exception of Istanbul, were not that well known, Ankara had quite a big share of attention as a provincial town (Aktüre, S., 1984, 1981; Faroqhi, S., 1994, 1984, 1979; Ergenç, Ö, 1984[3], 1980a, 1973; Özdemir, R., 1986).

For the present study, sources related to Ankara are evaluated in terms of the housing fabric. Information can be gathered from these sources on the following matters; such as the size and distribution of the quarters, the population they inhabit and the ethnic or socio-economical data related to this population, the state of the social classes and their distribution in the city, ownership and inheritance situation of the houses, construction materials and methods, types and sizes of spaces that form the buildings. This information was then superimposed with the visual material to understand the reasons behind the changes that we can follow on the present housing fabric. Such an approach clearly shows that the data related to the physical environment, which is more like the surplus of the socio-economical data that is often readily produced by the historians, is quite valuable information for disciplines like ours.

2.1.1 Pre-Ottoman and Ottoman Periods

Ankara has always retained its settled character, sometimes as a military camp and sometimes as a trade town (Darkot, B., 1950:437-452). The present housing fabric of Ankara is only a portion of the historic fabric within the borders of the town that had reached its most widespread state in the Ottoman period. The part of the town that we can define as *the fabric that has changed least* is located around the Citadel, its' southern skirts and to the west and north-west areas around Hacı Bayram Mosque. The fabric of the town that has spread towards east since ancient times, especially in the Roman Period, then in the Byzantine, Seljuk and Ottoman periods must have developed in relation to the motivations of these sub-cultures. However today there are no remnants left in the city belonging to the housing fabric of these sub-cultures.

The information related to the Byzantine and Seljuk Ankara, on the gradual process of the town being occupied by the Seljuks are quite restricted, therefore they are not helpful in making classifications on the specific case of the town pattern (Darkot, B., İA: 442-3). After the Ilkhanid period that started in 1304 the town was governed by the *Ahi* organization for a period of time (Darkot, B., 1950: 442; Galanti, A., 1951: 54-55).

The *Ahi*'s had an important role in Turkifying Anatolia by means of the trade and artisans' organizations and it is known that they were especially efficient in Ankara. Within the urbanization process of Anatolia, the *Ahi* organization has set the foundations of the Ottoman city by the structures they have developed on the levels of agriculture, artisanal and organizational basis. By developing new techniques of production and by taking local precautions they have also taken the control of the town's economy which thereby had been in the monopoly of the inhabitants (Çağatay, N., 1976: 423-438). The *Ahi* organization not only controlled the economic activities but as an organization outside the Ottoman centralized system, they also got control on cultural matters (Tankut, G., 1973).

Ahi Evran, the *pir* (leader) of the tanners and the shoemakers was one of the leading figures among the *Ahi*s of Ankara. Aktüre (1984) defines the Bent Deresi region, the old district of the tanneries, as the area where the houses and workshops of these artisans were located and she refers to the buildings in this area as furnished with a well developed system found in this area during later excavations for roadwork. She also states that at this period the *Ahi*s have developed mohair weaving besides tanning (Aktüre, S., 1984: 13-15). It is known that a number of monumental buildings related to *Ahi*s were constructed in this period (Koşay, H., 1935: 24), among which (see fig. 2.1) the most important in the old town are the Arslanhane and the Ahi Şerafettin Mosques (Öney, G., 1971: 20-24).

Ankara continued to exist as a border town throughout the 13. and 14 centuries. During this time the social and economical relationships and the road networks changed and the town was finally taken by the Ottomans in 1363. In later years the town changed hands once more, was subjected to throne struggles among the crown princes (Darkot, B., 1950, 443-4).

To summarize, it can be said that Ankara which had existed as a border town throughout the middle ages (Byzantine, Seljuk, Ilkhanid, *Ahi*s, until mid 14 c.) for about a thousand years until it was taken over by the Ottomans mainly functioned as a trade town. The major functional change which have affected the spatial structure of the town was the transformation from a Roman "garrison town" into a "trade town" located on one of the two major trade routes going from west to the east and the south-east.

Within the new political structure formed in the early years of the Ottoman period, Ankara had been the center of the Anatolian province for a short time, then the center was carried to

Kütahya and Ankara stayed as a *Sancak* center (Darkot, B., 1950:443-4; Koşay, H., 1935: 26). In this period of political turmoil, the town is expected to sustain its character as a border town without major developments in town life or an increase in production. However there is no information related to this period (Aktüre, S., 1984: 16-17). There is a study evaluating Ankara in the 15 c. on the basis of the Ottoman *tahrir* records, which only concentrates on the rural area around the town[4] .

The information for the 14. and 15 c. is limited to the mosques dated to this period (Figure 2.1). These are; the Ahi Elvan Mosque, the Eyüp Masjid, the Geneği Masjid, the Hacı İvaz (Helvai) Masjid, the Kulderviş Masjid, the Molla Büyük Masjid, the Örtmeli Masjid, Poyracı Masjid, the Sabuni Masjid, the Ahi Tura Masjid, the Ahi Yakup Mosque, the Balaban Masjid, the Boyacı Ali Masjid, the Direkli Mosque, the Gecik Masjid, the Hacettepe Mosque, the Hacı Arap Mosque, the Hacı Doğan Masjid, the Hacı Seyid Masjid, the Hemhüm Masjid, the Rüstem Nail (Dındın) Masjid, the Şeyh İzzettin Masjid, the Karacabey Mosque, the Abdülkadir İsfahani (Tabakhane) Masjid and the Hacı Bayram Mosque (Öney,G., 1971: 25-56). If we assume that each of these mosques form the nucleus of a quarter there will be around 30 quarters in the town together with the Citadel (Aktüre, S.,1984: 17), and the population should be around 5000-6000 in the 15th century[5].

Ankara is a settlement with a hinterland of low agricultural production capacity because of its geographic characteristics, therefore the amount of agricultural surplus flowing to the town is low too. This fact may well be the reason behind the absence of prosperous and impressive buildings in Ankara constructed in the Seljukid and the *Ahi* periods. This is in contrast to other wealthy towns (Kayseri, Manisa, Amasya) which had control over an agricultural area. As the agricultural productivity of the town is low, its place within the regional strata would increase with respect to its efficiency in trade and artisanal activities (Aktüre, S., 1981: 111-112). To this end the most prosperous period of the town is the 16 c. when mohair manufacture and trade have reached to a climax.

At this point it will be useful to briefly mention the condition of the Ottoman Empire in order to define the position of Ankara within it. The organizational structure of the Ottoman Empire in the 16 c. was shaped according to the agricultural production and the transportation technology. A continuos growth was possible with such a structure. The basis of this organization is the *miri* land ownership system. Within this system, based on the principle that all the land within the boundaries of the Empire is owned by the State, it is possible to sustain the importance of the trade routes and also to increase and to regularly collect the surplus. The increase of surplus product within a stagnant (relying on the oxcart and the oxen) agricultural technology is only possible by a strict class system. This vertical hierarchy imposed by the system also displays a variety within the classes as a reflection of the heterogeneous structure of the Ottoman society. Therefore as a horizontal classification[6] we see different communities like the Muslims, Orthodox Greeks, Armenians, Jews and the vertical hierarchy of the military class, the learned men, the tradesmen, the artisans and finally the *reaya* or the peasants (Tekeli, İ., 1982: 14). Below the class of peasants there usually is the class of slaves mostly being the war prisoners (Aksoy, S., 1969: 35-42; Faroqhi, S., 1993: 340-344). There is another group of foreigners, mostly tradesmen, who arranged the trading relations within the Ottoman society and the cities from where the major trade routes of the world had passed in the 16. century.

At the end of the 15 c. it is seen that the *miri* system started to disintegrate gradually leaving its place to a new land ownership system called *iltizam uslubu.* This practically meant the transfer of the miri land into private ownership which is a procedure (Cin, H., 1987; Özkaya, Y., 1977) that has resulted in the formation of the *ayanlık* and its institutionalization from the second half of the 17c.[7] After the mid 16 c. the income from the war booty has decreased leaving the tax, collected from the rural areas, as the only major income of the State. The governors in the provincial regions have started to put pressure on the *reaya* to be able to fulfill their duties towards the Palace, and parallel to this situation the *reaya* have started to migrate from the rural areas to the cities (Aktüre, S., 1975: 105).

The population estimations (Erder, L., 1975: 3) for Anatolia in the 16 c., ranging from 9 to 11 millions seems rather high for the pre industrialized period, however it is a hypothesis shared by the researchers of this period that there was a rapid increase in the population of Anatolia[8] between 1520 and 1580 (Barkan, Ö.L., a: 20-29, b: 214-247). This increase had almost doubled the tax payers in Anatolia between the years 1500-1600. Due to this rapid increase in population in the Mediterranean countries and for other reasons, the historians have interpreted the 16 c. as a period of demographic and economical expansion (Faroqhi, S.,: 1993: 1). In this prosperous period of the Ottomans, Ankara has a significant position to. Ankara (together with its rural area), with over 3000 tax payers is on the top rank of the Ottoman network of cities together with Bursa since 1520. Around 1580's the number of cities with such a qualification had increased to eight (Faroqhi, S.,: 1993: 16-17). Thus the appearance of the *bedesten* and several *hans* by the end of the 15 c. is a result of the intensity of trade activities in the town at the beginning of the century (Bakırer, Ö., Madran, E., 1984: 107-130).

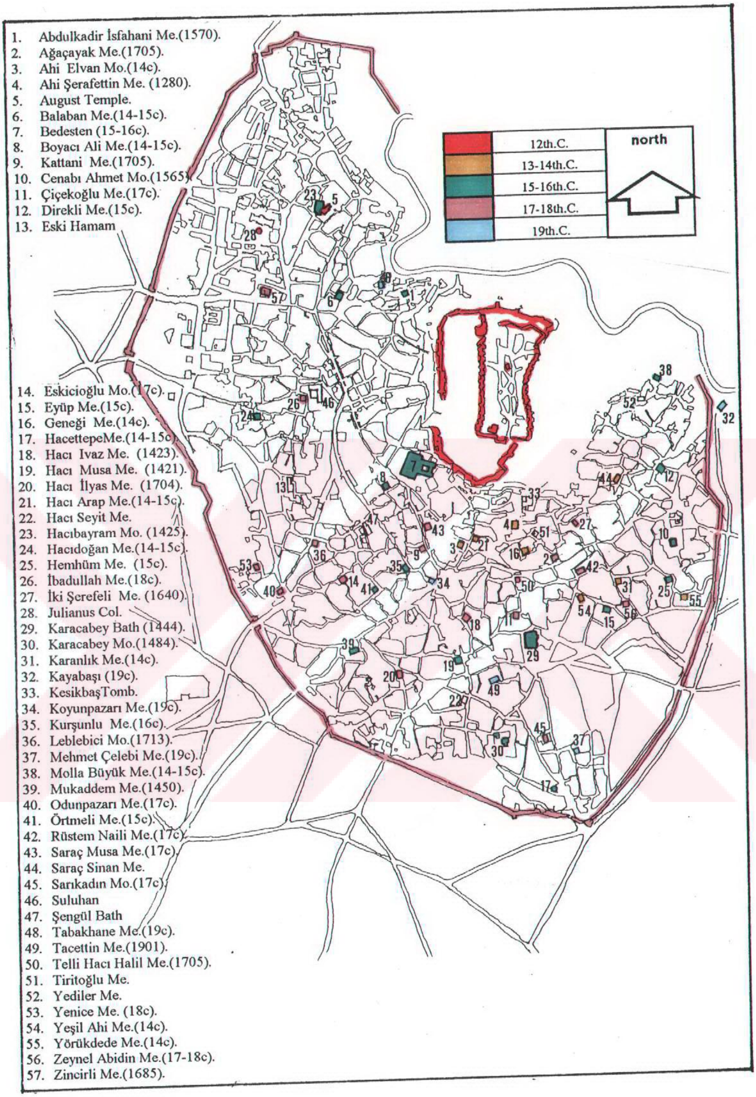


Figure 2.1 Distribution of Monumental Buildings in Ankara Between the 12. and 19.c., (Source: reproduced after Bakırer, Ö., (1992: 72-83) with reference to Akçura, N.)

There is no doubt that one of the factors increasing trade activities in the towns was the population rise. Parallel to the increase in urban population (an increase in the city populations by the migration from the rural areas) in the 16 c., the population of Ankara had increased. The population of the town is estimated around 12000-16000 based on the data derived from the *tapu tahrir* records of 1522. At this period the number of quarters in the town had increased to a total of 81. According to Dernschwam, 69 of these were Muslim, 3 were Christian and 1 was a Jewish quarter and the remaining 8 were inhabited by a mixture of Christian and Muslims (Eyice, S., 1972: 70). At this period within the city walls that had been repaired by the Byzantines, there are 6 quarters, 5 of them Muslim and 1 Christian. The area within the city walls was completely inhabited at the extent of buildings leaning onto the walls. This area was the place where the highest elite of the town lived thus the value of the houses in the Citadel were much higher in value compared to the rest (Ergenç, Ö., 1984: 49-50). According to tax registers of this period inside the Citadel there were 185 male tax payers who lives in 143 dwelling units (*hane*). We can follow the distribution of these quarters inside the city according to the number of tax payers, in Aktüre's study (1981: 112-113, 116).

A rapid rise in population is observed on the second half of the 16 c., Barkan gives the town population as 29.007, for between the years 1571-1580. The population estimates show that in contrast to the instability at the beginning of the 16 c. the population had risen at the end of the century. Hence the fact that the *Avarız* Household[9] number *(AH)*, had risen to 863 in 1607 shows that the vivid period in terms of town trade was the end of 16. and the beginning of the 17 c. (Ergenç, Ö., 1980: 85-108).

Table 2.1 Population Estimates for Ankara in the 16. Century.

	BARKAN[10] (1951-53:22)	GÖĞÜNÇ (1967:71-75)	ERGENÇ[11] (1973:65-67,283)	AKTÜRE (1981: 112)
1520-1530	14.872			
1522		15.000	13.203	12-16.000
1571-1580	29.007			
1590			25.000	
1607			22.000	

The population estimates of Aktüre and Ergenç are calculated as per the data related to the married and unmarried tax paying male population in a quarter derived by Göğünç (1967: 71-75) from the *tapu tahrir* (deed) records of the year 1522[12]. The 1607 estimates are based on the number of *Avarız* Households *(AHs)*, however the actual number of households corresponding to the *AH* numbers can be quite variable (Gögünç, N., 1977: 331-348;

Barkan, Ö.L., 1961:15). Additionally Ergenç (1984: 52) states that the population estimate that he has assumed -considers the population that is not included in this data- is on the bottom limit. Therefore the "amount of increase in the number of households in the quarters" given by Aktüre (1981: 298,303) for the years 1522-1607 may increase parallel to the possible increases in the data for the year 1607. However there is no information, including the travelers' books, to provide a base for comparison. Even according to Ergenç's estimate of minimum population for the year 1607, Ankara is still among the largest towns of Anatolia.

As per the data mentioned above, it is accepted that the town population increased 50 and sometimes 100% between the years 1522-1607 (Aktüre, S., 1981:117). Another data included in this comparison is that there had been a very small increase, from 81 to 85, in the number of quarters in the town (Ergenç, Ö., 1973: 26-29). The most crowded quarters are the ones closest to the commercial center. Hacı Murat and Tuli quarters set an example for this situation (Ergenç, Ö., 1984: 51-52).

Altogether this data shows that the borders of the town had not changed between the years 1522 and 1607 whereas there had been a great rise in the population of the quarters (Aktüre, S., 1981: 117, 298, 303). The data related to the population increases in the quarters and the above mentioned table which is organized by Aktüre shows that the number of households in some quarters, close to the commercial center had increased within minimum range of 50% and a maximum range of 200%. On the residential districts, further away from the center, this proportion is between 50% and 100%. It is normal that within Ankara's single centered structure in the 16. and 17c. the intensity of the population should be concentrated in these areas. Thus as we will mention further on in the study, parallel to the new commercial and administrative centers to be developed at the end of the 18c. the population will rise in these areas too.

These quarters must have sustained the same character throughout the 17c. Faroqhi states (1984: 233-234) that following the *Celali* riots, especially around 1690's the town fabric in Ankara's central quarters had become much denser compared to the beginning of the century[13] and the quarters in the outskirts of the town must have been evacuated because of the *Celali* riots (Aktüre, S., 1981: 115-117). The situations where the population decline is over 40% can be considered to be caused by the great fires that had occurred especially in the dense quarters.

The period between the years 1603-1607, named as the "great emigration *(büyük kaçgun)*", after the events caused by the *Celali* riots and general famine, had their effect on the urban space of Ankara. In the summer of 1603 the *Celali*s had started to attack the small towns and cities. Ankara, only eight or nine months after paying a huge ransom to Deli Hasa*n* was also blockaded by the *Celali* Troops of Karakaş Ahmed. During these attacks all shops and houses around Karaoğlan, Samanpazarı and Karacabey Baths which were the regions outside the city walls were ruined (Aktüre, S., 1981: 44). Thus in 1607-1608 the town's inhabitants got organized and built the outer walls to protect themselves from these attacks (Naima, 1968: 542). These walls rather crudely built[14], in a combination of mud brick and stone masonry, stood as a major element defining the borders of the city from the beginning of the 17c. until the end of the 19c. (Eyice, S., 1972: 87-88).

One of the main axes of the double centered urban structure Ankara had gained in the 16c.[15], started from the Cenabi Gate went uphill from the Avancıklar district to *Atpazarı* (Horse market) reaching the *Bedesten* from there. Atpazarı was connected to the Tahte'l-Kal'a via the Uzunçarşı (Ergenç,Ö., 1984:50). Tahte'l-Kal'a opened to the *Araba pazarı* which is somewhere below today's Denizciler Street on one end and to the Hacı Bayram Mosque and the Debbağhane (Tannery) via the Karaoğlan market on the other end.

Three of the gates on the city walls were most commonly used (see fig. 2.8). One of these was the Cenabi Ahmed Gate (Kayseri Gate) to the East, the second was the gate near the Hacı Doğan *Zaviye* (Izmir Gate) and the third, the Arabapazarı (*Namazgah*) Gate which was located below today's Denizciler Street and named after the market place nearby. The roads approaching the town were connected to the main axis of the town through these three gates (Ergenç, Ö., 1984: 50).

This road pattern shows that the axes thought to be present in the Byzantine period had changed[16] in favor of the newly formed city center (Acar, E., 1975: 10-11). On the other hand the quarters of the minorities being within the Byzantine boundaries of the town at the end of the 16c. shows that the Christian population were not pushed out of the district they used to inhabit in the Byzantine Period[17].

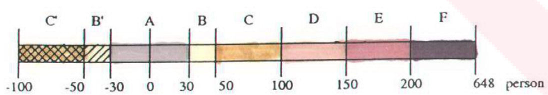
Ergenç (1973: 149) has recorded 44 types of tradesmen present in Ankara in the *Şeriye* record*s* dated to the end of the 16c. These tradesmen, other than the ones related to mohair manufacture (like: mohair weavers, mohair washers, mohair dyers *-perdahçılar* or *cendereciler-*), should have stayed within the regional and/or town scale. The construction related trades defined in this list are quite limited: blacksmith (iron mongers) and wall builders. One reason of this phenomenon may be that especially in the cases where the materials were provided by the owner of the building these trades would not necessitate a workshop (Faroqhi, S., 1993: 41). Otherwise there should have been enough number of workshops to fulfill the demand for new buildings that have developed parallel to the population rise in Ankara (see sec. 2.2.).

The mohair manufacture and the related trades which formed the base of the town's economy, differing from other trades, were practiced in the houses as well as in the workshops and shops. Such that in this period the presence of the looms and a space dedicated to mohair manufacture in a house would raise the price of the property thus we see that this activity was extremely important in terms of the form of the house (Faroqhi, S., 1983: 216-220). However there is no information related to the actual physical form of the spaces where the mohair weaving looms would be placed, possibly mohair was manufactured in the spaces dedicated for this function at the ground floors or the courtyards of the houses[18]. Faroqhi (1983: 232-234) produces an extremely important evaluation concerning the physical transformations of Ankara houses of this period (17c.):

> *.....From the sales documents concerning houses which have been exploited in the present study, it becomes apparent that the habit of building houses with an upper floor first became widespread in Ankara during the 17. century. In the years shortly before and after 1600, only 36 out of 343 documents (10.5 %) refer to the existence of an upper floor. About 1690, on the other hand, 152 out of 290 documents (52.4 %) mention the existence of dwellings built on at least two levels.*

We have mentioned earlier that, parallel to the halt in the horizontal spreading of the town the population had increased and the housing fabric had become denser throughout the 17c. This statement then shows an increase in the vertical rise which is a phenomenon that will form the basis to the research of the earliest buildings in Ankara dated to the 17c.

There are quite limited number of travelers' journals concerning this period. Dernschwam (Eyice, S., 1972: 70) who had visited Ankara in the years 1553-1555 had walked around "*the lower town where there are mud brick houses*". Here the streets are "*narrow and without pavement*". Simeon (Eyice, S., 1972: 72) who had visited the town in the years 1618-1619 refers to the third city walls and to the repairs of the churches damaged by the *Celali*s. The information in these sources support the studies concerning Ankara in the 16. and 17c. however they give extremely restricted information. On the other hand, the new *han*s and trade markets added to the town in the 16. and 17c. show that the commercial center of the town had expanded on the north west axis. By the end of the 17c. Ankara is an important trade center governing the Mohair manufacture of the surrounding towns (Aktüre, S., 1981: 45-46, 119-120).



GROUP	Group Range	nu. of Qu.	%	Type of Change in Population
C'	-99;-50	1	1.8	Decreasing; between 50 and 99%
B'	-49;-30	2	3.5	Decreasing; between 30 and 49%
A	-29;29	7	12.3	Stable; between -+29%
B	30;49	10	17.5	Increasing; between 30 and 49%
C	50;99	23	40.3	Increasing; between 50 and 99%
D	100;149	9	15.8	Increasing; between 100 and 149%
E	150;199	4	7	Increasing; between 150 and 199%
F	200;	1	1.8	Increasing; above 200%
TOTAL		57	100	A total of 57 quarters evaluated in this table according to information gathered.

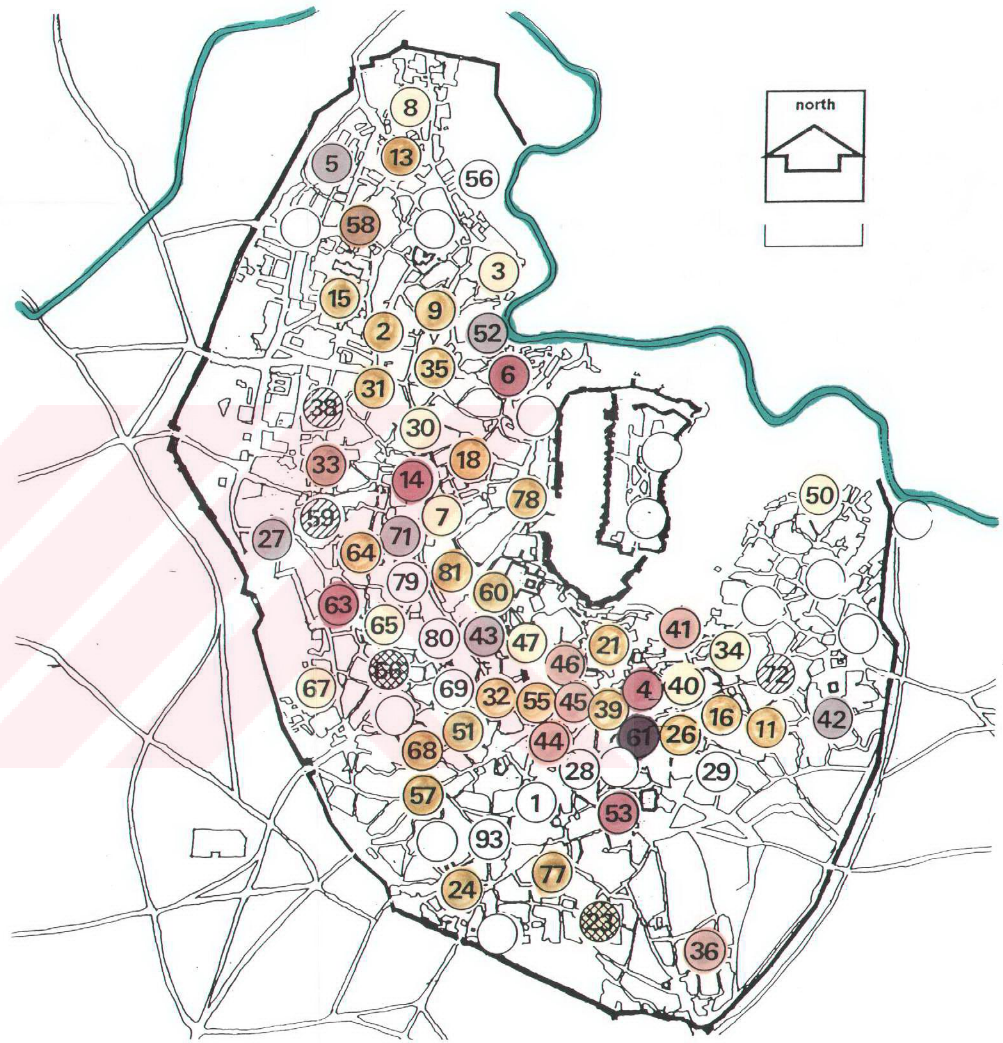


Figure 2.2 Distribution of the Changes in the Quarter Populations Between the Years 1522-1607, (see the list of the quarters in Appendix A; Source: reproduced with additional data after the following sources: Özdemir, R., 1986; Aktüre, S., 1981; Ergenç, Ö., 1973).

With this formation it is apparent that, the town had reached a structure that fits into the Ottoman city model defined by Ergenç (1980b: 105-106) from the 16c. onwards. The elements dominating the city were the mosque, *bedesten* and *imaret* complexes. The roads going into the city were connected to this center and with a regular relation between them and:

> *The carcass between these focal points were filled with shops and markets where the economic activity took place. The real center of the town was the bedesten. Around it the hans, which were not only places to stay overnight but trading places as well, were located.*
>
> *Often the larger mosque or mosques of the town would be located here. A spread outwards from this center to other focal points of the town is observed. The axis of this spread was formed by the wide street named Uzunçarşı starting from the Bedesten* (Ergenç, Ö., 1980b: 105-106).

Data related to the state of Ankara in the 18c. is mostly confined to the information in the travelers' journals. Ankara being on the route of many travelers at the beginning of the 18c. and especially in the 19c., was visited and its housing fabric was described by these travelers. Among these we can find information related to the monumental buildings, the social and economical life, population characteristics and the housing fabric of the town[19]. We will deal here with the information specifically concerning the housing fabric.

Tournefort who states that Ankara is still one of the finest towns in Anatolia in 1701 is especially interested in the antiquities. The source of wealth of the town was the trade depending on the manufacture of angora wool and mohair. Tournefort states that 40.000 Turks, 4-5000 Armenians and 600 Greek lived in the city and he refers to religious buildings of the minorities (Eyice, S., 1972: 74-75).

La Motraye (Eyice, S., 1972: 75-76), in 1703 states that the city walls are not in a good condition and refers to the status of the marble lions at the Kayseri Gate. A representation of this can be seen on the carpet[20] found by the author in the *Camlı Köşk* within the *Pembe Köşk Campus* (Fig: 2.3). This carpet represents Ankara and is dated to 1940.

We know, especially with the reference of the European travelers, that the city walls existed until 1890's, and from this representation dated to 1940 we understand that parts of the walls were still erect at this date. In 1705, mentioning the foreign merchants living in the town, Lucas refers to the house built by one of them, the Frenchman's house which was one of the most beautiful houses of the town (Eyice, S., 1972). It does not seem possible that the house mentioned here could legally belong to the French merchant. There is no clear information related to the application in the urban context of the Ottoman land system which was efficient in the rural areas (Acar, E., 1975). Especially when it is known that the legal rights to own property on the Ottoman land were given to the foreigners only in the year 1867 this situation is definitely not an ownership in the sense we understand today (Cin, H., 1987: 225, 290-292).

Figure 2.3: Ankara in 1940 (Source: carpet from 1940 in the collection of Camlı Köşk within the Pembe Köşk Campus,photo by: N. Şahin)

Lucas, mentioning that there had been no rainfall for the last six months in the summer of 1705, states that the surrounding mountains were bare with virtually no trees on them. It is significant that there were no forests in the vicinity of the town at the period when the buildings had just started to gain a second storey (Eyice, S., 1972). The timber used in the constructions in Ankara must have been brought from outside -Beypazarı comes to mind as the closest forest area with strong trade relations with the town-. The traveler emphasizing that Ankara is a very prosperous trade town at this period, writes that the roof of the Hacı Bayram Mosque was covered with lead sheeting. Richard Pockocke who visited Ankara in 1739-1740 refers to the water problem of the city and writes that the houses of the town were rather shabby and made of mud brick. He gives the town population as 100.000 and once again refers to the trade based on mohair manufacture mentioning the decrease of import from England in the recent years (Eyice, S., 1972).

The information related to the population in these travelers' books are quite contradictory. For example Tournefort gives the population as 45.000 which means that the population should have increased 100% between the beginnings of the 17. and the 18c. Keeping in mind that the borders of the town were the same in the 17. and 19 centuries, the lack of information that may explain the reasons or the reflection of such an increase in population to the physical space of the town. However looking in terms of the building density in the town the population data for the 18c. is expected to have stayed around 40.000 (for sources see Aktüre, S., 1981: 120-122). According to Özdemir's (1985: 122) estimation for the year 1786, based on the census of 1830 and the data related to the *avarız* paid by the households of the quarters the town population is 22000.

2.1.2. Ankara in the 19c. and the Beginning of the 20c.

In Özdemir's study (1986) consisting of the period between 1785 and 1840 especially the data related to the residential districts are important. Together with the information in Aktüre's work Ankara in the 19c. is much better known in terms of town population, functions and fabric compared to the 18. century. Aktüre (1981: 122-143) gives detailed definitions of the evaluations concerning the characteristics of the trade activity in the town and its reflection on the townscape. The trade activity was practiced in 20 *hans*, four of them were larger with about 1584 shops (in 1827). In this period the variety of trade in the town had increased a great deal compared to the 17c. While the number of trades had risen to 72 from 43, new *hans* were also built in the city. The Mıslı Paşa Han, The Pirinç Han and the Ağazade han were the ones built in the 18c.

In contrast to such an increase in trade, and parallel to the decline of mohair manufacture in the town, the number of looms gradually decreased and this too is mentioned by the travelers[21]. However the most comprehensive source in this matter is Faroqhi (1984: 219-). We are interested in this situation in terms functional changes or the disappearance of the spaces formerly dedicated to mohair manufacture in the houses.

According to Kinneir at the beginning of the 19c. the population is less than 20000. Özdemir estimates the town population in the year 1785 as 22000, based on his evaluation of data related to the census of 1830 (Çadırcı, M., 1980: 112) and to the *avarız* paid by the households of the quarters in 1785. Depending on this data, Özdemir makes an attempt to define the characteristics of the quarters in the context of housing fabric. Using the same data we will try to define the characteristics of the housing fabric of the town and the differences between the quarters. Before evaluating the population data for 18. and 19c. we should first look at the changes in the amount of *AH*s collected in Ankara between 1590 and 1833. We think that is useful to give here once more the data given by Özdemir (1986: 102).

According to the distribution seen below, the distribution of the *AH* in the town had gone through considerable changes basically in five different periods. While the number of *AH* was 863 in 1590 (period a) the town population had decreased with the effect of the *Celali* Riots in 1607 (period b) and the number of *AH*s have fallen to 600. We can see that the number of *AH*s changed from 264 to 275 (a difference of 8) between the years 1785 and 1790 (period c); changed from 199 and 212 (a difference of 13) between the years 1817 and 1826 (period d); and stayed fixed at 145.5 between the years 1831 and 1833 (period e).

Table 2.2 Change of *AH*s in Ankara as per the AŞS

PERIOD	DATE	Nu.of AH	SPECIFIC EVENTS
a	1590 (Ergenç,Ö., 1973:65-67)	863	
b	1607 (Ergenç,Ö., 1973:65-67)	600	*Celali* Rebellions
c	Oct. 28,1785 (Özdemir,R., 1986:101)	267	
c	Oct. 3, 1790 (Özdemir,R., 1986:101)	264	
d	June 26, 1817 (Özdemir,R., 1986:101)	212	Plague infectious (1813-17)
d	March 1822 (Özdemir,R., 1986:101)	210	
d	Sep. 17, 1822 (Özdemir,R., 1986:101)	208	
d	Sep. 22, 1822 (Özdemir,R., 1986:101)	209	
d	April 1823 (Özdemir,R., 1986:101)	200	
d	Sep. 1823 (Özdemir,R., 1986:101)	199	
d	March 1824 (Özdemir,R., 1986:101)	200	Long dryness and locust attacking
d	Sep. 1824 (Özdemir,R., 1986:101)	212	
d	Dec. 1826 (Özdemir,R., 1986:101)	200	
e	Dec. 1831 (Özdemir,R., 1986:101)	145.5	
e	June 1833 (Özdemir,R., 1986:101)	145.5	

It is for sure that these values had changed with respect to the social and economical conditions of the different periods. Thus as it is known the state of the region, the characteristics of the inhabitants being urbanites, peasants or emigrants, tax payers' economical capacity and power, their property ownership situation, their land savings are taken as the criteria to establish the state of the *AH*s. It is a known fact that the inhabitants of Ankara would visit the *kadı* asking for a decrease in their *AH* amounts due to economical situation of the time and that most of the times their demands were accepted. There are documents from 1820's explaining this situation (Özdemir, R., 1986: 103).

The data related to the year 1786 which will be taken as the data to base our population estimation points to two different periods (periods c and e). The number of *AH* in 1785 being 267 falls down to 145.5 in 1831. Which indicates a decrease of 46%. This situation can be related to reasons like the epidemic during the years 1813-1817, the drought and grasshopper attack in 1824 and 1826 or the demand of soldiers from Ankara in different periods.

As it can be followed on the Table 2.2 -see the fluctuations on the table above- these events, although they seem to be parallel to the decrease in population in the 19c., which had risen in the mid 18c., are not sufficient in explaining the dramatic wavering of population. This situation creates doubts especially on the reliability of the information given by the travelers related to the population. Only after access to the correct data related to the population, these fluctuations can be explained by the changes in the political and economical life of the city. In any case, within the periods defined by a variety of factors, the number of *AH* decreases with changes in population and/or in proportion with the income of the permanent inhabitants. The reflection of this decrease on the tax payers of the town is not altogether but generally homogenous.

For example the *AH* number is decreased from 2 to 1 (a decrease of 50%) in the Papani and İbn-i Gökçe quarters on 25 February 1822 and on the 8th February of the same year the *AH* number was dropped to 2 from 3 (a decrease of 44%) in Hendek quarter (table on Özdemir,R., 1986: 105). Namely when anything affecting the social or economical life of the town is experienced this situation must have had its reflections on all quarters homogeneously. It is also possible to come to this conclusion by comparing amounts of *AH* paid by the quarters in 1607 as established by Ergenç (1973: 65) with data Özdemir (1986: 101) has gathered for the year 1785. Through these data generally a homogenous decrease of 40-60% is observed. In some quarters there are considerable differences between two periods. These differences show that although there is no decline in the town's population, the population of some quarters have decreased. Our opinion is that, the basic reason of this situation is the changes seen on the town structure starting from 18c.

The data related to the distribution of the changes in population in the town space between the years 1522-1607 (fig. 2.2) and 1607-1830 (fig. 2.6) will bring us to this conclusion. While the population rise in the traditional commercial center of the town increases in the first period, in the second the old center loses population in favor of the new town center. When we compare the of the years 1607 and 1785 if the *AH* prices show a change other than an average of 40-60 percent then in these quarters there usually is a population loss. Therefore, if the total amount of *AHs* and the population size of the quarters in the town are known for a given period we may think that the correlation of these figures can give information related to the income distribution and hence the social structure of the said quarters[22]. Based on this assumption; we think that the *AH*N/ Inhabitants of a quarter relationship will reflect the income status of the inhabitants of the quarter. In this context the closest data that can be related to the total *AH* number known for the year 1786 is the census of 1830, at this date the town population is 28348 (Çadırcı, M., 1980: 112). By this data the following questions concerning the housing fabric of the town can be forwarded:

1. How do the quarter sizes change as per the results of the 1830 census? How are the distribution of the quarter sizes in the town?

2. As the amount of *AHs* are defined with respect to the economical status of the tax payers, is there a great difference (social stratification) among the quarters in terms of income status? How is the physical reflection of this stratification on the townscape?

To find the answer of the first question we have evaluated the data on the table in the Appendix B. The distribution of the quarters in the town with respect to their population sizes is seen on the figure 2.5 based on this data.

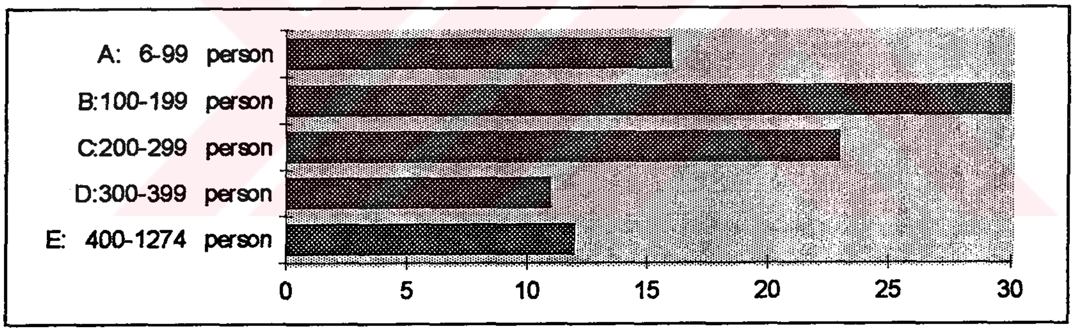


Figure 2.4 Distribution and Classification of the Quarters of Ankara according to Their Population Size in 1830, (Source: Çadırcı, M., 1980: 112; Özdemir, R., 1986: 119-122).

Table 2.3 Distribution and Classification of Quarters According to Population Size in Ankara in 1830 (Çadırcı, M., 1980: 112, see App. B)

Group	Range:# of person	# of qu.	%	Codes of Quarters:
A	6-99	16	%17	2,4,15,17,25,31,32,34,39,53,54,86,96,101,107,108
B	100-199	30	%33	3,5,9,14,16,18,26,28,33,38,43,44,46,52,55,56,58,6 1,63,64,70,72,74,77,83,91,97,99,105,106
C	200-299	23	%25	10,11,13,21,30,36,37,41,45,47,50,51,66,67,69,82, 8587,88,89,90,98,100
D	300-399	11	%12	1,7,12,22,24,40,65,68,71,76,95
E	400-1274	12	%13	23,29,36,42,57,59,60,79,81,94,102,104
	TOTAL	92	100	

GROUP	Group Range (person)	Number of Quarters	%
A	6-99	16	17
B	100-199	30	32
C	200-299	23	25
D	300-399	11	12
E	440 % over	12	13
TOTAL		92*	100

	MUSLIM QUARTERS
	NON MUSLIM QUARTERS

* The quarters which their location is known are included in this map.

ZONE	CHARACTER
ZONE I	Densely populated Non-muslim quarters located through the new commercial axes. The quarters in this zone usually concertrate in C and E groups.
ZONE II	This zone is the most densely populated area where the population of the quarters is above 200 people (group C and above). They usually consist of Muslim population.
ZONE III	The quarters in this zone usually concertrate in A, B and C (max: 300 people) groups that are in medium density. In this zone, the population density of the old commercial center changes between B and C groups.
ZONE IV	The quarters in this zone usually concertrate in A and B (max: 200 person) groups. But only in Hacı Bayram Quarter the population density reaches 300-400 people.

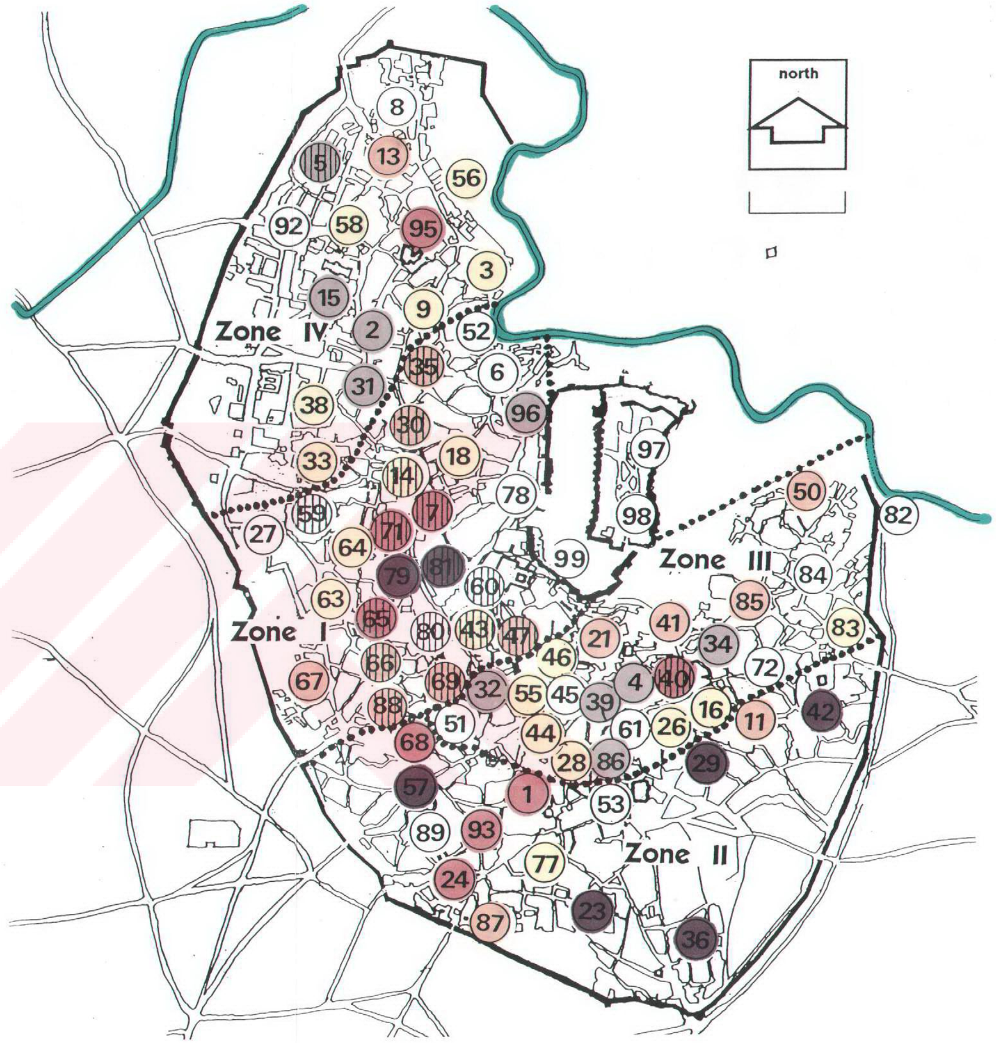


Figure 2.5 Distribution of the Quarters of Ankara in the Town according to Their Population Size in 1830 (Source: Çadırcı, M., 1980: 112; Özdemir, R., 1986: 119-122)

As seen on this map (fig. 2.4, fig. 2.5) and table (2.3) above, the population of the quarters change between the groups a and e. The quarters with a population below 100 inhabitants is 17%. The densest is group b by 33% and group c by 25% such that the population of these quarters range between 100-199 and 200-299. The ratio of group d with a population range of 300-399 and other quarters with a population above 400 are quite large if compared to the population they inhabit by 12% and 13%. Looking into this distribution, the quarter sizes in 1830 should be accepted to be groups of 200-300 persons. Town population being 28348, the average size for the 92 quarters is 308 persons. When we look at the distribution of these quarters in the town, we can divide the town into four groups with respect to the density of population (fig. 2.4). On Zone I as indicated on the map, stretching out from the skirts of the castle to the walls on the West the groups d and e (very dense) are concentrated. Mostly non-muslim quarters are located in these zones spreading parallel to the new commercial center developed in the 19c. In contrast, the population density is much lower (groups a, b and c) in the old commercial center between the Horse market (Atpazarı), the Sheep market (Koyunpazarı) and the surrounding quarters.

The zone indicated as no II, to the south of the town and defined by the city walls from its lower end is where the most dense (groups c, d and e) Muslim quarters are located. When these information are superimposed with regions on the map showing changes in the quarter populations between the years 1607-1830 (fig. 2.6), it is seen that the zones I and II are the areas with highest population density during 17. and 18c. The quarters in Zone III, which spread towards east from between the zones I and II have a population of 200-300. It is known that the population of the Avancıklar quarter had increased by new divisions since the 17c. In the zone no IV located to the north of the town, we see that the quarters with the exception of Hacı Bayram, are mostly of groups a and b (less dense).

When we superimpose this distribution with the functions existing in the town in the 19c. we see that the vicinity of the administrational center inhabits less population compared to other regions of the town. The new commercial center was quite densely populated and that the old commercial center was not as dense as the residential districts. We come across interesting results when we compare this situation with the spatial distribution of changes in quarter populations between the years 1522-1607 (fig. 2.2) and 1607-1830 (fig. 2.6). While the town population increases between the years 1522-1607 the old commercial center was a point of attraction.

Although there is an homogenous distribution on other regions of the town the population is quite dense around the center. Even so the population of some quarters (like the İmaret district) at the outskirts of the town have declined or stayed unchanged. This single centered, relatively homogenous town structure of the 17c. had changed throughout the 18c. parallel to the formation of new urban functions. While the population of some quarters had increased others could not stay fixed and lost population.

When we compare the populations in the quarters between the years 1607 and 1830, the situation we see is as follows (fig. 2.6). There is an increase in the number of quarters in this period (see Appendix A for 1522-1891).

However when we compare the quarters whose population and location is known in 1607 with the 57 quarters whose population and location is known in 1830 (see table 2.4 below) we see that while about ±29% of the population in 18 of these (32%) had not changed (Group A), there is a decrease between 30-49% (group B') in 8 (%14) of them and a decrease between 50-99% (Group C', with a decrease of maximum 78%) in another 8 (%14) of them. Meanwhile; in 5 (%9) quarters there is a population increase between 30-49% (Group B), an increase between 50-99% (Group C) in another 5 (%9) quarters, and in a total of 13 quarters (%20) the population increases between 100 and 648% (Group D: 6 Qu., 10%, increase of 100-149%: Group E: 3, 5%, increase of 150-199%: Group F: 4, 7%, increase of 200-648%).

Table 2.4 Change in Quarter Populations Between 1607-1830

GROUP	RANGE (as % value)	# of quarters	%	Codes of Quarters:
C'	-100/-50	8	14	2,3,15,31,32,33,39,58
B'	-49/-30	8	14	9,18,21,45,46,53,55,63
A	-29/+29	18	32	4,11,13,14,21,24,26,28,29,30,34,38,44,52,64,68,71,77
B	+30/+49	5	9	16,35,50,51,61
C	+50/+99	5	9	1,40,41,43,57
D	+100/+149	6	10	36,42,67,69,72,81
E	+150/+199	3	5	7,47,65
F	+200/+648	4	7	23,59,60,66
Total	-100/+648	57	100	

When we look at the distribution of these changes in the town we see that there are similar changes in some sub regions (fig. 2.6). In Zone I, on the south-east of the town defined by the city walls on one end, the population on quarter basis, increases within a range of 100-648%. In the Zone II, located between the north of Zone I and the old commercial center in about half of the quarters (40%) the population increases within a range of 30% and 99%.

In the old commercial center, Zone III, there is a certain population loss compared to 1607. Here the population of the quarters decrease within a range of 30% and 99%. In Zone IV, which defines the south-west border of the new commercial center there is a considerable increase (100-648%) in population. Most of the population in this zone consists of non-muslims, there are 11 non-muslim quarters in the defined area. Zone V which is made up of the fabric on the north-west of the town is where the new administrational center is located and it ends by Taşhan which also defines the border of the new commercial center. Here, against other regions in almost half of the quarters there is a decrease of 50-99%.

In the light of these data, variations in the population sizes of the quarters parallel to the changes in the functional distributions of the town are observed. While the old center had lost population in favor of the new commercial center, an expansion of the minority quarters is observed. Muslims had preferred the quarters on the south and south-west borders of the Citadel. To define the economical character of the population distributions in the urban space, we have to return to the second question above. As the amount of *AHs* are defined with respect to the economical status of the tax payers, is there a great difference (social stratification) among the quarters in terms of income status? How is the physical reflection of this stratification on the towns cape?

To answer this question our method will be to find the amount of tax paid per person by comparing the number of *AHs* in 1876 with the number of persons established by the 1830 census, in other words to establish the number of persons that paid one *AH*. One drawback of the method is that due to the 44 years that have passed in between the demographic character of the quarter will be changed. It is possible that some of these quarters may be deserted or had gone through too much changes of population, this will inevitably effect the results.

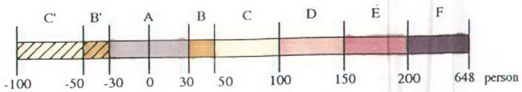
However we have to assume that such a possibility can be balanced by decreasing the ratio of *AH*. On the table 2.2 above we have stated that the *AH* number had gone down to 145.5 from 267 from the year 1786 to 1831, a decrease of %46 and that this decrease should have been distributed in the town in a homogenous manner. As we are interested in the *AH* values by their proportions within themselves this data will not change the groups which will be formed mathematically however the ranges to be defined will expand. Still, the decrease of 46% mentioned here is reflected upon the calculations[23]. At this point, while sampling the quarters of the town it should be reminded that the borders of the town had not changed and the number of quarters had not increased much at the beginning of 19c.[24].

On the other hand the data we have used for the sampling are the quarters of which the related data was complete and their location were known. As reflected on the figure 2.7 the quarters were grouped according to the number of persons paying one *AH*. The grouping system is as follows; if 1 *AH* is paid by 0-39 persons then Group A: Rich, if 1 *AH* is paid by 40-59 persons then Group B: Good, if 1 *AH* is paid by 60-99 persons then Group C: Satisfactory, if 1 *AH* is paid by 100-119 persons then Group D: Poor, if 1 *AH* is paid by 120-380 persons then Group E: Extremely Poor. Later to relate this data to the distribution of the urban functions in the town these information are reflected upon the map. On the table below the percentage distribution of these figures in ratio to the number of quarters are given. As per this data 46% (36 Qu.) of the sampled 78 quarters are in the middle group. The rich and well off ones are 36% of the whole, the income status of the 18% appears to be very low.

Table 2.5 Evaluation of Quarters According to Income Levels between 1607-1830 (App. B).

GROUP	RANGE (as % value)	# of quarters	%	Codes of Quarters:
A:Rich	0-39 person	10	13	2,15,32,33,39,43,52,60,63,91
B:Good	40-59 person	18	23	3,10,17,18,21,24,24,28,31,34,46,53,55,64, 67,70,77,88
C:Satis.	60-99 person	36	46	1,4,5,7,9,11,14,16,26,29,35,36,37,38,40,41, 42,43,44,50,51,54,57,58,61,66,68,69,71,72, 74,79,82,87,89,90
D:Poor	100-119 person	9	12	12,13,22,23,30,47,76,81,85
E:Ex.Poor	120-380 person	5	6	56,59,65,83,86
Total		78	100	

When we look at the spatial distribution of this data, although some zones do appear generally a homogenous distribution is observed. This situation is repeatedly mentioned in the previous studies on the Anatolian-Ottoman urban fabric. It is known that rich and poor had lived together even next door to each other within the town. However once the income status, population characteristics and periods of population accumulations are defined this information will give some insight as to the procedures that the houses were made in. Thus we have indicated that together with the general homogeneity, groups with little differences can be formed, to a certain extent. As shown on Figure 2.7, the fabric in Ankara can be divided in to five sub-groups in terms of income distribution. In zone I, which mostly of Muslim quarters, the number of persons paying 1 *AH* is between 60-99. The population in this region has increased over 100% during the 18c. and it became the most dense housing district of the town (the population of the quarter is a minimum of 400 persons). The old center to the west of this region defined as Zone II is inhabited by the highest tax paying groups, on the contrary the quarter population is low (max. 300 persons). In the quarters of the Zone III consisting of mostly Muslim population, the number of persons paying 1 *AH* is between 40-59. As per the limits defined before, this region is within low tax paying range. The difference of this area from Zone I is that it has more homogenous distribution.



GROUP	Group Range	nu. of Qu.	%	Type of Change in Population
C'	-99;-50	8	14	Decreasing; between 50 and 99%
B'	-49;-30	8	14	Decreasing; between 30 and 49%
A	-29;29	17	31	Stable; between - + 29%
B	30;49	5	9	Increasing; between 30 and 49%
C	50;99	5	9	Increasing; between 50 and 99%
D	100;149	6	11	Increasing; between 10 and 149%
E	150;199	3	5	Increasing; between 15 and 199%
F	200;	4	7	Increasing; over 200%
TOTAL		56	100	A total of 56 quarte evaluated in this tab according to informati gathered.

IIIIIIIIII	NON MUSLIM QUARTERS

ZONE	CHARACTER
ZONE I	Population increases between 100-648% in th zone which is located on the southern part f the city and developed in 15-16th.c..
ZONE II	Population increases between 30-100% in ts zone which is located between the commercl center and Zone I.
ZONE III	Population decreases between 30-100% in ts zone which includes the old commercial cent
ZONE IV	Population increases between 100-648% in 9 f the non-muslim quarters out of 14 in ts zone and in the other 5 quarters e population stays stable.
ZONE V	Population decreases between 50-100% in 7 f the 14 quarters that form this zone whh includes also the administrative center.

Figure 2.6 Distribution of the Changes in the Quarter Populations Between the Years 1607-1830, (Source: reproduced with additional data after the following sources: Özdemir, R., 1986; Aktüre, S., 1981; Çadırcı, M., 1980; Ergenç, Ö., 1973)

	G	Range	Nu. of Qu.	%	
	A	0-39 person	10	13	RICH
	B	40-59 person	18	23	GOOD
	C	60-99 person	36	46	SATISFACTORY
	D	100-119 person	9	12	POOR
	E	120-280 person	5	13	EXTREMELY POOR
			78*	100	

	TRADITIONAL COMMERCIAL CENTER
	NEW COMMERCIAL CENTER
	ADMINISTRATIVE CENTER
	VINEYARDS AND THE GARDENS
	HOUSING PATTERN
	CEMETERIES
	MUSLIM QUARTERS
	NON MUSLIM QUARTERS

* Between these 78 quarters only 64 (with locations known) are shown in the map.

ZONE	CHARACTER
ZONE I	The more densely populated and the poorest groups are in this zone located at the south and east edges of the city.
ZONE II	The rich groups (A,B) are in this zone which includes the old commercial center of the city.
ZONE III	Eventhough it does not show a homogenious distribution mainly B and C groups concentrate in this zone.
ZONE IV	The poorest and the richest groups live together in this zone that are located around the newly developed commercial center.
ZONE IV	The poorest and the richest groups live together also in this zone that is located around Taşhan and the Administrative center. While the richer groups concentrate around the administrative center, the poorest groups are located on the northern edges of the city.

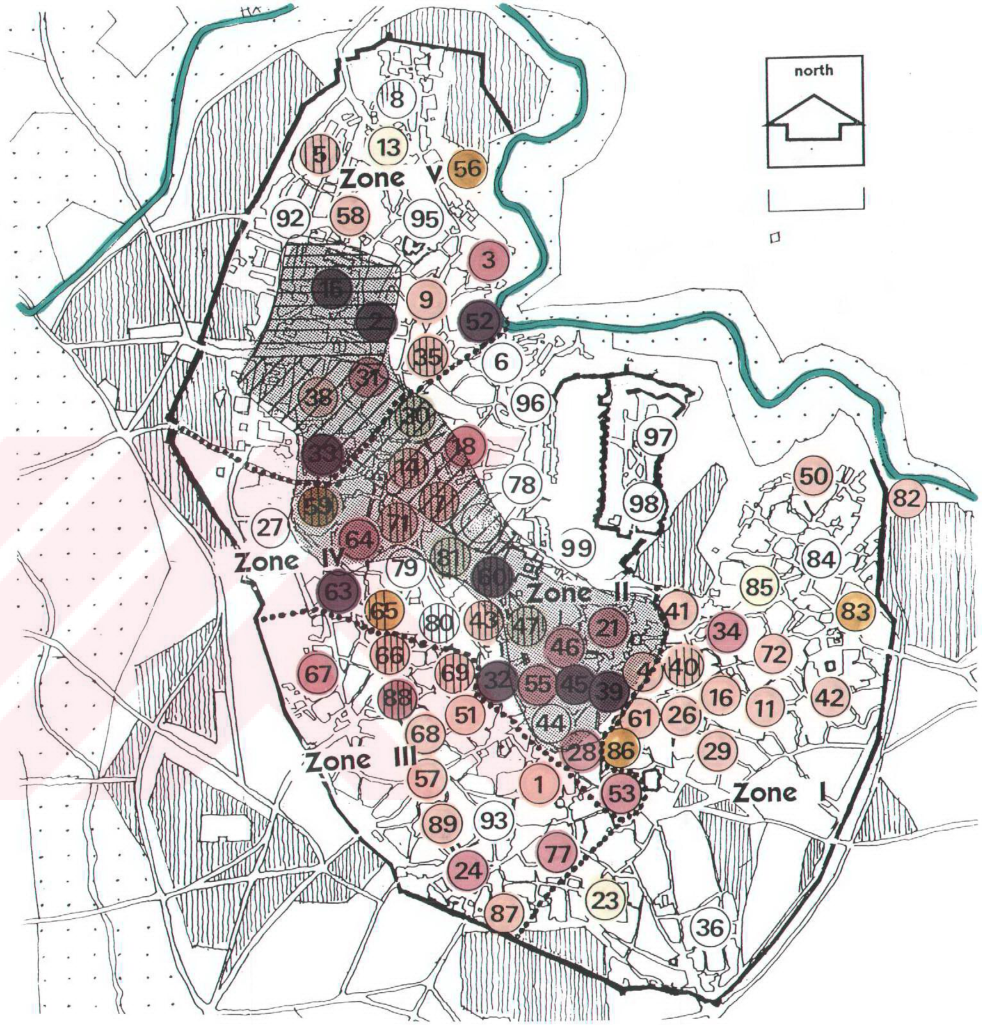


Figure 2.7 Tax Distribution according to Quarters in the Year 1830, (Source: Çadırcı, M., 1980: 112; Özdemir, R., 1986: 119-122).

In Zone IV, mostly inhabited by Non-muslims, the highest and lowest income groups live together. The population of this zone located close to the new commercial center, is also above the town average and it displays a heterogeneous character, quite different from the other regions. In this zone, non-muslim quarters that are among the most crowded and are included in the lowest tax group like Kebkebür-i Zımmi, Hacı Eshab, Hacı Doğan were seen next to Muslim quarters of low population, that are in the high tax paying group like Hatuni, Konurca and Papani. This brings to mind that the non-muslim communities which had gained the complete control of the trade in the town were not altogether from the high income group, but sub-groups either giving service to them or living under their custody were within the community as well[26]. Thus, the existence of a single low income quarter within the Citadel which was the most prestigious area of the town, can be explained.

The zone with quarters where the number of inhabitants was not more than 200 persons and where the mid and high income groups lived together more homogeneously, is identified as Zone V. As a sub-group within this we see the Belkis quarter, which was inhabited by the highest tax paying income groups therefore it was the richest zone. As the Hacı Bayram quarter within this zone, against the density of its population was not obliged to pay tax as some other quarters (i.e. Teke Ahmet Qu.,) it is not possible to comment on the economic situation of the population of this quarter. However the census of 1830 shows that with 390 persons, Hacı Bayram quarter is one of the most crowded areas of the town (Özdemir, R., 1986: 113-114, 121).

Similarly the population within the Citadel cannot be evaluated by the method defined by this data. As previously stated by Aktüre (1981:130) together with the administrative and military classes, the wealthy and prominent families also lived within the Citadel besides the minority groups. Özdemir (1986: 121) makes an estimation for this population as 1200 persons for the year 1786, who were obliged to pay a tax as high as 15 *AH*. However we do not have sufficient information related to the number of tax payers or the population of the quarters within the Citadel. Ergenç (1973: 26-29) gives the names of the six -of the nine- of these quarters as Güzeloğlu, Dudiran, Aşağıkapı, Yazıcı Şa'düddin, Camii (Alaeddin), Misafir, Suluk, Ramazan Şemseddin and Fişenkoğlu. However in the light of the existing information we can say that, with its population of 1200 persons, within the Citadel there had been a pattern formed of quarters with a population, of around 200 persons which can be considered low and generally of high income level. On the other hand the existence of 132 houses that were obliged to pay 2.5 *AH* shows that a very poor group of people lived here as well. This group, as stated above, must have been the group serving the elite in the Citadel[27].

In the light of this data we can say that the density of the town population in Ankara, in the first half of the 19c. had changed parallel to the changes in urban functions in favor of the new commercial center. It is expected that the direction of expansion for the new commercial center that has formed in the city in the second half of the 19c. should be related to these population movements that have occurred in the first half of the 19c. The preference towards the near vicinity of the Balıkpazarı Street (Anafartalar) in this period, must have prepared the conditions for the expansion of the trade activity of the town towards north, on the axis connecting the east-west (Kayseri-Istanbul) gates, (see fig. 2.8) following the topography[28].

In the second half of the 19c. this axis would expand up to the Karaoğlan Market and the Taşhan in the west, to create the new commercial center of the town. The basis for the setting of this axis must have been the location choice of the new administrative structure. Ankara had received a new administrational and military staff, as the *sancak* center of the newly founded Ankara Province by the reorganizations in 1836 (Yavuz, E., 1984: 195.; Çadırcı, M., 1984: 117). On the first half of the 19c., apart from the dual social structure formed by the economical functions, this little group of population that have emerged as the new administrators make up an administrational center. The nucleus of this administrational center referred by Mordtmann (Eyice, S., 1972: 84) as consisting of poorly maintained buildings in 1859, is the Paşa Palace located in place of today's *Vilayet Merkezi* (City Hall) and seen behind the Julianus column on Von Vinckes map dated 1839 (Figure 2.8). The formation of this center must have even had an effect upon the location choice for the buildings constructed after the Republic and used by the foreign diplomats.

From the beginning of the 19c., two main sections in terms of social strata, which are differentiated by their ethnic origins, were formed parallel to the economical changes. The first group are the Greek merchants who had acquired wealth by selling the regional products to foreign markets with low taxes, and the second group were the mediator Armenians who had collected these products from the peasants and had dealt with small scale wholesale and credit commerce. The other group are the Muslims who were the artisans or who dealt with wholesale and retail commerce (Aktüre: 1981: 125). In fact Ankara Province (as Kayseri) was the *sancak* with the highest Muslim population and it has retained this quality throughout the 19 century (Table 2.6). However, the trade activity that was more under the control of the foreign merchants, throughout the 17. and 18c., has passed to the Non-muslims by the foreigners leaving the town from the beginning of the 19c. onwards (Yavuz, E., 1984: 195). Hence in terms of professional share, the general view with respect to the ethnic groups is as follows.

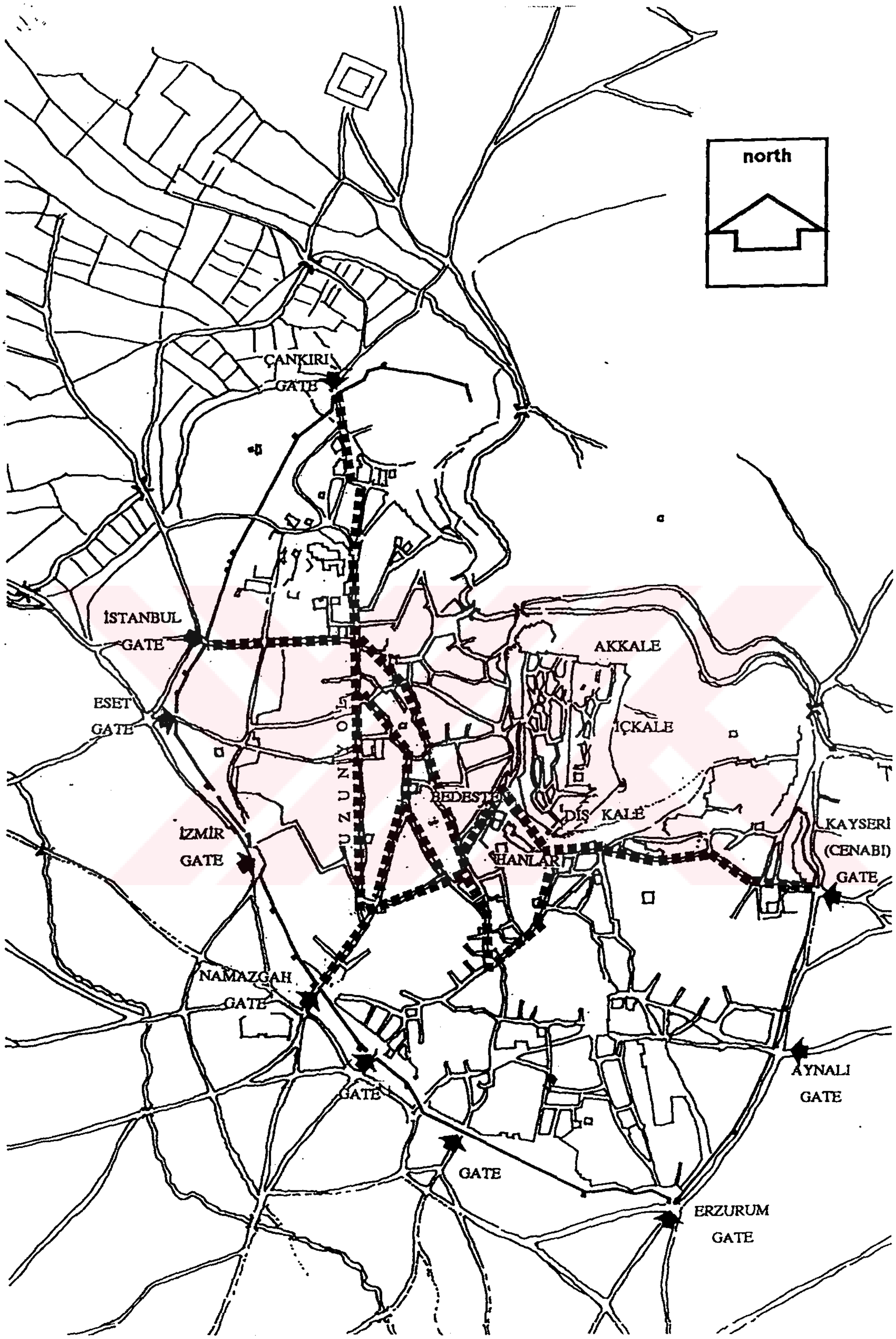


Figure 2.8 Ankara in 1839, (Source: reproduced after Von Vincke).

The Muslims were more involved with land and husbandry. The old *ayans* and local princes (*derebeyleri*) had acquired the ownership of the land after the *Tanzimat.* The tradesmen who had dealt with grain, flour and other trades within the region were Muslims as well. Small holds like bakeries, butchers, greengrocers, spice, tobacco and coal trades and artisans like saddle makers were mostly Muslims. The trades and arts that the Muslims and non-muslims had worked together were; cobblers, blacksmiths, tailors, iron and copper mongers and water sellers. Whereas as stated above the big trade was under the control of the Non-muslims. Trades under the control of the Christians are the brokers, *muhassıl and mültezim,* builders, carpenters, painters and weavers. The Jews who had been the poorest group in 19c. Ankara, dealt with selling of scrap iron or small articles and millinery (Yavuz, E., 1984: 195).

It is possible that there are sub-groups within both groups differing according to their economical functions. The homogeneity in the distribution of different income groups within the same quarter which had initially formed by the gathering of the people from the same trade is a reflection of this situation. The occurrence of this dual structure and locational choices in the town were distinguished in the first half of the 19c.

Data related to the quality of the housing fabric shows that, in the first half of the 19c. existing social groups had lived together, side by side, and the social strata is not directly reflected on the physical space. However the groups we have classified by evaluating the data we have collected, overlap the data related to the intensity of population with respect to spatial size which was established by Aktüre after examining the housing fabric that has survived up to this day. Aktüre (1981:130-135) states that in three of the four cases examined, the fourth one being Boşnak quarter, similar characteristics were observed. In this respect the author explains the high building density in contrast to its low population, by stating that the houses in this area are bigger than the others. She has established similar building densities in Hacı Murat and Erzurum quarters. She states that, although the differences are small, for example the Erzurum quarter is inhabited by lower income groups compared to Hacı Murat quarter, the houses here are smaller and the housing fabric much denser. This data is parallel to the results that we have established.

Even though the tradition of having separate Muslim and Non-Muslim quarters continued in the 17c., both communities lived in each others quarters belonging to each of them. However still the non-muslims generally lived in the quarters around the new commercial center. The Muslim population of relatively low income had lived in the south and south-east skirts of the town and the wealthy group lived around the new administrational center, the surroundings of the old commercial center and naturally in the quarters within the Citadel. This division shows that the choices of the population in the town had changed with respect to their ethnic origins. The crowded and low income sections of the town were partially located in the areas close to the new commercial center and in the outskirts of the town in a manner where a grouping is not possible.

It is expected that an intense building activity parallel to population increase, should have been experienced before the 19c. in the new commercial center, especially in the southern skirts of the town and around Avancıklar to the east. Therefore it can be said that by the beginning of the 17c. the horizontal borders being set and defined, in the third dimension the town pattern had intensified and changed considerably by the additions and renovations throughout the years. The selection of the contemporary buildings, within the formation procedure of this fabric, has to be defined by the data directly related to the buildings. Therefore the questions related to the concurrence can be answered only when these evaluations specifically on the housing fabric are supported by findings concerning the existing situation of the buildings.

Ankara had undergone more fundamental changes on the second half of the 19c. and especially after the establishment of The Republic. Before concentrating on this period, to complete the descriptions related to the physical characteristics of the town, will be useful to evaluate the information on the town fabric and specifically on the houses mentioned in the travelers' books. By mid 19c., parallel to the decline in the trade activities in the town, it is known that not many foreign merchants were left living in the town (Texier, quoted by Eyice, S., 1972), however still throughout the 19c. many foreign travelers did visit Ankara for a variety of reasons. The information related to the town given by these travelers may be summarized as follows.

In 1813, J. Mac Donald Kinneir writes that the outer city walls are in no condition to protect the city, that the houses of Ankara were mostly two-storey high and made of mud brick (Eyice, S., 1972). He also mentions the painted ceilings and open verandahs[29]. In his book, Kinneir describes the house of a doctor who was also the consulate saying that, this house was among the most beautiful houses of the town and it was built by its former owner who was a merchant. The lower floor of the two-storeyed house was dedicated to the servants and the upper floor to the owners of the house. A large, spacious *sofa* took place on the upper floor. Here an old fashioned table and eight or ten armchairs were placed, and just next to the windows there was a wide *sedir*. The sofa was flanked by two rooms (4 altogether) on each side and the sofa opened to the exterior through a balcony surrounded by *sedirs*.

The traveler who had visited another house belonging to a wealthy Armenian describes it as (Eyice, S.,: 79-80):

> *The house has a courtyard reached through an arched tunnel. There is a fountain at the center of this courtyard and it is surrounded by lodges and colonnaded galleries. The staircase on one side leads up to the roof. Here one can rest in cool weather.*

Kinneir who had also visited the house of the consulate doctor in the vineyards, at the outskirts of the city, witnessed the lack of wheat and food experienced in the town.

Texier arriving in Ankara in 1834 (Eyice, S., 1972), states that the mohair export had decreased considerably but that the *tiftik* goats were still quite valuable. The population was around 28000. In these years there were no longer many French or English merchants in the town. In 1837, Poujoulat (Eyice, S., 1972) describes Ankara as the poorest of all Turkish towns, mentioning the ruined situation of the city walls, he gives the town population as 24200.

Mordtmann (1859) writes that water was very scarce in the town and non-existent in the Citadel, that every house had a donkey and water was carted every evening to the houses by donkeys. G. Perrot (1861), like Mordtmann refers to the mud-brick houses of Ankara. Perrot writes that these houses looked very miserable from the outside but they had very pleasant courtyards inside. Stating that the camel caravans would occasionally block the way in the narrow streets he gives the towns' population as 45000 (Eyice, S., 1972).

F. Burnaby mentions that 18000 had died during the famine experienced in and around Ankara in the years 1873-74. Burnaby, like Mordtmann writes about the hardworking inhabitants of the town including the women, and especially about the harmonious way of life between the Muslims and the Minorities.

Colmen Van Der Glotz also states that the governor of the town had written a song in Greek and the Armenians had conducted their prayers in Turkish. This information brings to mind that such a cultural intercourse of the daily life should have infiltrated deep into the interiors of the houses (Eyice, S., 1972).

When Humann and Puchstein came to Ankara for the Augustus Temple, they wrote about the city walls being taken down in portions to create land to build on and to obtain material to build with. The houses are made of mud-brick walls, roof tiles superstructures and not plastered. Hence the color of the town is the yellow of the mud-brick. The travelers give the towns' population as 32000.

E. Naumann who had visited Ankara in 1890, defines a fabric of narrow streets and mud-brick houses. He mentions that the Christian quarters are in a better condition. In the same year, water was brought to the city from 20 km's distance and ceremonies were held on this occasion on the 20th of April. The outer city walls were in a very bad state. According to the governor, the towns' population was around 25-30000. The commercial activity was at the hands of the Catholic Armenians and the Greek. The traveler quotes in his book from the report of an expert in the name Rohnstock (Eyice, S., 1972).

V. Cuinet (1890) writes the population as 27825 and the *tiftik* goats were now bred only to be slaughtered by the butchers (Eyice, S., 1972). Even though some precautions were tried to be taken against this situation that had raised due to the famine, experienced in 1873-74's as well as some other difficulties. The earlier prosperity of the *tiftik* goat and the mohair production was never recovered (Yavuz, E., 1984:198).

In 1893 D. Arslanian gives the population as 26105 (Eyice, S., 1972: 91). In 1895 goat export was prohibited and a farm was established for their breeding. However in these years mohair production almost ended with only one or two looms in operation.

Captain Walter Von Diest who came to the town in 1896 writes that the herd owners had tried not to sell their animals, however they could not stand against the high prices offered and took a herd of *tiftik* goats of about 2000 animals were taken down to the Black Sea coast via Bolu (Eyice, S., 1972).

K. Kannenberg, in 1897, gives detailed information related to the origins of the *tiftik* goat, its beginning to be bred in Africa around 1860's and the number of goats and looms in the town. Now *tiftik* was taken to Istanbul as raw material, washed and after exported to France and England (Eyice,S., 1972).

In the light of the travelers' descriptions, we see that the housing fabric of the town was being made of mud-brick and timber throughout the 19c. and they were generally in a state of disrepair. Parallel to the decline of the economic activity in the town it is understood that the capital investment share of the buildings were quite limited and that no money was spared for the maintenance of the houses.

On the other hand when we relate this information with Faroqhi's comment that the number of two-storeyed buildings had increased at the beginning of the 17c., our thought is that; single-storeyed, flat-roofed mud-brick houses were in majority and the two-storeyed timber frame buildings had increased in number starting from the beginning of the 17c. Keeping in mind that the borders of the town were defined horizontally; it can be considered that the internal expansion and increase in the population could only be covered by an expansion in the third dimension.

From the painting in the Rijk Museum, which was presented by Eyice (1972) and from the expansion pattern of the masjids in the town, it is understood that the city walls built in 1607 were constructed without a bumper zone surrounding the city. If we accept, according to Tournefort and Naumann, that single-storeyed flat-roofed houses were covered with roof tiles from the 18c. onwards, we also have to accept that the present fabric had undergone changes throughout the 18. and 19c. by filling the gaps and by rising the third dimension.

Acar (1975: 17-18) presents a similar view in his study. According to the author whilst the earth roofed mud-brick houses were in the majority in the 17.c, by mid-18c., tile roofed timber houses first appeared among the wealthy, then spread among the commoners. The author also states that this development was under the influence of Istanbul houses.

When we gather together the information related to the population given by the travelers, we see that some of them had made inexplicable and exaggerated estimations (Table 2.6 and fig. 2.9). Of such information, especially the numbers 1740 (Pococke), 1835 (Hamilton) and 1859 (Mordtmann) are quite exaggerated.

The second graph (fig. 2.10) which we have prepared, by ignoring such data but by taking more reliable ones into consideration, appears to be more realistic. As per these results, parallel to the decline of commerce in the town especially at the end of the 18c. (1820's) a considerable decrease of population is observed at the beginning of the 19 century. Although the town was supported by the internal migration of the Muslim groups and the external migration of the non-muslim population, during the 19c., these population movements were not able to overcome the economical decline (Denel, S., 1984:133).

As it is seen on the graphs below (Figures 2.9-2.10), there is a decrease in population at the beginning of the 19c. if compared to the 18 century. Another decrease is observed between the years 1837-50. After the abrupt rise in population in 1864, after 1880 the population settles between 26000 and 34000. According to these results apart from some wavering the population had settled at 25000 in the first half of the 19.c and around 30000 in the second. Thus, Aktüre (1981: 123) who had evaluated the same data previously states that the town's population could have moved between 20-30000.

Table 2.6 Population Data for Ankara in 17. and 19. centuries and the Ethnic Distribution

SOURCE	PERIOD	TOTAL POPULATION	MUSLIM	ARMENIAN	GREEK	JEWISH
ERGENÇ (1973)	1607	23-25000				
TOURNEFORT (Eyice,S., 1972)	1701	45000	40000	4-5 000	600	-
POCKOCKE (Eyice,S., 1972)	1739-1740	100000	90000	10000	1500	40 family
ÖZDEMİR (1986: 122)	1786	22000	-	-	-	-
AKTÜRE (1981: 122)	18c.	40000	-	-	-	-
KINNIER (Aktüre,S., 123)	1813-14	less than 20000	-	-	-	-
M.ÇADIRCI (1972:121-126)	1830	25000				
C. TEXIER (Eyice,S., 1972:80)	1834-36	28000	-	-	-	-
HAMILTON (Eyice,S., 1972:81)	1835	55000*	9000 house	1800 house	300 house	-
CHESNEY (Aktüre,S.,1981:123)	1835-37	15200	10000	5000	-	200
POUJULAT (Aktüre,S.,1981:123)	1836-37	24200	20000	3000	700	500
GALANTI (1950b:76)	1848	23470	-	-	-	-
MORDTMANN (Eyice,S.,1972)	1859	60000*	8220 house	2900 house	800 house	80 house
GALANTI (1950b: 76)	1863	28000	-	-	-	-
PERROT (Eyice,S., 1972:86)	1864	44-45000	25000	15-16000	3000	1000
CUINET (Aktüre,S,1981:123)	1880	27825	17992	7855	1565	413
MAMBOURY (1933:86)	1882	32000	-	-	-	-
HUMANN,PUCHSTEIN (Eyice,S., 1972)	1882	32000*	4000 house	1850 house	350 house	50 house
NAUMANN (Eyice,S., 1972)	1890	25-30000	-	-	-	-
ARSLANIAN (Eyice,S., 1972)	1893	26105	16970	6389	2333	413
ANKARA VS (Galanti,A., 1950b:76)	1900	32051	-	-	-	-
ANKARA VS (Aktüre,S.,1981:123)	1902	33768	22769	7828	2329	822

* these figures were calculated by assuming a household as 5 persons per house.

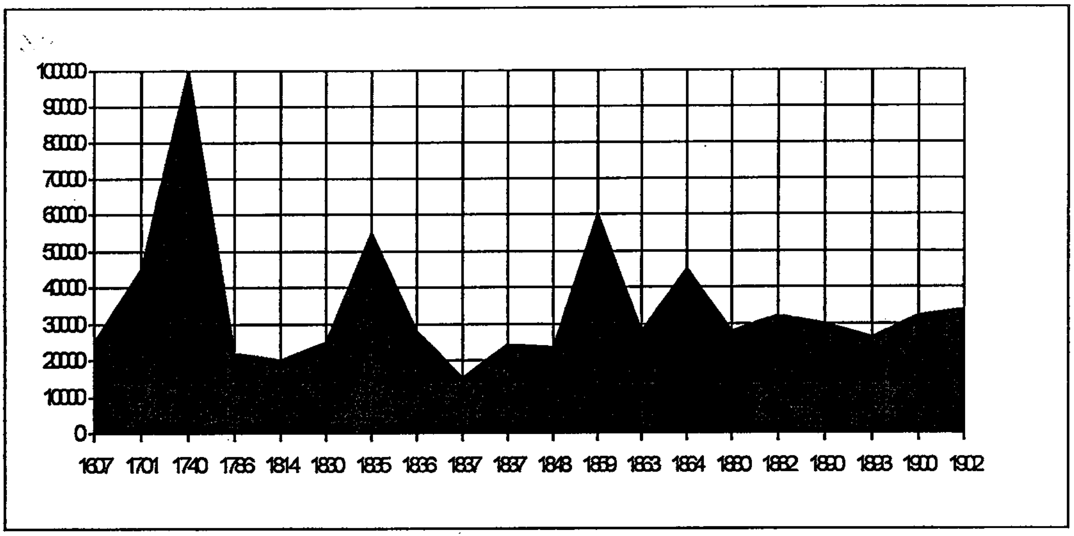


Figure 2.9 Population Estimates for Ankara (1607-1902; Source: Table 2.6)

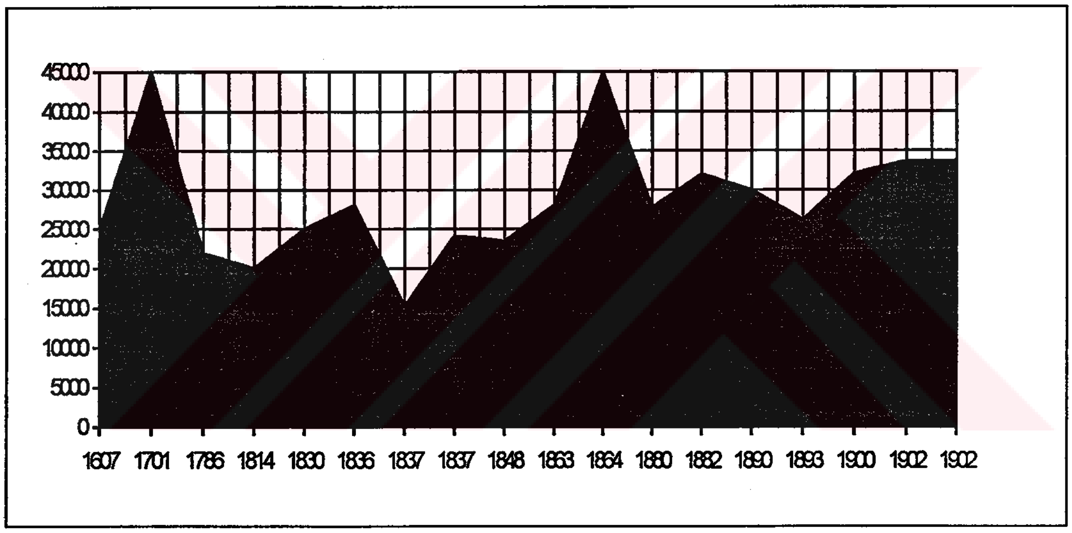


Figure 2.10 Population Estimates (including only the more reliable data) for Ankara (1607-1902; Source: Table 2.6)

When we look at the ethnic distribution of this population, between 1837 and 1902 there was an increase in the number of Non-muslims, parallel to the general increase in population and apart from some fluctuations it had stayed fixed as 35% of the total population. We had mentioned earlier that the Non-muslim population was quite small in Ankara *Sancak* compared to other settlements (Yavuz, E., 1984:195) and we also discussed their distribution in the town space, especially around the new commercial center.

Table 2.7 Ratio of the Non-muslim Population to the Total Population

SOURCE	PERIOD	TOT. POP.	NONMUS. POP.	RATIO of NM	%
TOURNEFORT (Eyice,S., 1972:)	1701	45000	5600	1/8	%12.4
CHESNEY (Aktüre,S., 1981)	1835-37	15200	5200	1/3	%34
POUJULAT (Eyice,S., 1972: 82)	1836-37	24000	4200	1/6	%17.5
PERROT (Eyice,S.,1972:86)	1864	25000	4000	1/6	%16
CUINET (Aktüre,S., 1981)	1880	27825	9833	1/3	%35
ARSLANIAN (Eyice,S., 1972:)	1893	26105	9535	1/3	%36
ANKARA VS (Aktüre,S., 1981)	1902	33768	10979	1/3	%32

It was already mentioned that within all these formations, mainly two social groups -of Muslim and Non-Muslim origins- differing from each other by their economical and ethnic characteristics had been formed by the second half of the 19.c. Here we should state that the western world had created and supported a local mediator class in colonized and half-colonized countries. The 1838 Commerce Law clearly displays this situation (Yavuz, E., 1984: 197)[30]. The characteristics of the social groups that were created by these formations after the Tanzimat Reform are quite interesting. This matter being altogether out of the boundaries of our scope, yet as background information it can be stated that it was more effective in İstanbul and İzmir, and it may be expected to have some impact in Ankara as well. Even if it is true for a small group in Ankara as well as in other cities, it could be thought that a formal Westernization had begun.

The distribution of the spatial preferences of these two different social groups within the town in the first half of the 19.c. became more accentuated in the second half of the century and caused the formation of a new commercial center. The immigrants, coming to town in this period, in terms of their economical conditions, must have been distributed in the low income groups within the Muslim population (Denel, S., 1984).

Parallel to the functional changes within the town, the spatial preferences of these two groups lay in two separate commercial regions. The Balıkpazarı Street (Anafartalar), formed in the first half of the 19.c., stretched towards İstanbul gate and created the Karaoğlan Market. These two regions of trade differed from each other in terms of the production activity and types of trade they housed (Aktüre, S., 1981: 125-127). One of the attraction points for the commercial center developing in İstanbul direction was the administrative center. This center, described by Mordtmann in 1859 (Eyice, S., 1973: 84) as composed of badly maintained buildings, is the Paşa Palace located in place of today's Vilayet Konağı (City Hall) and seen behind the Julianus column on Von Vincke's map dated 1839. The railroad and the Station Building that was completed in 1893 were the other attraction points for the commercial center (Aktüre, S., 1981). The railroad that approached from the southwest, without any organic relation to the town, caused the town to spread towards south and west. Together with the houses, especially Karaoğlan-Balıkpazarı markets were directed towards today's Ulus area. Since the area between the station and Ulus was marshy the town could not spread further to the west, and the station was connected to the town by a road approaching to this point. The area south of this road where Gençlik Parkı (Youth Park) is located today was a marshy area in the summer by the overflow of İncesu and a dusty field in winter time. H.V. Velidedeoğlu (1983) writes that there were wild duck hunts going on in this field or Kanlıgöl as referred by the locals which was a source of malaria for the town.

Today's Ulus Square, then called Taşhan Square, was an earth covered plaza in that period (See photos in: Ankara Büyükşehir Bel., undated). Taşhan built in the second half of the 19.c. was a 45-50 meters long building with a courtyard at the center. Meşrutiyet Hotel was located in front of Taşhan and opposite to it, and in place of the present Atatürk monument was the *Darülmuallim* (Teacher's School) which was burnt down later. The front facade of this building was in ruins and inside it there were the remains from the wall of an old *han*. There was a blacksmith and a cart maker's shop in place of the current Ulus *İşhanı* (Office Building). Opposite this building -today's *100. Yıl Çarşısı* (Shopping Center)- was the Millet garden with acacia trees and a little pool at the center. At the opposite corner from the garden was *İttihat* and *Terakki* Society Building which was to be used as the first Parliament house later on. The second axis connecting the railroad to the center was the İstasyon Street (Şenyapılı, T., 1985:7).

In relation to the railroad coming into the city the region gains an important position within market economy (Aktüre, S., 1981:127). Earlier, the export products of the region were; mohair, *tiftik* (mohair) thread and raw *tiftik*, however now there was an increase in the export of grain, fresh fruit and vegetables. With the trade activity prospering in the town, more than 200 new shops were built in this period, especially between the years 1895-1902. New branches of trade and crafts were flourishing in the town. In a town like Ankara, with a substantial experience of guilds, a development like this must have occurred parallel to the new prosperity of commerce[31].

As opposed to the decline of mohair production, there was a development in the vineyards of the town. The possibility of exporting fruit and vegetables by the railroad is reflected on the housing fabric by the occurrence of vineyard houses around the town. It is known that about 10000[32] of these houses, only very few left today, were built at the end of the 19.c. especially in the hillsides of Gazi Osman Paşa, Çankaya and Keçioren districts, and the local people and the state officials spent the summers in these houses (Aktüre, S., 1981: 129).

In relation to these vineyard houses, Perrot (Yavuz, E., 1984: 203-204) states that, apart from the extremely poor Jews, everybody had one. The houses of the wealthy Greek merchants, usually located to the south of the town were completely renovated and ornamented with stained glass and engravings in recent years. In front of the houses there were usually pergolas and pools at their centers. On all four sides of the pool there were generally small lions, rather tasteless in style and made of marble. Features like these and especially the stones used for the fountains were brought from İstanbul. High prices were paid to bring water to these pools and fountains. Although the view from the wealthy Greek houses to the North of the town was not that pleasant, here the land was more orderly and productive. The author, stating that he himself preferred the South of Ankara, writes that in this area called Büyük Esat, the view of the deep and undulating valleys going down from the houses perched on hilltops, was much better. Continuing his descriptions on this matter the author states that the vineyard houses were used for three months, longest in the spring months, and later in the summer people returned to their town houses. The reason was that it was difficult to commute to town for work especially in the hot summers of Ankara, and that the shady spots were much less in the vineyards.

Another important change in the housing fabric of the town that occurred in this period is the Boşnak quarter made up for the emigrants. This grid iron plan district located on the east of the town, established in line with the 1864 Tarik ve Ebniye Nizamnamesi (Denel, S., 1982: LII-) and the Vilayet Belediye Law dated 1877 (Ortaylı, İ., 1985: 172-) is quite important as an example of an urban building activity based on a master plan. This attitude was tried to be developed at this period (for further research on the Boşnak Quarter, see Denel, S., 1984: 131-153; Aktüre, S., 1981: 134-136).

Against the new functional network of the town, reached as a result of such essential changes in the 19.c., there is no significant change in the borders of the housing fabric of the 17. century (see the map in Figure 2.8.). However, considering that the 25000 population of 1830 had increased up to 33768 in 1902 (a rise of 74%) it could be said that there was an increase in the density of the quarters as well. At this point Aktüre's data on the basis of the quarters concerning 1970's; the housing densities (house/hectare) she had established on the basis of buildings, circulation (transportation) and green areas provide the data related to the densities reached at the beginning of the 20. century. Therefore we may think that this data also covers the increase in housing at the beginning of the 20. century, after the establishment of the Republic (Aktüre, S., 1981: 130-135).

Therefore the functional changes experienced in the town did not result in a horizontal growth, the town retained its borders which were established in the 17. century, for two hundred years. Considering this aspect we can say that the town had a static character.

The phenomenon taking place at the outskirts of the town had no direct effect upon the existing housing fabric. The basic reason of this situation is inevitably the fact that there had been no changes whatsoever in the production, transportation and communication technologies, regional scale or in the country as a whole (Tekeli, İ., 1982a: 111-46).

The arrival of the railroad is apparently a development in transportation, however it had no effect on the urban transportation within the city. One contribution of the railroad, as Aktüre (1981: 127) states, was an increase in the number of horse carts, used in the town parallel to the increase in intercity transportation and the increase in the number of vineyard houses.

Ankara had already reached the 20. century with in a economy in a derelict state as well as a physical state of disrepair. The fires of 1881 and 1917 caused great damage on the housing fabric destroying almost two thirds of the town (Altındağ Bel., 1987: 65). Especially the 1917 fire spread all the way to the south by burning down today's Işıklar and Çıkrıkçılar streets and the Saraçlar Market. The Bedesten, the Armenian and Greek districts located on the west skirts of the castle were burnt as well. On a photograph dated 1890 (Ankara Büyükşehir Bel., undated), these houses on the slopes to the north-west side of the castle are seen partially in their pre-fire state. It is known that, this district, mainly consisting of double-storey timber framed buildings is the most built-up part of the town (Altındağ Bel., 1987: 65; Denel, S., 1984: 134-135).

Meanwhile as the burnt down Bedesten had lost its former significance, the two commercial centers that were formed in the second half of the 19.c. tend to meet on today's Anafartalar Street (Şenyapılı, T., 1985: 6). The reconstruction of these fire areas, mostly private property, which are clearly seen on the map of 1926 was quite difficult on individual efforts. Hence the regeneration of these areas were realized gradually (earliest 1923), only after the Republic (Nalbantoğlu, G., 198; Şenyapılı, T., 1985: fig: 6-12).

Figure 2.11 Ankara in 1926 (drawn by S. Doğan after Şenyapılı, T., 1985: fig: 2)

2.1.3. Ankara in the Republican Period

The building activity in Ankara which was intensified after the declaration of the Republic, is quite important in terms of the urban planning experience in Turkey as well as the efforts to create a new capital. Ankara, with its planning and implementation experience, always had a leading status. In the present study, however we will try to evaluate this formation only in its effects upon the traditional housing fabric.

The population of Ankara was not known for certain in 1920's. However, some estimations based on the data available, shows the town population around 30000 during World War I and before the following War of Independence[33]. Few years after the declaration of the Republic, according to the first official figures, the population is 74553 (1927). After 1927, especially until 1945 the town population rises rapidly (DİE, census of 1927, referenced by Şenyapılı T., 1985: 203).

Table 2.8: Population Increase in Ankara Between 1927-1980

SOURCE	YEAR	POPULATION
Ankara Vilayet Salnamesi	1902	33768
DİE	1927	74553
DİE	1935	122720
DİE	1940	157242
DİE	1945	226712
DİE	1950	289197
DİE	1955	451241
DİE	1960	650067
DİE	1965	905660
DİE	1970	1467304
DİE	1975	1997980
DİE	1980	2561767

After 1919, not officially but practically, being the Capital and the decision center, Ankara was in a poor and devastated condition during the war of independence[34]. The roads of Ankara which experienced big fires, were covered with dust in the summer and were muddy during winter months. A part of the city was marshy and the city was infected with malaria. The buildings used by the decision makers were the city hall and the schools. The new representatives of the Republic were accommodated in some Ankara houses and the khans (Akçura, T., 1971: 28). For administrative purposes especially the masonry buildings located around the city hall were being used[35].

Under these circumstances, during the War of Independence and until the declaration of Ankara as the capital of the new Republic, it is not possible to expect a development in a larger context in the city. However, there were some disorganized efforts for the development of the city until the preparation of the 1927 Master Plan. The selection of the old city and its near surroundings for these development efforts, became a determinative factor about the future of the old traditional pattern in the coming years.

After 1923, parallel to the declaration of Ankara as the Capital (for more information about this process see Akçura, T., 1971: 22-29; Tekeli, İ., 1984: 321-334; Akgün, S., 1984: 223-235), first of all the Ankara *Şahremaneti* (formerly a type of municipality) was established with a special framework[36]. Then, to give an active role to this establishment, the Act No: 583 was formed. This act, that provided the expropriation of 4.000.000 m^2 of land, has primary importance for the preservation of the historic pattern, that directed the development of the city not on the old pattern but on the newly planned areas (for the discussions on this act see: Yavuz, F., 1952:13-15). In another word, this act became determinative in the axial development of the city from the old city towards Çankaya direction (Tekeli, İ., 1978: 38). The choice of Mustafa Kemal, that to live in a vineyard house in Çankaya after 1923, had to be effective in the formation of this development direction.

As the first efforts of the Ankara *Şehremaneti*, the establishment of a construction factory, an electricity plant, and model houses can be shown. To support the housing constructions and to give subsidies, *"Emlak ve Eytam"* Bank was established in 1927 (Tankut, G., 1993:113). Besides all these efforts of the legal authorities, there was no plan yet which combined the old city and the new development areas and directed the development of the city between the years 1923 and 1927. To solve the increased housing problem, some new initiatives were began by the public bodies. In the expropriated areas by Ankara *Şehremaneti*, the first housing constructions were activated and the Lörcher Plan, which was prepared in 1924, was started to be implemented in Yenişehir (Sıhhıye)[37].

It was inevitable to encounter a housing problem after the declaration of the Republic in which the population increase reached 100% if compared to 1920's. The number of hotels and *hans* were very limited which were serving only to the officers at the beginning[38]. The life style of the new comer officers who were called (*yaban*) "strangers", by the inhabitants of the city was contradicting with each other (Atay, F.R., 1984). The new comers had to find houses or rooms in the old pattern for rent, even though, this was not a preferable case both for the officers and the inhabitants. Just as, the preferences, like to let or to buy the vineyard houses around the city by the officers who have better incomes, show this dilemma[39]. But for the officers who have lower incomes there was no other alternative than to let a house in the old pattern. Owing to this demand, it is known that, after the declaration of the Republic and until 1940's, the houses in the old pattern were started to be divided horizontally or vertically or enlarged by some additions, to obtain separate dwelling units for rent. The surveys of Akok and Kömürcüoğlu (1946; 1950) proves this observation that the alterations were continuing in 1940's. Several sources and memorials, describing this period, also mention these formations in the old city (Karaosmanoğlu, Y.K., 1981; Erdoğdu, Ş., 1965; Toy E., 1974). For example, A.H. Koyunoğlu who come to Ankara in 1921, shares a room in Taşhan with 20 people. The Minister of Constructions (*Nafia Vekili*), who meets him says that he too is sharing a room of a house with five people, so he can not invite him. But he adds that he has the information about abandoned houses in Yahudi quarter which Koyunoğlu could use (Birkan, G., Pehlivanlı, S., 1977). Similarly, Arıkan also mentions in his memories: "*he was living in a house across the Russian Embassy (in Samanpazarı, around Kurşunlu Mosque) and the Representatives of Kayseri are also living together in a house across his house*" (Arıkan, S., 1943, quoted by Şenyapılı, T., 1985:18). Like F.R. Atay and Y.K. Karaosmanoğlu, H.V. Velidedeoğlu who came to the city in 1922, lived in a mud brick masonry house with two rooms looking to a courtyard, in Hacı Musa quarter. The toilette of the house was located across the other side of the court (Velidedeoğlu, H.V., 1983). A TRT production TV serial, named "*Ayaşlı ve Kiracıları*" documented the life style and the dense use of the houses in that period.

The unskilled workers or the villagers migrated from the urban areas were living in open air, in the empty areas around the city according to the memories of Z. Sertel (quoted by Şenyapılı, T., 1985). While it was forbidden to enter the city with animals, these emigrants were keeping away from the inhabited areas and staying together with their animals. This group does not form a certain population till 1930's who were the builders of the squatter buildings after that time.

There are many studies on housing practices that were developed to solve the housing problem after the establishment of the Republic. However, most of them are subjected only the newly developed housing projects and not interested with the effects of housing demands on historic fabric. Under the light of these studies, the efforts that were shown by the public or private bodies to solve the housing problem can be classified in two groups according to their distribution in the city, the characteristics of the users and the qualities of the buildings (as apartment blocks or single houses).

The houses in the first group are the apartment blocks, inside or at the edges of the historic pattern that were constructed by private or public investments. The apartment blocks, built by private investments, were usually located at Anafartalar street and in Necatibey Quarter (burnt down area in 1917). These were flats with elaborate facade orders (Nalbantoğlu, G., 1984: 260). There were shops in the ground floors of these buildings, continuing the commercial activities of the old commercial center which still retained its popularity. These blocks which were 4-5 storey high and had rich and ornamented facades to symbolize the status of the owner, were usually built by a family or a single investor because flat ownership was not yet legal at the time. Some flats in these blocks were used by their owners while others were to be let with higher rents. Consequently, they could be hired by the officers who had higher incomes. The housing blocks built by public investments are: I. Vakıf Apartmanları (1926-28; Aslanoğlu, İ, 1980: 337; Yavuz, Y., 1984: 238-239) at Anafartalar street and *II. Vakıf Apartmanları* (1928-1930) including The *Küçük* (Small) Theater, constructed by the General Directorate of Pious Foundations. These blocks were comparatively bigger than the former, built by private owners and were 6-7 storeys high. Another housing block built by the National Railroad Management was at the north-east of the station. 1/3 of the building was completed between 1927-28 but never used for housing.

The second group of houses were the ones built in lower density in comparison to the apartment blocks and were 1-2 storey high and located in a garden. These houses can be evaluated in two groups according to the demands of the users. Some of them were built with high standards and were very ornate while the others were comparatively more simple. Owing to this, these luxury houses with high standards were not practically used by the bureaucrats even though they were built for them. The first application of these houses were realized by the General Directorate of Pious Foundations on İstanbul street in 1927 (Yavuz, Y., 1984: 98). Stad hotel and the Central Bank (*Merkez Bankası*) were built in place of these houses which were later destroyed as a result of speculative pressures[40].

Other luxurious houses built by private investors and evaluated in this category because of their mass characteristics were usually located through the south sections of the Atatürk Boulevard near to Çankaya district. These houses were also highly ornamented like the private apartment blocks, and located in a scattered pattern, in big gardens and, were usually two storey high. The users of these houses were still using the old commercial center at Ulus because there were no developments around these houses. The social and commercial attraction centers of the time were *Ankara Palas, Karpiç* and some other good restaurants and shops in Anafartalar street. The political centers were the public buildings in Ulus and Çankaya.

The simple houses built for the bureaucrats, form the other sub-group in this category. The inhabitancy of the officers in medium or lower income levels in the above mentioned luxurious houses, was not practically possible. For these officers who had difficulties to find houses for rent in the old housing pattern, new houses were constructed by different public bodies. The examples of this group are the 198 houses built in Yenişehir, at Kazım Özalp street, on the cadastral lots numbered 1045 behind the Ministry of Health in 1925 (Aslanoğlu, İ., 1980: 22).

These houses were built in single or two storeys with brick masonry system and were planned to be sold to the bureaucrats with credit. However in later years, they were replaced with apartment blocks by the new rights brought by the master plans. The five houses (known as *Vakıf Evleri*) that were built by the General Directorate of Pious Foundations which were two storey high and had quite simple features and were designed for single families in Hamamönü, Gündoğdu quarter in 1927, were destroyed in the 1989's. Only one of these houses has reached to our times (Aslanoğlu, İ., 1980: 22-23). This housing practice which identifies the new life style, was supported by the Jansen plan and formed a model for the pioneer housing cooperatives that built houses in Bahçelievler, Güvenevler and Kavaklıdere districts.

Besides the limited data, it can be thought that Ankara was subjected extensively to the construction of public buildings during the years 1923-27. The new buildings were constructed especially around Ulus square and on both sides of the Atatürk Boulevard (formerly Müdafaa street). Among them the second Parliament Building, Ankara Palas (1927), General Directorate of Ziraat Bank (1926-29), General Directorate of İş Bank (1929), Osmanlı Bank (1926), II.Vakıf Han (1928-30), Gazi İlk Muallim Mektebi (1927-30), Çankaya Gazi Köşkü (1924), Türk Ocağı (1927-30), Emaneti Mübareke (Ethnography Museum, 1926), Çocuk Esirgeme Kurumu, Ankara Vakıf Evleri (1927), DDY Genel Müdürlüğü (1928), Ministry of Economy, Ministry of Justice and Conservatorium buildings can be listed (Sözen, M., 1984: 36-40; Yavuz, Y1984: 235-256; Şenyapılı, T., 1985)[41].

The choice of location for the public buildings shows that, the southern and northern parts of the railroad, the edges of the old pattern was preferred during this period, besides some penetrations inside the old fabric. The Justice House (Adliye Sarayı) built in 1925 on Anafartalar street and Gazi and Latife Schools, and the buildings around the City Hall (Valilik Konağı) are examples from this period (Şenyapılı, T., 1985: 24). Parallel to the completion of Atatürk Boulevard between the years 1925 and 1929, Anafartalar, Samanpazarı and Çankırı streets in the old city and İstasyon street on the west part of the city was opened up in 1926. In 1927, there was another big fire in the old fabric which affected the area between Tahtakale, the Central Post office and the current Municipality building. In this fire, all the shops and the Haseki Mosque burnt down (Şenyapılı,T., 1984: 25).

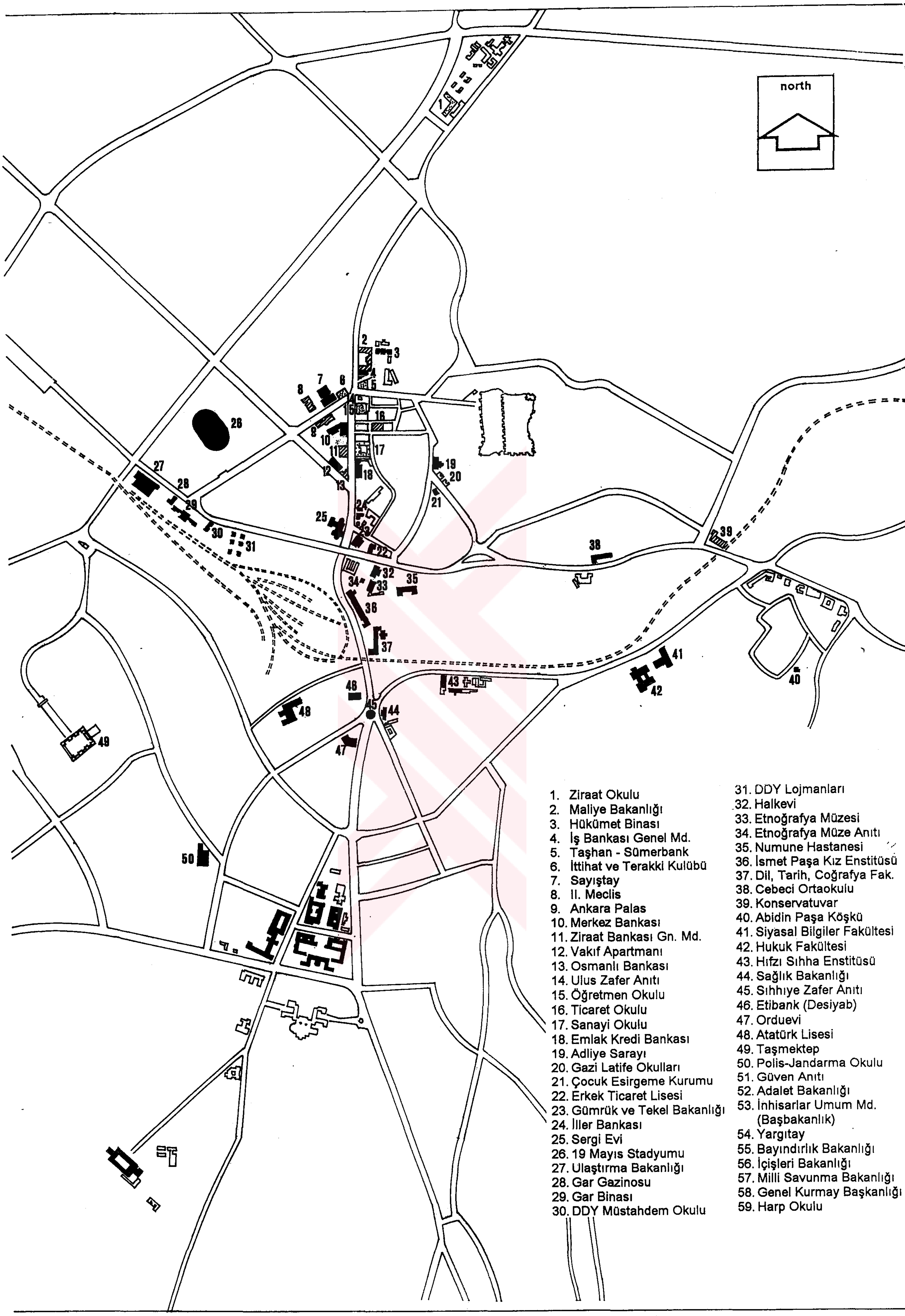


Figure 2.12 Public Buildings Constructed Between 1926-1940 in Ankara (drawn by S. Doğan after Şenyapılı, T.,1985, fig: 6)

In 1925, with the initiatives of Mustafa Kemal, to support the producers in agricultural activities and to provide the requirements of the city in local scale, the Atatürk Forest Farm (Atatürk Orman Çiftliği) which created an attraction point in the west of the old city was established. This area was transformed into a suburb of Ankara after the construction of a station in 1926 (Aslanoğlu, İ., 1980).

Ankara Şehremaneti, which faced the problems of substructure in the city since its establishment, was trying to set the electricity, water, telephone and oil-gas supply systems by the cooperation of the foreign companies. The first electricity supply was provided in 1925 to a limited area in the city. By the addition of new electricity plants, this service was carried to a larger part of the city in 1928. The supply of gas which started in 1928 was not distributed extensively as electricity and in 1930 there were still 477 subscribers in Ankara. These services, produced by the individual companies, were expropriated in 1942 and transferred to the Ankara Electricity and Gas Management Establishment which was formed as a section of the municipality (Şenyapılı, T., 1985: 25). Even though the first telephone service station was established in 1926, the automatic intercity communication could be provided only in 1929. In 1925, the Fire-brigade Organization was set in place of the former Fire Engine Man Organization (*Tulumbacı Örgütü*). The water supply of the city could not be provided with the limited sources of the Municipality and by the support of the Ministry of Public Works in 1939, the Çubuk Dam was completed (Şenyapılı, T., 1985: 25-26). However, especially the rapid increase of the population after the 1940's, limited the spread and completion of the public services of the city. During this process, the old city stayed unlucky in providing public services in comparison to the new developing areas and urban substructures could not reach the old sections of the city.

Within this disorderliness and casual development, the biggest anxiety of the Republican ideology, which was trying to create a symbol for the Republic, was not to have a modern capital in harmony both functionally and physically. In these circumstances, Ankara reaches its first Master Plan after a limited competition in 1927, in which three foreign architects/city planners participated. After the completion of the competition, the Directorate of Development in Ankara (İmar Müdürlüğü) was established by the Act No:1381 and dated 1928 in order to implement the master plan. This organization which directed the development of the city towards the master plans of 1932 (Jansen), 1957 (Yücel-Uybadin) and 1975, was an independent organization separate from the Municipality, and supported directly by the state having a great authority and privilege (for the organization framework of this establishment see: Tankut, G., 1993: 72, 94,179).

After Jansen won the competition of Ankara Master Plan, he started to prepare the application plans between the years 1929-1932 but, during this process he also had to produce decisions for the construction demands from Ankara. The lack of a coexistent map of Ankara and the definition of priorities according to construction demands as well as the difficulties in communication between Jansen who was in Berlin and the Development Directorate of Ankara was the problems in this process which lasted four years and was defined as the pre-application period by Tankut (1993)[42]. The implementations continued according to a quickly prepared temporary application plan, and the decisions and implementations produced in this period about the newly developing areas were becoming practically unchangeable. When the building permissions are studied for the years' 1926-1934, it becomes clear that the number of new buildings constructed before the preparation of the master plan in 1928 was higher than the pre-application period (number of new buildings constructed between 1929-1932 was 641)[43].

This result shows that there was an extensive construction activity especially in the years 1926-27, before gathering the first master plan under the limited control of the Ankara Şehremaneti. It would not be wrong to assume that during this period Ankara Şehremaneti was probably not effective in the control of the building activity in the old pattern. The number of new buildings in the application period (after 1932) decreases more (the number of new buildings is 305 between the years 1933-34). The reason for this decrease is probably because giving building permissions was taking too much time of the authorities who were caring cautions in order to not to cause any oversight as a result of difficulties in communication, lack of information and experience (Tankut, G.,1993: 91-126). Certainly the other reason was the economical crisis affecting the world which also influenced Turkey.

The Development Directorate of Ankara and Jansen were subjected to many criticisms in this period because of the delays in giving building permissions. The groups, defending the cancellation of the Directorate of Development and giving its responsibilities to the Municipality, were always existing even though they were not effective. The dominant character of these groups, who at the beginning preferred the development of the city on the old city, was to direct the land speculation in the city for their benefit[44]. Even though in the organizational level, the possible effects of the land speculation was considered consciously and tried to be controlled by radical precautions land speculation could not be controlled in a large extend[45], and the groups who expected personal benefits from speculation always existed and kept their activity.

In the pre-application period which lasted till 1932, the above mentioned construction activities continued under the control of the central authorities who were supported and protected by the state, in keeping with growing strength of the Republican policy (Tankut, G., 1993: 111-126).

The reason for the abandonment of the First National Architectural movement which lasted till 1930's is that the Republican ideology which owned a modern identity, did not support this movement as its own reflection on the physical environment. In this political setting, the modern designs of the foreign architects, coming from the west after 1928's, were accepted and supported by the Republican ideology. In fact, the revolutionist Republican ideology did not propose or impose a design understanding to these foreign architects parallel to its own understanding of physical environment. The basic reason of this, is because there were no experts in design or planning issues among the advocates of the Republic. Then, naturally to form an architectural identity would take some time for a country like Turkey which has limited experience in modern city services and planning works and could form some acts and organizations only at the end of the 19.c. as a result of some western influences. Within all these circumstances, the Republican ideology preferred an architectural understanding different from the contemporary western ideologies, which was not competing with monumentality, but was in human scale, simple and apart from the formalist approaches[46]. By this choice, the Republican ideology set the criteria for the second National Architectural Movement that developed after 1940's.

When Jansen completed the application plans in 23.7.1932, the effects of the worldwide economic crisis started to be felt in Turkey also. During this process the speed of building activities was also reduced in the Capital.

The Development Directorate of Ankara was subjected to criticism for paying 1/3 of its budget to foreign experts, and these critics caused to take some strict measures against the directorate. A positive development in the economic situation of the directorate cannot be observed until 1939 when Jansen left the position. Besides Atatürk, who was the biggest authority in controlling of the master plan was no longer alive (Tankut, G.,1993: 111-126).

Here before mentioning the building activities of the period, it seems necessary to have a look at the main approach of Jansen to the application plan that was put in practice in 1932 and was quite different than the one presented to the competition. It looks that Jansen carried out the application plans in regard to the demands of the Ankara Şehremaneti. Jansen's main approach in the application plan, was to evaluate the existing old pattern and the newly developed parts (like Yenişehir, Railroad Station, the commercial center in Ulus, AOÇ, Çankaya), as the basic elements of the city. In the application plan the preservation of the old pattern gains more importance when compared to the competition plan[47]. The planner proposes a regulation for the old pattern, to keep it away from the speculative pressures of the new developments around the old fabric.

With this main approach, the plan brings together the old and the new parts of the city side by side and sets them on two main axes. The first one extends from north to the south, and the other from east to west and are perpendicular to each other. The determinant axis is the one that stretches in the north-south direction and connects the old residential and commercial centers of the city to the new developing areas, to the administrative center in Yenişehir and further south to Çankaya. The commercial center (Ulus) formed in the second half of the 19. century is chosen as the main commercial center of the city and substantiated by the plan. The area located between the station and the old city, which was formerly a marshy land, was transformed into a city park while it was a commercial center in the competition plan (Şenyapılı, T.,1985, fig: 14).

On this north-south axis, three different residential zones were defined according to social stratification (Şenyapılı, T.,1985: 247). The first one is the traditional residential zone located in the Citadel and its surroundings. The planner exhibits different approaches in this zone. In the historic fabric in the Citadel and its south and south-east sections the planner proposes the opening of some service roads only and preserves the rest of the organic pattern (Altındağ Belediyesi, 1987: 74-75). While opening these roads he uses the references of the organic pattern and the topography.

Jansen's foresight for the building density in this area is 20% (*TAKS*) for the parcels which are approximately 400-500 m2 (Tankut, G.,1993: 223, Table: 4.2). And, the planner keeps the burnt-down area on the west side of the Citadel as a city park to create a green area serving the old pattern. Jansen exhibits a different attitude in the area on the west of the Citadel and the north of the Station. In this area, which was already partly renewed through the Atatürk Boulevard he proposes the renewal of the fabric appropriate with the functions in the commercial center. The formation of apartment blocks and the reconstructions in the burnt-down areas strengthened the centrality of Ulus. The planner accepts Ulus as the only center of the city and he does not propose a secondary new center.

In the south part of this area, especially in the sections affected by the boulevard (north-south axis), the renewal of the old fabric is considered in the plan. Bringing together the old and the new is contradictory for Jansen who accepts the preservation of the old city the best solution is to separate the old and the new parts physically. It does not look possible that the old texture can resist the land speculation created by bringing the old and new together. The reason of this contradictory approach must be the attitude of the Municipality who defends the Act No: 583. The demand of the Development Directorate of Ankara is not to preserve the old pattern as Jansen proposes but instead not to touch this pattern at all. Because, the Municipality has no power either to renew or to restore the old fabric. Here, the aim is not to preserve the old fabric but to renew it piece by piece. Jansen knows that to bring the old and the new pattern together will satisfy the local authorities but it will also cause the change of the old fabric. To solve this problem he tries to develop some measures by preparing regulations for the old city (Ankara İmar Md., 1937:39-41; Ankara Şehremaneti, 1929:4-6).

In the area extending from the south of the railroad to the administrative center (Bakanlıklar area), Jansen proposes a secondary housing zone which consists of parcels 500-700m^2 in size and has a building density of 20% (*TAKS*), with one or two storey high houses located in gardens. Some part of this zone includes also the formerly applied Yenişehir Plan. Besides, on the west part of the Administrative center there is a quarter designed for 3000 bureaucrat houses.

The third housing zone proposed by the plan is the most prestigious one and starts from the Devlet district (Bakanlıklar) and spreads towards south to Çankaya and ends at the Residence of the President of the Republic. The houses planned in this zone have bigger parcels, about 1000 m^2 in size, which symbolize the former vineyard houses.

The other important development proposed by the plan in the new city is the administrative center. In this center, a design understanding is exhibited which brings the open and the closed urban areas together forming an administrative zone rather than forming an administrative axis as the symbol of the political status (Şenyapılı, T., 1985:38). While the new educational (university buildings) and cultural activities are located on the east part of the Atatürk Boulevard, sports activities are placed on the west part of this axis and the south-west section of the city is left for industries. In the western part of the city defined by the open organized areas, an airport (in Tandoğan) is also proposed. By this distribution of the urban functions, the east-west axis which is extending parallel to the railroad is transformed to an axis combining the cultural, educational and sportive activities in the city. In order to apply Jansen's plan decisions, Ankara is divided into seven sections in 1933 and five year application program is put into practice. In this period in which the effects of the economic crisis was felt very strongly (Tankut, G., 1993:164-167), the applications that were realized in Ankara can be summarized as follows.

The opening of the north-south axis was already completed before 1932, this period combining the First, Second and Third Çankaya Streets, Enstitü Street, Atatürk Boulevard, Cumhuriyet Street, and extending from Çankaya to Ulus Square. The other axes completed until this period were the İnönü Boulevard (which combines the station to Cebeci quarter, formerly known as 16 Mart Şehitleri Street, and later named Atilla Street and currently İnönü Boulevard) and the İstasyon Street or Cumhuriyet Caddesi which combines Ulus square to the Railroad Station (Şenyapılı, T., 1985: 52).

The development of this central area was completed till 1930's through the construction of the outstanding public buildings in Ulus square and on the Atatürk Boulevard up to Sıhhıye. New buildings constructed during this period are the Central Bank (1931-33) and the Vocational (commercial) High School for Boys (1928-30). The site of Youth Park was still unbuilt.

On the route from Ulus square to Karaoğlan commercial center, there exists the Municipality building in its current place, and on the side of Balıkpazarı, Modern Mall (Asri Hal) with 63 stores on the site that were burned down in the 1927 Tahtakale Fire. The Karaoğlan center dividing into two on the corner crossing the Posta street, joined the Çıkrıkçılar uphill on one side and the Çocuk Sarayı Street on the other. On the street the Justice Hall, Gazi and Latife Schools are placed facing the Police department and the Ministry of Economy on the opposite side. After the Ministry of Economy the street splits into two and joins to Samanpazarı on one side and to İtfaiye square on the other. The northbound Çankırı Street connected the city to the Keçioren and Etlik vineyards. The part of the Boulevard, on the south of the railroad was already built up extending to Havuzbaşı Park as it was originally named, with the İsmet Pasha-Zübeyde Hanım Institute for Girls (1930), the Ministry of Health (1926-27), Army Hall (1930-33), Council of State (Devlet Şürası), Victory Memorial and Red crescent (1929).

In 1933, there used to be a 11m. wide refuge with trees on each side, on the Atatürk Boulevard between the Parliament (TBMM) and Sıhhıye. This refuge which was planned to be used for light rail transportation, was later used to expand the Boulevard. The boulevard was surrounded by four-storey high buildings on each side (Şenyapılı, T., 1985: 55). Bakanlıklar as planned to be the administrative center of the city was built up during the planned period after 1932. The buildings that were designed by foreign architects and accepted as a reaction to the First National Architecture Movement are as follows (Sözen, M., 1984: 167-243): Ministry of Defense (1928-30), Army Headquarters (1929-30), Güven Monument (1932-36), Ministry of Internal Affairs (1932-34), Ministry of Public Works

(1933-34), Ministry of Commerce (1933-35) Supreme Court of Justice (1933-34), the Parliament (1938-60), Ankara General Directorate of Monopolies and the Prime ministry (1937-38).

Other buildings in various parts of the city other then the administrative buildings are (Sözen, M., 1984: 167-243); Atatürk Forestry and Marmara Kiosk and the Turkish Bath (1932), Switzerland and Iraqi Embassies (1932), School of Political Science (1935-36), Military Academy (formerly War College, 1930-35), President's Residence (1931-32), Bank of Housing and Credits (1933-34), Austrian Embassy (1935-36), Faculty of Language, History and Geography (1937), Ankara Atatürk High School (1937-38), Cebeci Secondary School (1938), Sümerbank (1935-36), Çankaya Kiosk for Prime minister and Guests (1936-37) General Directorate of Cities Bank (1936-37), Exhibition House (formerly) or Ankara Opera House (1933-).

During this period, major problems were encountered in securing planned development of the city, such as requests of permission for unplanned constructions of both public and private buildings. Under the pressure of the Development Directorate of Ankara, Jansen tried to meet these demands either by making revisions in the master plan or by providing new rights. Besides these efforts to secure a planned development within the planned areas, requests for permission to make constructions outside the planned areas, started. At the beginning, the Development Directorate of Ankara excluded itself from this issue by delegating the authority to the municipality, however, at the end of 1933, the decision No: 216 encouraging these demands was promulgated (İmar İdare Heyeti Kararı, No: 216, 7.11.1933, referred by Tankut, G., 1993: 172). With the enactment of this decision, expanding the boundaries of the master plan up to the Municipality borders, undesirable developments begun to emerge outside the planned area. Before the completion of the plan, requested from Jansen in 1934, covering the vicinity of Ankara, constructions on the surroundings of the city increased to a great extend (Tankut, G., 1993: 171). Main reasons behind this development are the increase of land prices in the city and the housing problem getting more severe every day. During the period between the years 1925-1935, the price of land had increased 900 times (Tankut, G., 1993: 183). People who failed to own land within the planned area started to settle outside it, which resulted in gaps between the planned area and the unplanned outer regions that were not completely developed yet.

Parallel to the problems faced in the new development areas of the city, some problems began to emerge in the old pattern. After 1930s, land expropriations were initiated for new roads in the old city. It is understood from the records that preliminary construction works for Mukaddem and Bahriye Streets was started in the beginning of 1930's (Şenyapılı, T., 1985: 56). Due to the high cost of construction in the southern parts of the railway, middle and low income groups preferred the old city and Cebeci on the southeast of the old city. Statements made by Şenyapılı (1985: 55-56), based on the records of the Development Directorate, indicates two facts, originating from intensive population pressure in these parts of the city where low quality and intensive constructions increased.

The first one is that; after 1930s, requests for permission to share land, construct and parcelation increased in the older quarters of the city such as Ahi Yakup, Mukaddem, Hatuniye, Atıf bey, Hacı Doğan, İsmet paşa, Hacı Ayvaz. This indicates the start of a renewal process in the vicinity of Karaoğlan commercial center and filling up the gaps within the old city pattern. The Development Directorate tried to meet these demands through counseling Jansen.

The second fact that Şanyapılı draws attention, is the rapid increase of the illegal constructions in the old pattern. This formation progresses by the use of the repair and addition permissions to build new houses. After the approval of the master plan, in the application period and especially in 23.7.1932, the control of the illicit developments was started to be discussed. In this period, the types of illicit building activities vary from the additions or alterations, up to construction of new buildings without permission. While the illegal additions include the addition of floors, transformation of the basements to houses, transformation of the ground floors to shops. The new illegal buildings vary from the building of a room, a stable, service spaces, garages, a shop or a complete house in the garden or the courtyard. The attitude of the Development Directorate also gets to abate after 1933 against the illegal buildings[48]

Tankut's researches show that at the beginning the illegal building activities were common in the old fabric. For example in the year 1933, there were 28 destruction decisions and 23 of them were against unlawful buildings, and 26 of these buildings were located in the northern section of the railroad in the old city. Most of these unlawful buildings are the houses or the service spaces, only one of them is a shop. 12 of the 17 destruction decisions from the year 1934, were in the old city. 8 of these decisions were about the illegal buildings while 4 of them are unlawful buildings, 1 of them is a shed and two of them were shops. In the year 1935, 38 destruction decisions were taken. While 32 of them were the rebuilt or highly altered buildings and 26 of them were existing in the old city. 10 of the 16 destruction decisions from the year 1936 were unlawful buildings and the others were illegal additions to the existing buildings. 8 of these 10 unlawful buildings were houses and service buildings and two of them were the commercial buildings. Tankut does not refer to the location of these examples but she points to the increase in the number of illegal buildings constructed as shops. She also mentions that if these shops were located under a house, in the case of their re-transformation to a house, they were not destroyed by the local authorities.

After June, 1937, the Development Directorate of Ankara was taken from the protection of the Ministry of Interior and was transferred to the municipality (Tankut, G.,1993:133). After this period, parallel to the changes in decision making mechanism, the destruction decisions increase after this period. In 1937, there were only 4 destruction decisions and only one of them was in the old city. In the decisions of this year in place of "destruction", the definition of "alteration for transformation" was started to be used. After 1938, in place of taking destruction decisions for the illegal buildings, they were subjected to a penalty by the municipality. We could not evaluate the destruction decisions after this year because their location was not precisely referred in the study of Tankut. Though, Tankut's surveys show that the illegal buildings existing since 1931 in the public property belonging to the universities in Cebeci, could not be destroyed in 1938. The Development Directorate shows as the reason of this case the Act No: 1504. According to this Act, for the destruction of a building it should be proofed that it was constructed after the date of approval of the master plan, which is 23.7.1932. There are also notifications in the year 1939, against the illegal constructions done about 1933's in Hacettepe quarter. But the Development Council does not destroy these buildings even though they are illegal. Owing to this, it seems clear that the forgiven unlawful buildings are not the ones built before 23.7.1932 (Tankut, G.,1993:173-177).

These cases exhibit the general attitudes in the application process of the plan besides, the difficulties in controlling and inspecting the illegal buildings depending on a denunciation system. And this general attitude encourages the construction of illegal houses for rent in the city where the housing problem increased the renting income. The old city staying out of the development activities and the control of the local authorities is a more suitable area for the illegal buildings. Especially the existing renting demand was encouraging this tendency in the old pattern which was an inevitable housing area for the officers in the low income group.

Within all these circumstances, when the Jansen's attitude to the old pattern is studied in the application plan of 1932, it can be argued that the plan had no a conservation attitude in the contemporary meaning besides all the efforts of the planner[49]. The conservation attitude presented by the plan is not based on the conservation and development of the old city, but to use the existing fabric as a housing stock with minimum interventions. Even as, the demands coming from the old pattern were not contradictory with this trend of the plan.

From the point of the preservation of the old fabric, the plan had basically two contradictory aspects. The first one, which was already mentioned above (Altındağ Belediyesi, 1987:74) and about which Jansen was also aware of, is the fact that surrounding the old city with new developments would increase the speculative pressures on the old fabric. The plan also supported this formation by not to proposing an alternative new commercial center. To direct this formation for the sake of preservation of the old fabric was naturally related with the function of the old center. This was the second contradiction in Jansen's application plan.

The quality and the speed of the transformations in the old pattern, naturally related with the amount of capital spared for this purpose and the determinant of this was the choice of function superimposed on the old fabric. The policy of Jansen's plan was to determine the old fabric as the housing area serving to the middle and lower income groups. This attitude which caused the loss of urban rant on the old fabric creates the minimum conditions for the survival of the old fabric by decreasing or minimizing the speculative pressures on it. But, the uncontrolled and unsolved housing problem in the city, changed the direction of the pressures in the old fabric and caused the increase of illegal building activities in this areas. This situation created a change of demand in the old fabric that was not considered in the plan. On the other hand, this demand caused the change of the quality of demands in this pattern in the long run that could not provide the suitable conditions for the formation of private initiatives for the preservation and maintenance of the historic fabric. The speculative pressures in the areas near to the commercial activities continued. This formation was supported by the later master plans which increased the building heights and created an edge problem through the main axes in the old fabric.

Meanwhile, the new organization models, like cooperatives, were tried to be set in the new city to solve the housing problem of the upper and middle income groups. While the houses in gardens were still preferred by the cooperatives; the form of the apartment blocks started to change. These new apartment blocks which were usually built in Yenişehir, had the architectural characteristics with cubic masses, flat roofs, simple facades, carrying the features of the new design understanding created by foreign architects[50].

Besides all these efforts, a comprehensive housing policy could not be developed for the housing problem that was one of the major issues between 1932-35's, and housing production always stayed at the back of the population increase (Tankut, G.,1993:182). One of the important transformations of this period, is the increase in migration from the rural areas parallel to the growth of new employment possibilities in big cities. This group which could not increase during the 1920's because of limited employment sources in the cities, will be effective in the coming years after 1930's.

As one of the physical factors opening the way to the formation of squatter areas in Ankara during the period 1923-30, Şenyapılı (1985: 42-45) points out the areas left out of the Jansen plan and close to the city center because they are not suitable for settling due to their topography. One of these areas is Altındağ hill that is on the north of the Citadel and the other is the vegetable gardens around Akköprü. Instead, the formation of the first squatter areas started in the latter area before 1930's. At the beginning, the attitude of the authorities to this problem, was ignoring the formation of the squatter areas and later it was considered as a transitory item which could be solved by planning or by taking strict measures. The first documents that reached the Development Directorate with information on the formation of the squatter buildings dates back the year 1933. The squatter buildings increased rapidly during the 1930-40's parallel to the population increase that resulted from lack of investments in the rural areas and finding more employment opportunities in the cities for the marginal population. The common feature of the first squatter buildings is their choice of land that is close to the old city, empty, uncontrolled, and left out of the plan by forming a topographical threshold (Şenyapılı, T.,1985: 56-57).

Within all these formations, the period between 1930-40's appears as the era in which the city gets denser and spreads towards its edges through the unplanned areas. Different social groups in the city, also started to built houses by forming organizations in different parts of the urban space to solve the increasing housing problem. Şenyapılı (1985: 69) makes the following evaluation about this period considering the different solutions derived by different social groups:

> *These solutions which were derived as a result of the land ownership pattern, the lack of legal and organizational frameworks of the local authorities, and the penalties in the planning works, did not only limit the development of the city beyond the master plan decisions but they also formed the tendencies about subjects like, land policy as the major element of the urban development, environmental pollution, density, spatial formation, urban services, and space standards of future.*

Parallel to the end of the supervision of Jansen in 1939, it can be observed that the penalties on application were extensively repeated and the illegal developments in the urbanization process continued in this period also (Tankut, G.,1993: 137,155-201).

Even though, there was no comprehensive development in the agricultural and industrial sectors between the 1940-50's, the population of Ankara reached to 300 000 in 1950. In another word, the population projection of the Jansen plan which was done for the first 50 years was caught in the first 20 years (about the critics of population projection of Jansen Plan see Tankut, G.,1993: 60-63).

Another important change in the urban fabric, as the result of the local demands, was the increase in building densities in the third dimension using the block order parallel to the growth in the horizontal direction. These demands which were extensively observed in the northern part of the Atatürk Boulevard penetrated to all the main axes in the city after 1948, and the building heights were increased to four. There were also similar pressures coming from the single storeyed housing cooperatives.

When the expropriations were continuing through the existing roads in order to enlarge them, the opening of the Bahriye, Işıklar, Posta and Anafartalar streets were completed between the 1940-45's. In the same period, the construction of the roads like, the one combining Anafartalar street to İsmet Pasha park, İnönü School and Samanpazarı street, the road combining the İsmet İnönü Boulevard to Koyunpazarı, and the ones in Yenice Quarter, as well as the roads in the burnt down areas were continuing. Besides them, the Hacıbayram and the Lozan squares were arranged (Şenyapılı,T., 1985: 104). In the old city in 1948, the building heights on the axes like, Atatürk Boulevard, Anafartalar, Meşrutiyet, Denizciler streets, the axis between the Çankırı street and Ulus square, the axis between the İtfaiye Square, Ministry of Health and Refik Saydam Institute, the axes around Samanpazarı and Hamamönü up to Dörtyol are increased to four storey. In this period, through the main axes the increase of the building heights are accepted while the plan decision in hosing areas of the Jansen plan was kept (Şenyapılı, T., 1985:103-104).

Meanwhile, Yenişehir and Cebeci axes were transformed to commercial axes parallel to the increase of building densities and commercial activities in the new city. The progress in the commercial activities also caused the development of some new commercial axes in the old city. On the other hand, these commercial activities progressing in Yenişehir affected the type of the trade in Ulus. Şenyapılı defines the types of these commercial activities referring to the documents in the Development Directorate. According to her surveys while the trade on lasting consumer goods focuses in Anafartalar street, the trade on unresisting consumer goods spreads through the Denizciler, Posta, Işıklar, Konya, Kediseven, Çıkrıkçılar and Çocuk Sarayı streets. Şenyapılı (1985:109-110) also mentions that, in the new developed quarters of the city small commercial activities (like grocery, butcher's, etc.) serving in local scale spread and according to the character of the quarter some other amusement or recreation activities (like cinema, confectioner's shop) were also added to these functions.

The housing development continued in the formerly developed organization system for the medium and upper income groups. Though, the houses with garden were usually built in the areas where the land was cheaper, in the city the apartment blocks were preferred. Another factor that caused the spreading of apartments in 1948 is to legalize the condominium naturally. The act which legalized the condominium was put in practice in 1954 (Şenyapılı, T., 1985:94). Parallel to the progress in such legal measures, the cooperatives were also developed which solved the housing problem of the middle classes and many cooperatives were set in this process. And the state supported these developments by creating some subsidies (Şenyapılı, T.,1985:71-79).

The demands on the building activities reflected to the Development Directorate between the 1940-50's, were usually on the unification and separation of the parcels and on building permissions. The 78% of the demands coming from the old city were concentrated on these matters in general and they were more extensive in the old city. This shows that, the building activity was continuing more actively in the old city. The most common activities were the addition of floors, illegal constructions and building permissions[51]. On the other hand, the squatter buildings started to spread around the north-east parts of the Citadel and in Altındağ.

Migration to the urban areas, as a result of the increase in employment in the agricultural sector, caused the formation of squatter areas around the city, especially after 1945's. The rapid growth of squatter areas which set the unplanned areas around the city was usually evaluated as a physical spatial problem. As a consequence of this, the solution of squatter problem was only searched in the spatial structure of the city. The measures developed, like destruction or legalization, could not prevent land speculation and could not be implement extensively and regularly in the city (Şenyapılı, T., 1985:104-116). From the point of old fabric the Altındağ squatter which was the first created area gains another importance in the coming years.

Şenyapılı (1985: 80-81), classifies the inhabitants of the squatters in three groups according to their economical and demographic characteristics. The first group, which is formed of officers in the lower income level are in a relatively better condition than the others. This group, whose economic power was not sufficient to buy the land, but who are able to buy the necessary building materials, usually inhabited in the areas around Altındağ, Atıf Bey, Yenidoğan districts which are the closest and disordered sections of the city. By this location, they could get the electricity and the water supply in a short time about 1930's.

The building materials and the construction techniques used in the construction of the squatters show a development in time. While, in the earlier days of this formation, the aim was only to built a shelter rather than a building, after 1950's, squatters which had a more permanent character started to be built. Even though, in all periods the squatters were built by using almost all types of materials, in the squatters built after 1950's local, reused materials taken from the older buildings started to be used. This action resulted in the formation of warehouses where the materials of old buildings were collected and sold. The most common material used in the construction of squatters in Ankara was mud-brick (Şenyapılı, 1985:127-135).

These first squatters, built by their owners according to the rural tradition they were accustomed, can be considered as the continuation of the traditional building techniques. Because they were constructed with timber and mud brick until the production of briquette in 1953's, since these two were cheapest materials. The reuse of the materials or the elements (timber beams, door and window frames, etc.,) of the old traditional houses in these buildings created a direct formal relation between these two types of buildings. It is also known that, while the construction of squatters became a monopoly in time, the workers employed in this sector also become expert in this field and continued to work in this sector. The reflection of this monopoly to the public is in the form of land speculation. This process created a sub-sector which deals with the construction of squatters and the masters skilled in this task formed the monopoly (Kurucu, T., 1965, referred by Şenyapılı, T.,1985:133). These masters took the control of the developments in the squatter areas by setting good relations with the gendarme. The masters who reached the foreman status, created the link between those who wanted to built a squatter and the workers by organizing the construction. This illegal organized skill, transformed the process of squatter construction to a more settled, qualified and permanent system if compared to the beginning[52].

Meanwhile in 1950's, the unlawful building process which started in 1930's was still continuing in the historic pattern. Considering the lower income level of the inhabitants of this area, it can be thought that the organized skill in the squatter construction could also be used by these people. The productions of this organized skill can be differentiated when briquette is used in the old fabric, but to make this distinction gets difficult when the buildings are constructed in the traditional techniques and materials. However, these two type of buildings (squatter and traditional) which existed together and side by side after 1950's probably influenced each other.

In the map showing the existing situation of Ankara in 1957, the formation of the squatter buildings in the areas out of the Jansen Master plan, especially in the north-east parts of the Citadel, defines a new border for the historic pattern. The development of this squatter areas, too close to the planned old center indicates the faulty authority of the control mechanisms on the historic fabric. The observations on the historic fabric show that when the material and construction techniques are concerned, the squatters built in the area share some similarities with the traditional houses. For both groups, either living in the squatters or the traditional houses, who had no opportunity to obtain new and modern materials, the use of the traditional materials must have had a rational side[53].

Under these circumstances and the formation of squatters the preservation of the old fabric as it was proposed in Jansen Plan was inhibited. Furthermore, as the old fabric was left to its destiny there was an increase in the nonresidential functions in the parts which could not be renewed. Thus, the old city started to transform to a twilight zone (slum area). Ulus loosing its priority and becoming a commercial center of secondary importance for the sake of Kızılay, changed the quality of trade and the consumers negatively, and instantaneously the physical environment of Ulus. Surrounding the old fabric by squatters, changed both the demographic structure and the physical appearance of these areas. In this manner, the old fabric transformed to a transition zone for the new comers to the city. In short, the old city practically could not be preserved (for an evaluation on this subject see Altındağ Belediyesi, 1987: 75-77).

Ankara is one of the cities which has actively lived the effects of the change and the economic development process developed in the country level during the 1950-60's. The new sectored balance that was reached, at the end of the expansion in the agriculture sector, that took place before 1950, and by the development of service and manufacturing industries after 1955's, created changes in the demographic structure and economic life of the city. During this time Ankara was the second attraction center after İstanbul for the migrators. The 1950 and 1955's, were the years where the population increase reached its climax (see Table 2.8).

The Jansen plan lost its unity and validity in these years and was subjected to many alterations during this time and the city expanded beyond the limits of the master plan. This process formed a need for a new master plan in the years 1950-60's by the effects of the changes in social and economic life in the city. And, resulted with the competition for the master plan in 1954. The plan by Yücel and Uybadin, which won this competition gave a new direction to the development of the city.

To evaluate and to criticize this master plan which was approved and put in practice in 1957, and the implementations done accordingly are beyond the limits of this study. Here we will try to limit the discussions on this plan, considering only its effects on the old fabric and the near surroundings which were designated as Protocol Area (Keleş, R.,1971:164) by the former plan. In this plan which was enlarged to include all the Municipality borders, the developed pattern and the road pattern was preserved into a large extend, while the increase in densities was provided by block order and growth in the third dimension. Besides, several housing zones were opened parallel to the expansion of the planned areas (Şenyapılı, T., 1985:152-58).

While, the north-south axis which combines Ulus and Çankaya keeps its priority, some new axes were proposed in the historic pattern beside the axes between Ulus and Samanpazarı commercial centers. The area, behind the Municipality Building at Ulus, was cleaned from the traditional buildings and densely built new commercial buildings, office blocks and the green areas were proposed in their place. After the plan was put into practice, it was degenerated in a short time by the demands and pressures on the increase in building heights. The building rights proposing high, dense buildings in adjacent order, resulted the destruction of the existing buildings which had not yet completed their economic life as a result of increasing land prices. Especially after 1955, the building height is raised to eight storey on the Atatürk Boulevard. The activities to open or to enlarge the roads continues very actively in the city in such a way that, the roads opened between the 1950-53 reaches to the amount of roads opened between the 1923-50 (Şenyapılı, T., 1985:161-4). Naturally some of these roads exists in the old city, for example the decision to open the Anafartalar street was taken in 1955 (Şenyapılı, T. 1985:167-8).

Even though Ulus center was renewed partly resembling the development in the city, it still keeps its provincial commercial center character serving to the rural and marginal population. The trade activities developed both by the increase in population and by the support of the consumption with the contemporary economic model of the period. The demands coming to the Development Directorate were very strong asking permission to built temporary shops for the year 1955. The decision to built "quickly and temporarily" shops was taken at this time in place of the demolished shops on Ulus square, on the axis between the Opera square and the train bridge, in the green area to the west of the Ankara Palas and between the Samanpazarı and Esen park. Besides, the demand of an land owner to built a temporary commercial center near Ankara Palas, on the side of the Central Bank was also accepted. In the same year, all the demands to built shops on Bend deresi street and through the brook side were also conditionally accepted. Besides the development of commercial axes towards Kızılay, similar commercial axes also grew in the newly developed quarters

(Şenyapılı, T., 1985:163-4). The 1957 plan also lost its validity within a short time, around 1975's, when the population projection of the plan for the year 1985 was reached in 1962 (Şenyapılı, T., 1985:153; Tankut, G., 1993: 202). Tankut (1993: 203) evaluates the plan of Yücel-Uybadin which stayed in practice for eighteenth years as such:

> *... this plan which basically keeps the approaches of Jansen, excludes the urban development and does not propose solutions for and does not present new ideas, it is kept as a type of "trustful plan". For this reason it could not be effective and has given up itself to the high densities in the central sections and extensive spreading of the squatter areas around the city.*

The 1975 plan, which was prepared after the plan of 1957, and which had a projection for the year 1990, is the subject of the planning disciplines today going out of order as a result of implementations that are contrary to the plan.

During this process decisions like, designation of the Citadel and the near surroundings as Protocol Area in 1972[54], designation of the old city as "Urban Site" in 1980, and designation of a Preservation Zone around the Urban Site in 1986-87[55], parallel to the discussions on conservation issues which started in 1970's, have been the decisions determining the future of the old City of Ankara. The first planning study on the historic fabric in Ankara which had a title "Ankara Citadel Preservation and Development Project", was done by METU, Faculty of Architecture, by Department of Restoration in 1979-80 by the demand of the Ministry of Culture. This project which consists of survey, evaluation and pre-decision stages, the conservation problems in the Citadel were outlined and necessary legal and administrative measures were defined. The report of this research project was used as specifications for the competition on Ankara Citadel Preservation and Development Master Plan in 1987.

The planning works on the historic center at Ulus are continuing today with some competitions by Altındağ Municipality, and they were started to be implemented since 1992. The first of these competitions is Ulus Historic City Center Preservation and Development Master Plan which was chosen at the end of a competition in 1986 (Bademli, R., Kıral, Ö., 1992: 128-137). The application of the plan was completed in 1990 and put in practice. This plan includes the commercial center in Ulus historic center excluding the residential areas like the Citadel, Ulucanlar, Erzurum and Avancıklar quarters. The application plan of Ankara Citadel Preservation and Development Master Plan which was opened to a competition in 1987 was not prepared yet. The residential quarters like Ulucanlar and Erzurum are still subjected to temporary building regulations which were prepared after their designation as "Preservation Area", where no planning works are carried for them yet.

2.2. Organization of Building Activity and Building Tradition

In the traditional Ottoman society, in the formation of the physical environment a large group of specialized architects, building masters and artisans were involved. The architect of the traditional society was not only the designer and the practitioner of official architecture but he was also responsible for constructions related to agriculture, transportation, urban infrastructure, and in addition to the control of the building masters. With these duties, the architect participated in the upper bureaucratic class as an administrator who had a series of educational and practical experience. Therefore, the architect of the Ottoman society, was a skilled expert who differs from the other administrative or artisan groups in the society (Ortaylı, İ., 1976: 56).

The architects were among the top level decision making authorities in shaping the physical environment. However, there is not enough information to prove that they were permanently practicing -commissioned or active- except the Capital, even in the biggest Ottoman cities like Edirne and Bursa. The earliest records indicate that in the 16c. there were architects who had *tımar* in the provinces. Orhonlu (1981: 12) points out that these architects might be the ones *"that were sent from the Capital to the frontier provinces to built the necessary fortifications in the border citadels"*. In other cities, although it is known that, the building activity was controlled by the *Kadı* until the 16c., the order or organization of construction works is not exactly known.

It is known that, in the Ottoman State order, the training of the architects was provided in the *Hassa Mimarlar Ocağı* (*Hassa* Architects Organization, here onwards HAO) which was a part of the *Yeniçeri Ocağı*. The establishment date of HAO organization, who build and controlled all the state buildings of the Palace throughout the Empire borders as well as in Istanbul, is not exactly known. However, from the construction of the Karaca Hisar Mosque that was built by Osman Gazi in 1289, it is understood that, since 1289 architects and building masters were employed in the Ottoman State system (Turan, Ş., 1963: 3). According to the records, it is not clear whether a special organization which deals with the construction works was established as early as the 14. and 15. centuries. Turan (1963: 3) mentions that such an organization might have been established after the conquest of Istanbul. While the HAO was operating as the builder of the official constructions and restorations in the Palace and throughout the Empire, the *Şehremini* (formerly a local organization set in Istanbul and responsible from the works of the Palace), to whom the HAO was connected, was executing and controlling the financial aspects of the HAO, and all the technical operations concerning the cost estimate, design and construction, were the initiative of the *Mimarbaşı* (the chief architect in *Hassa* Organization).

The period when Sinan was the chief architect, was the most influential era of the HAO. There were two groups of masters in HAO, the higher rank was called as *Kalfa* (*Halife*) and *Üstad*. Besides them there were the lower rank with their own subdivisions according to their skill and seniority. At the top of this ranks there was the *Mimarbaşı*, followed by *Mimar-ı Sani* who has the highest seniority and also who could act on behalf of the *Mimarbaşı*. The number of the architects who worked in the *Hassa* organization could vary according to the needs of the periods[56].

Mainly, the principle duty of *Hassa* architects was to design the constructions and the restorations of state buildings all over the country, to prepare their cost estimations and to apply the projects. HAO, was also authorized in controlling the domestic architecture and realization of urban services like bridges, water canals, fountains, street pavements, etc. (Turan Ş., 1963:9-22). Although, these were not the written rules, valid for all periods *Mimarbaşı* had also responsibility to limit the building activities which might create problems for the city.

For example, as a common rule valid for all periods to construct buildings near to the city walls, aqueducts or mosques was forbidden (Refik, A., 1988a: 17,20,22,26,58; 1988b: 13,50; 1988c: 67,112,157). There were also temporary rules, changing time to time, according to the problems that the city faced. After the earthquake of 1510 which caused the destruction of 109 mosques and 1070 houses, building in timber became an obligation (Arel, A., 1982:70). Contrary to this, due to fires in later periods, this precaution was disregarded and to build only in stone masonry became a rule that can be understood from the orders of *Mimarbaşı*.

In the *firman*s, dating from to 1559[57] and 1695 stated by A. Refik (1988c: 21), we can see orders to use mud-brick and stone in masonry buildings instead of timber framed building. Moreover, special rules were also enforced as a precaution to fire. In addition to the temporary precautions like, to store water in barrels (Refik, A., 1988a: 60), building regulations as; to build in stone masonry in the place of burnt buildings, to decrease the width of the eaves, to build the eaves from brick or tiles, not to build projections above 18 *parmak*s (about 56,7 cm), prohibiting to build *tahtapuş* (timber framed, semiopen entrance space), *şahnişin* (timber framed projection) or the pergolas above the shops (Refik, A., 1988a: 59; 1988c: 21,66,67,83,158; 1988d:9). However, these rules were not widely applied due the difficulties to obtain material and the high costs of masonry structures (Turan, Ş., 1963:17).

As a conclusion, those rules which were related to the organization of the physical structure of the city[58], should be interpreted as the ones whose legal status could be changed, and they were mostly dependent the tendencies of *Mimarbaşı* and were particular to their period[59]. Moreover it should be considered that, while existing rules were not practiced widely even in Istanbul, this practice, without doubt, was much more limited in application in the provincial settlements under the authority of the Ottoman state.

Another duty of HAO (*Hassa Mimarlar Ocağı*) was to prepare the cost estimates of restorations and to specify the necessary interventions of the religious or public buildings of the minorities. As already known, Ottoman state policy did not permit the minorities to construct new religious buildings, moreover, even the enlargement of the existing ones was prohibited, they were only permitted to restore the existing religious buildings. Ortaylı (1974:14-) indicates that this situation also continued after the *Tanzimat*. In addition, the non-muslims were not also permitted to settle around certain mosques and in the muslim neighborhoods too (Refik, A., 1988a: 14,52; 1988b:53; 1988c: 10, 30, 88, 105, 157, 213).

When domestic architecture is concerned, the houses of the non-muslims had to be lower compared to the muslim houses. According to a *firman* (Refik, A., 1988c:8), dated 1725, the non-muslims were permitted to build houses with a maximum height of 9 *ziras* (681,9 cm.) while muslims could build up to 12 *ziras* (909,2 cm). This type of distinction was also made between the social classes in the society[60]. The houses of the upper class (administrators, tradesman etc.) were higher than the *reaya* (farmer class).

In 1818, the limitations on building heights were changed to a maximum of 14 *ziras* (1060,7 cm) for the muslim houses and 12 *ziras* (909,2 cm) for those of the non-muslims. In 1827, these limits were once again changed, the muslims were permitted to built up to 14 *ziras* (1060,7 cm) and the non-muslims 12 *ziras* (909.2 cm). The executor of these rules was HAO, who also controlled and gave approval (Ortaylı, İ., 1974: 13). *Çavuş* and *Kethüda*, the assistants of *Mimarbaşı* were responsible for the determination of illegal constructions (Turan, Ş., 1963:17-18; Denel, S., 1982: 76-78).

The rules pertaining related to the building heights, were invalid after the regulations brought with the *Tanzimat* in 1839. From that date on, the building heights were specified according to the construction material and the technique but not according to the social or ethnic distinction (Denel, S., 1982: 76-78). HAO was also responsible in setting the wages of building masters and workers (Refik, A., 1988a: 67; 1988b: 36; 1988c: 70,155; 1988d: 20) beside control of production and quality of building materials and prices (Refik, A., 1988a:

60,64; 1988c: 31, 35, 79, 157, 169). *Mimarbaşı* intervened also to avoid the employment of unskilled workers and to the increase of wages parallel to the increase of building activities after times of migrations or big fires. At times of war another duty of *Hassa Mimarlar Ocağı* was to support the army by building the necessary substructure like bridges, roads etc., (Turan, Ş., 1963: 18-19).

HAO was also responsible from the constructions belonging to Pious Foundations all over the Empire (Turan, Ş., 1963: 15-18). When a member of *Sultan*'s family or a powerful member from the administrative staff of the Palace decided to construct a monumental building in the Provinces, he/she had to ask the HAO for architectural support. Since the *Mimarbaşı* could not be present in all the construction sites throughout the country, the HAO entrusted assigned one or a group of architects for that project.

The form of organization of HAO shows that it worked as a centralized establishment. It acted as the executor or the competent authority for approvals for the monumental buildings in the Capital and the Provinces. In this respect, it should be mentioned that the number of monumental buildings in Istanbul was very high in comparison to other cities. For example, in Sinan's period more than 75% of the monumental buildings ordered by the Palace were built in Istanbul (Aktüre, S., 1994: 23-).

The building activities in the provinces were directed by the *Eyalet Mimarları (*or *Şehir Mimarı, Mimarbaşı, Başmimar*: the Provincial Architects) who were appointed by HAO. Although the beginning of this tradition can not be exactly dated, according to registers, the appointment of *Eyalet Mimarları* to different provinces or towns in the position of a provincial center became a usual practice after the 16c. (Orhonlu, C., 1981: 11). It is usually accepted that the appointed *Eyalet Mimarları* were chosen between the members of the HAO. Ortaylı (1976:57) quotes that referring to a conversation with the late Prof. C. Orhonlu who mentioned that:

> *... In some cases the local building masters who were not trained in the HAO but who were prominent in their skill and capacity, were also appointed as Eyalet Mimarı and there were also Non-Muslims among them.*

Beside the *Eyalet Mimarı* who was the local authority on behalf of *Mimarbaşı* of HAO, especially in big cities there were also architects working in the construction of buildings belonging to Pious Foundations (Orhonlu, C., 1981). The *Eyalet Mimarı* was appointed with the consent of the *Mimarbaşı* and the *berat* of the Sultan. If the *Eyalet Mimarı* was not chosen the HAO, he reached this status with his local experience and became the indisputable expert between the building masters in the city.

By specifying different statements used for *Eyalet Mimarları*, Orhonlu mentions that in general these were the architects who should have the knowledge of geometry and measurement techniques necessary for construction[61] In the early appointment of the *Eyalet Mimarları*, it seems that their areas of activity were kept quite large, but in later periods, the number of them was increased and their areas of activity were restricted and even in to the villages *Eyalet Mimarları* were appointed. Besides that, in the big cities like Edirne, Cairo, Jerusalem there were more than one architect charged near the *Eyalet Mimarı* (Orhonlu, C., 1981:14).

In the hierarchical Ottoman state order as Aktüre (1975: 105-106) mentions, the number of settlements that had a city status was quite large extending in an order of *Eyalet* (Province), Capital (Istanbul), *Eyalet Merkezi* or *Paşa Sancağı* (Provincial Capital or Regional Center), *Sancak Merkezi* (regional center), or *Subaşılık* (Small bazaar city, small city or village), and *Sipahilik* (Rural settlements like village, *mezra*) depend on the administrative and functional formation.

For example in the second half of the 16.c., only in Anatolia -except Istanbul- the number of the cities which had more than 1000 taxpayers was 51. Ankara was among the 9 cities which had more than 3000 tax-payers. The others were Bursa, Kastamonu, Tokat, Sivas, Kayseri, Konya, Ayntab ve Urfa (Faroqhi, S., 1993: 17,53,-58). According to "Cihan-numa" by Katip Çelebi in 1732, the number of settlements which had a city status was 138 only for Anatolia (Faroqhi, S., 1993: 104). If the data of Turan (1963:46), that represents the number of architects varying between 18 to 43, in the years 1526 and 1689, is considered, it becomes clear that the number of architects in HAO was not sufficient to supply the construction demands even in Anatolia alone. Owing to this, the outcome of *Eyalet Mimarı* seems quite reasonable which developed parallel to the increase and the growth of the Anatolian cities (Orhonlu, C., 1981:15-16). Yet, the number of the *Eyalet Mimarları* who were trained in the HAO and appointed in the cities is not known.

Information coming from sources that mention the *Eyalet Mimarları* who had been charged between the local masters, is comparatively more limited. However, these architects should have been the most prevailing class in local scale in the formation of settlements. And the number of *Eyalet Mimarları*, charged out of the HAO as Orhonlu's quotation, may possibly be more higher than it was generally mentioned.

The income of *Eyalet Mimarları*, was provided by the allocation of one of the *mukataa*'s of the settlement (Orhonlu, C., 1981:22-23). However, by the increase in building activities the *Eyalet Mimarları* started to earn extra income by creating new opportunities for themselves. For example, collecting money from the building masters under the name of *keseriye* became habitual for the *Eyalet Mimarları* although, it was illegal.

Orhonlu points out these economical opportunities, as one of reasons behind the frequent changes in the position of *Eyalet Mimarları*. Even, the non-professional landowners started to be charged as *Eyalet Mimarı* as a result of the implementation of "*malikane*" system after 1695 which prevented the selling of the *mukataa*'s (Orhonlu, C., 1981:24). The responsibilities of *Eyalet Mimarları* show similarities with the Mimarbaşı in Istanbul. They also had to do the repair and restorations of the buildings belonging to the state, to control and arrange the wages of the buildings, the quality of the building works and materials, and to support the *Kadı* as an expert in the cases related to building activities.

2.2.1. Organization of Building Activities in Ankara:

Even though, Ankara had always been an important commercial center, there is no document found yet, to designate the appointment of an *Eyalet Mimarı* from the HAO. Moreover, the building activity in Ankara was quite limited concerning the Pious Foundation Buildings which were mostly commercial in character such as khans.

The biggest religious complexes in Ankara are Cenabi Ahmet Paşa Mosque (1565) and Karacabey Complex (1440) which are quite simple and conventional compared to the monumental buildings in Istanbul or other big Ottoman cities. This characteristics of the religious monumental buildings, was mentioned before by some other writers discussing that Ankara was not economically an important center (Yücel, E., 1969:9), but, there are also contrary arguments. For example by stressing the importance of Ankara as a commercial center, Aktüre (1981:118) claims that the khans in Ankara which form the commercial center are as monumental as the khans in other Ottoman cities. Although this discussion is not directly related with this study, it is important because it represents that the building activity in Ankara was not directed much by the architects from HAO except some conventional monumental buildings. If the building activity in the city was limited in its locality and was not much open to outside influences, this situation should have reflected on the domestic architecture too. In other words, it shows that the modest character of Ankara houses was defined by the local demands and the wishes of the inhabitants. As a continuation of housing tradition, the use of the same materials and techniques in the religious buildings (masjids and mosques) in Ankara should be the result of this locality.

The researches on Ankara do not reveal a record of the appointment of an architect from HAO. In *Şeriye Sicil*'s of Ankara, there is a record on the choice and approval of an *Eyalet Mimarı* (or *Mimarbaşı*) between the local building masters (Özdemir, R., 1986:211-212). According to this record, Mehmet Salih Ağa who was appointed as *Mimarbaşı* on 7th April 1792, was asked to be replaced by the local building masters who claimed that he was acting illegally. The building masters asked to the *Naib* of Ankara (the representative of the *Kadı*) to appoint Ahmed bin Abdullah as the new Mimarbaşı who was chosen with the unanimity of the building masters. *Naib* of Ankara, Mevlana Ahmet Hulusi Efendi, accepts this demand and appoints Ahmed bin Abdullah as the new *Mimarbaşı*. However, the former *Mimarbaşı* objects the case and by the approval of the *Naib* and the *Sultan* he becomes the *Mimarbaşı* again after the 15th of July 1792.

It is also known that, after the death of an *Eyalet Mimarı*, this mission may also be transferred to his son if he is capable to take this position (Orhonlu, C., 1981: 19). Although there is no definite record, the authoritative family known as "Mimarzadeler" in the 18c. in Ankara creates some questions peculiar to this data. Çadırcı (1984: 90-91) indicates that, the members of Mimarzadeler family who had authority on the administration of Ankara were from the religious class (*ilmiye sınıfı*) and worked as *Mufti (müftü) and Mütesellim* (formerly lieutenant governor). It would be interesting for our subject to search the family name and find out if some members of this family had been active as *Mimarbaşı* in earlier times, at this point this will remain as a question.

In the periods when the building activity was under the control of *Kadı* up to 17c., in the provinces there was possibly a guild system depending on the master-apprentice relationship in the provinces and also in Ankara, before the formation of *Eyalet Mimarı* concept (Faroqhi, S., 1994:343; Ergenç, Ö., 1973:132). When the immense number of the cities, with their population above 20000 before the 16c., is concerned, control of the building activities in these settlements would obviously be very difficult without a local organization specialized in construction works. In addition, the traveling building masters tradition was continuing to exist since the Seljuk period as Sözen mentions in the introduction he wrote to the book "Türk Mimarları" by A. Refik (1977: 11). Subsequently that tradition is still continuing today, therefore it should have been perpetuated during the Ottoman period and Faroqhi (1994:343-344) considers this assumption was also valid for the 16c.

2.2.2. Building Activities in the Westernization Period:

The first westernization movements started in the period of Mahmut, I. (1730-1754), brought substantial renovations for the improvement of the army beside the influences on architecture. The western effects that were only seen in the decorations and the forms in architecture at the beginning, became effective in the organization of building activities, by the establishment of some institutions in the western sense during the 19c. The foundation of the schools in western understanding to train experts for the building sector was the characteristic of this process in the 18c. *Mühendishane-i Bahr-i Hümayun* (The Imperial Naval Engineering School), established in 1773, and the *Mühendishane-i Berri-i Hümayun* (The Imperial School for Artillery Officers) established in 1795-96[62] were the first institutions founded in this understanding (Refik, A., 1977:17).

The authority of HAO practically continued until the establishment of the *Ebniye-i Hassa Müdürlüğü* (Imperial Buildings Directory) in 1831 after the removal of *Başmimarlık* and *Şehreminliği* (Denel, S., 1982: 14-15). Following the declaration of the reforms (*Islahat Fermanı*) in 1839, aiming to create an egalitarian and strong centralized system in administration, state mechanisms were tried to be reorganized by executive improvements (Ortaylı, İ, 1985: 46-47).

However, the success of such a comprehensive effort was obviously dependent on the existence of an educated staff and their participation in bureaucracy, and, the establishment of this type of institution was largely contingent with the financial assets of the state. Whereas, the corruption and the difficulties in economic conditions continued to grow after the reformations (*Tanzimat*) till the beginning of the 20c. In these circumstances the impacts of the reforms in the provinces remained quite limited though, they were effective on the reorganization of the legal and institutional aspects of the state order. These reforms were not developed as a result of the local pressures to set up a local democracy but were developed by the demands of the intellectuals who wanted to reorganize the administrative system of the Ottoman state order (Ortaylı, İ., 1985:118-).

The effects of reformation was also seen in the building activity beside other fields. The tradition was left and an organization system was tried to be set in the building sector supported by written regulations like *Ebniye Nizamnameleri* (Denel, S., 1982: XXIV-XXXII). On the other hand, the necessary legal arrangements were developed that prevented the supply of urban services by the municipalities which were done formerly by the local authorities (Denel, S., 1982: 14-15). While some of the urban services were controlled by the

Ebniye-i Hassa İdaresi (Chief Directorate of Buildings), established in 1831, the control of the Pious Foundation Buildings was done by the *Efkaf Nezareti* (The Supervisory Institution of Foundations) which was established between the 1836-54.

The efforts to establish a municipality in the modern sense, became substantial for the capital by the establishment of a new "*Istanbul Şehremaneti*" in 1852-53 (Ortaylı, İ, 1985: 119-128). Galata and Beyoğlu sections of *Istanbul Şehremaneti*, gave the examples of municipal services in western understanding. The French originated form of these municipalities did not have a democratic structure in contemporary meaning, although they comprised municipal councils. Only the high tax payers were able to be selected to the municipal councils according to the election system which was also a model valid in the western world for that time, as Ortaylı mentions (1985:129:142). The Commission for the Improvements of Roads (*Islâhat-ı Turuk Komisyonu*) which was established in this period and was active between the years 1866-69, realized some important applications for Istanbul in city scale (Denel, S., 1982:16-17). Beside, in 1868, this commission tried to set the new municipality organization by dividing Istanbul into 14 districts in order to adapt them to the system used in Galata and Beyoğlu districts.

All these efforts, even though they were supported by the regulations, could not be implemented regularly because of economic problems. The administrative authorities were usually blamed from the slow rate of implementations and they were frequently altered with the new ones parallel to the changes in the regulations (Ortaylı, İ., 1985: 143-149). In 1877, The Municipality Act for Istanbul and the Provinces (*Dersaadet ve Vilayet Belediye Kanunu*) was introduced considering the scale and particularity of the problems of Istanbul that differs from the Provinces (Ortaylı, İ., 1985:149-152, 156-176). Although, this act could not be put in practice extensively, the municipality services in Istanbul were carried more actively then the provinces. In the Reformation Period (*Tanzimat*), after Istanbul these activities were at first tried to be implemented in the harbor cities[63] that developed in the 19c., and in each of them the municipalities were started to be established (Ortaylı, İ., 1985: 156-157). By the demands and the participation of the traders and the foreigners in these harbor cities, the municipal services were regularly developed while the municipalities could not be institutionalized in the provinces of Anatolia (Ortaylı, İ., 1985:159-160).

In the provincial settlements, the municipal works were carried out by the *Kadı*'s up to the Reformation Period, and, after 1826, they were implemented by *ihtisab amirleri, mutasarrıf* and/or by the governors. M. Akdağ (1959: 73-82, 102) mentions that the authority of the *Kadı* in the classic period was changed by the transfer of some of this responsibilities to the

Sancakbeyi thus his authorities were limited after the second half of the 16c. The diminishing of the power of *kadı* was continued also in the later centuries and after the mid 18c., the *Kadı* started to appoint the *Naib* to his positions (Özkaya, Y.,1977: 46). This case was also valid in Ankara and the city was governed by the *Naib* after the mid 18 century (Özdemir, R., 1986:177-).

Some of the responsibilities of *Kadı* were tried to be transferred to the newly established organizations by the late 18. and early 19c., *Kadı* or *Naib* still kept an important role on the juridical, administrative, economic issues and urban services (Özdemir, Y., 1977: 177-202). When the urban service are concerned, the duties of *Kadı* (or *Naib*) can be summarized as: to bring water to the settlement, to provide the maintenance and the repair of the foundation and public buildings, to maintain the sanitary conditions in the city, to control the goods sold or produced by the tradesman and the officially fixed prices (*narh*) to protect the consumers.

In the first half of the 19c., *Eyalet Mimarları* were still on duty in Ankara to support the *Kadı* or *Naib* about the building activities. Özdemir presents some documents concerning the works of some architects from HAO active in some construction works in Ankara.

For example, in 1739, a commission was established to prepare a report on the restoration of Şengül Bath in Ankara. The two architects, Üstad Mehmed bin Yusuf and Mehmed bin Halil from HAO, were participated in this commission. Similarly, in 1804, es-Seyyid Mustafa Halife, who was a member of HAO, was charged with the construction of the barracks of Nizam-ı Cedid Army in Ankara. There is also a cost estimate report on restoration work for of Ankara *Mevlavihanesi* which was prepared by a commission that was formed of local building masters and an architect, from HAO in 1806 (AŞS, 119/132-133; AŞS, 202/12-16, referred by Özdemir, R., 1986: 210). Özdemir, stresses that they were not the architects permanently appointed *Eyalet Mimarı* of the city. The author continues to explain that the building masters of the city choose one specialized master among themselves to be introduced as *Başmimar* to the *Kadı*, and the *Kadı* inturn asks for the approval of the *Sultan* in order to appoint that person as *Başmimar*. Certain documents referring to this case are already mentioned above. In this process, sometimes it is seen that, the person or the master who wants to be appointed as the *Başmimar* goes to Istanbul and attempts for the job and gets the approval of the *Sultan* directly. For example, Abdurrahman veled-i Mehmet who became *Başmimar* of Ankara on February 25, 1809, obtained this position through the way mentioned (Özdemir, R., 1985: 212-213).

The effects of the westernization movements, after the second half of the 19c., were quite limited either on institutional level or on building practice in the provinces like Ankara, because of the reasons mentioned before. The establishment of municipal organizations, their authorities and working principles were reorganized by the Province Regulation (*Vilayet Nizamnamesi*) and Provinces Municipality Act (*Vilayet Belediye Kanunu*) that were put in practice in 1871 and in 1877 (Ortaylı, İ., 1985: 160-161; 170-174). Due to the former regulation, the establishment of the municipality was required in each settlement where there was a governor or a *mutasarrıf*. In the formation of the municipality councils at the beginning, legally there was only the officials. But, practically the landowners or the tradesman were also chosen to these councils (Ortaylı, İ., 1985: 160-161).

In the Salname-i Vilayet-i Ankara, dated to 1872, it appears that the Municipality Council of Ankara was formed of 6 members in which three of them were Non-Muslims. In the municipality council of the year 1882, there were 22 members and again half of them were Non-Muslims (Denel, S., 1984: 133-134). As mentioned in Chapter 2.1.1, these ratios show that the Non-Muslims were very influential in the city life, though they only formed 1/3 of the city population. The municipality councils were formed of people who had high incomes, pertaining to the rules brought by the Province Regulation which necessitates being above a certain income level to participate in the council.

The limited applications of the Provinces Municipality Act (*Vilayet Belediye Kanunu*), dated 1877, and the Road and Building Regulations (*Tarik ve Ebniye Nizamnamesi)* of 1864 (implemented after 1869) which were valid during the last quarter of 19c., caused some changes in the urban form of Ankara.

These changes such as; the development of Boşnak Quarter, developments in the burnt down areas after the fire of 1917 and the renovations of the early 1920's, are discussed in detail in the previous section. Although, there is no definite information on the enlarging or opening of new roads in the urban pattern until the Republican Period, these operations were possibly only in the areas affected from the fires or in the new developed sections of the city. The large scale implementations that were done in the city before the Jansen Plan are also mentioned above in the previous section. The difficulties in application of decisions on urban scale at the end of the 19. c., might become understandable considering that solving problem deriving from the ownership pattern is also a question of today.

The dead-end streets which were formed as a result of the multiplication system of the traditional pattern are strikingly limited in number in the existing historic urban pattern in Ankara. Akçura (1992: 66), who mentioned this observation before, explains this referring to

Faroqhi's data on the houses in 17c., as such: "*the traditional houses in Ankara were generally situated in an order to be reached by the main streets that is a characteristic of the urban pattern in Ankara since 17 century*". Faroqhi (1987: 39) mentions that in 1600, around 163 buildings from among 276 recorded in the registers, had one facade open to the street, however 72% of them were situated on dead-end streets. On the other hand, in 1690, 192 of the recorded 274 buildings had two street facades while 60 of them were surrounded by streets on more than two sides, however only 7 of them (2.5%) were on the dead-end streets. From this data it becomes clear that the dead-end streets were not common even at the end of the 17c. When the existing historic pattern is considered, this tendency should have been continued parallel to the increase in the density of the pattern during the 18. and 19. centuries.

The 21st. item of the Building Act (1882 *Ebniye Kanunu*) which forbids the formation of dead-end streets was enacted in 1882 and it was peculiar to the areas affected from the fire (Denel, S., 1982: LXIX). Therefore, it seems reasonable that the non-existence of dead-end streets was a characteristic of the urban pattern in Ankara. On the other hand, despite the limitations on the projection or *Şahnişin* by regulations (1864 *Tarik ve Ebniye Nizamnamesi*, items 15-16, see: Denel, S., 1982: LV, LVI) these elements existing on the facades of the Ankara houses were preserved until 1950's. The passageway on Gelin street in Ulucanlar district, for which Kömürcüoğlu (1950: 14) publishes a photograph, is an indicator that these limitations were not implemented regularly.

The first and the second Building Regulations dated 1848 and 1849 (*Ebniye Nizamnamesi)*, 1864 Road and Building Regulation (*Tarik ve Ebniye Nizamnamesi*) and the 1882 Building Act (1882 *Ebniye Kanunu*), which were activated especially after the second half of the 19c., have brought some definitions and limitations on the heights of houses and shops, their material and technique, usage of masonry walls for protection against fire, enlargement of streets; must have been implemented to some extend, though not regularly. It is not possible to accept the full implementation of those regulations in a country town like Ankara, when they rarely applied them even in Istanbul. Besides, there is no information on the implementation of these regulations in the existing urban pattern, except the newly developed areas. Only, some observations on the urban pattern can give some clues in this aspect.

For example, although there is no difference on the construction methods, the differentiation among the heights of the buildings in some examples is a remarkable characteristic. This formation might be related with the regulations implemented in the second half of the 19c. that was mentioned above. The limitation of building height owned by *reaya* or Non-Muslim groups, should be the explanation of the modest and low houses in the urban pattern. On the other hand, in the houses, where the side walls adjacent to the neighboring buildings were built-in stone masonry against fire, must be constructed with respect to the related items of the Building Regulations.

The house at Kireçli St., 2 in the Citadel and the one at Zülüflü St., 18 in Erzurum Qu. (1921), are representatives of this case that differs from the other examples with the fireproof stone masonry walls at their sides for protection against fire. These houses showing the characteristics of late the 19c., are also higher than the other houses in the urban pattern, besides the limited variations in their construction techniques. So, these houses must have been built in the period after *Tanzimat* in which the building heights were defined according to the construction material and not to the social stratification in the society. The other examples reflecting the building regulations are the ones at Birlik St., 3-5 across the synagogue in İstiklal Qu., the Kınacılar house at Kalekapısı St., 28 and the house at İnci St., 14. These examples that have similarities in their plan schemes, facade order and architectural features, are differentiated from the houses in the urban pattern with their sizes, mass characteristics and masonry sections. Especially the ones across the synagogue, must have been built after the 1848 Building Regulation, when their height is concerned, although it is not known whether they belong to Non-Muslim families[64].

Besides these examples, there are many cases in the urban pattern where the differentiation according to the building height is not as clear as the mentioned ones. Denel (1982: 81) states that, the limitations and the differences on building heights, brought by the regulations, are so small that they are not identifiable in urban scale. For example in 1725, while the difference between the Muslim and Non-Muslim houses were around 3 *zira* (227,3 cm) it decreased to 2 *zira* (151,5 cm.) in 1818. In fact these differences which are not noticeable in urban scale, create a distinction in architectural or building scale. This differentiation gives some clues about the construction period of the buildings however, the main problem in the dating of the buildings is the insufficiency of the knowledge about the implementation of the building regulations for whether they were regularly implied or not.

2.2.3. Building Masters, Construction Process and Construction Material:

The buildings masters show a great variety in construction tradition of the Ottoman period. There are many types of masters skilled in different fields in the list that was prepared by Orhonlu (1981: 8) according to the Adana Registers, dated back to the year 1704. These are like: *dülger* (carpenter), *duvarcı* (builder), *kireççi* (limeburner), *keresteci* (lumber merchant), *mismarcı* (nail, stud maker), *demirci* (blacksmith), *keserci* (a type of carpenter skilled in cutting timber with adz), *destereci* (a type of carpenter skilled in cutting timber with saw), *burgucu* (driller), *camcı* (glazier), *sıvacı* (plasterer), *hakkçı* (carver, engraver), *horasancı* (master skilled in making *horasan* mixture), *badanacı* (painter), *bıçakcı* (cutter), *sandıkçı* (maker of coffers, chest etc.), *değirmenci* (miller), *arabacı* (cart-wright, coachman porters carrying the construction materials to the site), *çukurcu, kutucu, marangoz* (carpenter), *hurdacı* (seller of scrap metals), *taşçı* (stone-mason), *furuncu* (baker), *kerbiçci* (moulder, master skilled in mud-brick making), *sırık hamalı* (formerly porters using poles and slings), *beygir hamalı* (formerly porters using horse, hack), kafesçi (master skilled in latticework) and *kaldırımcı* (paviour, swindler).

Some of these building masters whose profession is very specific, must have been working only in the construction of monumental buildings and they might be employed only in Istanbul. For example the limeburners had also some subgroups like *yağlı kireçci*(fine lime maker) and *taş kireçci*, (coarse lime maker) in Istanbul. Similarly, sorcerers had also some subgroups like *kurşun örtücü* (master covering the sheet-lead) and *tahta kurşuncu* (master covering the timber finishes by sheet-lead) and they only worked in the monumental buildings (Orhonlu, C., 1981:9). However, the types of building masters do not show a great variety in the small settlements as in Istanbul.

The types of the masters and the workers employed in the construction of Süleymaniye Mosque and the İmaret in the 16c. were given in detail by Barkan (1972: XVI). They were *Sengtıraş* (stone-mason), *Benna-Duvarcı* (builder, wall builder), *Neccar* (carpenter), *Nakkaş* (painter, decorator), *Lağımger* (nightman, sapper; builder and cleaner of drains and sewer), *Haddad* (blacksmith), *Camger* (glazier), *Sürbger* (sorcerer), *Errekeş* (bucksawyer)[65].

The number of building masters and workers that worked in Süleymaniye complex reaches to 3523 and their ethnic distribution is almost in the same ratio as Muslim and Non-Muslim. The 51% of the total employee was Christian while the 49% was Muslim. Besides some professions were more popular for certain ethnic groups. For example the 77.4% of the carpenters, 89% of the stone-mason, 87.3 of the wall builders, 87.3% of the painters, 93.7% of the glaziers, 90% of the sorcerers were Muslims while others like 83% of the stone-masons, 92% of the sappers, 63.4% of the blacksmiths were Christian. Most of these masters were coming from Istanbul and the settlements closed by, the others were coming from the Anatolia, Rumelia and the Aegean islands except the ones whose origins could not be determined. In this distribution, stone-mason, sorcerer and sapper masters appear to be coming from the provinces in Anatolia (Barkan, Ö. L., 1972: 147-150).

As a continuation of the guild (*Lonca*) system in the Ottoman Empire, the number of masters and workers was constant in order to preserve the, balance between supply and demand and was named as *gedik*. All the masters and the workers in the capital or in the provinces, who were involved in construction works had to take a license for construction from the *mimarbaşı*. In usual conditions the ones who had no license were not able to work[66]. However this *firman* was reversed from time to time when there was a demand for workers, especially after the big fires or the earthquakes in Istanbul. The *firman* of the *Sultan* to stop the employment of the unskilled workers indicates the case (Refik, A., 1988a: 61;1988c: 33).

The sources on Ankara, especially related to different professions of building masters, give information about the modest formation of the building tradition in small settlements (provinces) of the Ottoman Empire. In the periods, when the construction works were under the control of the *Kadı*, there were a group of building masters trained in the master-apprenticeship relation and the guild system formed by them in the provincial settlements. Contrary to the weakening of the guild system at the end of the 16c., the building masters and artisans in the provinces continued their works by forming some small groups. In the cases of the leave or the dead of some members, they had some rigid rules for the choosing new members. Ergenç (1992: 14; 1973: 132) defines this organization system as such:

> *In each artisan group that was called "Hirfet", there was a "kethüda" and a "yiğitbaşı" and they were elected by the unanimity of votes of the masters in that group and the election was completed with the registration of the Kadı.*

In Ergenç's list (1973:149), prepared specifically for Ankara for the end of the 16c., there are 43 artisan groups and the ones related with the construction works are stone-mason, carpenter and blacksmith. The employment of the building masters from Ankara in the construction of Süleymaniye Complex between the years 1550-1557 (6 stone chipper masters, 1 of them was a Christian and 5 of them were Muslim, and 8 stone-masons, 5 of them were Christian and 3 of them were Muslim) shows that there was a developed construction practice in Ankara since the 16c. (Barkan, Ö. L., 1972: 150).

To charge a *Hassa* architect from Istanbul and the temporary traveling masters was a tradition in the Ottoman state system when an official or Foundation building was to be constructed and this was also valid for Ankara. From the documents on Ankara, it appears that, even though they were limited in number there was a group of building masters, at the end of the 16c., working in local scale, for the routine construction works in the city. The carpenters and the stone-masons had to work together to form the masonry and timber framed domestic buildings in Ankara. The absence of some masters like, limeburner, plasterer, mud-brick maker shows that, all these works could also be done by the other building masters.

As known, the basic sources to obtain information about the masters in the settlements in the Ottoman Empire, are *Kadı* registers or *Şeriye Sicil*s which were prepared according to the number of taxpayers. So, the types of the building master were prepared accordingly. Faroqhi points that the building masters did not need shops, especially when the building materials were obtained by the owner of the construction or because they had temporary works. She interprets that, because of this reason building masters were not mentioned regularly in the *Şeriye* registers (Faroqhı, S., 1994: 41). This interpretation figures that the types of building masters documented in the register might not represent the actual case. It should be keep in mind that there might be more building masters which were not counted in the registers.

There is also information about the continuation of the tradition of seasonal traveling building masters in the 16c. that were existing since the Seljuk and Byzantine periods. Faroqhi (1994:343-344) especially indicates that the traditional technique based on mud-brick masonry, gives the opportunity to the owners to built their houses themselves with a minimum support. Besides she has an assumption that in the provinces of Ottoman Empire there was a demand for unskilled workers for the construction works especially in the building seasons. She stresses her assumption by presenting some temporary workers that were paid 1000 *akçe* and one *kile* of flour to built four mud-brick walls in Ankara at the end of the 16c. Referring to another case, in Kızılca Eymür village near Ankara, Faroqhi mentions some workers who were employed only for making mud-bricks. She interprets that the temporary workers had more opportunity to find a work in the construction of Pious Foundation buildings.

Arel (1982:74-) makes a similar evaluation and accepts the traveling building masters and workers as a reason for the spreading of the Ottoman house tradition throughout the Empire. Referring to some villages consisting of traveling workers, Arel remarks that the tradition of seasonal workers was also valid in Greece. She also mentions that, this tradition was also convincing for the Muslim and the Christian building masters and the workers in Anatolia and Rumelia.

It is known that this tradition is still continuing even it is very limited today. Bektaş (1990:

49; 1991a: 58-59; 1991b:37-41; 1991c:63-64) who has studied traditional construction techniques, introduced some of the few still alive old building masters which represents the continuation of this tradition. Bektaş with reference to living masters, also mentions that formerly there were traveling Armenian building masters in Akşehir; building masters from Tavas (Kayseri) in Şirinköy; Greek, Girit, Macedonian originated building masters in Kuşadası.

The two documentary programs prepared by TRT, the one on Kayseri Houses completed in 1993, under the supervision of V. İmamoğlu and the other as series on the traditional handicrafts and old building masters completed in 1991 under the guidance of M. Sözen, are very important sources that contain interviews with the old building masters even though they are not specific to Ankara.

Parallel to the augmentation in the variety of tradesman in Ankara during the 19c., the variety in the profession building masters also increased. Özdemir's (1986: 229-232) researches show that there were 95 types of tradesman in Ankara in 1825 and the ones related with building activities were 5 *kirişçiyan* (timber joist maker or seller), 25 *demirciyan* (blacksmith), 7 *çilingiran* (locksmith), 8 *çıkrıkcıyan* (spinning wheel maker or seller), 4 *saçakcıyan* (eaves maker), 72 *esnaf-ı dülgeran* (carpenter), 2 *kireçciyan* (limeburner), 14 *sıvacıyan* (plasterer), 29 *taşcıyan* (stone-mason), 1 *kurşuncu* (sorcerer).

In the list prepared by Çadırcı (1980: 118-119) showing the types of building masters in Ankara in 1830, there is also information about the ethnic origins of the building masters. However, as the writer also mentioned before, the list is not complete. The types of tradesman related with building activities give the similar results like, 1 *bezirci* (linseed seller, Christian), 8 *çilingir* (locksmith, all are Muslim), 14 *demirci* (blacksmith, all are Muslim), 1 *mermerci* (marble seller, Muslim).

Ottoman building tradition was based on masonry and timber framed structural system but showed some variations according to the local and/or periodical characteristics. While, the *Miri* and the Foundation buildings were mostly built in masonry, the hoses were usually built in timber framed structural system depending on the local material. Direct information about the types of materials used in these buildings can be gathered from the buildings themselves that are basically, stone, brick, mud-brick, tile, timber, iron, lead, different mortars and plasters, paper, glass, glazed tile, nail etc. Moreover, the written sources might give information about the production and quality control and standardization of building materials.

The most detailed source in this respect is the publication of Barkan on Süleymaniye complex. There is quite detailed information about the type, size, origin and the quality of building material that were used in monumental buildings. The four single stone piers of the Süleymaniye mosque that were carried from different cities in the Ottoman Empire (like Alexandria, Bergama) beside, some antique stone pieces were removed from their places for the construction. The stone quarries near to Istanbul and the ones at İzmit, Aydıncık, Mihaliç, Kavak İskelesi, Ezine, Ereğli and Marmara island supplied the necessary stone (Barkan, Ö. L., 1972: 331-360, 1979: 11-100). Some of these quarries were also used not for the official buildings in İstanbul but also for other buildings in the Anatolian cities (Erguvanlı, K., 1962). To obtain the necessary iron and lead materials for the construction of Süleymaniye Mosque and materials for the *İmaret* materials were produced under special orders and stocked in large scale.

While, most part of the iron was transported from Samarov (Bulgaria), the production of iron window balustrades, window and door hinges and door knockers, nails and all other iron elements were produced in İstanbul (Barkan, Ö. L., 1972: 361-369; 1979: 122-154). Similarly, the lead that was used to cover the domes of the mosque was obtained from the mines in Serbia and Bosnia (Barkan, Ö. L., 1972: 369-380).

The brick and tiles in different quality and sizes used in different places in the construction were also to be produced by special orders in the brick yards in İstanbul (Barkan, Ö. L., 1972: 381-384; 1979: 155-172). The timber elements in different types and dimensions to be used in the scaffolding of the constructions were obtained from the Blacksea and Rumelia coasts beside the forests around İzmit, Sapanca, Akyazı, Göynük and Biga (Barkan, Ö. L., 1972: 385-393; 1979: 101-121). All these information shows that there were special rules in the construction of *Miri* buildings that are specific to the monumental buildings. Though, there is not enough information for whether the same materials were also used in the construction of the houses or domestic buildings not only in İstanbul, but also in other Anatolian settlements. It is quite difficult to estimate the effects of the standards brought for the *Miri* buildings on the materials used in the houses. Though, considering the difficulty of quality control for the materials that were used in *Miri* buildings, it seems unrealistic to expect the use of same standards for the materials of the domestic houses.

As it was mentioned before the production, quality and price of the materials and the building masters was under the direct control of the HAO. The sultan *firman*s dating from different periods represent the standards of building materials. The two different *firman*s, dated to the years 1595 and 1596, order to intervene to the producers of tiles and bricks which were out of standards in dimension and density. (Refik, A., 1988a: 17,20,22,28,58; 1988b: 13,22-23,50; 1988c: 67,112,157). There are also other *firman*s aiming to standardize tile and brick production especially in the periods when to construct in masonry was brought as an obligation. For example in one of these *firman*s dating 1652 -numbered 202- the standards[67] for the roof tiles were defined as, 13.5 *parmak* (around 42,5 cm.) in length, 6 *parmak* (18,9 cm.) in upper width, 5 *parmak* (15,7 cm.) in lower width, and the weight of each unit should not be less than 460 *dirhem* (1472 gr.) (Refik, A., 1988c: 31,35,79,169).

Similarly in another *firman*, carries dating 1595, orders to the *Kadı*s of Kara Birecik and Akyazı stating that the timbers which were send from these towns were below the standards (Refik, A., 1988b: 23). This *firman* mentions that, formerly the timbers send from these towns were 4 *zira* (303 cm) in length, 8-9 *parmak* (25,2-28,3 cm) in width, and 1 *parmak* (3,1 cm) in thickness and that these standards should be kept in the new cut ones also.

In a *firman* dating from the year 1607, ordering that the timbers manufactured in İzmit should be sent directly to İstanbul, the timber types for construction were listed as walnut, hazel nut, linden and alder trees (Refik, A., 1988b:32). Another firman that was sent to the *Kadı* of Selanik, dating from 1609, orders the production of standardized nails in Siroz (Refik, A., 1988b:38).

There are also some *firman*s ordering not to sell the glazed tiles to outsiders before the demanded to supply of the Palace is complete (Refik, A., 1988b: 33,36). There are also similar orders on the production or the trade of lead and lime. All these limitations are important to represent the formation of standards and a control mechanism even thought they are valid for İstanbul and the *Miri* buildings in İstanbul.

In the Building Regulations put in practice during the 19c., it seems that beside some obligatory rules to make masonry buildings, the material to be used in timber framed structures were also started to be defined. By these regulations a standard use and production in construction materials was tried to be set. Mentioning the use of qualified materials to increase the strength of the building, a classification was set, based on the building costs to obtain some standards in building activities. Beside, the building regulations define the type and the use of materials in the buildings, but not the specifications of the materials.

The Building Regulations seem quite contemporary by their context that brings proposals for maintenance and repair of the buildings. They instituted some technical details, precautions and limitations especially against fire by evaluating the practice in traditional construction techniques.

For example in the 18. item of the 1st Building Regulation (I. *Ebniye Nizamnamesi*), dated 1848, the construction of chimneys in the houses, shops and *han* rooms was defined clearly as they should have *"temur" (iron)* beams and made of brick masonry with horasan mortar and the height of the chimney should exceed 2 *zira* (151,5 cm) above the tiles of the roof. Pipes made of sheet iron had to be placed to the chimneys of the *konak* and *kahvehane*; and, the floor and the ceiling should be covered with sheet iron. To built a kitchen into the interval floors of the timber framed houses was also forbidden (Denel, S., 1982: XXXVII).

In the 1848 Building Regulation (*Ebniye Beyannamesi*), the building standards were defined as to the material. In these definitions the width of masonry walls, the characteristics of the materials and their use was given. For example, to obtain a long resistible type of timber that was used in the buildings, it had to be cut preferably between November and March. In the places that were subjected to water the use of the oak tree was proposed instead of the pine tree which would be weak. The use of brick as infill material in timber framed houses, was also suggested especially below the windows on the facades that could not be protected by the eaves. It is also especially mentioned that the timbers should be painted to preserve the material. In plaster works the use of fine *horasan* with filtered lime or fine aggregated sand, or, lime and linen was proposed in place of timber finishing on facades. In this same regulation for the timber finishing on facades, that was quite common in İstanbul, some damp proof coursing details were offered and to make all the construction activities in summer season was strongly advised (Denel, S., 1982: XL,XLV).

In the 11-13th items of the 1849 Building Regulation (II. *Ebniye Nizamnamesi*), for the timber framed buildings to built firewalls exceeding 2 *zira* (about 151,54 cm.) above the roof tiles was ordered. In the 21 St. item of the same regulation facades covered with timber boards (possibly mentioning weather boarding) was strictly forbidden and the use of horasan plaster was proposed in its place (Denel, S., 1982: XLIX). In the 38th item of the Building Act dated 1882 (*Ebniye Kanunu*), to build fireplaces and chimneys was brought under the rule that they should be completely made in masonry by using firestone (*odtaşı*) or brick and horasan mortar. The height of the chimney should be 2 *arşın* (151,54 cm.) above the roof, but if there is a timber framed building closer than 2 *arşın* (151,54 cm.) the chimney should exceed the height of the neighboring building. The thickness of the chimney walls should be a minimum of 8 *parmak* (25,2 cm.) and the use of earthenware smoke pipes is also forbidden (Denel, S.; 1982: LXXI-).

It was mentioned before that, these regulations were not applied extensively in the provincial settlements. Regarding Ankara, the use of some of these rules can be observed and their examples were already referred above. In the dating of these examples, to identify the items of the building regulations on the buildings, became important like, existence of firewalls, or two or tree facades of the building made in masonry etc.

Beside these regulations, traditional building activity was also affected from the West both in architectural and technical aspects. While the Western effects on architecture became popular in İstanbul, their effects were limited on the traditional building activity in the provinces and mostly for functional purposes.

For example in the first half of the 19c., the use of window paper still continues in the Anatolian cities. The use of paper was quite common in Kayseri in 1841, and 1/3 of the houses in Bitlis had window paper in 1897. The export of glass, from France and Belgium, started between the years 1883-84 through the Samsun and Trabzon seaports. According to these data, it can be thought that the use of glass for the windows became popular at the end of the 19c. and at the beginning of the 20c. (Yavuz, A.; 1984: 192).

The information, about the construction materials and the activities in the Ottoman Period, usually focuses on İstanbul and the monumental buildings of the cities. Because of the form of the state, the written regulations specific for each settlement on local scale could not be developed. Though, the traditional construction activities developed by the guild system locally in each settlement and that was of course effected and controlled by the centralized authority. On the other hand the existence of traveling building masters and workers helped in the spread of the local traditions and created a collective building tradition. If it were not so, to find some common features in the building tradition that was limited between the strict rules of the guild system would be quite difficult in the wide-spread boundaries of the Ottoman Empire.

2.3. Regarding the Anatolian House

Within the typologies developed to define the traditional Anatolian house, the Ankara house, carries modest characteristics in the sphere of what is defined as the *Turkish house* or the *original Anatolian synthesis*. Even though the problem of typology of the traditional Ottoman house is not the concern of our work directly, in the definition of its architectural characteristics, both definitions and terminology forming the criteria in the evaluation of Ankara houses gains importance. The typology investigations done on the traditional Anatolian housing fabric can be convened under three groups. The first group, linking traditional Anatolian housing on the basis of its ethnic identity, sees its physical development in the formation of the units like main hall (*sofa*) or room into a spatial arrangement. (Eldem, S. H., 1968; Kuban, D.,, 1982; Küçükerman, Ö.,, 1973) The second group, acknowledging the spatial arrangement proposal of the first group as a criterion; utilizes characteristics like structural system, material, climatic features of the area, of traditional Anatolian houses to arrive at a classification which divides Anatolia into regions in the light of these data (Aksoy, E., 1963; Kuban, D., 1966; Tanyeli, U., Kazmaoğlu, M., 1979; Eriç, M., 1979). While timber framed houses built with "*Hımış*" construction technique come to be acceptable mostly as being Turkish, load-bearing structures are often acknowledged as belonging to minorities. The third and the last group, criticizing the selected parameters of the first two typologies as somewhat arbitrary, aims to propose a more comprehensive method.

Group I: Definition of the Traditional Turkish House with Respect to Its Spatial Arrangement

Considering the origin and development of the traditional Turkish house, the proposed typology of S. H. Eldem (1969)[68], having been influenced from ethnic roots, based its principle on the relationships between the main hall and the rooms of the main floor. This typology, taken as a starting point, became the essential tool for a great number of typologies that have come after Eldem's typology. Eldem's Turkish house typology treats the main hall as the main focus of attention and examines the spatial assembly (its location) and the spatial hierarchy (rooms, sofa, annexes, passages and stairs) of the building parts, classifies the development as starting from "without *sofa*" type to A, what is accepted as the most progressed, "central *sofa*" type. These Turkish house types carry excessive urban characteristics and they display variations, as they have been spread through a wide area within the boundaries of the Ottoman Empire, embracing both Anatolia and Rumelia. Information gathered from the houses were limited to the main floor plans and no definitions were brought to the other characteristics of the structures.

Eldem, noting that the so called "without hall" or the "A" type was under the influence of the houses in Iraq and Syria, defined it to be the most primitive of its kind. The "open hall", "outer hall" or "B" type seen until the 17c., was defined as a plan type where rooms were arranged at one side of the sofa. This plan type depending on the sofa's location and/or size, took on subcategorizes like L, U shaped, and this formed the origin of the Turkish house. The "inner hall" or "C" type, developed in the 18c., was defined as a plan type where the rooms were lined on both sides of the sofa. According to Eldem, the rooms being equipped with windows and making projections to the streets became widespread starting from the 18c. In traditional Anatolian housing on the basis of its ethnic identity, sees its physical development in the formation of the units likemain hall (*sofa*) or room into a spatial arrangement. (Eldem, S. H., 1968; Kuban, D.,, 1982; Küçükerman, Ö.,, 1973) The second group, acknowledging the spatial arrangement proposal of the first group as a criterion; utilizes characteristics like structural system, material, climatic features of the area, of traditional Anatolian houses to arrive at a classification which divides Anatolia into regions in the light of these data (Aksoy, E., 1963; Kuban, D., 1966; Tanyeli, U., Kazmaoğlu, M., 1979; Eriç, M., 1979). While timber framed houses built with *"Hımış"* construction technique come to be acceptable mostly as being Turkish, load-bearing structures are often acknowledged as belonging to minorities. The third and the last group, criticizing the selected parameters of the first two typologies as somewhat arbitrary, aims to propose a more comprehensive method.

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Out of the 265 house examples documented by Eldem (1968: 35, 36, 38-78, 84, 85, 90, 103, 105, 117, 141), 12 were taken from Ankara. (consisting of "inner", "central", "outer" plan types). But according to our studies, today non of them exist. While the "outer" and "inner" hall type houses are often dated back to the 17 or 18c., the "central" hall type "vineyard" houses are from the 19.c. Furthermore the 17c. examples given by Eldem do not represent the earliest houses in Ankara but seem to be from the period when the second floors began to be added. As it was mentioned before, according to Faroqhi's records, the addition of the second storey to the Ankara house became widespread at the end of the 17c. Thus, from the explanations of the travelers, it is understood that houses built before this time were single storey high, load-bearing, mud brick structures. The extensive use of projections should have been the outcome of the development of the second floor. As the necessity of the structural system, use of timber frame in the city should have been started at this period.

But in Ankara today, some of the oldest existing examples dated to the 17c. are located in a courtyard. Thus, for these houses there is not a possibility of opening to the street with projections. The oldest examples that do display a street facade, and which have the so called "Ankara type of projection", do not represent any concern for facade order (examples at Citadel, Doyran St., 9 and Kurt St., 1).

The earliest possible examples of Ankara houses, where the original plan scheme can be followed, can be dated to the 17c. The ones that we can spot as being older have the "outer hall' plan type. According to Eldem's typology, the "inner hall" plan type that started to be seen in Istanbul at the 18.c, is another type that is widely observed. The accentuation of 'the 'main room" and the "*köşk*", seems to have lost its importance in the Ankara houses of the later period when compared to the 17c. In the late period houses the distinction between main room and other rooms begin to diminish and the rooms become homogenous. Main room, in terms of its articulation becomes closer to other inhabitable rooms. *Köşk* or *Seyregah* is not repeated any more. Tradition of the Main room or *Köşk* seems to have been valid for older buildings of the 17.c.

The researchers following Eldem, have added to his Turkish house typology, ethnic & religious norms like "nomadic life", "tent tradition", "*oba düzeni* (order of tents in a defined space)" and "privacy". And further extending them with criteria like "material and building tradition" and "locality" have developed new definitions and typologies.

One of these typologies belongs to Küçükerman (1973). Küçükerman investigates the room instead of the hall as the main determinant. Starting form the thought that the Turkish room had been designed according to the need's of the family members, he accepts his functionality as the result of a tent tradition. Küçükerman (1973), dividing Anatolia into regions based on cultural influences, claims that Central Anatolia being the most closed place to external influences, is the main component which makes up the Turkish house. Between Central Anatolia and the Coastal areas, there is a zone named by the author, "crossbreed belt". Küçükerman (1973: 30-48), while stressing the role of the "room" in determining his typology, does not neglect to mention the influential role of the "hall".

Kuban (1982: 195-209), on the other hand, accepting a certain relationship between regions, due to the differing historical and cultural patterns and regional building traditions, ascertains that there do not exist homogeneous building trends in Anatolia[69]. In the writers definition of "Turkish house", that includes Anatolian examples, and reflects the Turkish-Islamic family structure; room and half open service spaces that are added to the room are seen as the main elements of the typology's. In the scheme Kuban proposes:

> *the main element is the multi-functional room and spaces that are adjacent to the room. When these units are placed in a perpendicular axis to each other, all the variations of the topological classifications made before would be obtained.*

By declaring this statement Kuban (1982: 199-200) produces more innovative approach than the other researchers. Within this typology, depending on the family size and social stratification, the units multiply to transform into the "outer", "inner", "central" hall types. The origin of this repeating unit is linked with the Palace architecture of Syria & Iraq and with the culture of Central Asia. Kuban groups this house typology, according to influences of differing cultures that effected Anatolia in terms of its progress and variations. Thus, Anatolia is divided into six areas. Within this grouping, the Anatolian shores and the Balkans, where the *hımış* (timber framed structure) construction system developed at the Turkish age, is shown. This building type, unlike the buildings of other groups, was not limited to regional scale. On the contrary, they spread over a large area encompassing the lands where the Ottoman Empire spread. Kuban accepts the building trades of the capital İstanbul as the progressed and varied examples of the regional tradition. Kuban by bringing in these definitions, sheds light on the periods earlier than the period Eldem, tries to classify. The writer, besides bringing depth into the classification of the Turkish house also discusses regional characteristics, traditions, traditional construction techniques and materials, the family structure and religious norms as the influencing criteria that shaped Anatolian houses.

The Ankara houses are also seen within the group Kuban defines as the Turkish house. The preliminary simple step in Kuban's scheme, showing the evolution of the Turkish house, could not be followed within the existing pattern of Ankara houses. Actually, the writer does not put any claim for Ankara houses to have evolved exactly in the same way shown by him. On the other hand, within the housing pattern in Konya, it is possible to see the varying steps of the proposed evolution model. In Konya we could still see the most primitive form; made up of one room and giving service to that one room, the sometimes closed *mabeyn* or half open *tahtaboş* entrance space. Also, in Konya we could observe the existence of the more developed hall type within Kuban's model. The preliminary, simple step proposed by Kuban's model, goes back to the earliest examples in Anatolia and it is still being used especially in the rural areas. This scheme which is seen in Konya and not seen in Ankara is linked to the different process of development of housing in these two cities (Ergenç, Ö., 1973). In Konya, while the traditional housing fabric reflects the continuation of rural characteristics, Ankara presents, with the structural differentiation, an urban character[70].

Aksoy (1963) accepts the central space as the principal elements of civil architecture and stresses the importance of regional characteristics that shape the plan layout. Aksoy developed a new typology by adding the material and climate criteria to Eldem's approach derived from the main hall. Furthermore, Aksoy tries to clarify the existence of variations within the same region with reference to nomadic Turkish culture. Aksoy, divided Anatolia into three areas; south, central and west-southwest with reference to climatic regions.

Within this grouping, carrying influences of the Hittite culture of the regions in Central Anatolia, the main building material is mud-brick. And the typical city of the area is Konya. As one goes more west and south, timber is added to the local material. Thus, at places like Ankara, timber framed constructions are seen on the upper floors (Aksoy, 1963: 51-52). In the houses of this region besides the courtyard used as the central space, floors or houses intended for summer/winter usage becomes common. In Konya, while the summer/winter houses take on different locations at the side of the courtyard (Sözen, M., Dülgerler, O.N., 1979: 79-110). In Ankara the floors are divided according to seasonal utilization.

Group 2. Definition of Traditional Turkish House with Respect to Construction Techniques and Materials

What we define as the second group is the typologies which analyze the traditional house with respect to its construction system and materials (Kuban, D., 1966; Tanyeli, U., Kazmaoğlu, M., 1979; Eriç, M., 1979). The idea springs from the thought that in pre-industrial societies there was limited technological means and available materials, thus the construction techniques and the local building traditions were the main determinants in the classification. In this typology, the traditional houses were grouped mainly into two, according to their construction technique, either as being masonry or timber framed. Then, their sub-groups were determined according to the material uses. Among these approaches U. Tanyeli and M. Kazmaoğlu (1979), besides the use of materials and construction technique of houses; took into consideration criteria like form giving characteristics such as;, roofing, spatial order, etc.,. And they formed their sub-groups, they arrived at two main divisions; which are mentioned as "original Anatolian synthesis" and the "transition zone". According to the sub-groups of this typology traditional Ankara houses are defined as, having pitched roofs, being constructed in *hımış* construction technique, using of natural color of the building materials and having mostly open-hall type plan solutions where brutalist tendencies are seen under "original Anatolian synthesis".

We had mentioned in part 2.1 that in the 16-17c., the travelers explaining the city of Ankara, depicted the traditional houses, in general, as being made of mud brick, flat roofed and as having a single storey. But according to Tanyeli's classification Ankara houses are described as having pitched roofs and made of *hımış* construction system. At this stage, it is understood that the writers' classification is based on the existing housing fabric. This situation leads us to assume that the group of houses exhibiting the original Anatolian synthesis have been formed after the 17c., at least for Ankara anyway. Tanyeli's definition of the use of natural colors of materials is known to be valid throughout the 19c. We had again mentioned that, in 1882, when Humann and Puchstein (Eyice, S., 1972:86) entered Ankara, they described that the tile covered roofs and mud-brick house facades, due to not being painted gave generally a yellow overview to the city. Colmen Van der Goltz (Eyice, S., 1972:89-90), on the other hand, in 1889, explains that with the vibrancy the new railroad system brought to the city, the front facades of the houses were painted white. Therefore, throughout the 19c. the governing color should have been soil' color. The use of color that is presently seen on the facades of the houses should have been taken up in the beginning of the 20c. and when thought of the economical conditions, perhaps after becoming a Republic.

Group 3. Search for New Definitions

Discussing the problems of Ottoman housing traditions Arel (1992), when looking at the traditional house architecture in Turkey, questions whether or not the ethical character of "Turkish house" is part of an important fact. And thus brings a criticism right down to the core. The writer emphasizes the need to explain, how, in what form and after which period, the common and individual architectural characteristics of the "Turkish house" developed. She reinterprets the thoughts that from time to time come to be discussed, but without enough emphasis. As an indicator of cultural value and inclinations, the writer starts from the houses' physical status, to define the following, in order to determine cultural meanings (Arel, 1982, 34-54);

1. Principle of contrasts: ground floor / first floor
2. Tradition of *Köşk* / *Divanhane* / Main Room: Nomadic traditions / Tent customs.
3. Contrast of open / closed spaces: Relationship between open / closed spaces.

It is for sure that Arel's approach, her historical perspective and look, bring new proposals and definitions for the discussion of traditional housing.

i. *Fevkanilik*: Principle of Upper Floor:

Arel, in general, pointing out that most of the typologies were formed based on the plan order of the upper floor, proposes an approach that aims to put forward the reasons for spatial, functional, structural dissimilarities between ground and first floors (Arel, A., 1982: 34-40). Especially in old houses, while the upper floor carries an established geometrical order, occupied by the living spaces, the ground floor occupied by the service spaces takes shape according to the parcel it is located on. In cases where there is a middle floor, we see that it works as a mezzanine floor to the upper floor and is occupied either as winter rooms or as rooms for the servants. The upper and lower floors are also dissimilar in their structural systems. The ground floor, is constructed with a load bearing system, the first floor is made up of a timber framed structure. The above definitions that Arel makes, concerning the spatial organizations belong to the houses of the 17c. As we approach the 19c. the differentiation between floors diminish, and the ground floor starts to follow the geometrical lines of the first floor. Parallel to this development the diversity in the structural system and material between floors disappears. Thus, we see a more uniform use of material, on the whole.

Arel's definitions, which she assigns to the houses of the 17c., that reflect the contrasts between ground and first floors, are also valid for the houses of Ankara. It is seen that, Ankara houses which are dated to older periods, even though they have undergone alterations, the ground floor is reserved for service areas while the upper floor is the living spaces. This differentiation is seen in the intermediate periods where the service spaces in the ground floors are not completely lost but partly reserved for living. And in the later periods the ground floor is transformed, like the examples of the 19c., and it is utilized entirely for living. Another reason for this transformation must be the rural quality of the house changing into an urban character. The house, loses its quality as a space to manufacture goods for the family and as a result some service spaces loose their functions and this has caused the change in the house's spatial character. Thus, the observed service spaces like the stable, the hayloft or the use of the courtyard changes function from the 17. to the 19c. The courtyards stop being the extension space for the ground floor; they either become smaller or take on an open-space quality.

Arel (1982) draws attention that early period houses, differ in terms of building material and construction technique as well as in the characteristics of the upper floor. Kafesçioğlu (1955) recognizes in the construction system of the houses at north-west Anatolia, that the masonry walls surrounding the house at the ground floor do not carry the upper floor. On the contrary the upper floor is maintained by posts placed inside the masonry walls. However, in the houses of Ankara, there are examples where the ground floor carries the first floor, as well as the first floor carrying itself independently from the ground floor with free standing posts. Still, the construction system defined by Kafesçioğlu (1955: 44, 58-72) as can not be observed in the houses of Ankara much consciously and systematically.

In the later period houses of Ankara, a composite system is seen where some parts of the upper floor was carried by independently standing posts, while the other parts by the masonry walls below. And in the houses in much later periods, in terms of the construction system, a uniformity can be followed among the floors and the load-bearing ground floor carries the timber framed upper floor. The houses that Kafesçioğlu defined can be seen in the distinct examples in Beypazarı (near Ankara), where it has been used extensively. This construction system relatively dates to the older periods. Because the existing housing fabric in Ankara belonging mostly to the 19c. and exhibiting extensive changes, is probably the reason why we do not observe this system in Ankara. However, it can be thought that this change in the construction system could have developed as a phase.

In the older houses of Ankara in the "Ankara type" projection, it is known that excessive material more than what was structurally needed was used. In the later ages though, the projections were constructed with less material in a more rational fashion. Thus, this also reflects that the structural system progressed in time.

ii. *Köşk, Divanhane*, Mainroom Tradition:

For the *köşk, divanhane*, mainroom tradition which takes different spatial organizations according to local characteristics, Arel, establishes symbolic relations with the old Turkish tradition of the "*muyanlık*", that is guest room, and the royal tent concept. The difference between *köşk* and mainroom is not functional but seasonal. In reference to the theoretical approaches brought to house typologies, *köşk* can take place inside or around the house in a single volume or adjacent-jointed order.

After the second half of the 17c., in the sources, the *köşk* is referred to as *şahnişin, tahtani* or *çardak* differing according to regions. At the houses where there is not a separate *divanhane*, (guest room), the function of the *köşk* is taken over by mainroom. Mainroom differs from the others in location, spatial order and facade order. In the spatial order of *köşk* or mainroom we observe a level difference at the ceiling or on the floor. A hierarchic order is tried to be obtained on the floor with the elements like *seki, sekialtı* and *sedir*.

In the modest houses of Ankara we observe a separate *köşk* constructed inside the garden. Also observed is the open-space called *seyregah* or *köşk* built as the extension of the hall. Mainroom, on the other hand, especially in the old houses is seen as a room that is distinctively different than the other rooms in its spatial order. In the examples of the 19c., the built-up furniture starts to be more simple and homogenous.

However, there still existed a more decorated room, accentuated on the facade, that can be regarded as mainroom. In the houses of subsequent periods, instead of the mainroom, we see the hall extending out of the facade, the rooms approaching nearer to each other in terms of their decorations and loosing their hierarchic order. All through the 19c. with the introduction of the use of mobile furniture within the house, the quantity of built-in furniture decreased. This also had an impact on the hierarchic order of rooms.

iii. Open / Closed; Inside / Outside Contrasts:

Arel accentuates on the richness, sensitivity and the complex structure of the functional divisions and the plan scheme of the spatial establishment in Anatolian houses'. She states that, in the two dimensional perception of traditional houses, this inherent richness could not be expressed. Because, in the Ottoman traditional houses the ground floor/first floor or inside/outside contrasts, do not reflect a total contradiction. While elements like *seki, seki altı, papuçluk* representing a hierarchy in the third dimension, open/closed and half open spaces create intermediate zones between the inside/outside contrasts. Thus in the perception of traditional houses, in order to exhibit this richness in buildings it is necessary to develop alternative techniques of approach.

Asatekin (1994), who criticizes the religious / ethnic emphasis on the formation of the architectural characteristics or construction technique, proposes a technique based on to the one Arel developed. Asatekin, underlining the fact of each house presents a special "case", groups the conditions defining each "case" as follows:

1. location and scale of the settlement.
2. natural qualities of the environment.
3. economic conditions.
4. cultural, historical accumulation and past of the society living at the settlement.
5. social composition and structure of the society.
6. technique.

Asatekin (1994), states that these criteria have a variable nature and she accepts each house as a composition of these variables. Thus, each situation is a synthesis of the congruence of these basic variables. Asatekin (1994) proposes a model made up of sub-categories of the above listed variables and examines the building, starting from its urban fabric and going to its elements, following a hierarchical line of study, emphasizing the family-building relationships.

2.4. Conclusion; Evaluation of Historic Sources and More Recent Studies

Particular to the city of Ankara and to the Anatolian house, historical references related to the Ankara house, enable us to make a pre-evaluation on the formation period of the existing fabric. When examining the development process of the city of Ankara, the first question we investigated was whether or not the existing buildings of the Ottoman period Ankara belonged to the isochronal.

Through studies related to the fluctuations of the city's population in different times and its spatial distribution within the urban scape, it was possible to produce some answers. In the light of the historical data, with reference to extensive transformations within the process of building, clues were established as to the period characteristics of the houses'. Accordingly, it is seen that the traditional housing fabric at Ankara has been a subjected to intensity densities and transformations mainly in three periods. These periods are;

1. Increase in vertical densities, in the 17c.,
2. Increase of demand in housing in the Capital, after Republic
3. The periphery of the traditional fabric to be surrounded with squatter's structures.

2.4.1. Increase in Vertical Dimension in the 17. Century

All through the 17. and 19. centuries there were no changes in the boundaries of the city. Even though at different times there were fluctuations in the population, this did not effect the housing fabric in terms of the horizontal layout. Intensity is observed only by further division of parcels or/and extending out in the third or the vertical dimension.

It can be accepted that, the increase in construction activities seen at certain periods brings with it common qualities between the houses of the same period. There must have been factors like the duration of construction, usage demands of the people of the period, economical conditions and an increase in the demand for housing that shaped the production process of buildings. On the other hand, particular to the city, the increased density within the housing fabric, shows that the houses were not built at the same period.

It was emphasized before that the traditional housing fabric of the city of Ankara was formed during the Ottoman period. The housing fabric belonging to earlier periods is not existing today and the fact that while the present fabric was taking its form it must have been influenced by pre existing ones. The earliest sources available display that the city had been generally made of one storey high, flat roofed houses of mud-brick. From the buildings Faroqhi examined, it becomes clear that in 1607, only 10% of the houses had a second storey. If this ratio is accepted as reflecting the percentage on the whole, it can then be assumed that Ankara at the time, with single storey houses had rural characteristics. On the other hand, it can be assumed that between the 17. and 19c., the parcels were large enough to receive higher densities while the boundaries of the city in the horizontal layout stood constant.

According to the maps reproduced with respect to the information of population changes, for the years 1522-1607, the traditional commercial center is seen as the base point of attraction. While the population increased at higher ratios in the quarters of the commercial center, the rise was much constant at other quarters. On the other hands, at the quarters located at the periphery, a population decrease is encountered probably due to *Celali* rebellions or fires. Nevertheless, in 1607, after the construction of the city wall an increase is noticed in the population of the periphery.

Between the years of 1607-1830, the quarters which received population increases, were the ones situated at the south and southeast periphery of the city, which are the Erzurum and Hacettepe districts of today. According to the surveys of Faroqhi, a 52% increase in the two storey houses around the years 1690, also shows the housing fabric intensify, in the third dimension. This information, together with the statement of Arel, dating the tradition of the "main floor" to the 17c., points to isochronal changes.

In the 17c., parallel to other cities, the development based on the construction technique and material is also seen at Ankara. In today's Ankara, it is difficult to find buildings showing characteristics of 17c. houses. The few that exist are at Citadel, Erzurum and Ulucanlar districts (see the catalog in App. C). One of the oldest examples in Ankara, the house at Erzurum Qu., Erzurum street, 48 shows traces that it was not constructed at once but its main floor, dated to the 17c. (Akok, M., Gökoğlu, A., 1946), was constructed later than the rest[71]. Only a few of the 30 houses, which are mentioned in the sources published in 1940s as the oldest houses in Ankara, exist today (Akok, M., Gökoğlu, A., 1946).

Of the houses recorded by the N. Akçura (1992: 62-71), with the limited number of those that survived to the present, it is difficult to trace the house characteristics of the 17c. While some parts of the houses carry their original characteristics, some others seemed to have altered at large scale. For example, the two storey high, 'open sofa' type house at Ulucanlar, Gelin street, No. 8 maintains most of its original characteristics and conveys simple qualities. It is probably the oldest existing house in Ankara today. But its structural condition is in a poor state and is used today as a house. The following houses, can be considered as the oldest houses of Ankara with respect to their architectural characteristics; at Ulucanlar (Hamamönü) Qu., Cingöz st., 20 (Kömürcüoğlu, E., 1950), Uzunkavak st., 27 (Akçura, N., et al., 1993 a,b); at Erzurum Qu., Erzurum st., 46-48 (Akok, M., Gökoğlu, A., 1946), Sarıkadın st., 43; at Citadel, Doyran st., 9, Kale Kapısı st., 10, Kurt st., 1 (Yavuz, A., 1984). Some of these houses will be introduced in further detail in chapter III and are presented in the Catalogue in App. C. However, due to lack of sources they can not be dated in chronological order and in order not to cause any speculations, it is preferred to define them as "the oldest buildings". This approach, which had been used before[72], is necessary in defining common characteristics in the evaluation of buildings.

In the 19c., parallel to the development of a second commercial center around this new center, an intense population increase was seen situated at the west hillside of the citadel. These were the quarters belonging mostly to the non-muslims. Large parts of these quarters belonging to rich groups were burned down in 1917. Today, a portion of what is known as İstiklal or Leblebicioğlu quarter (belonging to the Jewish community) is in existence.

We know that, in this area the buildings are not contemporary with one another and that this area of the city in the 19c. was subjected to population increase. Thus, it can be stated that the traditional housing fabric within the city was not concurrent. For example, the comparative study carried for Boşnak Quarter could not possibly be made for other districts. From the population movements within the fabric of the city it is understood that south and east sections and the circumference of the new commercial center started to be populated towards later periods. It was mentioned before that, the later developed south and east portions of the city (see figures 2.4-2.7) consisted of people having low incomes. On the other hand, the commercial centers and the outer parts of the administrational center which developed in the 19c. housed relatively higher income groups. With that, when looked into the information concerning income distributions in particular it is seen that the poorest and the richest groups lived side by side, within each other. As a matter of fact, even though the current condition of the area, has altered to a great deal, it shows the heterogeneous characteristics expressed by many writers earlier.

In short, the data concerning the Ottoman period Ankara revealed that, throughout the 17. and 19c. the urban fabric staying constant at the horizontal, grew at the vertical, and that the city's south-east edge developed at later periods, giving service to low income families. The transition of the buildings from rural to urban, for a "pre-industrial society", can be said to have taken place starting from the 17c. We see that the population that was 23000-25000 in the 17c., grew to approximately 40000 in the 18c. and dropped to 32000 at the end of the 19c. This means that the city's population in 399 years climbed ordinarily by 33% and this reflected to intensification of the city, its boundaries staying constant.

Although during this period, while the construction activities in the city had been only carried out by local artisans, with Ankara becoming an important commercial center it was opened up to outside influences. The characteristics like, the development of the inner hall plan type, the use of pediment and facade decorations, the employment of mobile furniture parallel with the removal of built in elements like the *sedir* and the installation of *sandalye çakması*, the whitewashing of the houses start to be seen in the Ankara houses of the 18. and 19c., together with some other traditional Turkish houses of the same centuries. The houses from the last period, some of which can be dated display characteristics like, number of stories in accordance with the limitations in the *Ebniye Nizamnameleri*, higher fire walls, an increased use of bricks or stone masonry and having shorter eaves and projections.

Considering the building tradition features like, the use of projections with braces instead of Ankara type projection, the use of bricks as infill material in new buildings and in the restoration of the old ones, in accordance with search for symmetry in the facade order, the use of new window dimensions, emphasizing the "hall" at the facade instead of the "main room", the disappearance of the main room tradition and homogeneous furnishing of all rooms, omitting the shutters, the use of glass in windows, the use of stove instead of fireplace, establishing the structural unity between the ground and the first floors, utilizing the ground floor for living activities, thus in relation with this, decreasing the functional relationship between building and courtyard, including the service space activities inside the house and providing the entrance to the house directly from the street. In opposition to all these changes, the use of "central hall" type of plan arrangement, the most developed are among the changes that were brought to Ankara houses during the 19c. Turkish house plan, used for the *Köşk*'s was not widely used in Ankara. This plan scheme, exemplified by Eldem (1968: 141), in the 19c. vineyard house at Büyük Esad, belonging to Değirmenci Ahmet Ağa, could not be encountered at the urban houses of Ankara.

With these characteristics, the Ankara houses within the discussions of traditional Ottoman houses, defined as the Anatolian synthesis or the Turkish house holds a modest position. Examples that will further explain this evaluation will be presented in reference to monographic works at Chapter III.

Eventhough the economy of the city of Ankara collapsed in the first half of the 19c., this did not effect the urban form much. But still, interventions like the coming of the new railroad and the destruction of the Citadel wall somewhat affected the look of the city, as we know that at this period some new administrational and educational buildings were constructed.

These periods altogether did not cause any extensive changes to the traditional housing fabric of Ankara, until the beginning of the 20c. with the declaration of the Republic. Without doubt, the building tradition continues with changes and the effects of Building Regulations are noticed in the new half timber constructions[73].

The interventions done on the urban fabric before the declaration of the Republic can not be considered as extensive enough to have an effect on the whole. These interventions are more or less actions consisting of building on empty parcels or in the place of demolished houses.

When no date is attributed to house, it becomes difficult to differentiate it from other houses. But the ones that have a date on them, that the Building Regulations had been followed to a certain extent. For example, the house at Erzurum Qu., Zülüflü st., 18, dated to 1921 was constructed at ground and first floors in stone masonry, and the upper floor was in timber framed construction system. On the sides, there are fire walls and the floor heights are raised with respect to other buildings. This building had been built accordingly with the new floor limitations determined by the Building Regulations of 1848. It is possible to identify these buildings from others, just by examining their structural system and material, and in some cases by observing their heights. As a matter fact we had given the examples in section 2.2. while discerning the effects of Building Regulations. İstiklal Qu., Birlik st., 3-5; Citadel, Kalekapısı st., 28; Ulucanlar Qu., İnci st., 14 are the buildings carry these characteristics . They can be accepted as houses built after 1848.

2.4.2. Increase of Demand for Housing in the New Capital

The beginning of the 20c., with the decision to make Ankara a Capital city, a second building movement in Ankara is seen. After the 17c., Ankara had witnessed an homogeneous increase in its urban fabric. But with the above mentioned political decision an obvious acceleration was felt. In this period, depending on the wealth of the owner, two types of building activities are observed.

The first group can be defined as the early Republican period buildings, where the structural system, plan scheme and building elements are changed from the old, the second group, produced by people with low incomes, continues the local tradition for building. These simple buildings, as well as being extensions of already existing buildings could also be constructed on new parcels, obtained as a result of demolishing or dividing the existing parcels.

Throughout this period, the local building tradition still continues, at the same time, new construction systems and materials that can be defined perhaps as incompetent and unskillful, were started to be used in new housing. As we had mentioned in section 2.1. in the light of the documents, it can be noticed that throughout planning history there has always been illegal and unplanned construction activities in Ankara besides the planned ones. This tendency was felt most strongly at the old parts of the urban fabric. At the beginning of the 20c., the population that was approximately 32000, grow to 74000 by 1927 and to 123000 by 1935. The building activities that started with the declaration of the Republic were not sufficient enough to meet the demands.

For this reason, especially at the beginning, there were widespread interventions, practiced on to the urban fabric in order to answer the shelter needs of the newcomers.

At this period, the buildings that were newly constructed or the interventions on the existing buildings varied much according to the economic status of the people involved in these activities. It is possible to read this differentiation from the existing urban tissue. The kinds of interventions done at this period can be divided into three;

i. Alteration of Buildings by Their Division

The division of the houses into smaller units can be accepted as the first kind of intervention done to these buildings. During this period, the use of traditional construction techniques were more economical with respect to employing new techniques. And, the interventions done to existing buildings were realized mostly by following traditional methods and materials.

The interventions done at this period were generally ones of quality and compatible with the buildings in terms of both material and detailing. So much the interventions were coherent that it is difficult even for the trained eye of a professional to tell them apart from the original.

To explain this situation further, an example of a houses situated at Erzurum Qu., Dutlu st., 21-23 can be given[74]. Eventhough the definite construction period of the house is unknown, still we can understand from the registration deeds that it existed before the year 1895. It was learned that this house, at the beginning of the 20c., after going under extensive interventions was divided into three units.

According to the data obtained, the house had an "Outer hall" plan type, with a "main room", consisting of a single storey service space (most probably a stable) at the side of the building. And that was transformed in to house unit where the arrangement of the upper floor changed much and the service spaces in the ground floor were turned into living spaces.

It was examined that these interventions, maintaining the qualities of the traditional building techniques were practiced with little differentiation. Eventhough the exact date of these interventions are not determined, again from the registration deeds, it can be estimated to have taken place around in the 1930's.

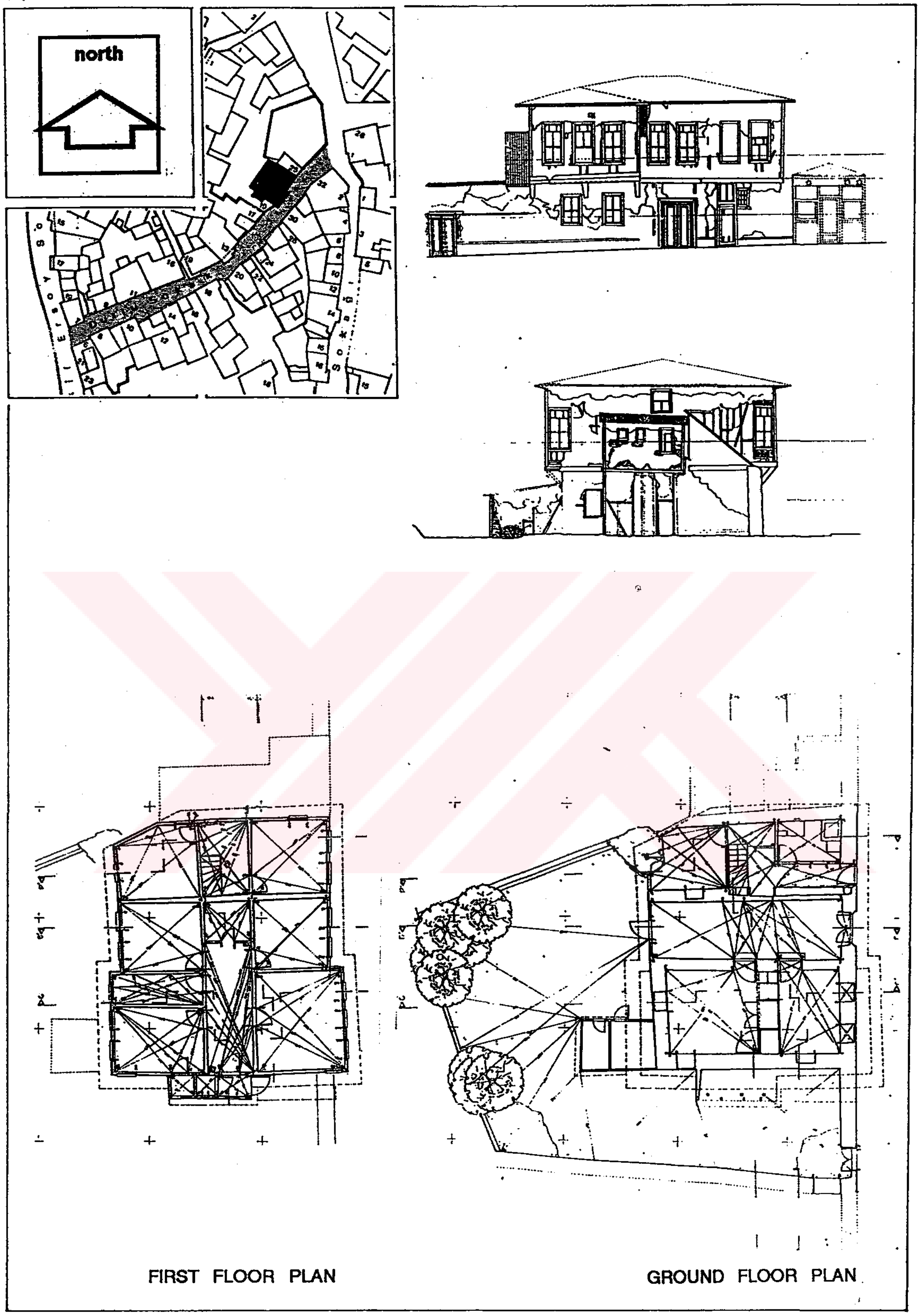


Figure 2.13 Floor Plans of the House at Dutlu st., 21-23.

Another example to this situation is a house at Erzurum Qu., Sarıkadın st., 69 (App. C). Eventhough the exact construction date for this house is also unknown, from the plan scheme and architectural elements it can be dated to 19c. The ground and the mezzanine of the house are made of stone masonry. The house has a "inner hall" plan type, with an entrance directly from the street, has a symmetrically arranged facade, and its hall makes a projection to the street. It is understood that the building had undergone some qualified alterations, to be divided up horizontally to obtain separate dwelling units. Eventhough the exact dates of the interventions are again unknown, still its features leads one to believe that they had been realized at the early Republican period. Numerous more examples can further be presented concerning this case.

The alterations done on the traditional houses are one of the widespread problems the buildings face. The Fourth Chapter of this thesis will be deal in detail with the technical aspects of these interventions. The point wanted to accentuated here is that the interventions realized at the early Republican period, followed the lines of the building tradition and it is difficult to differentiate them from the original traditional buildings. The probable reasons for these interventions (dividing houses for further use) in early Republican period was the prestigious location of the houses within the city. However the interventions done on later periods, did not consider satisfying the demands of the dwellers and more important did not consider to meet the physical requirements of the buildings as a significant criteria. The aim had become to divide the houses into maximum number of units, in order to rent out.

A great number of the publications mentioned before, that deal with the first years of Republican Ankara, give information regarding the division of the houses. Also, monographs that were done on Ankara houses around the year 1940 tell about the interventions that altered the buildings to great extend and changed the original quality of the houses. Gökoğlu (1946: 5-7) examining and giving the list of the oldest houses that were constructed in Ankara between the dates 1706-1823 says:

> *Today, among these houses almost non of them were able to preserve their original condition. Due to the housing crisis, that to be a great extent caused alterations and repairs to take place in these buildings, 'those invaluable works of art were either completely lost or remained in parts only.*

Thus in 1946's, Kömürcüoğlu (1950: 22) draws attention to this problem and touching upon the same subject discerns that the houses were changed into apartment units as the result of the crisis.

ii: Additional Buildings Constructed at the Courtyards of the Houses

The second type of interventions realized at this period is the additional buildings constructed at the courtyards of the houses. Especially at the period before the Jansen Plan went into practice, unauthorized buildings within the city were constructed mostly in the old fabric. It was mentioned before that most of these interventions were of the type where either new buildings were built or masses were added to the old buildings. However in their application, traditional building techniques were used. Eventhough there are no definite indications within the written sources, these assumptions are the outcome of several research projects carried out within the historic pattern in all of which the author of this thesis participated (Akçura, N., et al., 1993 a,b, 1989; Altınsay, B., et al., 1988).

Within the urban pattern, inside the parcels, besides from the existing main building, there are new buildings constructed inside the courtyards not to be used as service units but as housing units. These buildings, eventhough resemble the old due to the use of traditional techniques, they can be set apart from the others by their plan schemes and craftsmanship. With respect to the traditional buildings they are much simpler and eventhough their structural technique and materials are basically the same with the old there can be minute variations in the building techniques[75] and plan schemes[76]. It can be argued for whether these simple buildings can be accepted as traditional or not.. However the following points should regarded:

Firstly, these buildings are built using traditional structural techniques and their production processes follow in the same line. Secondly, they are formed in to cadastral parcels instead of master plans. Eventhough the plan schemes have undergone changes, still the plan elements like, built-in cupboards, etc., continue to be used. What separates these buildings from those with a poor quality which were defined as the 3 rd. group, is the more skilled use of technique and employment of traditional building techniques.

Due to the continuance of the tradition, it serves right to accept these buildings as part of the tradition. Nevertheless, it should kept in mind that they have been produced under special circumstances and that they are rather different than the older ones. The construction of these buildings in a period when the prestigious state of the historic pattern was not yet lost, can be seen as the explanation for the use of quality construction techniques. But as a result of the economical conditions of that era, it was impossible to construct big and magnificent houses. Thus, it can be accepted that these buildings provided temporary solutions to the problem of housing of that period using the opportunities at hand. Eventhough the possibilities were limited, due to the unaltered social level of the users of the area, a certain quality was tried to be obtained. Anyway, the preference the users that could spend higher capitals for housing, formed the new apartment buildings of the period.

iii. New Buildings Within the Old Pattern

Another type of construction activity that had taken place within the old housing pattern is the construction of new buildings. In general, these buildings are located within single parcels, or they can be considered as being the main block in the case of sharing a parcel. According to their construction techniques, they can be grouped into two;

The first group, are the ones built of masonry system where the main material is brick. These buildings carry the characteristics which the architectural historian define as the Early Republican Period (see section 2.1). They can be differentiated from other buildings by their architectural characteristics and construction techniques.

The houses built by the state are the ones more often to be mentioned in the written sources. However, the ones made under private ownership are known and studied less in comparison to the others. During the formation of the first apartments in the burnt down areas in Ankara, while a new urban pattern was developed according to partial master plans, in the cadastral parcels within the traditional urban pattern similar houses began to be constructed. The construction dates of each of the new houses in the old pattern are significant in terms of presenting the intermediary sections in the renewal of the traditional fabric, but, it is outside the scope of this study. However, at least a few examples of such buildings, can be presented: Erzurum Qu., Hamamönü st., 24, Sarıkadın st., 71 and various examples in Hacıbayram quarter.

The second group are the apartment houses built in the traditional construction technique. The widespread construction of this type of buildings can not be expected, due to the economic conditions of the time; the high costs of materials, the encouragement of the use of new materials and the difficulties in obtaining a building permit, shows that traditional building techniques were not preferred. As well, in the evaluations made before, the preferences of the owners and users of the apartment houses made by private enterprises, were mentioned and these draw the same conclusion. Still the single example we have determined in Erzurum Qu., proves that despite all the disadvantages, it was employed. This house at Sarıkadın st., 22 (Akçura, N., et al, 1989: 17), demonstrates a wide programmed building, constructed in the apartment type of layout and giving service to several family units.

2.4.3 The Periphery of the Traditional Pattern Being Surrounded with Squatters

In the rapid urbanization process of Ankara a high increase in population was experienced. It was stated before that during this process the formation of the squatter areas started. The first squatter buildings in Ankara were realized around the old city, at Altındağ, which was not opened to settlement in the Jansen Plan. Thus, the east part of the traditional historic pattern was subjected to squatter buildings.

In the period when Jansen had prepared his plan (1927) the building rights in Avancıklar quarter, was quite limited. However it is understood until the preparation of the plan of 1957, squatter construction activities were extensively carried in this quarter. This is comprehended from the existing maps of the area.

Even the observations done from the exterior in this fabric shows that traditional building materials and to a certain extent techniques were employed. Among these squatters, the qualified examples show similarities with the new buildings constructed within the old fabric. Thus in this sense it is possible to state that there is a parallelism between the "new traditional" and the "first squatter buildings". In these squatters, the same materials "new traditional buildings" were used, due to the reason of the material being inexpensive and practical. After the 1960's it becomes more possible to differentiate the squatter buildings from the traditional ones.

Within the development of the city of Ankara, the old city looses its prestigious place, thus causing the migration of the existing social groups, resulting in the transformation of the users in the historic pattern. The historic pattern becomes a transition area for the newcomers to Ankara until, they can provide better living conditions for themselves.

As the reflectance of this social change, the interventions done in the historic pattern change. The interventions, like those in the first years of the Republic, don't have to be ones of quality. Besides, the new users not having demands for better housing standards, the owners also do not have any requirements in that direction because it is accepted have completed their economic life with respect to modern buildings. They are expensive to maintain and repair, and those expenses are not met with rent money.

In the same line with these changes in the social structure, there were alterations in the building materials that are used. The new materials were more widespread. Therefore, this effected the form and quality of the interventions realized. The interventions done on the traditional housing pattern, at this time, becomes very similar with the technique of construction and materials used in squatter buildings.

The construction of new buildings in the traditional pattern is still practiced despite the decisions taken towards conservation. The houses are still divided within, mass additions and/or construction of new buildings in the courtyards still continue. The interventions made after the change in the social structure of the historic pattern, can be determined as interventions more easily. The material used in these interventions are mostly collected and reused pieces like wood, brick and roof tile.

NOTES

(1) Here we prefer to use the word "change" to "development". Development that involves positive aspects may be judgmental, therefore we will be looking at *how* the change *happens* rather than its being positive or negative.

(2) Researchers of the Anatolian-Ottoman house have used different methods in seeking the origins of this type of house. We can find the first example of these approaches that are basically tried to relate to the Ottoman-Turkish-Islamic concepts in S.H. Eldem. This basic approach establishes the basis of the Turkish house on the plan scheme, where main living floor generates around the sofa. Although this approach is confined to a limited geographical region concerning its examples it does not cover specifically Anatolia and the geographical borders of the Ottoman lands. A second group of researcher who takes the room as the basic unit from which the house generates state the relation of this space with the nomadic tradition of the tent. These explanations are discussed in the next section 2.3 and 2.4..

(3) In this study, the unpublished doctoral thesis was used, however the thesis was published as a book in January 1995, see the references cited: Ergenç, Ö., 1995.

(4) An unpublished dissertation on 15c. Ankara is written by Muzaffer Arıkan, referred by Faroqhi, S., 1993: 9.

(5) The town population is defined to be 12000-16000 while the number of neighborhoods have increased to 81 in the 16c. Therefore we can assume that about 30 neighborhoods would correspond to a population of 5000-6000 in the 15c. (Aktüre, 1981:259) Here the author has followed two methods for population estimations. First she has multiplied every tax paying married male by 5 which is the average number of family members she has assumed, the unmarried male population is not included in the population determined by this method. Therefore the author proposes population of 10405 as the minimum population as per her method. By the second method she has multiplied every "*nefer*" namely tax paying mature male regardless of their marital status by 5 and estimated another population of 14420 When the non-tax giving families (355 dwelling = 1775 persons) are added to both sums the author defines the estimated population in 1522 as 12000-16000.

(6) The classification made by İ. Tekeli was used here.

(7) Here we do not go into further details of the Ottoman land system and changes in the land ownership as it is beyond the boundaries of our subject, however several sources related to the subject can be recommended, some of them are given in the body text.

(8) See for the population estimates: Barkan, Ö.L., 1940:20-29, 214-247).

(9) *Avarız* household, *AH* (*Avarız Hanesi*), does not represent a dwelling unit (*menzil, ev, hane*) but it represents a tax unit defined according to a variable ratio taken from the taxpayers. It characterizes a fictive group formed by single or married male tax payers whose number may vary. The number of tax payers included in a *AH* unit, is defined according to the local conditions, economic situation of the tax payers and it is changeable in time. The number of *AH* may change between the quarters of a settlement even in the same period (Barkan, Ö.L., 1961).

(10) Ö.L. Barkan accepts one 1 *AH* equals to 5 dwelling units. L. Erder and S. Faroqhi uses the value also (1977:7).

(11) Ö. Ergenç, estimates the population in 1607 according to the number of the *AH*. He also accepts 1 *AH*=5 dwelling units. Undoubtedly, according to the accepted value of the *AH*, the population estimates may change.

(12) Aktüre (1981:112,259, footnote: 411) gives data about the number of male tax payers. For

example in Hacı Musa quarter there were 72 "*nefer*"s and 46 dwelling units recorded in which 46 of them were married, 26 of them were single. There is no any record on the number of persons immune from tax. Akçura uses these values for population estimates accepting the 5 dwelling units equals to one *Avarız* household.

(13) Faroqhi, S., 1984: 233-234:

> *The accuracy of the sicil descriptions thus vindicated, it seems reasonable to accept that dwellings built on several levels become popular in 17. century in Ankara. In addition, the number of inhabitable rooms contained in one hose equally showed a tendency to rise. While in the years shortly before and after 1600, %39.9 of all documents concerned houses of three or more inhabitable rooms, by the 1690's this percentage had increased to %48.6. Thus it appears very probable that the central section of late 17. century Ankara was more densely inhabited in 1690 than it had been ninety years earlier. This in turn would seem to indicate that Ankara did not decline as far as the number of inhabitants was concerned, and may in fact have begun to grow again once the most difficult years of the Celali Rebellions had passed.*

(14) Humann, the traveler visiting the city in 1882 refers to the walls as in a state of disrepair and states that they are demolished to create land and to sell the salvage material, quoted by Eyice.

(15) Ergenç, Ö.; 1984:50:

> *Ankara in the XVI century spread within the walls mentioned above on a piece of land sloping down from the castle to the present day train station. The part of the town outside the castle also appears to be divided into two sections. The vicinity of the castle was named as Yukarıyüz, and the part below today's Anafartalar Street stretching from Hacı Bayram Mosque to the Karacabey Complex as Aşağıyüz. These terms have continued to exist up to the Republican Era. The center of the Yukarıyüz is the Atpazarı (horse market). Surrounding Atpazarı were the Bedesten, next to it the Mahmutpaşa Han, the Uzunçarşı and trade markets and hans opening into it. Next to these buildings of trade and art, the most prominent mosques of the town were located: like the Ahi Şerafettin and Hacı Arab. The center of the Aşağıyüz was the Taht'el-kala (foot of the Citadel). Here the Hasan Paşa Han and the Haseki Mosque are the two important features. Uzunçarşı connects the commercial sections of Aşağıyüz and Yukarıyüz.*

(16) Acar, E., 1975:10, pr:6:

> *Still one should think that, some basic features of the Greco-Roman town structure had occasionally survived in many Turkish towns, these disappeared completely only after the formation of the Muslim quarters.*

pg:10, last paragraph:

> *Within this context most important one of these elements providing the continuity of the towns through the antique era, Byzantine, Seljukid, Ottoman periods is the super positioning of the old forums and the nuclei of the new settlements., ...As in the case of HacıBayram Mosque replacing the Augustus Temple.*

pg:11, pr:3,

> *....This road which forms the north-south axis of the part of the town*

stretching on the plain (refers to the Uzunyol in Von Vincke's map), crossing in a very orderly manner with the road reaching to Kaledibi from the Istanbul Gate brings to mind the correlation among the Ankara of the Antique Era and the Mediaeval Ankara.

(17) Acar, E.,1975:12, pr: 1:

When captured by the Turks, Byzantine Ankara did not go much beyond the line between the north-west end of the castle and the Çankırı Gate on the North and the line connecting the Atpazarİ and Namazgah on the South. The minorities' quarters being within these boundaries shows that they were not pushed out of the area they had lived in the Byzantine Period.", see also figure: 4 in the same source.

(18) On the contrary, it is understood that the Ankara dye shop was some kind of a cooperative where all the craftsmen worked together in one building, but there is no information related to its physical state (Faroqhi, 1993: 182).

(19) For a review of the European travel literature concerning Ankara, see S. Eyice (1972) and K. Alemdar (1984).

(20) The photograph of the carpet in the Camlı Köşk was taken by the author during the survey works carried out in the Camlı Köşk by the METU Faculty of Architecture of which the author is a staff member and used here with the courtesy of the Presidency of the Turkish Republic. The author would like to express her gratitude to the authorities.

(21) Eyice (1972:93) refers to this observation of K. Kannenberg who had visited the town in 1897.

(22) Göğünç's (1970) article sheds light on this matter. In Göğünç's data related to the household-population quotient for the 19c. this ratio changes between 1.88 and 9.6. However the author uses the term *avarız* household to the same effect as actual household (family). Ergenç, in his study (1973:66-77) accepts as 1 *AH* equals to 5 actual household (dwelling unit), and 1 actual household equals to 5 people. According to Özdemir's information (Özdemir,R., 1986: 109) we see that the number of actual households paying 1 *AH* had changed between 9 and 61.5 (like 9; 10; 13; 15; 16; 53; 61.5) in the course of 48 years (1785-1833). Therefore as unless it is possible to set an average figure for one year, it is quite difficult to make population estimations based on the *AH* numbers.

(23) To establish the *AH* value in 1831, the amount of *AH* paid by each quarter in 1785 should be decreased by 46%. We have reflected this situation on our study as follows; First we found the number of persons paying one *AH* in Hacı Musa quarter, with 376 persons population in 1830 and paying 4 *AH* in 1785 as 376/4=94 persons. By making the same calculation for every quarter; we divided the number of persons paying 1*AH* into following groups as a: 0-39, b:40-59, c:60-99, d:100-119, e:120 and over. We defined the distribution of the quarters in this grouping. For example the Hacı Musa quarter was evaluated within the group c with 94. When we did this calculation for all quarters, 13% of them were in the highest tax paying group (Group: a; 1*AH* is paid by maximum 39 persons, the richest group), 23% paid fairly high taxes (Group b; 1 *AH* is paid by maximum 40 to 59 persons, the rich group), 45% paid medium level taxes (Group c; 1*AH* is paid by maximum 60 to 99 persons, the middle group), 12% paid low taxes (Group d; 1 *AH* is paid by maximum 100 to 119 persons, the poor group), 7% paid minimal taxes (Group e; 1*AH* is paid by maximum 120 to 380 persons, the poorest group). Parallel to the 46% decrease in the *AH* values per quarters this ratio of *AH*/person will be doubled. In this case the ranges defined by Groups a, b etc. will be doubled as well. Here we later reflected the decrease in the *AH* on the groups. Therefore we accepted the new ranges as a: 0-79, b:80-119, c:120-199, d:200-139, e:240 and over. Naturally no difference in the groups percentage occurred.

(24) As stated before between the years 1522 and 1830 the boundaries of the town remained

unchanged, the increase in the number of quarters had happened by the divisions of the existing quarters. Besides the sampling in this present study was made specifically for the quarters with number of *AH's* and the populations were known for both periods. For the related data see tables in the body text.

(25) The economic recession experienced in 19. century Ankara was mentioned previously by several authors, following this trend here while defining the groups, thinking that the biggest group should reflect this recession we defined the Group C to cover a section below medium -for the related research see Aktüre, 1981. In fact with reference to Planhol, Faroqhi expresses that the mohair manufacture in Ankara had continued until the year 1820, however this was not enough to bring the town's economical activity up to the prosperous state it had reached in the 17c.

(26) A *similar relation in terms of the distribution of the urban population is seen in today's cities.* Vertically (i.e. the janitor of the apartment blocks) or horizontally (i.e. the population of the squatter population living in the vicinity of GOP and Çankaya being the service group for the upper income groups living in these quarters) the existence of a lower income group servicing the upper income groups, although in a different scale, still continues to exist as a pattern.

(27) Özdemir (1986), in the table on page 105, gives data showing that against the 132 houses in the Citadel that were obliged to pay 2.5 *AH* (1*AH*=53 actual household) in 1836, there are 46 houses obliged to pay 4.5 *AH* (1*AH*=10 actual household) at the same date.

(28) Acar (1975:10-11) considers the north-south and east-west axes of the town as part of the traces left from the Byzantine period. Ergenç's (1980a-b) definition of the town formation in Ottoman period also shows the existence of these axes. Therefore it should not be accidental that the town expands on the north-west axis in the first half of the 19c.

(29) These spaces must be the *seyregah* or the open sofa, this subject is discussed in detail in the section about the architectural characteristics of the Ankara houses.

(30) Yavuz also mentions the 1838 Treaty and interprets its impact on Ankara. For a more substantial and detailed study on the transformation of the social structure as mentioned above see: Nalbantoğlu, Ü., 1984: 189-301, see also: Akçura, T., 1971: 21.

(31) Mohair weaving was directed only to the domestic market since 1820's (Faroqhi, 1994) After 1838 as per the trade treaty tiftik was begun to be exported as raw material. Although some measures were tried to be taken towards the end of the century in the fields of agriculture and animal husbandry since these were not useful technologically they were inefficient (see also: Yavuz, E. 1984: 197-198).

(32) It is reported in the Ankara Vilayet Salname of the year 1900 that there was about 10000 vineyard houses around Ankara at the beginning of the 20. c.: mentioned by T. Şenyapılı, (1985: 11).

(33) The population estimations by different authors for this period are as follows; Yavuz, F., 20000 (1952: 8); Akçura, T., 20-25000 (1971: 21); Aktüre, S., 20-30000 (1981: 123), Vilayet Salnamesi, 33768 (1902); data of DİE , 74553 (1927).

(34) After the determination of Ankara as the Capital of the Republic by the Council of Representatives in 27.12.1919, Ankara started to serve as the Capital (Akçura, T., 1971: 24-25).

(35) Some of the buildings used by the Republic during the War of Independence are: Vilayet Konağı (City Hall), Sanayi Okulu (Built in the period of Governor Ferit Pasha, Industrial School), Taş Mektep built in 1890 (in place of the today's İhtisas Hospital), Duyun-u Umumiye Binası (Ottoman Public Debt Administration), Cebeci Abidin Paşa Köşk (Köşk of Abidin Pasha in Cebeci), School of Agriculture built in 1908 (used as headquarters by M.Kemal), School for Teachers (built in 1907 across the Taşhan), 1st. Parliament Building (started to be built in 1912 by the Society of

Union and Progress) and Taşhan (see: Şenyapılı, T., 1985: 15).

(36) The first step was taken by the establishment of "Cemiyet-i Umumiye-i Belediye" in Feb., 16.1924, by the Act No: 417. Undertaking of an active role of this newly established mechanism by the current Building Regulation (1882 Ebniye Nizamnamesi) was practically not possible. So, to overcome the limitations of this regulation the Act No: 583 (Ankara'da İnşaası Mukarrer Yeni Mahalle İçin Merkezi Yerlerin Bataklık ve Mergazi Arazisinin Şehremaneti'nce İstimlaki Hakkında) was put in practice in March, 24, 1924. For more detail and discussions about this act see the following sources: Yavuz, F.,1952:15-24; Tankut, G., 1993:49-54. For the organization of building activities and legal framework see the following sections of this chapter.

(37) Tankut discusses this plan mentioning that it was done by Lörcher, in 1924, under the light of the some new data, even though it was mentioned before in most of the sources as the plan of the Heussler (1927) referring to F. Yavuz (1952: 25). Just as, if the Heussler plan was prepared in 1927, the development of extensive constructions in the area would not be possible. However, the evaluation of the already built Yenişehir Quarter, which is about 150 hectares, was one of the criteria of the competition of Ankara master plan. In the competition plan of Jansen, the existing developments in the city are identified. In this plan, it appears that besides the old city, the development in Yenişehir looks almost complete. for further detail see: Tankut, G., 1993: 54-59, 71, Plan:2.4 and 2.5. Besides the application of Jansen plan that was prepared in 1932 supports Tankut's pretension. In the map prepared by Şenyapılı showing the pre-existing situation before the application, it appears that especially the eastern section of the pattern in Yenişehir was completed in 1932. This opinion was mentioned before in a seminar at METU, in 1979, by Mitat Yenen. Yenen expresses in this seminar that the development in Sıhhıye was probably to be started by the Ministry of Health between the 1925-27, before the Heussler plan. For this note see: Altındağ Belediyesi: 1987:132.

(38) In the memorials written on this period, besides Taşhan, the Meşrutiyet hotel in front of it and Adalet Hotel across the Zincirli Mosque were also mentioned (Velidedeoğlu,V., 1983; Erdoğdu, Ş., 1965).

(39) In the newspaper advertisements of the period there are notices on the vineyard houses for rent (Bilgen, H., 1985: 17-21).

(40) The last example of this houses was destroyed in 1973, for more information see: Yavuz, Y.,1984: 236 and Aslanoğlu, İ., 1980: 22-23.

(41) The first National Architecture movement that started in 1908, after the II. Constitution continued till 1930's. For more information about this movement see the following sources: Sözen, M., 1984; Aslanoğlu, İ,1980; 1984: 281-288. For the development of the first apartment blocks and the developments in Anafartalar streets See:Yavuz, Y., 1984: 235-256; Nalbantoğlu, G.,1984: 257-280; Nalbantoğlu, G., 1981; Nalcıoğlu, Y., 198?. master tezi

(42) Tankut defines the period between the competition and till to the preparation of the application plan as the pre-application period (1929-1932) for which we have adopted the same definition. Tankut accepts the period between the 1932-39, as the application period. For details see: Tankut, T., 1993, section 3.

(43) These data cover only the buildings which had building permissions. Their distribution according to the years is as follows: in 1926,240; in 1927, 367; in 1928, 246; in 1929, 87; in 1930, 203; in 1931, 275; in 1932, 151; in 1933, 155; in 1934, 150; source: Tankut, G.,1993: 108.

(44) After the declaration of Ankara as the Capital and when the development started without a master plan, the land and building prices in the old city were highly increased. After the opening of the boulevard, land speculation moved to the new city. F.R. Atay notes for this period "*we were all interested with land speculation. Everybody was greedy to obtain land in order to sell later*". H. V. Velidedeoğlu points out the same (Atay, F.R., 1980; Velidedeoğlu, H. V., 1983). Ankara Şehramaneti (municipality) had no force to buy land by paying the costs of expropriation. Similarly,

the Act No:583, put in practice for this purpose, was criticized by the land owners in its time. Because there were not enough measures taken to support this act, the speculation in the new city could not controlled. For more detail see: Altındağ Belediyesi, 1987: 66-68.

(45) For example, Ankara Şehremaneti which was established in 1924, by the act numbered 417 shows some similarities with its organization framework to İstanbul Şehremaneti, but it had some differences which was under the authority of the state. The staff of the Ankara Şehramaneti was formed of a Şehremini (mayor) and the 24 members appointed by the Ministry of Interior. The rule required to be a landlord or to be a taxpayer to be eligible as a member of the municipality council was omitted and this gave the possibility to the participation of the republicans in the Municipality. For a detailed evaluation see: Tekeli, İ., Ortaylı, İ., 1978; Tekeli, İ., 1980: 54. Another example of the case is the Act No: 583, dated 1925, see the note: 182.

(46) The current social and political media of the time was undoubtedly very important in this period. For an evaluation see: Tankut, G., 1993: 111-116.

(47) For a detailed evaluation on different approaches of Jansen in the competition and application plan see Altındağ Belediyesi, 1987: 72-75.

(48) These data taken from Tankut's study are based on the documents of the Development Directorate of Ankara on unlawful buildings. The writer indicates that these data only include the documented unlawful buildings, in fact, the ratio of illegal buildings must be higher. For this reason, these data should be evaluated as the minimum values in which its aim is to define type of interventions and illegal developments Tankut, G., 1993: 173-179, and note 183 on page 199.

(49) For the preparation of Jansen for the competition and evaluation of his project see: Tankut, G., 1993: 60-89; Altındağ Bel., 1987: 70-73.

(50) For an evaluation on architectural characteristics of these buildings see: Nalbantoğlu, G., 1984: 257-280 and 1981.

(51) Beside the old city, Yenişehir, Keçiören, Etlik and Cebeci are the quarters where there is extensive construction demands. 65-78% of the demands from these quarters are about constructions. Bahçelievler and Maltepe are the quarters where the building demands vary between 36-44%. The quarters where the construction demand is lower (19-29%) are Dikmen, Ayrancı, Akköprü and Kavaklıdere quarters (Şenyapılı, T., 1985: 105).

(52) İbrahim Öğretmen also mentions the monopoly of the construction process (Öğretmen, İ., 1957, quoted by Şenyapılı, T.,1985:134).

(53) In this study the squatter buildings are only searched in relation to the historic fabric in Ankara, their material and construction system. The other features of the squatter buildings are not mentioned in this study.

(54) The decision on the designation of Ankara Citadel and protocol area of GMEEAYK, Dated: 14.10.1972, No: 6691.

(55) The decisions of High Council of Real Estate of Cultural and Natural Objects (*Taşınmaz Kültür ve Tabiat Varlıkları Yüksek Kurulu)* Dated 10.7.1986, No: 2458, and Dated 15.5.1987, No: 3194.

(56) The population of the "Hassa Architects Organization" varied according to the circumstances of the period. Turan (1963: 4-5, 46) gives some data about the number of the architects in HMO for different periods. The number of the architects in different years was given below accordingly: in 1526, 18; in 1604-1605, 39; in 1626-27, 42; in 1633-34, 43; in 1651-52'de 42; in 1664-65, 34; in 1679, 36; in 1688-89, 36.

(57) The firman on: The building of the houses in Galata in masonry system and without eaves that burned in the fire (Refik, A., 1988a: 59); The firman on: The building of the houses and shops in İstanbul in stone masonry (Refik, A., 1988c: 21). Besides these firmans, A. Arel (1982: 71, footnote: 79) mentions another older firmen on: not to build "çardak" in the houses and building only in mud-brick masonry with

reference to A. Refik. But this firman is not included in the 1988 edition of the same source.

(58) For the organization of building activity in İstanbul see the historic documents in: Refik, A., 1977: 91-100, 105-152.

(59) For the effects of these rules on the urban space and for visual comparisons see Denel S., 1982.

(60) 1 Arşın=757,738 mm., (Arşın= Zira or Zira-i Mimari); 1 Parmak =31,572 416 666 mm.,; 1 Hat = 2,631034 722 222 mm., ; 1 Nokta= 0, 219 252 893 518 518 mm. (parmak was called boğum up to the year H.994. According to this 1 Arşın was 60 parmak before, and became 24 parmak after H. 994). 1 Arşın = 24 Parmak,; 1 Parmak =12 Hat ;1 Hat = 12 Nokta, (Arseven, C.E., Sanat Ansiklopedisi, V:3:1562).

(61) *"İlm-i hendeseden haberdar ve emr-i bina ve mesahayı..."*, Orhonlu, C., 1981.

(62) As a continuation of Mühendishane-i Berr-i Hümayun, Sanayi-i Nefise Mektebi (School of Fine Arts), appears as the first institution on architecture.

(63) Ortaylı shows some settlements in Tuna Region, the big harbour cities in the east Mediterranean, the regional centers as Baghdad, Demascus, Beirut and some big centers in Anatolia as the examples of the first municipalities.

(64) In the building regulations, put in to practice during the Reformation Period, the items caused the discrimination of Muslim, non-muslim and "reaya" groups were removed and a classification was based on the distinction of construction techniques as timber framed or masonry. In the 1848 Building Regulation the building height was limited to 22 zira (16.5m) in timber framed buildings, and 30 zira (23m) in masonry buildings. In the former Firman of the Sultan that was in practice before the 1848 Building regulation, dated to 1818 the building height limit given to Muslims was 14 zira (10.5m), to Non-muslims 12 zira (9m), and to "reaya" class was 10 zira (7.5m). For further details see: Denel, S., 1982: 76-77.

(65) Sengtıraş: Taşçı, taş yonucu; Benna: Duvarcı, yapıcı; Neccar: dülger, marangoz; Nakkaş; Lağımger; Haddad: demirci; Camger: camcı; Sübger: kurşuncu; Barkan, Ö.L., 1972: XVI.

(66) For the firman of the Sultan about not to confer the construction licence to those who were not skilled enough, see: Refik, A., 1988:33, no: 49; and Ortaylı, İ.,1976: 57.

(67) Dirhem was the weight unit and the name of the silver coin in Ottoman Period. It was the 1/400 of the "Kıyye" and equals to 3.2gr. Vakiyye is the weight unit equals to 400 Dirhem, that is about 780 gr. The silver coins were also called dirhem. Dirhem-i Halis: Pure silver coin. Dirhem-i mağşuş: Silver coin mixture with some other metals. Dirhem-i Örfi: Silver coin in 16 krat (Pakalın, M.Z., Osmanlı Tarih Deyimleri Sözlüğü, v:3, İstanbul, 1971).

(68) Eldem's research, being the product of a time when definitions of national architecture were tried to be developed, stressed much of the "Turkish" ethnic side. The examples he took were from the periods between the second half of the 15th century to 19th century. And the greater part of these examples consisted of (saray, köşk, konutlar) palaces, villas and houses which had much monumental qualities. Therefore, Eldem's work, instead of being considered as a typology for traditional Anatolian houses, should be evaluated as the development of Ottoman housing of the last 4 centuries. It has no claims to define the evaluation of the house in Anatolia. Furthermore, imputes like the material and the structural systems of the examined houses were left outside the scope of the research.

(69) Kuban's research being different from Eldem's, goes back into the history and to the first settlements in Anatolia. For the argument of the Turkish house, he especially takes the 900 year of the Turkish-Islamic dominance in Anatolia.

(70) When we look at the work of Ergenç, where the compares the 16.c. Konya and Ankara, we see that the population, physical structure and trade practices of the two cities show similarities. In the year 1993, we were able to obtain detailed information related to Konya houses from the studies we have carried around the Konya Mevlana complex. The topological studies conducted on these houses, showed that they reflect a parallelism with Kuban's proposed model. The trade dependent to mohair production in Ankara and the trade dependent on grain production in Konya have been a reason for the importance of

these cities in all periods. While Ankara's population increase after becoming a Capital city has accelerated its rate of change, Konya's expansion after the formation of the Republic has been slow. In Konya, at regions where traditional housing densities are low, the areas are faced with new construction activities due to the development plans. But, on the other hand, the places which have not lost their original properties seem to be protected. In Konya, within the traditional pattern, a great deal of variety of houses are followed. For further information see; ODTÜ, Mim. Fak., 1993.

(71) According to the studies made by the author, the ground floor constructed in stone masonry and the mezzanine are older. The mezzanine is directed by Ankara type projections to an open area which houses a "yatır" at its north side and is still a public property. Later on with the addition of a second storey this mentioned floor took on mezzanine floor characteristics. Thus, eventhough the upper floor dates to the 17.c., the other floors date back to earlier periods, perhaps to the period when the quarter was newly forming.

(72) The lack of inscription panels on the buildings, and the fact that no land registers were prepared before the date 1930 makes it difficult to attribute exact dates for the construction period of the houses. For each study, it is not always possible to examine the existing information on the land registers in the basis of one to one comparison with each building. It is inevitable to classify the houses based on their architectural characteristics and by comparison to other houses which can be dated. The same method is accepted, with that used by METU, Faculty of Architecture Department of Restoration's study of the Citadel, which is a relative approach like "older" or "newer" (Yavuz, A., 1984: 155-194).

(73) for these regulation see Akçura, N., 1987 or Denel, S., 1982.

(74) This house was studied by METU, Graduate Program in Restoration handled in the scope of Arch. 405 Design Studio 22 at the year 1994; the supervisors of the project were: G. Asatekin and F. Gökçe and the students were: N. Baturayoğlu, İ. Baykal, E. Bilgili, P. Gedikli, E. İzgi, E. Kurul (METU, Fac. of Arch., Restoration Archive).

(75) Non existence of service walls or application of timber frame construction right over the ground floor level can be noticed.

(76) A circulation axis and rooms attached on this axis, and predesigned floors that present the possibility to be divided in the horizontal. This plan scheme also can be partially viewed in other Republican period buildings.

CHAPTER III

GENERAL CHARACTERISTICS OF HALF TIMBER HOUSES IN ANKARA

Definition of the architectural, structural, material characteristics and spatial uses in traditional Ankara houses forms this chapter according to the classification developed in the second chapter. Here the aim is not to create some basis for the evaluation of architectural values but, to define some basis for interventions in the conservation of the houses. In this limitation, the emphasis does not focus on conservation problems in the larger context, which were observed in the historic site in Ankara, but, the functional alterations and their effects on fabric and the building will be the subject of the fourth chapter.

The houses which form the traditional urban fabric, preserve their original features that represent different architectural characteristics, affected from the developments in technology of construction. The historic references of this variety and their effects on urban fabric are already discussed in chapter II and evaluated in section 2.4. of the same chapter. In this evaluation, the architectural characteristics of the earlier and later examples are also mentioned pointing out that the urban fabric in Ankara consists of mostly 19c. and some 17c. houses. In this study, the period which lasted for 300 years and created the historic urban pattern was defined as the first period in section 2.1.2.

During the Republican period, besides the efforts to create a new national identity and to use new construction technologies, there was also a continuous action to produce houses with limited economic sources to cover the increasing demand of housing. The new buildings constructed in traditional methods are the products of the second period which affected the urban pattern in Ankara and these were discussed before in section 2.4.

Lastly, a third period was defined, for squatter housing developed in the near surrounding of the urban fabric. These squatters are the buildings constructed poorly with traditional methods at the beginning; but then, with the use of new materials thus they easily differentiate from the traditional houses.

The limited sources, defining the characteristics of different periods in the traditional urban pattern particularly in Ankara and generally in Anatolia force us to make a distinction based on the physical characteristics of buildings. The periods identified above are derived from the historic references in Ankara, that give some clues for such a distinction by the definition of growth in the city and development in construction technology. Certainly, the definition of periods is not sufficient itself for the identification of periodical characteristics of the buildings alone. However, these periodical characteristics might help the dating and identification of the interventions and alterations done in a building or in the historic fabric.

The historic urban fabric in Ankara has been subjected to extensive alterations and pressure more than the other Anatolian cities because of its specific historic background. As a result of this, "alteration" becomes an important item in the identification of Ankara houses because it reflects different periodical characteristics.

The architectural characteristics defined in this section are mostly based on the surveys on buildings but their classification is developed, in reference to the periods limited in this study. In this context, the studies (Akçura, N., et al, 1989; Akçura, N., 1993a-b, Şahin, N., et al, 1988) completed with different contents on the traditional urban fabric of Ankara where the author has also taken part in different positions were used as references[1]. One of the studies between them that concentrates on Ulucanlar Quarter was used as a basic source[2]. The others were used to make comparisons with the Ulucanlar district and to represent some specific cases in Ankara (Altındağ Municipality, 1987). In addition, monographs on Ankara houses are chronologically reviewed especially if there is reference to any still existing example in the city (Eldem, S. H., 1968; Akok, M., Gökoğlu, A., 1946; Kömürcüoğlu, E., 1950; Bahçeci, M., 1989). Besides, some buildings that might reflect the specific problems of rehabilitation and conservation were measured and documented by the author and also used as the data of this chapter[3].

The buildings forming the traditional organic urban texture of Ankara were subjected to comprehensive alterations since 1927 and especially in the 1940's the result of which they have lost their original characteristics extensively. These alterations create difficulties in defining their original spatial organization today for those people who are interested in their conservation. In this part of the study the traditional houses of Ankara are studied in a hierarchical order extending from building-lot relations to architectural elements. Parallel to this order, by outlining periodical features, the buildings are defined as "old, oldest" and/or "new, late" to create some basis for their historic identification that might give some clues for their conservation.

3.1. Landuse in Historic Urban Fabric:

After 1920's, traditional urban fabric in Ankara has been subjected to large scale alterations to produce new dwelling units besides the rise in new commercial activities. During the urbanization process, especially in the 1940's while Ulus was becoming the only commercial center of the city, the houses located at the edges of the traditional quarters were subjected to extensive functional changes and started to be used as office, shop, workshop and storage spaces under the pressure of the new developing commercial activities.

When the land-use pattern in the traditional urban fabric is searched what appears today is that residential functions are still continuing in the historic quarters such as Kaleiçi, Ulucanlar, Erzurum, Avancıklar, İstiklal quarters, the north part of the Yeğenbey, the north and east parts of Hacıbayram quarters; although, the commercial activities intensified through the big axes surrounding these areas. In the quarters where the interference of commercial activities was slow because of topographic conditions, the residential functions still continue (Figure 3.1).

The existence of the Hacıbayram mosque in Hacıbayram Quarter, that is still one of the most popular Friday mosques in the city, caused the development of new commercial religious functions in its near surroundings. In the southern part of the area, the shops and workshops of chandelier manufacturers were spread around the houses where the residential functions became limited. Even though in the northern part of the quarter residential functions survive, the historic urban fabric there is getting partly empty for the last few years. The fire in 1993 increased this formation. The topographic threshold created by Bent Deresi street stops the penetration of the commercial activities in the north and east parts of the quarter.

In Kaleiçi and Dış Hisar, the residential functions continue densely besides some changes, which occurred since 1989 for touristic purposes. In the long run, developing new touristic activities will change the outlook of the Citadel district.

Kızılelma district that is surrounded by Saraçlar, Çıkrıkçılar streets and Anafartalar street almost completely lost its residential uses by the pressure of the commercial activities. The buildings existing at the edges of this neighborhood are also subjected to intensive alterations and renewals. Besides, the ones located in the inner part of the quarter are usually in bad structural condition and left uninhabited. The big fire centered in Saraçlar street destroyed many traditional shops as well as some houses in 1991 and gave very big damage to the area (Asatekin, G., 1993).

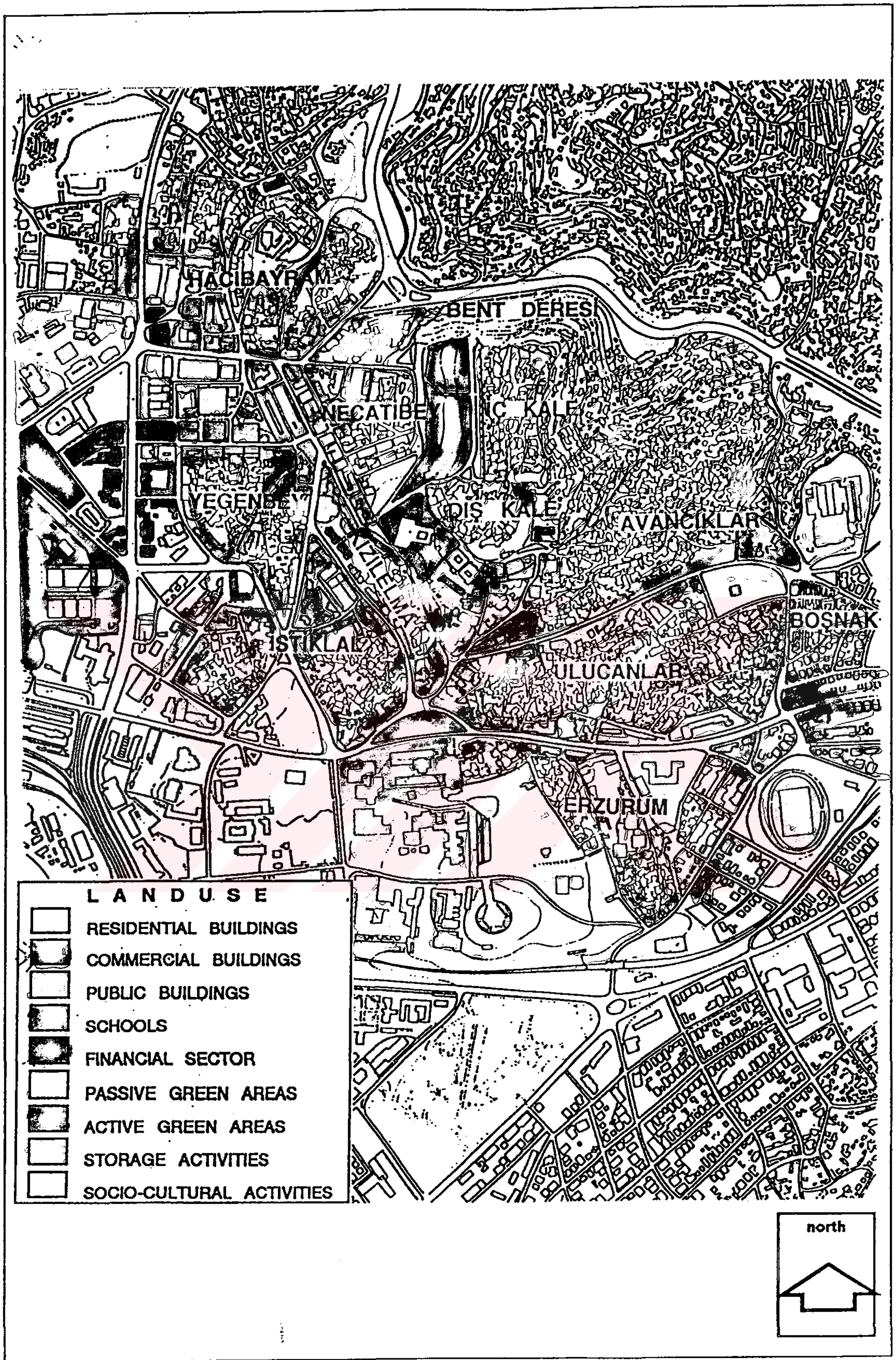


Figure 3.1 Landuse in Ankara Historic Center (reproduced and adapted to actual situation, source: Akçura, N., 1989: 8; Alltındağ Municipality, 1987: 23).

İstiklal quarter is surrounded by the commercial axis such as Hasırcılar, Anafartalar and Talatpaşa. The area separated by the Hasırcılar street due to topography, in the south-west direction and the highrised buildings on the surrounding axis isolate it from the environment. The historic fabric located on both sides of the Hasırcılar street was damaged and the southern section of the area was destroyed during the construction of the road in late the 1970's. The inner part of the İstiklal quarter still keeps its residential function.

Commerce and production are activities located around Suluhan and in Yeğenbey quarter. As a result of these activities the houses lost their residential uses in the area. In the southern part of Suluhan, where are tinsmiths located, there is a special production and trade sector which has settled in the years. Through the Çerkes street, trading spreads and penetrates to the inner parts of the area for storage purposes. Except these zones the residential uses continue in the area.

Even though the Avancıklar quarter is a part of the Ulucanlar district, the buildings in the area differ from the traditional texture especially in the northern part, at the edges of the city walls. As it was mentioned before (in chapter II) the zone on the south of this quarter was inhabited during the second half of the 18. c., in the Ottoman period, but the northern part developed after the 1950's as a result of the urbanization process. The northern part of the Avancıklar is one of the first slum area developed in the city. Because of this formation the traditional buildings located at the southern part of the area and around Koyunpazarı street have better architectural qualities. The touristic and traditional commercial activities are located in buildings near to Koyunpazarı street. The topographic threshold parallel to the Ulucanlar street limits the penetration of commercial activities to Avancıklar quarter in the south. Residential functions continue densely as in the past in this part of the historic urban fabric. On the Avancıklar quarter, no earlier research and/or publication was recorded

Ulucanlar and Erzurum are the two quarters where the residential functions have largely remained and the characteristics of the historic urban fabric are well preserved. There is an edge problem derived by the surrounding main commercial and traffic axes in both quarters.

Owing to the distribution of the functions concerned; it seems that the residential function is still continuing in different percentages in the different sections of the traditional urban fabric in Ankara. The land-use pattern shows that different types of commercial and production activities spread in the historic pattern according to the location of the quarters. Apart from the commercial zones and axis there is also limited commercial activities, serving in local scale, in each quarter (shop, grocery, etc.).

3.2. Building Unit and Location Characteristics:

Density in the traditional urban pattern in Ankara appears to be quite homogeneous. However, the sizes of the building lots forming the pattern show great variety and they do not have a geometric order. The building lots existing inside the Citadel are comparatively bigger than the lots located in other quarters, but the building/lot ratio in the lots does not really differ from each other. The big size of the buildings in the Citadel might be the reason of this case. Data produced by Aktüre (1981;130-135) shows that Erzurum quarter dated back to 15-16. centuries is one of the densely inhabited quarters in the city with small sized buildings in it. However as a general evaluation the ratio of built-up areas to the open and circulation areas looks quite homogeneous as it is shown in the table below (see Table 3.1.).

Table 3.1 Characteristics of Historical Urban Pattern in Ankara (Aktüre, S., 1981:130)

Name of the Quarter	Date of Settlement	Ratio of Built-up Areas (%)	Ratio of Circulation Areas (%)	Ratio of Open Areas* (%)	Building Density Building/Hectar e
Suluk (Kaleiçi)	12-13centuries	56	14	30	40
Hacı Murat	14-15centuries	51	10	39	40
Erzurum	15-16centuries	57	13	30	50
Boşnak	1878	30	40	30	35

* Including courtyards, gardens and unidentified open areas.

The original cadaster order (Bademli, R., Kıral, Ö., 1992: 128-137) continues in the traditional urban pattern of Ankara in which the parts were not effected from the master plan decisions implemented since 1930's[4]. In this pattern the use of the dead-end streets is not originally common if when compared to other Ottoman cities. The '*kadı*' registers searched by Faroqhi show that this is the characteristic of the pattern in Ankara since 17c. Besides alterations in the historic pattern there are no dead-end streets in the Erzurum, Ulucanlar and İstiklal quarters. However inside the Citadel the form and the topography of the Citadel caused the formation of some dead end streets reaching to the city walls at the edges. In this urban pattern developed without dead-end streets each building parcel has a facade to at least one street.

In the parcels there are more than one building unit increased by the additions in time. For example in Ulucanlar, the number of building units in a lot varies between 1 to 5. While one of those units forms the main building; the others might be later additions such as; residential units, original ancillary buildings (*müştemilat*) and service spaces like kitchen, storage, WC, etc.

In the studied 63 lots in Ulucanlar, while there are totally 95 building units, in 41% of the lots (in 26 lots) there is only a single building unit; in 23% of the lots (in 15 lots) there are two building units. In the 11% of the lots (in 7 lots) there are 3 or 4 building units. Besides these, there are also parcels emptied by the demolition of the former building. The two lots used commonly by a single building (as a result of change in ownership) and the lots where the original building/lot relation changed by the construction of a new building are the other alternatives. All these alternate cases show that there might be variations even in the adjacent lots when the building/lot relations are concerned. The table 3.2 shows the common combinations of building units in a single lot, these combinations can repeat and or change in different ways (Akçura, N., 1993a: 11-16).

Table 3.2 Combinations of Building Units in a Single Lot

Main Building
Main Building + Ancillary (or Enclosure) Building
Main Building + Ancillary + Service Space(s)
Main Building + Ancillary + Service Space(s) + Additional residential Units

For this distinction in the Citadel, the unit "adjacent" to the main building, the "separate" unit and the "complementary" unit definitions (for service spaces) are used besides the main building (Altındağ Municipality, 1987: 171). In all the lots in the Citadel, beside the main building there are also adjacent or separate units. In the 224 examples studied, there are adjacent units in 36% (81 main bldg.), there are separate units in 47% (105 main bldg.) and there are complementary units in 8% (18 main bldg.).

In İstiklal quarter, even though there is no numerical data for comparison, it looks that the use of additional units beside the main building is also common. Furthermore, added units are usually service spaces in İstiklal quarter (Altınsay, B., et al, 1988: 87).

Identification of the later additions is usually possible by surveying the architectural and structural characteristics. Such a survey may help to put them in a chronological order in order to find out, whether these buildings were build simultaneously with the original one or not. Inside the Citadel, the buildings are defined according to this distinction and named as "old', "lately derived" and "new" buildings (Altındağ Municipality, 1987: 171). The definitions used for this differentiation are; "traditional", "original enclosures" and "new" in Ulucanlar. In both quarters the older buildings are located in bigger parcels.

The placement of the building units in the lots show variations. Especially in the Citadel, existence of the city walls effects these locations. Orientation to the view according to topography in the buildings adjacent or placed on top of the city walls' is a popular choice at the edges; but this is a special case in the Citadel of Ankara.

The characteristics in the location of the buildings show changes in the other quarters; but, it is possible to derive some groups. In such a classification, the main criteria should be the main building/lot relation and not the geometric order, because they differ in form and in dimension completely. Second criteria might be the location of the main building in the parcel that reflects the original condition. Lately added units can also be classified as to the locational characteristics but, they should be evaluated in a different category to define the original building/lot relations. The surroundings of the lots by one or more streets naturally affects the location of the building. The lots can be classified in three groups according to the location of the main building (Figure 3.2).

<u>A. Main Building Located in the Court:</u> Besides the 17c. houses located at the court there are also examples built in the late 19c. showing the same characteristics in location. In these examples; the entrance is taken from the street to the court, then from the court to the building. Parallel to the repetition of the pattern this type of relation might have become rare by the division of big parcels (Erzurum Qu., Erzurum st., 46; Ulucanlar Qu., Gelin st., 8; İstiklal Qu.,). In the Citadel, for orientation to the view, the buildings are especially located in the courtyards far from the street.

<u>B. Main Building Facing the Street:</u> The location of the building may change depending on the street/parcel relation. When the lot has only one facade to the street there are two common types:

<u>B1. Main Building Oriented to the Street with its Side Facade:</u> While the main facade of the building is oriented to the courtyard one of the secondary facades may open to the street. Even though the courtyard facade of the buildings in this group is highly altered, there usually exists an open *sofa* directed to the court. On the street facade, there may be the main room and/or the other room(s) facing the street. The buildings owing these characteristics are comparatively the older ones. In this solution there might be two entrances, one directly from the street to the building and the other from the street to the courtyard (Kale Kapısı st., 10; Doyran st., 8, etc.). The courtyards of this type might be filled with additional buildings which may transfer the court to a small entrance court. In that case the entrance is usually through these small courts (Ulucanlar Qu., Uzunkavak st., 25).

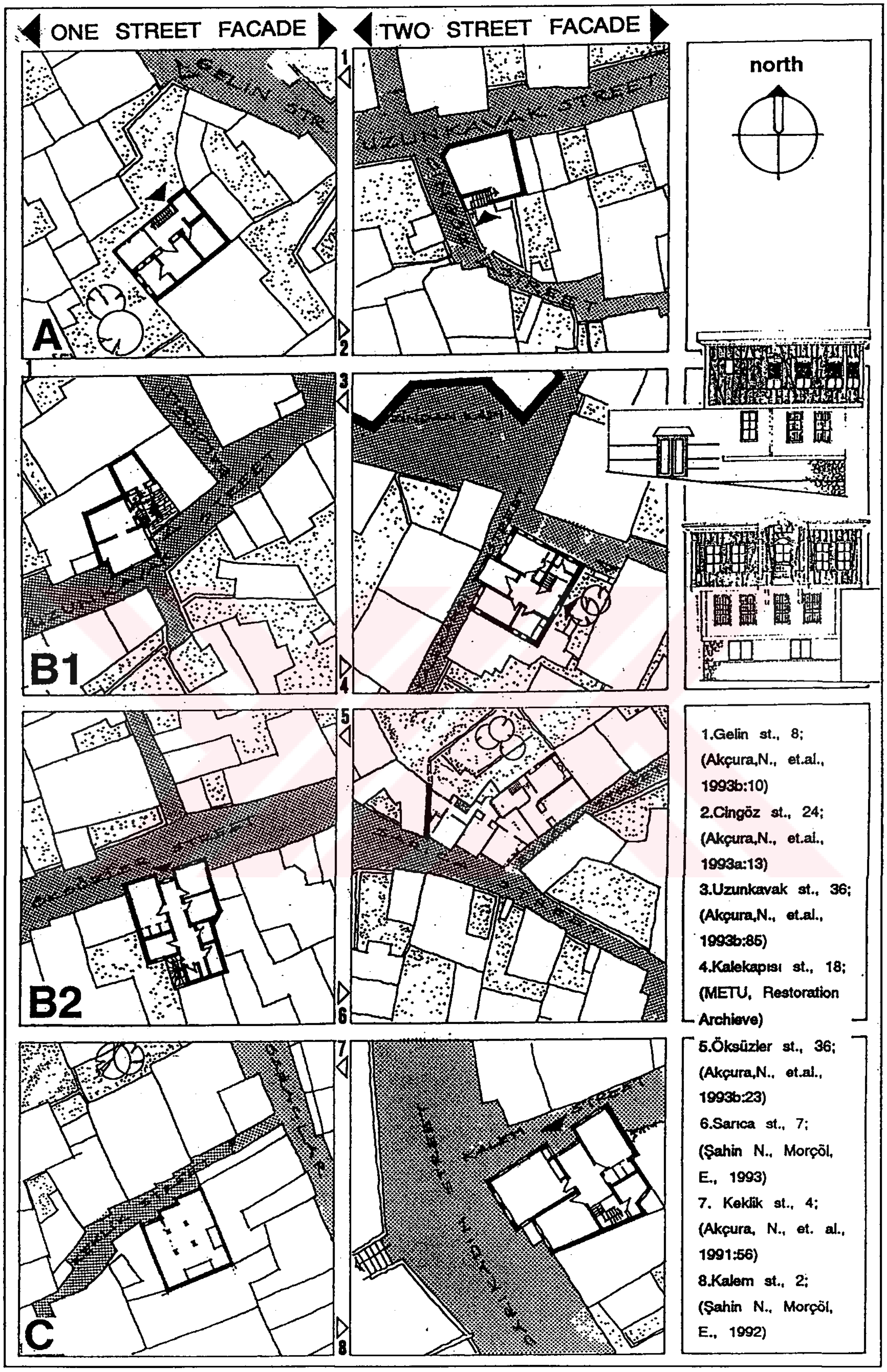


Figure 3.2 Building / Lot Relations in Ankara

B2. Main Building Oriented to the Street with its Main Facade: This type is more common in rather later examples and the building is located on the street facade of the lot. The entrance from the street reaches a semi-open *taşlık* space. The courtyards are usually located at the back of the building (Ulucanlar Qu., Öksüzler st., 36).

When the lot is surrounded by two or more streets, the derivations of the above mentioned types can be seen. As a generation of A type, when there are three streets then the building might be oriented again to the court and the entrance is from the court (Ulucanlar Qu., Cingöz st.,24, a later e.g. Uzunkavak st.,30A). Besides, there might be some corner buildings facing the streets surrounding them as a derivation of group B and C, i.e., an earlier one in the Citadel at Kurt st.,1 and a late one in Ulucanlar Qu., at Eylül st.,1 and Sarıca st., 7.

C. Main Building Filling the Complete Lot: In Ankara there are also buildings that fill the lot completely and have no courtyard. From the examples studied, it is not possible to make a final conclusion whether this is an original solution or not.

The house at Keklik st., 4 is an example of this case, the house is in the old commercial center and has one facade to the street. The building placed on a single lot, the window order on the south-west facade and the traces of a door at the ground floor show that formerly there might be a court on this direction. However, the present ownership pattern does not support this observation. It can be thought that such uses might have been common in the buildings located in a densely inhabited traditional commercial center. Though, the repetition of the case cannot be observed in the neighborhood. So, with such few examples it is not possible to generate a rule for the use of buildings covering the whole lot. Another example at Uzunkavak st., 27, located across the Cenabı Ahmet Paşa Mosque in Ulucanlar has the same order. The building covers its lot completely and it too has three street facades. Some other examples might be the house in Erzurum Qu., at Kalem st., 2; and the building in Ulucanlar Qu., at Öksüzler st., 13. Most of these examples (except the second one) are comparatively dated back to late 19c. on the basis of comparison. With this observation it is possible to think that this type of a use in the lot is not an original feature in Ankara houses and it may have derived as a result of division of ownership in later periods.

The courtyard is one of the most important elements in Ankara houses. Especially in the older ones the courts are bigger and a part of it is used as a garden to grow vegetables. Today, these gardens and courtyards are not well maintained as they were before. There might be some service buildings in the courts such as; kitchen, wood house, storage, WC, coop and some architectural elements like pool, well, fountain, stone pavement besides the main and additional residences. The earlier elements referred in the publications, such as mohair workshop (*sof karhanesi*), pit (*tandır*), bake-house or fireplace (*ocak*) does not exist any more in the courts. The reuse of antique stones for different purposes is quite common. The stone stairs placed at the beginning of the timber staircases are still existing today. Trees and vine plantation are inevitable figures of Ankara courtyards. Nevertheless today, most of the courtyards lost their original features and uses. The stone paving originally used in almost all courtyards are covered with screed today.

It seems that the meaning and the use of the courts have also changed in time in Ankara houses when the earlier and the later examples are compared. In the former ones, as a semi-private open space, the court was the densely used section of the house that also provided the entrance to the building and the service spaces were placed in. It was the space where daily life went on and a continuation of the house itself. Courts lost their character in the houses built in the late 19c. In later examples the court at the back of the building started to be used as an open place but not the inseparable part of the house. Especially after the service spaces were taken inside the building, the court lost its function and became only an open space (see Figure 3.2.).

In all this differentiation in the building/lot relations, the common order in Ankara is that the lots have one facade to the street and the corner buildings naturally have more than one street facade. According to these locations the entrances to buildings can be classified in four groups:

<u>a. Entrance from the street to the court and then to the building:</u> This type is more common in the buildings located at the courts and where the land is quite plain or in the buildings facing the street with their side facades. This type of entrance is extensively used at older houses (Location type A and B1).

<u>b. Entrance from the street to the building and then to the court:</u> The entrance reaches the semi-open '*taşlık*' space in the buildings facing the street with their main facades. The later examples of traditional houses have this type of entrance with a courtyard at the back (Types B1 and B2). In some examples there may be a secondary entrance with a passage directed from the street to the courtyard (Type B2 and C).
<u>c. Direct entrance from the street to the building:</u> When the building has no courtyard then the entrance opens from the street to '*taşlık*' that is an semi-open space placed in the ground floor. This order can not become common because most of the buildings have courtyards

(Type C). Using the whole parcel for the building does not look as an original solution (Keklik st., 4; Kalas st., 11; Eskicioğlu st., 7/A).

The variations of above mentioned entrance types can be used when the lots are surrounded by more than one street. If there is a difference of height between the streets there might be another type of entrance:

d. Entrance to different levels or separate entrances of the building and the court: This type derives according to topographical conditions. There can be an entrance from the street to the ground floor and a second one to the basement floor or to the courtyard. This type is quite popular in the Citadel, in the northern part of the Ulucanlar and Hacıbayram quarters that are steeper areas than the others.

To generate strict classifications on the locations of buildings is not possible for Ankara but underlining some similarities is possible based on the relation of the lot and the building with the street. The relationship with the adjacent parcels is primarily important in the orientation of the building. To keep the privacy of the neighbors and to create privacy in the house is one of the major constraints in the design process that we mentioned before while discussing the Anatolian house (See chapter II). A litigation register dated to 1594 shows that privacy was also an important criterion in Ankara houses: (Ergenç, 1992, 15). An inhabitant in Mukaddem quarter complains about his neighbor whose window in his *sayegah* is looking to the claimant's window and disturbs the claimer who can no longer his own window. Then the claimant brings the case to the *kadı*. As a solution, the '*kadı*' orders the defender to built a wall in place of his window (Ergenç, Ö., 1992: 15).

Owing to this, relation with the neighboring buildings and privacy becomes the most important item in orientation. The size and the form of the parcel and the building ought to be evaluated accordingly. The relation of orientation according to daylight and climate has secondary importance contrary to the presumptions of Kömürcüoğlu (1950, 16).

In the Citadel, the climatic data was not considered primarily as the physical notion of the parcels whereas topography was. In spite of this, it is observed that houses with an open hall are oriented in the east-west direction (Altındağ Municipality, 1987: 173). Moreover, there are also open halls directed to the north or south (See Figure 3.3). For example in the Citadel the open hall of the house at Doyran st., 9, is directed to the north while in the other example at Kale Kapısı st., 10, it is directed to the south. These examples show that climatic conditions are not the most important factor in the orientation of buildings. Similar examples can be given from the Erzurum quarter too. While the open hall and the main facade of the house at Erzurum st., 46 is directed to the east; the other facades are built almost solid. However, in the example at Sarıkadın st., 43, the open hall is oriented to the north and the main facade faces the street on the west. The other facades of the building are solid.

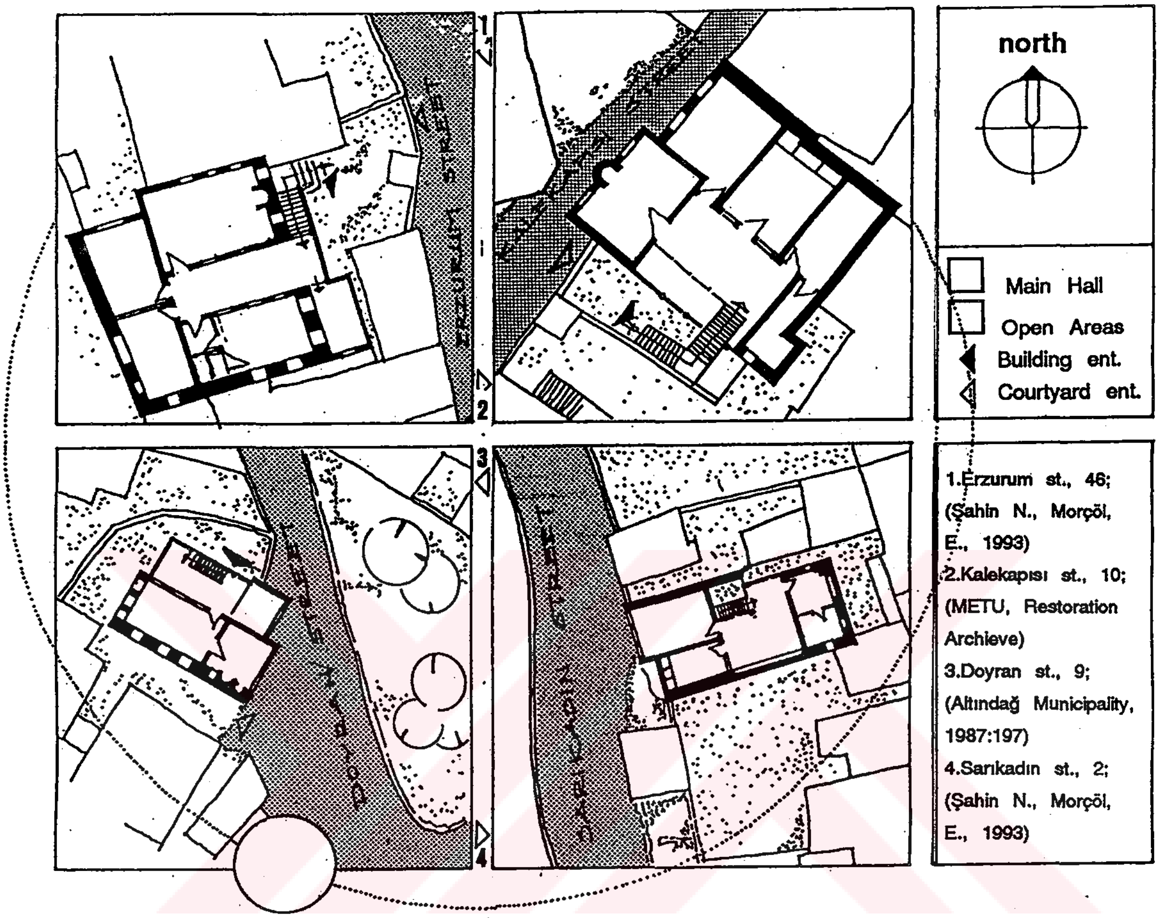


Figure 3.3 Building Orientation

Furthermore, a lattice-work is located on the upper section of the south wall and some sunlight may enter the open hall. As a rule, the windows opened to the neighboring parcels are always above eye level and used only to take light. Undoubtedly, there are many examples representing this case.

All these surveys show that during the construction process the orientation and openings of the earlier houses defined the design criteria for the new buildings in the formation process of the historic pattern.

Keeping the priority of privacy, the climatic conditions are tried to be controlled by some architectural solutions. Seasonal uses of floors or the spaces as "winter room" and/or "summer section", building the winter rooms more closed and protected, and designing the summer sections more open and permeable shows that architectural solutions derived to adapt the houses to climate are successfully used in traditional houses.

3.3. Mass Characteristics and Building Heights:

The houses forming historic urban fabric have various mass characteristics. The number of floors' change between one to three but most of them have two floors. Roof and basement floors may be used where topography suits. The service spaces located at the court are one storey high and addition of floors to the masses is a common type of alteration in the buildings. As a consequence, it might be thought that the change in the floor numbers in time is a feature in the historic urban fabric.

For example, in the 95 building units surveyed in Ulucanlar, 38% have one floor, 55% have two floors and 7% have three floors. In these 95 buildings, 83 are traditional houses. In which 27 have one floor, 49 have two floors and 7 have three floors. In the 5 of the two or three storey high buildings there is a mezzanine, in the 4 there is a roof floor (*cihannüma*). The 9 of the lately added 12 buildings in the area have one floor and the 3 have two floors (Akçura, N., 1994a: 23-24,27).

In the İstiklal Quarter also, building heights vary between 1 to 3 floors. Even though where the study did not give the percentages about the buildings heights, the houses with 1 or 2 floors look more common in the area. However, especially in the buildings around the synagogue the floor heights are usually three (Altınsay, B., et al, 1988: 69). In the Citadel, the buildings with two floors are common and most of them have basement floors. On the contrary, only in 7 examples there is a mezzanine and in 14 example there is a roof floor (Altındağ Municipality, 1987: 143).

For the floor heights of the buildings it is not possible to give definite floor heights or an approximate measurement repeated in each building. The height differentiation between the ground floor and the upper floors as emphasized in the discussions on the Anatolian house can not be observed systematically in the Ankara houses.

The table below figures the floor heights of some Ankara houses for comparison. Unfortunately, most of the examples dated back to late 18. or 19. centuries and are the ones keeping their original features.

In the examples, the floor height indicates the clearance in the main hall of each floor (*sofa* or *taşlık*) and the reader should consider that there might be some level differentiation in the same floor.

Table 3.3 Variations in Floor Heights in Ankara Houses:

ADDRESS:	PERIOD	GROUND FLOOR	MEZZA NINE	FIRST FLOOR	SECOND FLOOR	CİHAN NÜMA
E-Erzurum st, No: 46	17. c.	3.64m.	2.08m.	3.50m.	-	-
E- Sarıkadın st, No: 43	early	3.42m.	-	3.30m.	-	-
Kalekapısı st, No: 10	early	4.00m.	-	3.50m.	-	-
U-Eylül st, No: 1; Sarıca st., No: 7A5	late 18c.	2.54m.	-	3.55m.	-	-
S-Keklik st, No: 7	late 18c.	3.73m.	-	3.19m.	-	-
S-Saraçlar st, No: 37	late 18c.	3.94m.	-	unidentified	-	-
U-İnci st, No: 14	19c.	2.51m.	-	3.53m.	3.85m.	-
UH-İnci st, No: 3	late	3.93-428m.	-	3.83m.	-	-
U-Öksüzler st, No: 13	late	4.05m.	2.01-2.11m.	3.37-3.77m.		
E-Kalem st, No: 2	late	unidentified	unidentified	3.22m.	-	-
Keklik st, No: 4	late	3.40m.	-	3.25m.	-	2.70m.
İ- Eskici st, No: 2	late	3.51m.	-	4.20m.		
İ-Eskici st, No: 4[6]	late	3.05m.	-	2.68m.	-	-
İ-Kumrucuk st, No: 17	late	3.00m.	-	3.30m.	-	2.50m.
İ-Kalas st, No: 11	late	3.25m.	-	3.10m.	-	2.50m.
İ-Eskicioğlu st, No: 8	late	3.33-4.17m.	-	3.28m.	-	-
Kalekapısı st, No: 18	late	2.75m.	-	3.38m.	-	-
E-Zülüflü st, No:18	ca.1925-7	2.82m.	1.95-3.04m.	3.00m.	-	-
E-Sarıkadın st, No: 69	republic	2.62m.	2.88 m.	3.28m.	-	-
E-Sarıkadın st, No: 67	republic	unidentified	-	3.08-3.11m.	-	-

The data above figures that the ground floor height in earlier example's varies between 3.42 to 4.10 m., in the later ones it becomes slightly lower and changes between 3.00 to 3.50m. (min.: 2.51, max.: 4.28 m). But there are always exceptions. In the upper floors the floor height varies between 2.80 to 4.20m.; but the heights about 3.30 to 3.50m. are more popular. Owing to these results it is not possible to assume that there is a height differentiation between the ground and upper floors. In the early examples the height of the mezzanines is lower and around 2.00m., but in the late ones there might be the spaces in different levels in which the floor height is near to the upper floors.

Considering this case, it is possible to conclude that the spatial organization of mezzanines' continues in the later examples but, by the increase in the floor heights, the mezzanines assume the features of the main floor and is different then the earlier ones. As the early ones, the mezzanines in the later examples do not cover the whole storey and they have a gallery opened to the entrance space (*taşlık*) in the ground floor. The height of roof floors is about 2.50-2.70m. The *Cihannüma* may be a closed or semi-open space and it may contain one or two rooms with a staircase.

These dimensions show that there is no a standardization in floor heights. Even though the building heights were increased in the second half of the 19c. by the Building Regulations, the surveys show that they were not widely implemented in Ankara.

3.4. Architectural Characteristics:

3.4.1. Spatial Organization and Plan Scheme:

The spatial elements forming an Ankara house are the court and the building(s) located at the court. The main uses in the spaces forming the house are living, sleeping and circulation. The service spaces such as kitchen, storage, bath-room, WC, etc., located at the ancillary buildings in the court or in the ground floor are complementary spaces. The order and the combination of these spaces show some common features but these are the repetition of their relations and not the repetition of the dimensions or the geometric order. The variation of spaces created by dimensions and architectural elements gets richer with the changes in the urban pattern and topography. As a result even in the repetition of the same plan scheme there may be great differences.

The houses subjected to '*kadı*' registers for different purposes give information about the original spatial organization of the houses in Ankara since 16c. A register prepared in the year 1594 defines a house in Ankara as such (Ergenç, 1992, p:15):

> *... the house in Sed quarter consists of a "tabhane", a "soffa", a "fevkani" room, a "tahtani" room, a trellis, a bake-house, a "hayat', a "sayegah", a workshop with two looms inside and other apparatus, one side of the house is looking to a non-muslim house and the other side is looking to a street,...*

Another register belonging to the same year defines a house with a *sayegah*, a summer house (or section) and a *hayat* (in some registers this word is used as window, Ergenç, 1992: 15). A register dated back to 1602, gives information about a house that was in sale in Buryacı quarter that the house was surrounded by two streets and consisted of two *tabhane*, a room, a *soffa*, a trellis, two *taşra* rooms, a stable, a well and a court (Ergenç, 1992: 15).

Registers evaluated by Yavuz (1984: 165) with reference to Faroqhi, mention that the houses located at the courts were named as '*hayat*' in traditional Ankara houses. Furthermore, Yavuz points that the elaborate houses formed of two sections were named *mahruta-i hariciye* and *mahruta-i dahiliye*.

As the spaces such as *hayat*, *sofa*, *tahtani* and *fevkani* rooms, *seyagan*, *örtme*, stable and straw house might be located in both sections; the spaces or elements such *tabhane*, cellar, kitchen, bake-house or fire place can be placed only in the *dahiliye* section. From the characteristics of these spaces the writer interprets these sections as *haremlik* and *selamlık*. Because there are not many examples of double sections in the houses she points out that this case can be seen only in elaborate houses (Yavuz, A.,1984: 165).

Even though Ankara examples are not included in his work on foundation charters, Madran also refers (1994: 427) to the *Hariciye* (external) and *dahiliye* (internal) sections of the houses. He uses the term *hariciye* for the spaces located at the courtyard. While the kitchen and the cellar were parts of the *dahiliye*, the stable was part of the *hariciye* only and other spaces can be found in both sections. The definitions of both researchers look quite similar when the historic references are concerned.

Yavuz (1984: 165-167) accepts that the existence of *fevkani* room in most of the houses represents that the houses have two floors. She defines that the smallest houses consist of a *tabhane* or a *tabhane* and a *sofa*, or a *tabhane* and a *tahtani* room. Besides, in some examples there might be a stable and a cellar placed in a single storey high service building. The number of rooms in a house varies between 1-6, and usually the houses have 2 or 3 rooms. Yavuz interprets that the houses in Ankara were simple and small scaled when the information gathered from the registers is concerned.

Faroqhi (1984: 233) points out that while the dwellings built on several levels become popular during the seventeenth c. in Ankara, the number of inhabitable rooms contained in the houses showed a tendency to rise. In the '*kadı*' records in the years shortly before and after 1600, while 39.9 % of the houses had three or more inhabitable rooms, by the 1690's this percentage had increased to 48.6 %. She also mentions the use of mohair workshops in the houses and the prices of houses with mohair workshop and looms in them were higher than the others (Faroqhi, S., 1984: 216, 220).

The spatial organization of the houses are not stated clearly in the registers but together with Yavuz's (1984: 166) interpretation the spaces and elements located in an Ankara house can be listed as follows:

Table 3.4 The Spaces and Elements Located in an Ankara House

mahruta-i *hariciye* or *selamlık*:	the external section;
mahruta-i dahiliye or *haremlik*:	section for women or internal section;
hayat:	court or some times used in place of window (Ergenç, 1992, 15);
bahçe or *hadika*:	garden;
çardak:	trellis;
ağaç:	tree;
su kuyusu:	well;
sokak kapısı:	main entrance door;
sokak kapısı önünde seki:	lowered leveling in front o the entrance door;
musluk:	tap;
sofa or *sayegan*:	main hall;
örtme and *tahtapuş*:	shadowed, semi open circulation and entrance spaces;
tabhane:	winter room (Yavuz, A., 1984: 166; Arel, A., 1982: 34-46);
yazlık ev:	summer section or house;
taşra oda, fevkani and tahtani:	rooms;
harem:	woman section;
divanhane:	guest room;
köşk and şahnişin:	kiosk or rised section in the semi open main hall;
oda altı:	lowered section in the room;
mutbak:	kitchen;
fırın evi:	bake-house;
kiler:	cellar, store-room;
mahzen:	magazine;
kenif:	toilette;
ahır:	stable;
ahır sekisi:	mezzanine on stable;
samanlık:	straw house;
odunluk:	woodhouse;
sof karhanesi:	mohair workshop;
karhane:	workshop;

The registers do not represent the location and distribution of these spaces in the buildings, but they give some information about the building and the parcel. The rooms and the *sayegan* might be located in the upper and the lower levels according to the surveys of Yavuz. When the *sayegan* are placed at the upper level they represent similar features with the *şahniş, köşk, uykuluk, taht* and *seki* in their concurrent meaning. The nonexistence of *sofa* in some houses brings a question for whether there was a space representing the *sofa* or not, in these examples. Yavuz has two alternate answers. In the first one; the room at the outside should be used as *sofa* in the houses with two rooms passing through each other. She shows the peculiar examples of Citadel houses representing this case. However, as they are the later built houses showing comparatively late periodical features this is not a reasonable interpretation.

In the second alternative she accepts the *sayegan* as the space used as an open *sofa*. The *sayeban* as a Persian originated word, was given the synonym of *suffa* and *tahtapuş* in Risale-i Mimariyye and it was defined as a shadowed and timber covered *sofa* (Gökyay, O.Ş., 1976: 193). The similarity between the words *sayeban* and the *sayegan* might indicate that they were the same spaces.

The *seyregah* presented by Gökoğlu and Akok (1946: 7) does not sound similar to *sayeban*, but their spatial definition is similar to *sofa*. Furthermore, the *seyregah* differentiates from the *sofa* as a more ornamented space and usually a space directed to the view. However, a similar example (Uzunkavak st., 27) to the one (Uzunkavak st., 37) given by these authors still exists today with a *seyregah* directed to Cenabi Ahmet Paşa Mosque in Ulucanlar quarter. The ceiling of the *seyregah* or the *sofa* as we called, is highly ornamented when compared to the others. The street facades of the sofa are surrounded by lower walls.

The popular space, the *sayegan* might have the same function as *sofa* as in the earlier examples. In the houses there were rooms identified as *Tabhane* (guest room or winter room for Ankara houses), *divanhane* (guest room or house) or *yaz evi* (summer house or section) as to their specific uses; so, in the case of specialization of the *sofa* it might be mentioned with another name.

In the Ottoman, Turkish and/or Anatolian house definitions, the basic elements of spatial organization are *sofa* and rooms (Eldem: 1968), circulation areas and rooms (Kuban: 1982) were accepted as the spaces forming the main house. The combination and evolution of them create some orders. The common room definitions used for traditional houses is also valid in the case of Ankara.

Though, the *sofa*, especially the ones built in the late 19c. represent different features, in most cases, it becomes difficult to identify whether it was produced as a result of alterations or whether it was an original feature. However, in some later examples which have traditional elements and are built traditionally, the *sofa* gets smaller and becomes only a circulation area. The *sofa* transforms to an "entrance space" that is mentioned in Kuban's evolution model of the Turkish house; or to a "passage of communication" as Eldem stated in his typology. Besides, the transformation in the construction technology from traditional to modern techniques the continuation of these plan schemes is quite interesting and an item that should be discussed. This feature, observed in Ankara houses can be used in dating the buildings. On the contrary when the plan scheme is not clearly identifiable some other criteria must be considered.

The typology presented in this study is based on the spatial relations and the existence of the *sofa*. Similar typologies produced before, by other researchers who have worked on the historic urban fabric in Ankara can not be disregarded. Moreover, under the light of the discussions mentioned above, the typology presented here includes the buildings which were usually neglected as peculiar examples. Among which, most of them dated back to the late 19c. or to the beginning of the Republican period have a different type of circulation space which is no longer a *sofa* anymore.

Here, we should underline a problem that the alterations in traditional houses sometimes make the plan scheme completely unidentifiable in which case the original spatial organization can not become clear. On the other hand, the workmanship and material use in the building give some clues.

The buildings that are defined as "without *sofa*" are completely different from the latter case. These can be identified by the materials used (such as brick) in the later period and the workmanship. The traditional architectural elements are widely used in these examples also; moreover, the quality of the machine worked materials differs (i.e., use of wood based materials). For example, the peculiar buildings in the Citadel where there is a circulation space such as a corridor or a hall contrary to the *sofa*, and the plan scheme repeated on each level can be recorded in this category (Yavuz, A., 1984: 160). Under the light of these criteria, the buildings in the historic urban fabric in Ankara can be classified in three groups with reference to the periods defined before:

1. Traditional Houses: These are the houses dated between 17. and beginning of the 20. centuries and are identifiable with traditional spatial organization, developed basically around the *sofa*, architectural elements, materials and construction techniques. However, the peculiar examples mentioned above, the ones without the *sofa* and showing other features can also be stated in this group.

2. Republican Period Traditional Houses: These are the houses built with traditional techniques and materials to counterbalance the increased housing demand in which the

traditional spatial organization still continued with some alterations. These houses, built at the beginning of the Republican period, have no original *sofa*; they are domestic and simple.

3. The Squatter Type Houses: These are the ones which were built after the historic urban fabric became a transition area for the social group living in them. In which the traditional techniques and materials are partly used at the beginning of the transformation process. These houses are usually ineligible and not subject to conservation but can be accepted as a building stock.

In this classification, it should be emphasized that there might be overlapping all the time that is, there might be buildings with features that carry the characteristics of the earlier or later periods. The periodic identification presented here is derived from the methodology of the study. Owing to that, the complex feature of the formation of historic urban fabric has always kept a potential to produce examples out of the periods defined.

The main types, in the classification presented here, are the buildings with and without *sofa* and there might be variations of each one by some sub groups. In the type with the *sofa*, the *sofa* functions as a space, where circulation and the daily life of the family continues. So, it set certain dimensions and should have architectural elements such as *sedir*, staircase, etc.,.

Some sub groups can be derived from the typology done by Eldem as to the relation of the *sofa* with other spaces and its location in the plan scheme. This was done before just as in the earlier works of different authors on Ankara houses (Kömürcüoğlu, 1950; Altındağ Municipality, 1987; Yavuz, A., 1984; Akçura, N., et al., 1993). In a typology done according to the sofa, the houses with an outer hall and with an inner hall are the popular types in Ankara.

Types with a Hall, "*Sofa*" / *With an Outer Hall*:

In this type the hall is located on one side of the building and oriented to the courtyard with an open side and the rooms placed on the other facades of the hall. The number of rooms depends on the size of the buildings.

In some examples, there might be a space named as *köşk* which is a sitting place raised from the hall. These spaces that were originally open are today closed in most the houses. The type with an outer hall is more popular for the earlier houses but it can be seen in the later ones too. The rooms surrounding the hall in the T, L or U shapes are the derivations of this group.

In the earlier examples of this group, there is no repetition in the plan scheme of the upper and the lower levels of the houses. There is a continuation between the court and the service spaces distributed in the ground level. The court integrates with the spaces at ground level. The houses having this planimetric order are usually the earlier ones that are located in the courtyard and the entrance from the street is taken from the court.

The contrariety (Arel, A., 1982: 34-40) between the upper and lower levels as seen in the earlier houses that still preserve their rural character show that the family production activities continue effectively in the courtyard. The examples of this type were defined as type A by Kömürcüoğlu (1950: 22) and they were quite common in Ankara in the 1950's. This type dated back to the 16-17. centuries by Kömürcüoğlu in which the hall is named as *hayat* or *sergah* and the raised section placed in the hall is named as *tahtseki* or *köşk* (Kömürcüoğlu, E., 1950: 23).

The surveys done in the Citadel show that the houses with a hall are few in number than the ones without a hall. The number of rooms located around the hall varies between 1,2 and 3. There are also examples of L shaped halls that are formed by the location of a room on to the narrow side of the hall (Başkale st., 3). Besides, as Yavuz mentions the houses with an outer hall and a single room are quite common in the Citadel. The existence of houses in the Citadel (Yayçeken st., 20, İç Hisar st., 13; Başkale st., 3) that have an outer hall and dated to the 17c. supports the hypothesis that the use of the outer hall is a feature of early periods (Yavuz, A., 1984: 159).

In Ulucanlar district besides the houses keeping their original features with the outer hall, there are also examples where the hall is transformed to a circulation space. The oldest house in this quarter and probably in the city is at Gelin st., 8. The house is located in the court and has two floors. The ground floor is used for service spaces and in the upper level there is an outer hall with two rooms with highly ornamented features.

Other examples with the outer hall and keeping original characteristics are those in Ulucanlar quarter; the house at Uzunkavak st., 27; the house showing late periodic features with a T shaped hall at Uzunkavak st., 14; the L shaped hall and a partly altered example is at Gelin st., 7; as an altered example of L shaped hall is at Gelin st., 12.

The original examples of this type which were common in 1940's decreased gradually in time by the division or closing of the outer halls for different purposes. However, this plan scheme can still be found in the urban fabric even though it has been altered (See figure 3.3: 2,3 and figure 3.4 for some examples of this type).

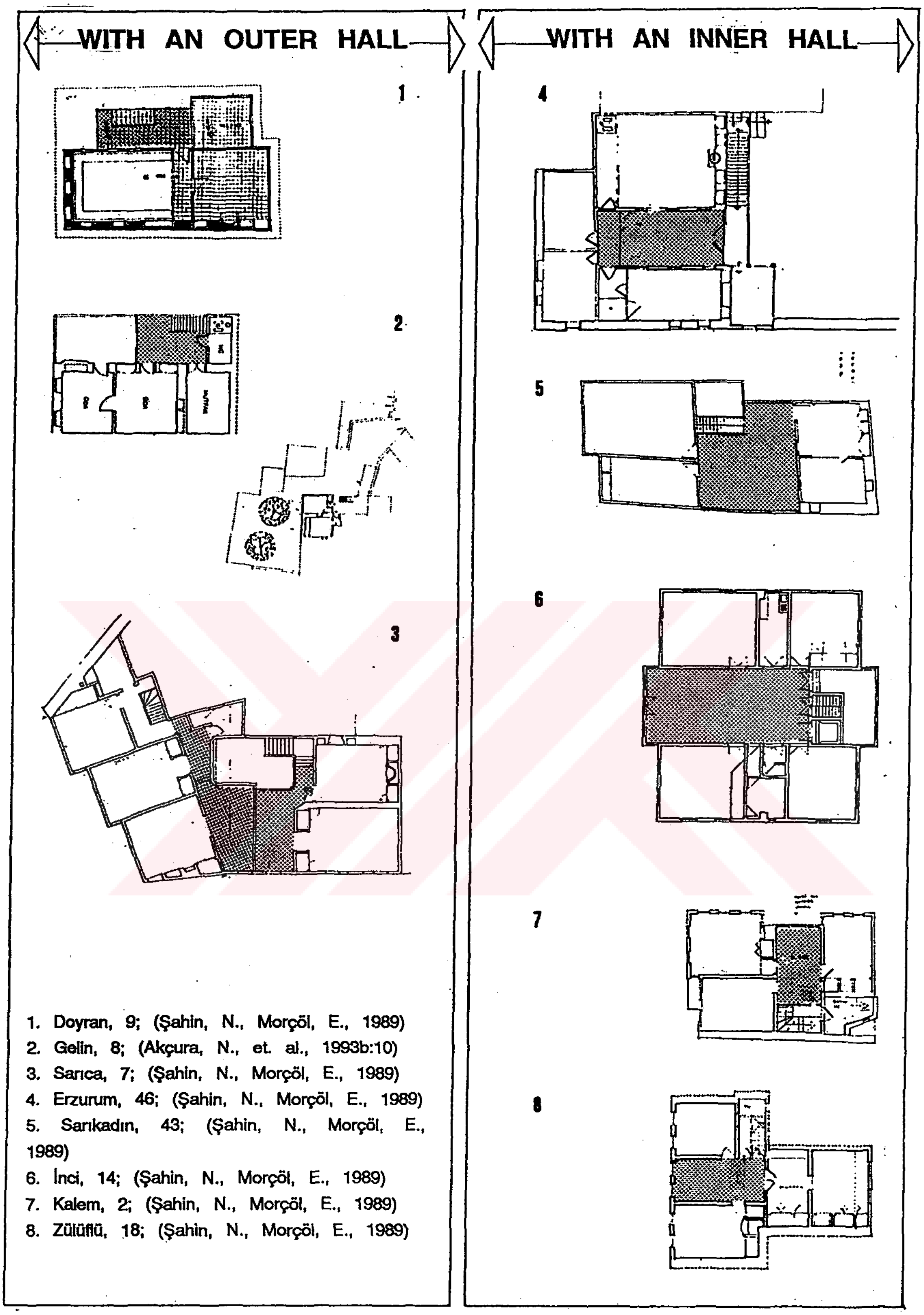


Figure 3.4 Plan Types According to Location of the Main Hall, the *Sofa*

Types with a Hall, "*Sofa*" / *With an Inner Hall:*

In this type the hall is placed inside the house and the rooms are located at both edges. The number of the rooms may be two or four, placed symmetrically on both sides (Figure 3.4). In the houses that have the architectural elements showing earlier features there might be an open inner hall. In this type there can be plan schemes with an axial hall besides the asymmetric ones. One of the example of the former one in Ankara, that was accepted as the second stage in Eldem's evolution model, is in Erzurum quarter, at Erzurum st., 46-48[7]. The examples of the latter case are the house in Erzurum quarter at Sarıkadın st., 43 and the house in İstiklal quarter, at Eskici st., 2.

Placing service spaces (kitchen, WC) between the rooms becomes popular in the later examples of the type with an inner hall. In the early examples of this type the contrast between the upper and the lower levels was still kept. However, in the late ones, the plan scheme of the upper floor is repeated in the ground floor with a *taşlık* space located in place of the main hall. The entrance is taken from the street and placed at the *taşlık* that meets with the court. In this plan scheme, the courtyard transformed to a space placed at the back of the house. The importance of the court in the former houses changes in this plan; because the service spaces were started to be located in the building; so, the court was not an inseparable part of the daily life. On the other hand, the change from the rural to the urban life style decreased the production facilities at home; as a result of this process the function of the court also changed.

The type with an inner hall is the most common in Ankara houses among the early and the late examples. Furthermore; it can be seen that in the houses built in brick masonry at the Republican period.

Besides, the controversy in upper and lower levels, the use of the spaces like *köşk* and the *başoda*, the use of upper window, fireplace, *seki*, *seki altı*, are as the early features that can be seen in the early examples of this type. However, in the later examples the rooms become homogeneous when the character and elements are concerned. The use of furniture affects the decoration of the rooms where the built-in-furniture are removed. The removal of *sedir* and placing of *sandelye çakması* instead are the features originated from the new, modern life style. The fireplaces were removed when the stoves become popular, and openings were added to the room facades for stove pipes.

In the examples of this type that is commonly used in the Citadel there might be some variations by the addition of one room to the L shaped halls. This type is also common in

Ulucanlar, with earlier open (Cingöz st., 20) and later closed examples (Öksüzler st., 36). A staircase placed in the *taşlık*, reaches the inner floor at the upper level. Other examples to this case in Ulucanlar are the house at Gelin st., 5 and Cingöz st., 10.

A later typical example of the house with the inner hall in Ulucanlar is at İnci st., 14. It has a rather monumental character. In Ankara three more similar examples are recorded, two of them are across the synagogue in İstiklal Qu. at Birlik st., 3-5, and the third one is at Kalekapısı st., 28 known as Kınacılar Konağı in the Citadel. Even though; it is as monumental as the other house at İnci st., 3, in Hamamönü, it should be mentioned in this group with the inner hall that has the commercial activities placed at ground floor.

There are many examples repeating this plan scheme in Erzurum quarter built in late 19c. A house dated to the year 1927, at Zülüflü st., 18; and the one at Sarıkadın st., 69 are the interesting examples of this group built in traditional techniques. The *taşlık* at the ground level and the mezzanine in the first level affects the mass of the buildings in these examples. The house in İstiklal Qu., at Eskicioğlu st., 7A and the one at Eskici st., 8 are the other later examples where the *taşlık* is repeated on the upper floor as the inner hall and there are some further alterations in the plan scheme. The surveys done in İstiklal quarter show that it is not possible to understand the original plan scheme of the houses in this area because of extensive alterations. For this reason to make a typology for the houses in İstiklal quarter is difficult. However the ones representing the features of the defined plan types are documented and referred to in the related sections.

Without a Hall:

These are the houses built in traditional techniques as a solution to balance the increasing housing demands. They are more simple and domestic and because of these qualities they were not referred in most of the studies on Ankara houses. The repetition of the plan scheme in each floor, having a circulation area placed between the rooms are the features observed in this type. As they are late houses; these are not subjected to alterations which is another identifying feature of this group. On the contrary, they show similarities with the altered original enclosures of the houses. Although, they were built in traditional techniques they have different features; for example, the use of mud brick was not common but brick was used in this group. Furthermore, the use of reused materials, taken from old houses, was probably a standard choice in the limited economic conditions when these buildings were erected. The spatial characteristics of these houses differ from the others in dimension. For examples there is no a hall, but there is a circulation space with smaller dimensions. The projections are not common, though there might be a balcony or a raised, semi-open entrance space. This type of buildings usually have one or two levels with a plan scheme repeated in each floor. Besides all these features, the identification of these houses is more difficult because it should be based on observations alone. As a result of that it has a speculative side. Nevertheless, these are the houses forming the historic urban pattern as a they keep the traditional techniques. They should be accepted as a part of the historic urban fabric.

The same definitions were used in the houses defined as peculiar in the Citadel although their percentage is higher than the houses with a hall (Yavuz, A., 1984: 160). As to the plan scheme, these houses form some groups that were built in the late 19c. In some of the plan schemes, the hall is transformed into a long and narrow corridor, combining the rooms adjacent to it (Yayçeken st., 14). Besides these; there are also examples where the sofa is converted to a small hall (Yayçeken st., 18) and the rooms surrounding this hall form an L or U shape (Yayçeken st., 22). The halls used in these examples are not *sofa* any more, they are narrow circulation areas and this is why they are referred as a hall or entree.

Yavuz (1984: 160) refers to the houses in the west edge of the Citadel that have two dwelling units in each floor and the plan scheme is repeated in each level (İstek st., 2, Kağnı st., 4). These buildings should be evaluated as a continuation of the traditional houses and in the formation process of themselves. Similar examples like the ones at the Citadel were identified in the site studies carried out in Ulucanlar (Akçura, N., et al., 1993a: 47). In these houses the main hall is repeated in a simple form with smaller dimensions. Some examples of this peculiar type in Ulucanlar are; Uzunkavak st., 10A, 10B, 12, 14; Cingöz st., 14 (Akçura, N., et al., 1993b: 54). The important feature of this type is that, the mass of the building is comparatively smaller, and the numbers of the rooms and/or floors are less than the traditional ones. Except these surveys, there is not enough data about these houses, for that reason it becomes difficult to precise exact conclusions which are beyond the limits of this study.

3.4.2. Facades

The variations in the mass and the locational characteristics of the houses and the different combinations of the elements represent a variety in the facade order of Ankara houses, in which case to develop a facade typology may become impossible. Then, almost each case represents a unique facade organization. However, from the facade elements and their combinations some facade characteristics can be noticed. The elements forming the facade of

Ankara houses are window, door their frames, shutter, timber cornices, posts etc., and projection, balcony, *köşk*, eaves, *cihannüma* in mass scale. The finishing materials that give texture to the facade are plaster, paint and stone or brick. These elements are widely described in the section below (see section 3.4.2) but here we will give a brief information about some of them.

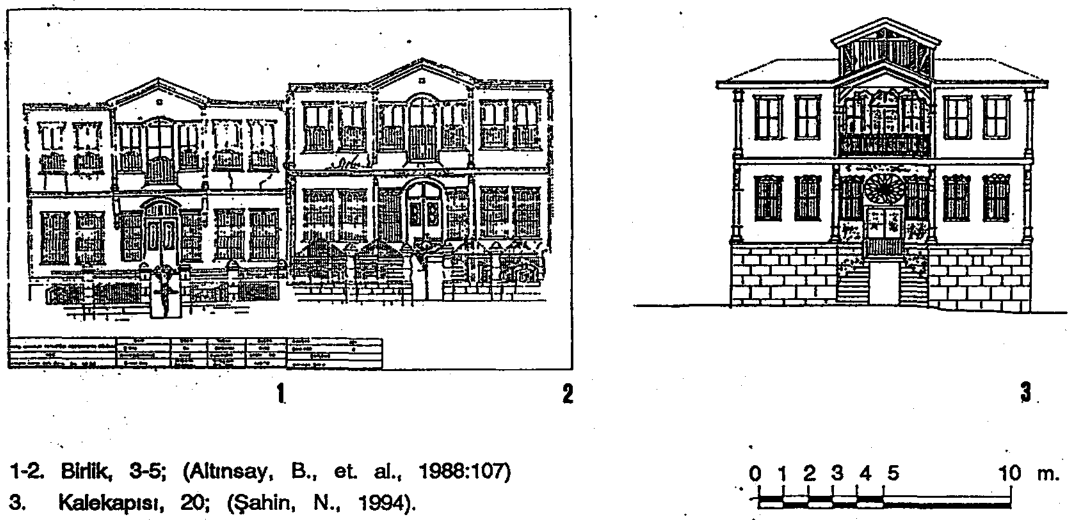
The most important elements of the facades are the windows that are used on the upper floors in rectangular form with 1/2 ratio and in ground floor in squared form with smaller dimensions. In the earlier houses there can be smaller upper level windows with timber balustrades, and top windows with stucco grilles. However, in the later houses the windows become more elongated at the upper levels and ornamented with Neoclassic motives.

The doors become the dominant elements of the facade in the later examples, they are either located in an entrance niche, or they are enriched with windows placed at top or on both sides of the entrance or with ornamentation around their frames. In the earlier ones the street doors are the elements of the courtyard wall.

The eaves in Ankara houses are 50-60 cm. in width. Though, in the earlier examples there are eaves projecting about 1.00 cm. This shows that the eaves of the houses were originally wide, but probably they changed.

While the periodical features and plan scheme of the houses are considered, it becomes clear that in the earlier houses the courtyard facade is more elaborate than the other facades, contrary to the late houses. In the buildings directed to the court, the building opens to the court with the hall in the upper level and the courtyard facade of the building is quite transparent. There can be the *köşk* space in the main open hall. Other facades of the building, usually directed to the neighboring parcels, are comparatively more solid. There can be windows on those side facades but always above eye-level. The elements of these earlier houses are; wide eaves, top windows, timber balustrades called *lokma* type, timber shutters, etc., (Erzurum st., 46; Gelin st., 8).

When the facade of building is oriented to the street there might be a projection and windows on top (Doyran st., 9). However, this is not a strict rule; there may be only a few openings on the street facade; because, the court facade is still the main facade in this type of buildings. In later examples the street facade becomes important and there may be elements such as; projection, balcony, windows in a dominant order, door and some ornaments made with timber and brick infill. Usually a monumental design understanding was searched in a symmetrical order formed with recesses and projections and the addition of a roof floor in the late examples.



1-2. Birlik, 3-5; (Altınsay, B., et. al., 1988:107)
3. Kalekapısı, 20; (Şahin, N., 1994).

Figure 3.5 Facade Organization in the Late Examples

In the buildings without sofa the mass characteristic is quite plain without projections. There might be a heightened semi-open entrance space or sometimes a balcony but they are usually quite simple.

3.4.3. Architectural Elements

The spaces forming the plan scheme are mentioned before in the discussion of the plan types, in section 3.4.1. In this section we will deal with the architectural elements of the Ankara house as, exterior, interior (built-in-furniture) and openings. The elements effecting the mass of a house are; projection, balcony, *köşk* and *cihannüma*. The internal architectural elements forming the houses are; flooring, the elements formed with the elaboration of floors as *sedir*, *seki altı* (or *safnail, pabuçluk*), ceiling, the elements forming the room facades as door, window and their elements (as *kafes*, shutter, balustrade, etc.,), fireplace, cupboard, *yüklük*, *lambalık*, *gusulhane*, *sergen*. The local names of these elements vary in Anatolia according to their ornamentation and specific uses, however all of these are quite simple and have domestic features in Ankara houses.

Müştemilat and Service Spaces: The original enclosures called *müştemilat* in Turkish are the complementary elements of the earlier houses placed at the court. These enclosures contained formerly the kitchen and storage spaces. Originally, the toilets are separated from the building and located in the court. All these service spaces are usually single storey high and built with traditional techniques. Today, most of them are transferred inside the dwelling units.

Projections: One of the most important elements effecting the mass character of the Ankara house is the projection. The spaces that is, the main room or the room(s) in the earlier examples and the hall in the later ones project to the street to take light and vista. In the earlier houses, the projections were also used to transfer the upper level to a rectangular form.

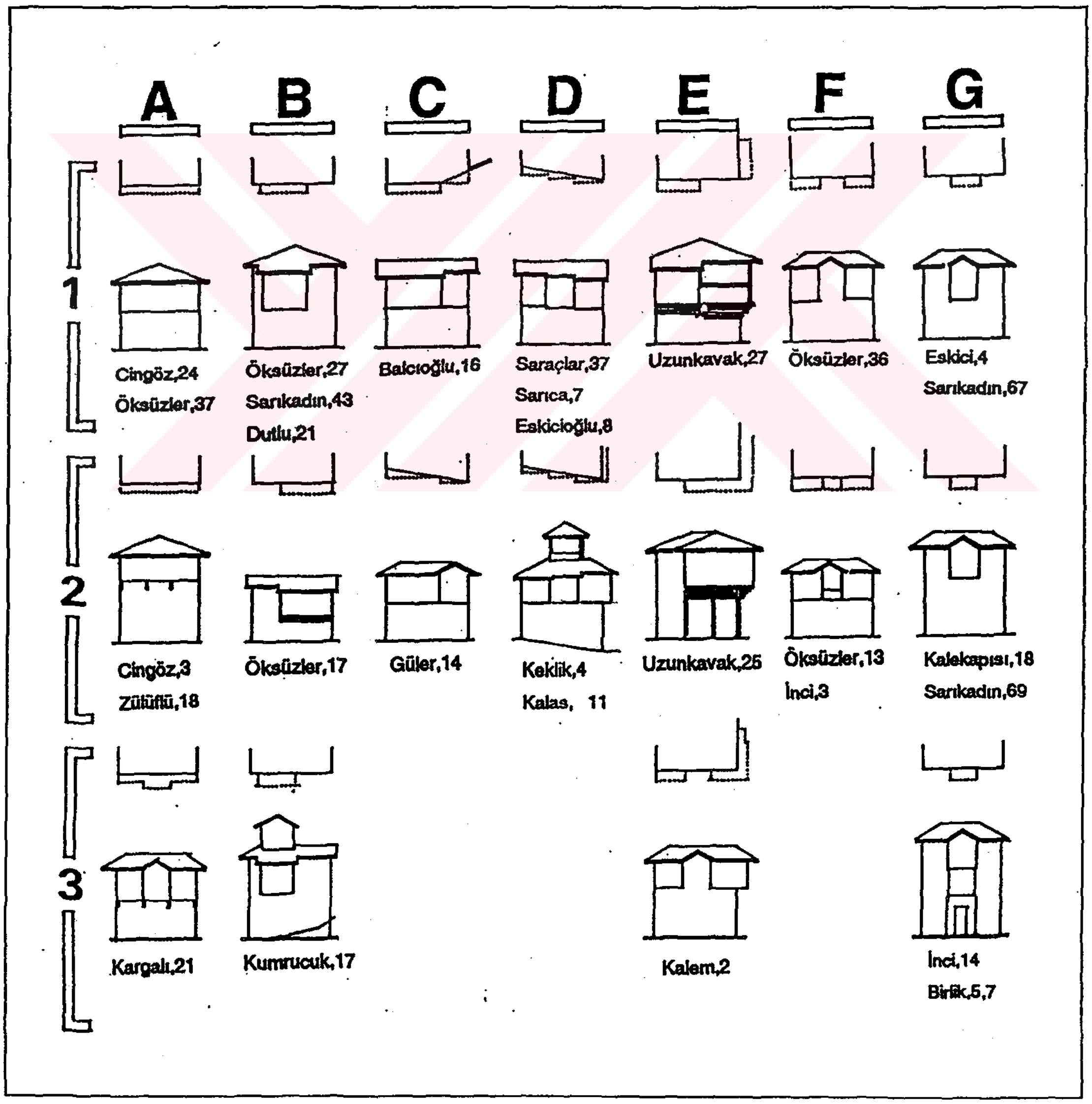


Figure 3.6 Projection Types in Ankara Houses

Projections may be placed through the whole facade, at the center or at the sides in a symmetric order or at a part of the facade in an asymmetric order. In the corner buildings there may be projections on both facades separate from each other or a single one at the corner extending to both facades.

The form of the projections are usually defined according to the angle between the ground floor walls and the street. The rectangular, triangular or trapezoidal projections are extensively used in the projections in Ankara. The structural systems of the projections, which will be discussed in detail in the next section, can be classified in three groups; as the projection with overlapping elements (Ankara type), the projection with bracing elements and the simple projection. Between these the projection with overlapping elements, locally known as Ankara type have been used extensively in the earlier houses. Still, the projection with bracing is more common in comparatively later buildings.

Köşk: *Köşk* is the heightened section of the open main hall in the earlier houses. The examples of this element are very limited today, but they were widely used in 1940's as Kömürcüoğlu (1950) documented. An existing example of *köşk* is in the building at Erzurum st., 46. The *köşk* was built as a continuation of the open inner hall with a highly decorated ceiling and eaves.

Balcony: It is a facade element used at the later examples which is not common in Ankara houses. Balconies carried by timber or iron beams and/or braces usually have iron balustrades. In some examples it is used only as a nonfunctional facade element. For example, the balcony of the house in Erzurum Qu., at Kalem st., 2 has no a passage from the first level (see figure 3.4).

Cihannüma: *Cihannüma* is a space located at the attic, that was common in late houses in Ankara. It consists of one or two rooms reached by a staircase from the upper floor of the buildings. Their facades are usually open. The walls surrounding them are about 1.00 m. high above the floor level. It is a shadowed and cool place used to sit-in across the view and/or to dry food.

There are also some examples that have closed facades. Most of them were originally paved with floor tiles for this specific food production activity. It looks in the photos of Ankara houses taken in 19c. that almost all the houses had such spaces at the attic (Ankara Great City Municipality, undated). Some of them are differentiated from the *cihannüma* and these are locally called as *pastırmalık* and especially built to treat and to dry food (figure 3.7).

Figure 3.7 Ankara in the 19 century, Looking to Citadel from Hacıbayram Quarter; published in 1890, in Berlin (source: Ankara Büyükşehir Belediyesi, undated, cover photo).

Eaves: Eaves are important elements defining the facade character of Ankara houses. In the older ones there are eaves projecting about 1.00-1.50 m. Yet, the width of the eaves are decreased up to 0.50 or 0.70 m. in time, as a precaution against fire, which is mentioned in the building regulations implemented after 1867. There are variations in the finishing of eaves. While there are quite simple ones which are covered with timber, there are also timber lath ornamented and decorated ones. Because the roofs are the most altered part of the houses, the eaves are also subjected to alterations. Originally, there are no gutters specifically produced for Ankara houses as it was the case in Antalya. The rain fall in Ankara is quite low, this might be the reason why there is no any precaution against rain (Ulucanlar Qu., Cingöz st., 20, Gelin st., 8; Erzurum Qu., Erzurum st., 46).

Ceiling: Parallel to the spatial hierarchy followed in the main room, the ceilings of the hall and the rooms in Ankara houses show variety from the simple one to the more decorated ones. The division of ceilings follows the geometry of the spaces and decoration with timber lath which is the basic principle in ornamentation. The use of borders, framing the edges of the decorated ceiling is a popular use. Though, timber laths or the borders were not common in the simple types. By the elaboration, the borders create zoning in a single space forming different levels. This intricate form is used especially in the main rooms that creates a richness in the earlier houses.

Besides the decoration with timber laths ceilings having a carved or jointed central boss, were quite popular in all periods. In highly ornamented ceilings there is also painted ornaments named as *kalemişi* in Turkish (see figure 3.8).

So, in the ornamentation of ceilings, there is a wide variation created by timber laths, borders, central boss and painted decorations. The use of timber laths in different order with the borders is the most popular type of ceiling decoration.

The central boss and painted ornaments were used in specific spaces like the main room and the hall. While the painted decoration is seen only in the earlier houses, the use of the central boss is common in all periods but the workmanship and decoration differs. The rectangular, square, ellipsoid, circular and octagonal forms are widely used in the central boss but the most popular one is the octagon.

The profiled laths were also used to decorate the ceiling. In the more simple ceilings the laths were placed at the joints of the timber covering, parallel to the timber plates, while placing the laths to create boards on the ceiling is also a popular and the most simplest order. To create a squared or octagonal grid by using the thin timber laths is a common use in the earlier houses. The examples of the latter type can be seen in the earlier houses like; Kireçli st., 2, Doyran st., 9 in the Citadel; Gelin st., 8 in Ulucanlar Qu.; Erzurum st., 46 in Erzurum Qu. In these houses besides the main room and the hall, the ceilings of the other spaces had a simple squared grid pattern arranged by the timber laths. On the ceilings of the spaces like storage, kitchen, straw house and stable, the timber floor beams were not covered but left open.

The ceilings in Ankara houses were the most ornamented sections of the house. Until the beginning of the use of furniture, the houses were decorated with the permanent elements, in which the ceilings were usually the most elaborate ones. The ceiling types mentioned above were commonly used till the end of the 19c. and even at the beginning of the Republican period which get more simplified.

<u>Flooring:</u> Timber and tile are treated as paving materials on timber floor beams in Ankara houses. The pressed earth is used in the service spaces above the ground floor while the stone is utilized in the pavement of the entrance space (*taşlık*) and the courtyard.

In the specific zones like *sekialtı* and in the main hall the floors were covered with tiles while the timber covering was preferred in the rooms. In the earlier houses there are also examples where the *sekialtı* and *sekiüstü* of the main room are paved with tiles (Erzurum st., 46). The use of tiles in *cihannüma* spaces that need to be washed is also common.

Tile paving was the most altered floor coverings, this is why they can not be noticed today. Some of the examples where the tile paving is still existing are; Doyran st., 9, in Citadel (Yavuz, 1984: 164); Sarıkadın st., 43 and Erzurum st., 46, in Erzurum Qu., (Akok, 1946); Gelin st., 8, in Ulucanlar Qu. For a tile paved *cihannüma*, a lately built house at Keklik st., 4 can be given as example.

The floor pavement in the lately built houses are timber except the *taşlık* space. The stone pavement is the most significant feature of the *taşlık*s and courtyards in Ankara houses. The stone was never used in *sekialtı* or in the main hall in Ankara houses unlike Kayseri (İmamoğlu, V., 1992: 220-221). Though, stone was noticed in the pavement of some toilettes that still retain their original condition.

In stone pavement there is no standardization. Both cut stone and rough stone were utilized in paving with regular order. Most of the court and *taşlık* paving are covered with screed today to obtain a smooth surface (examples of original stone paving in İstiklal Qu., at Eskicioğlu st., 8; in Samanpazarı at Keklik st., 3; in Ulucanlar at Uzunkavak st., 25).

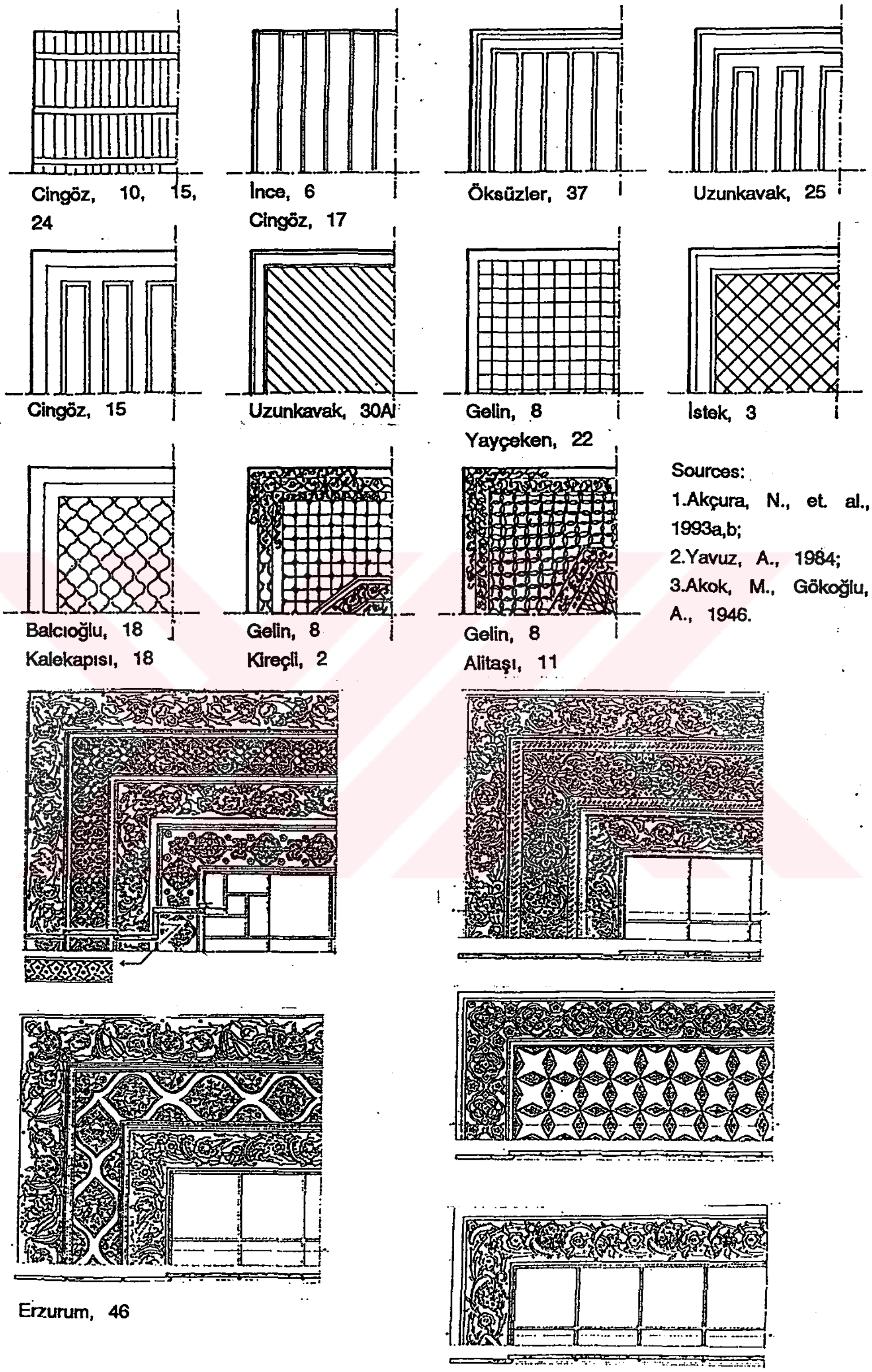


Figure 3.8 Some Examples from Common Ceiling Types in Ankara Houses

Service spaces located at the ground floor are covered with pressed earth. At present some of the storage, straw house, stable, etc., are paved with timber, works lately to produce new dwelling units.

Safnail-Sekialtı: Called as sekialtı or *pabuçluk* in different regions in Anatolia, the entry area of the main room that is lower than the main floor is locally called *safnail* Ankara. It is separated from the main floor by balustrades and arches. In this differentiation the upper part called *seki* or *seki üstü* forms the main floor. This lower platform, paved with tiles, is used as a preparatory space in the main room. When entering the room, people took their shoes off and passed to the upper section to sit on the *sedir*.

Sedir: *Sedir* is a built-in sitting platform placed on one or two edges of the room. In the earlier houses it surrounds the room from three edges except the entrance side. These elements are placed at the street facades of the rooms, to have a better view from the street while sitting then the height of the windows in front of the *sedir* are arranged accordingly.

The height of the *sedir* changes between 25 to 40 cm. After the use of chairs, the heights of the *sedir's* were increased to have a parallel sitting platform. Subsequently, *sedirs* were removed from the rooms when the use of furniture was becoming popular in most of the houses.

Room Facades: The built-in elements of room facades are mainly cupboards with specific uses and names and the timber cornices. Windows and doors are also the features that effect the outer and inner facades. The cupboards as the integral parts of the rooms have different sizes and functions to which we will come back later.

Sandalyelik and the *Sergen* are the timber elements used in the rooms. *Sandelyelik* is a timber cornice placed 65-70 cm. above the floor level and has a width about 15-20 cm. Its aim is to preserve the wall plaster from the possible damage of movable furniture like chairs. *Sergen* is a set of open shelves in timber, placed usually on the kitchen walls and used to put utensils on.

Door, Window and Their Elements: The interior and exterior doors of the houses differ from each other and both of them are made of timber. The elements of the doors are combined with timber joints. Nails and metal timber connection elements are not popular in their construction like almost in all other built-in-furniture. The main gate opened onto courtyards or into the building. The main gate has two wings while the interior doors usually have one, except the two winged ones in the late houses.

In the earlier houses, the doors are decorated by jointing and carving. The hierarchical order of the spaces are reflected on the doors. The more decorated ones are used for the main room. By looking at the decoration of the doors placed at the *sofa* it is usually possible to guess the spaces behind them. Various types of decoration is used on the doors. The paneled order on the door wing or the use of arches at the top, all look popular in the earlier houses. In the late houses, the inner doors are heightened and sometimes double winged, but more simple in form.

The main doors of the building or the courtyard doors are more elaborate then the interior doors. The former ones, seen in the late houses have windows on top or on the sides to take light into the entrance space behind them and have two wings. Decoration of the door frames was also common in the later examples. The courtyard doors have bigger double wings to let the carriages pass through, and eaves on top of the courtyard door to protect the visitors from rain. With the alterations of the doors, in time, the hierarchical order of doors in the buildings was partly lost. The use of metal doors keeping the original dimensions of earlier ones became popular especially in the main doors.

The windows are the important elements that represent the periodical characteristic of the building. For example, the top windows with stucco grills, placed in the main room and the hall were common since the 17c. where the use of glass was not common in buildings yet, while, the square formed, small windows were popular at the ground floor especially in service spaces.

Their dimensions and form changes according to the spaces where they were used. The dimension of the inhabitable space (rooms) windows are in 1/2 ratio in general. The guillotine type was common earlier, the winged type became popular later in similar dimensions. The use of elongated windows in the main hall together with the windows in 1/2 ratio in the rooms was a popular choice in the 19c. in order to create strong and symmetrical facade order.

The window frames and the pediment at top were the elements used to decorate the windows. The timber shutters and balustrades were utilized before the use of glass and their examples are limited to the early houses today. On the contrary, the cast iron window balustrades commonly used in the 19c., still exist. The houses were subjected to large scaled interventions by enlarging the windows in the traditional fabric in Ankara. In these interventions the windows in 3/4 ratio and with several wings took the place of the original ones in order to let more light to the interior.

<u>Cupboards, Niches, *Yüklük, Lambalık*:</u> Built-in cupboards are the integral parts of the rooms that have different functions and sizes. The basic types are *yüklük*, *lambalık*, open niches, cupboards and glassed cupboards. *Yüklük* is the biggest cupboard allocated for storing the rolled-up beds and pillows. *Lambalık* is a recessed apse on the wall or between the cupboards, it is about 80 cm. above the floor level and is topped with a half-dome. It is raised from the nearby cupboards about 20-40 cm., has a timber framed structure covered with gypsum plaster. It was usually placed at the center of the wall together with a number of cupboards to put lamps or other valuable household utensils.

By the use of these cupboards together with the *gusulhane* and the room door, many combinations were produced on the single or both walls of a room (see figure 3.9). A classification can be produced according to their variety, number, size, height, wings, combination order and the location of the wall in which they are placed in a room but we will no go into detail about them.

Though; the basic elements repeating in most examples can be mentioned here and these are; wall part, window, door, door in a niche, *yüklük*, *gusulhane*, narrow cupboard, cupboard, glassed cupboard, *lambalık*, fire place. When the door and the cupboards are placed on the same wall, the cupboards have usually wings. For cupboards open niches with shelves is not a common type. *Gusulhane* and *yüklük* have a single wide wing or usually two wings. The *lambalık* is usually placed at the center of the winged cupboards in a symmetric order. In this use the *lambalık* starts about 80 cm above the floor level and there might be another small cupboard or the wall may run solid. This order has been used in comparatively later houses.

<u>*Gusulhane*:</u> *Gusulhane*, a bathing alcove located in the wall, is one of the most common features of the rooms. It is comparatively a large unit, enough to wash one's body, and larger than the other cupboards except the *yüklük*. Originally, the floor and the facades of the *gusulhane* are plastered probably with a water proof lime plaster (*horasan*) and at present the floors are paved with screed. Even though they were subjected to alterations in material scale in many houses they still keep their original functions now.

The timber wings of the *gusulhane* are wider than the other cupboards and their floor levels are lower then the others. In the Citadel, there are some *gusulhane*s where there is a lid placed at top of the floor level to be closed after use (Yavuz, 1984: 163). Few examples, gypsum plastered and ornamented, keeping their original features still exist in Ankara houses today (Yayçeken st., 20).

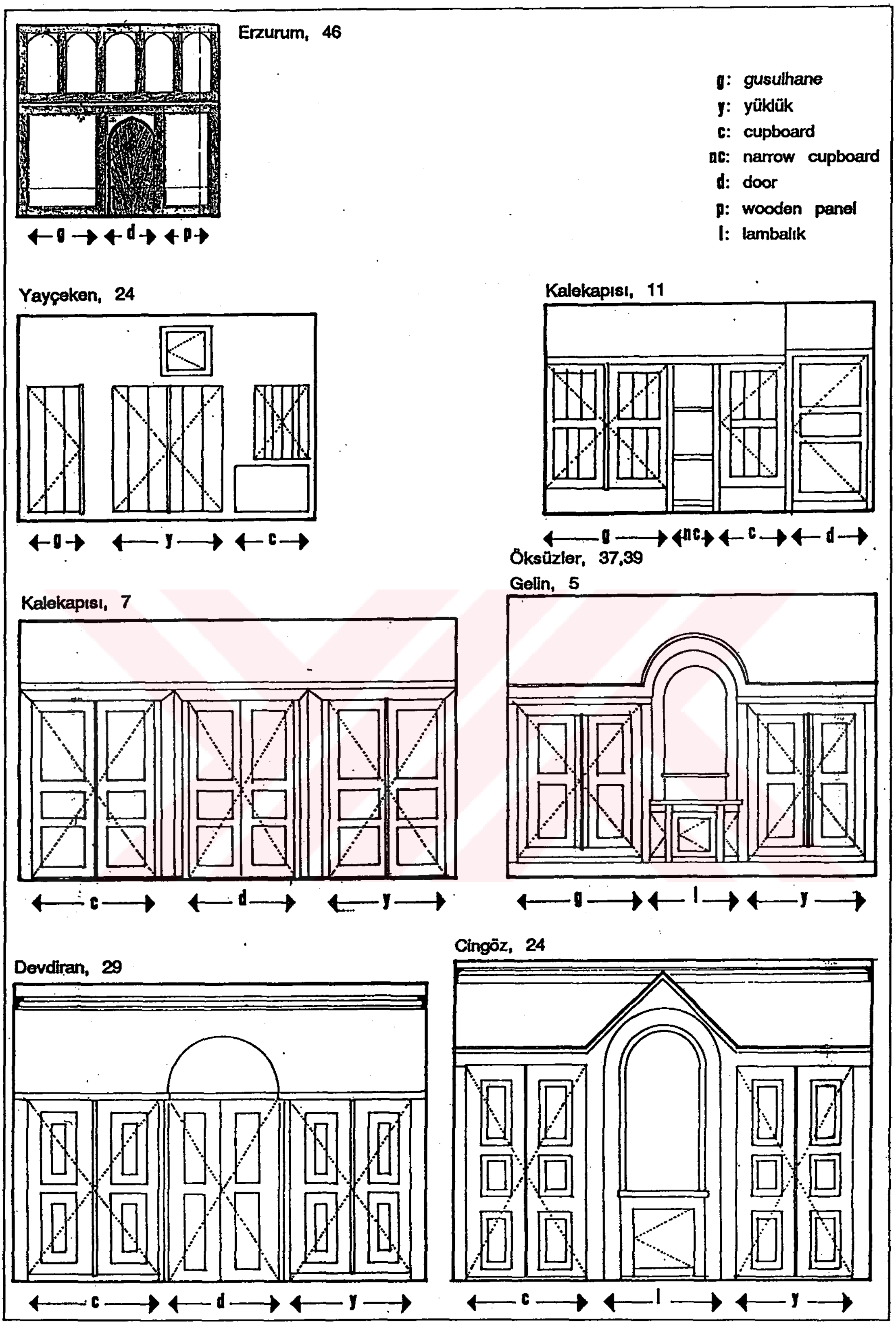


Figure 3.9 Some Examples from Room Facades and Their Elements
(source: reproduced after Akçura, N., et al., 1993a: 82-87; Akok, M., Gökoğlu, A., 1946;
Yavuz, A., 1984: 178-181)

Ocak: The fireplace, one of the distinct elements of Ankara houses, is almost completely lost today. In 1980, at the Citadel there were only three houses that had a fireplace. In two of them, the fireplace was located at the center of one of the room facades on which they were placed (Doyran st., 5) and the third one was placed between the two windows on the street facade of the room that projects to the street at Kalekapısı st., 10 (Yavuz, A., 1984: 163).
An older fireplace, in the main room of the Yusuf Uğraş house at Erzurum st., 46 still exist today in a partly ruined condition it is placed on the masonry wall and has a curtain made of gypsum. Formerly there had to be fireplaces at the kitchen in the ground floor and in the winter section of the houses as that was documented by Akok in Y. Uğraş house.

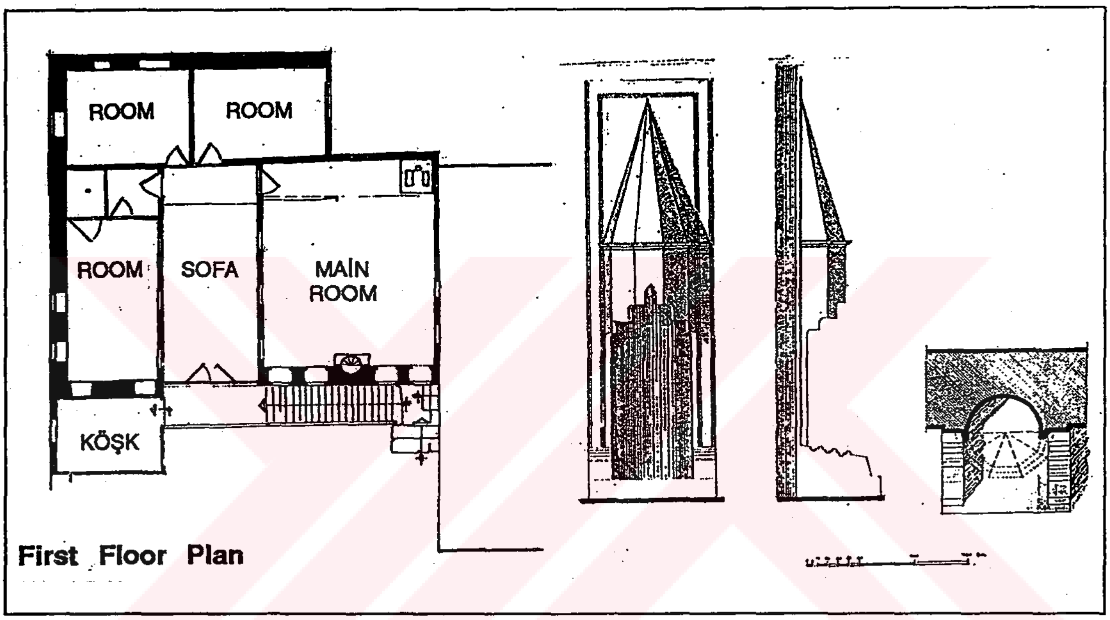


Figure 3.10 Fireplace in the Main Room of Yusuf Uğraş House at Erzurum St., 46, (source: Akok, M., Gökoğlu, A., 1946; Şahin, N., Morçöl, E., 1993)

Nevertheless, there are not enough examples to describe the physical characteristics of the fireplaces in Ankara houses. Traces of a chimney hole passing through the timber flooring in the house at Keklik st., 4 gives information about the use of fireplaces at the ground floor.

However, the use of fireplaces was forbidden on the interval floors by the building regulations (*Ebniye Nizamnamesi* 1887). This shows that there was a tendency to built fireplaces on the interval floors. For such usage, the obligation brought by regulations to built the chimneys with brick masonry, can be another clue for us to determine the use of fireplaces in a house. The original fireplaces and their chimneys were widely removed to keep the buildings far from the fire after the use of stoves.

3.5. Structure and Material Characteristics

Traditional Ankara houses were built with timber framed construction system that mainly consists of three sections according to the characteristics of the construction technique and the material. These sections are; foundations and the masonry section that forms the ground floor which we call the masonry base, the timber framed upper section and the roof structure (see figure 3.11). As a methodology, structural analysis of the Ankara houses based on this classification was developed by Morçöl before[8].

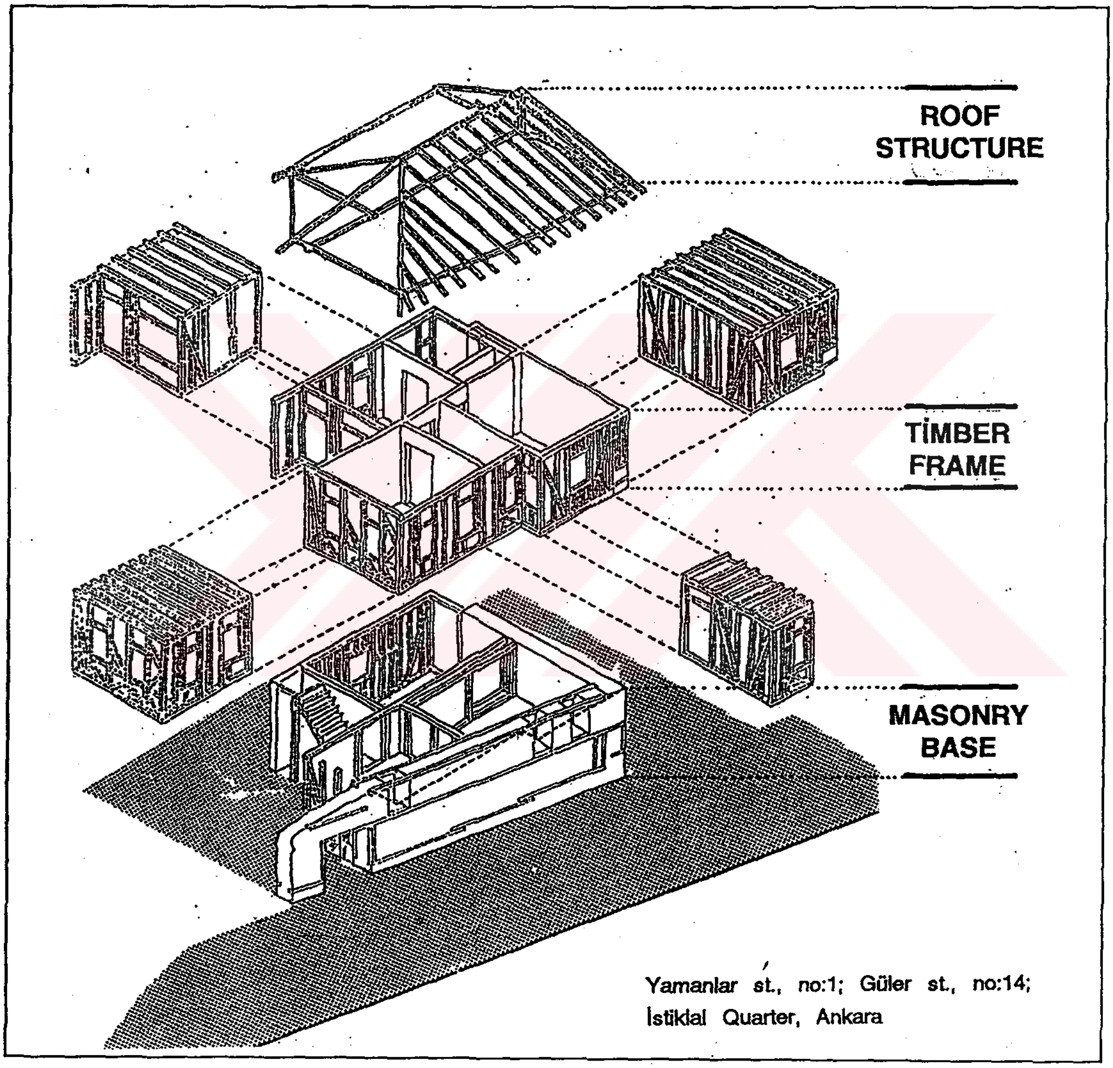


Figure 3.11 Sections of a Timber Framed House in Ankara
Source: Şahin, N., Morçöl, E., 1991: 660.

The structural opposition between the ground and the upper floors that is accepted as a characteristic of Anatolian houses (Kömürcüoğlu, 1955, 48; Arel, 198) is not completely valid for Ankara houses[9]. Even though in the settlements near to Ankara, for example in

Beypazarı the use of main posts carrying the upper floor apart from the masonry base is common, this was not prevailing systematically in Ankara (Aksulu, I., 1982). On the contrary, there are some houses in which some of the main posts may continue from the foundation up to roof level but that does not reach a systematic order.

The opposition in the structural system of upper and lower sections that reflected the plan scheme is a characteristic of old Anatolian houses. However, a differentiation in the plan schemes of the upper and the lower sections exists, even though such a structural opposition between the levels is not observed in Ankara houses. Owing to this, it becomes clear that; there is a continuation and unity in the structural system although there are divergent plan layouts in different levels (e.g., Erzurum st., 46).

The outer walls in the ground floor are completely masonry while the inner partition walls might be masonry or timber framed as a feature of the construction technique. The timber framed upper floors are arranged to get a proper geometrical form by the projections above the ground level. The floor beams are usually placed; parallel to the short sides of these right angled, rectangular or square formed upper spaces. So, the dimensions of available material limited the space dimensions. In Ankara, the space dimension or the length of the floor beams vary between 3.00m. to 5.00m. and reach a maximum 6.00 meters. If there are bigger spaces than these limits (in some specific cases especially in the main hall), timber logs with a bigger diameter were used in place of the ordinary beams that have cross-sections of 15x10 cm. or 10x10 cm. The use of main girders, 20x20 cm. or 20X10 cm. in cross-section, is possible for larger spans besides the regular beams (e.g., Sarıkadın st., 43, Erzurum st., 46).

As mentioned before in the section 3.3., the building heights vary between one to three floors and there may be a basement and a roof floor in Ankara. The floor heights' change between 2.50-400m. in ground floors but usually it is about 3.50m. as shown in table: 3.3. In the upper floors it varies between 2.68-4.20m. and the common height is around 3.00-3.50m. In mezzanines, the floor height is about 2.00m. then the roof floor is about 2.50m. These dimensions were probably derived from the sizes of available timbers.

The variation in the heights of the floors indicates that there was not a standard production of timber elements and the floor heights were determined according to the material available. In spite of this, the use of longer timber logs was not common even in the earlier houses, except in special places as main girder or post.

3.5.1. Masonry Base

The masonry base is a combination of stone masonry foundation walls and the masonry ground floor walls on top of that. These two parts might be built with the same material or they may differentiate in the foundation and the ground floor.

3.5.1.1. Foundations

In the foundations of Ankara houses and in the courtyard walls, a local material a type of andezite called as Ankara stone was commonly used. The upper section of the masonry base is composed of mud-brick or rubble stone. The thickness and the composition of the walls vary with the age of the building. The thickness of the walls in the masonry base changes between 50-90 cm. but the standard thickness is about 60-80 cm. The use of timber beams or cushions under the stone or mud-brick foundation walls has a long tradition in Anatolia since the very beginnings (Naumann, 1985:61). It is not possible to make an explanation about the use of timber cushions in Ankara houses because of the inadequacy of records on foundations of traditional houses[10]. On the other hand, the timber beams used in the stone foundation walls, regularly in each meter, is observed in the restorations done in the city in recent years[11].

The depth of the foundation depends on the characteristics of the land on which the building is erected. In some cases, where the ground is not homogeneous it becomes necessary to go deeper for the foundations. In Ankara, the settled area around the Citadel, where the traditional houses are spread, has a comparatively rough and rocky character (Altaban, Ö., 1987:7-15). However, in comparatively plain areas like; Ulucanlar, Erzurum and İstiklal quarter, where the foundations go deep for almost 2.00 meters, it was necessary to remove the earth above, to reach the rock base underneath. The depth of the rock level is changeable; so, for construction it is necessary to find specific solutions in each parcel. In some of them, it is possible to reach the rock level in 20-30 cm. but in some others the foundation may go deep for almost two meters or more below the ground level[12].

The foundations can be classified in three categories according to their structural characteristic as; discontinuous, continuous and composite foundations.

i) *Discontinuous Foundations:* This type is commonly used in north-western Anatolia in the houses where the ground floor is left partly empty (figure 3.12). This system which is noticed in Beypazarı and Nallıhan, is in settlements very near to Ankara but it is not observed in this density in Ankara houses (Kafesçioğlu, R., 1955:42). In this system, the upper floors rest on timber posts with a cross-section of 20x20 cm. or on thick timber logs (figure 3.13). These posts were not jointed together in the ground level but they were placed on top of the irregular stone piers; thus, the foundations do not behave continuously. The openings between the posts are filled with non load-bearing mud-brick or stone walls. The stone bases are raised 25-40 cm. above the ground level and the timber post is just placed on them without any joint or a specific detail. In this manipulation, there is no damp proof course that preserves the timber posts from the rising damp; however, raising the stone piers 25-40 cm. above the ground level is supposed to be satisfactory. A timber girder, placed on top of the timber posts combines them by forming a frame.

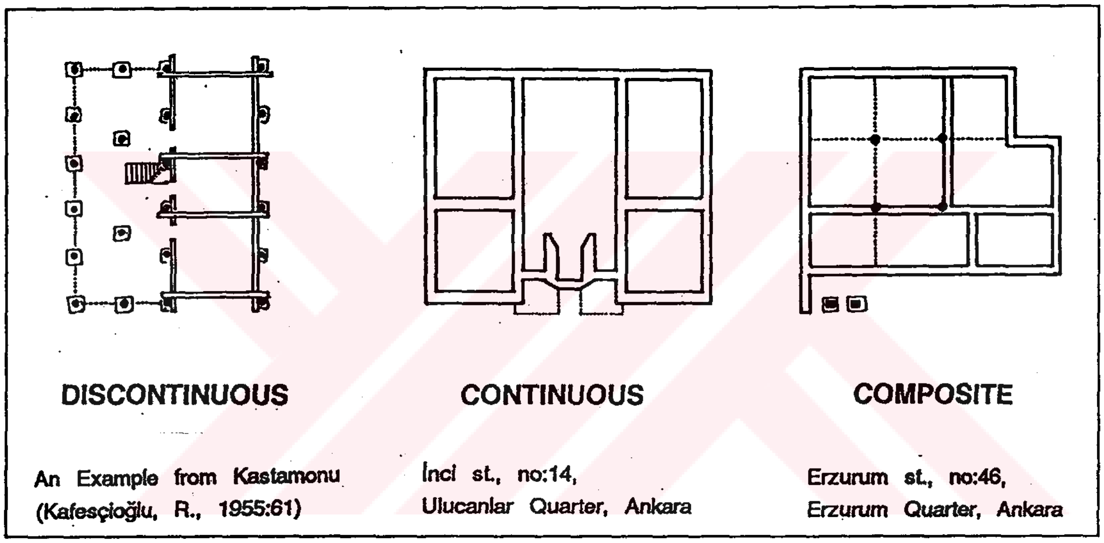


Figure 3.12 Schematic Drawing of Foundation Types in Timber Framed Structures

This type of structural system was not used in Ankara; but the use of timber posts in the *taşlık* below the open main hall is a popular feature in the early examples. The house at Kireçli st., 4, in the Citadel owned by the Ministry of Culture; the house at Doyran st., 9, owned by Ankara Great City Municipality and the house at Sarıkadın st., number 43; are the examples resembling this case. During the restoration process of the first house it was noticed that the original walnut logs with a 30 cm. diameter were replaced with the new ones and the building was completely reconstructed by keeping only some of the original painted ceilings (Şahin, N., Morçöl, E. 1989). In the second example at Doyran st., 9; the original materials were better preserved, and most of the original posts carrying the hall still exist today (Şahin, N., Morçöl, E., 1989). However, the foundation type of these buildings can not be defined as discontinuous; since they have composite foundations.

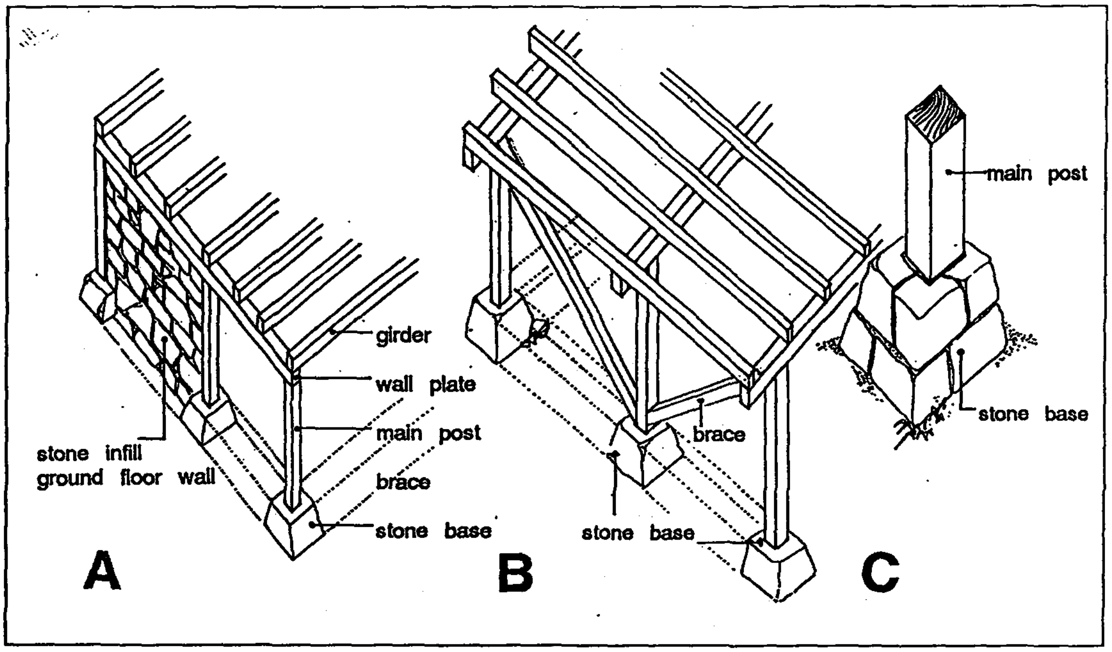


Figure 3.13 Main Post Order in Discontinuous Type of Foundations
(for more examples see Kafesçioğlu, R., 1955).

ii) *Continuous Foundations*: The foundation, forming a frame under the external edges and through the axis of the building is defined as continuous foundation. In Ankara, it is built in rubble stone masonry. This system became popular in some houses built at the end of the 19c.; when the open hall become out of fashion and the buildings reached a simple cubic mass, then the continuous foundations were used in such buildings. The house in Ulucanlar, at İnci st., 14 resembles this case, it has a plan scheme with a centralized closed inner hall and the rooms are placed on both sides. This plan scheme is determined completely on the foundation walls which are built of cut stone masonry in the ground floor and probably rubble stone masonry in the foundation level. Some other examples resembling this case are the houses in Erzurum Qu., Sarıkadın st., 67-69 and Zülüflü st., 18. If there is a *taşlık* space in a lower level, in the ground floor, the continuous foundations were used through the inner axis surrounding the *taşlık* which is built in the timber framed technique. The house in İstiklal Qu., at Eskicioğlu street, 8 is an example of the case.

iii) *Composite foundations*, is the most popular type in Ankara houses in which the foundation of the external edges of the building is rubble stone masonry forming an outer frame, and the inner axis or partition walls made of timber framed system are supported by separate main posts in the foundation. The house in Erzurum Qu., at Erzurum st., 46 is an early example with composite foundations while the house in Samanpazarı, at Keklik st, 4 is a late one.

In Ankara houses in general, the outer walls of the masonry base are stone masonry and the inner partition walls are built with the timber skeleton system. If there is a semi-open space under these partition walls, the foundations may be in continuous order. However, if there is not a space like the *taşlık* in the ground floor, the partition walls are placed on the timber posts that are located on top of the separate stone piers (e.g., Keklik st., 4). In such cases, the thickness of the main post does not necessarily increase. The main post has a cross-section of 10x10 cm. This type of foundation is not specific to Ankara, it is also common in north-western and in central Anatolia (Kafesçioğlu, R.,1949:10,25).

As a secondary alternative, if there is no partition wall in the ground floor, then the upper floor is carried by the separate main posts located in the ground floor (e.g., Erzurum st., 46). When there are partition walls in the ground level the upper partition walls are carried by them, even though the thickness of the wall gets thinner.

The rubble stone foundation walls reinforced by the timber beams are placed on the interior and exterior faces of the wall around one meters apart from each other. Timber beams in masonry walls is a tradition dated back to prehistoric periods in Anatolia. For example in Beycesultan (Naumann, R.,1985:61-62, 58-67, 368-391) the timber beams were frequently used in the stone masonry foundation walls (BC. 4.000-2000) in the Early Bronze Age[13] (fig. 3.14).

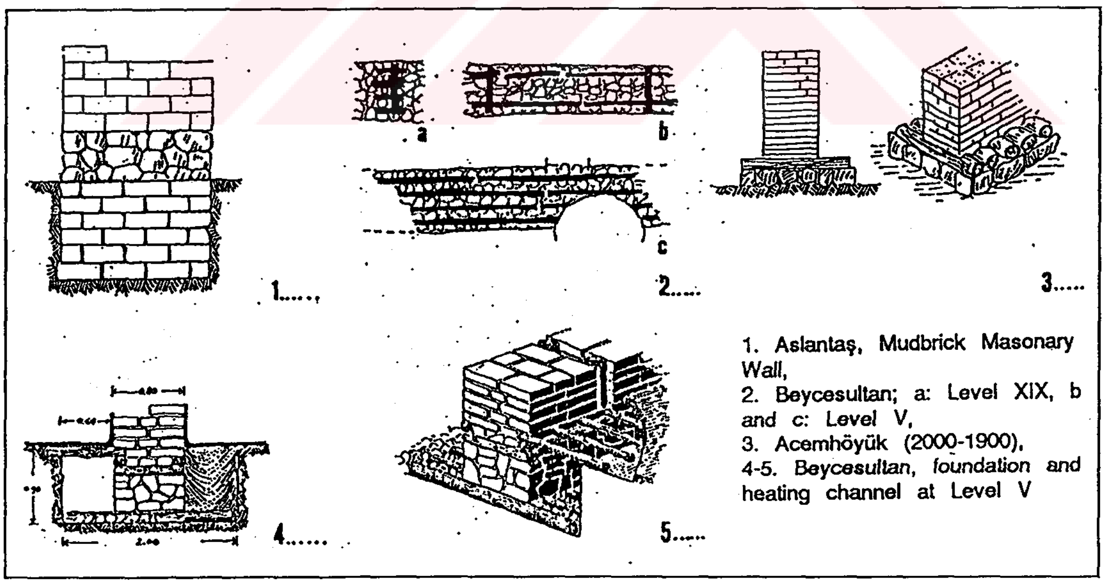


Figure 3.14 Use of Timber in Foundations in Historic Periods in Anatolia, (Naumann, R.,1985: 62, Figure: 34, 35a-b, 36).

The main function of the timber beams was to form a frame around the masonry and to provide the unity of the wall. Besides, the use of timber elements, set under the mud-brick foundation walls, in order to preserve the material from rising damp was also an old tradition in Anatolia. Timber elements are used both to adjust the ground and to keep the material from rising damp in Acemhöyük III (BC. 2000-1900) where the foundations are built with mud-brick.

The sudden decrease of the percentage of humidity in the brick section above the timber beam located 1.45-1.50 meter over the ground level is mentioned by Tunçoku (1993: 97) according to the results of the mortar and plaster analyses of Tahir and Zühre Mescid in Konya (13c., Seljuk period) and this supports the observation that timber was used traditionally as a damp proof course. Because, the hydroscopicity of timber placed parallel to its fiber orientation is higher as a result of capillary action while the hydroscopicity is lower when it is used perpendicular to the fiber orientation of the timber.

As a result, when the timber element is placed in the wall, parallel to its fiber orientation, it functions as a damp proof material. Undoubtedly, timber alone cannot stop rising damp completely, because it is also a porous and hydroscopic material, besides timber beams were not placed side by side creating a covering layer in the ground floor section of the walls. So timber can not stop the dampness completely. Still, this traditional common use, makes us consider that there is a rational in this assumption. The use of especially resin riche pine, which is a toxic material and has strong resistance against wood boring insects, shows the former builders were aware of the physical and chemical properties of the materials they used. On the other hand, the hydroscopicity of resin riche pine will be lower, because all the fibers are filled with resin. The triple use of the timber beams in the wall covers the wall section and creates a sound layer that behaves as a damp proof course. To prove all these arguments is beyond the limits of this study but these are the important observations which should be evaluated and tested by the researchers who work on building physics.

In some of the 19c. houses in Konya, where the tradition of timber beam in the masonry base was common, only the mud brick section of the masonry base was plastered and the stone foundations, topped with timber beams at ground floor level, were left uncovered (Metu, Fac. of Arch., 1993). The mud plaster is naturally weaker against water, so; a local caution was taken to prevent the plaster from rising damp in Konya.

In the houses that keep their original plaster, the lower stone sections of the walls are completely deteriorated under the ground floor level in Ankara. In some others, the plaster is renewed with the cement based plaster and painted in dark colors. So, probably there was no original solution used against rising damp except the use of timber beams at the top of the stone foundations as a continuation of tradition in Ankara. These beams, besides forming a horizontal frame that reinforces the mud-brick masonry are also used to prevent the decay of the mud brick with reference to the discussions above.

Timber beams were used both in mud-brick and stone masonry walls (figure 3.15). The beams made of timber with, a cross-section of 10x10 cm., are used in the interior and exterior faces of the walls connected to each other regularly by some tie beams. The cross-section of the tie beams are usually 10x10 or 5x10 cm.

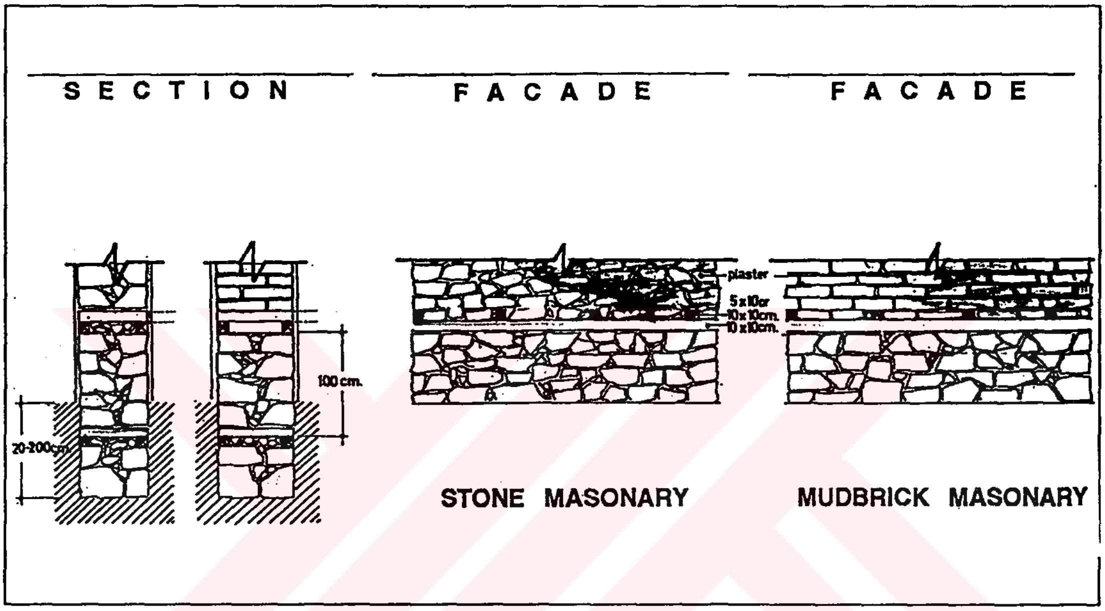


Figure 3.15 Use of Timber Lintels in Masonry Walls in Ankara Houses

3.5.1.2. Ground Floor Walls

The ground floor walls are made of cut or rubble stone or mud brick masonry while the foundations are built with only rubble stone. The rough stone blocks were used in an irregular order in rubble stone masonry walling, where the bigger stone blocks are placed at the outer parts and the small ones placed in the inner parts. The earth based mortar; that is made of silt, clay and straw was used as binding material in the masonry walls[14].

When the ground floor of the building is made of cut stone masonry, only the outer faces of the walls are made of cut stone (figure 3.16), and the inner faces are rubble stone. In this order, only the outer face of the stone blocks was cut and the other faces were left rough. In Ankara, except the few examples built in late 19c., there are not many buildings that have ground floor in cut stone masonry. The sizes of the cut stone blocks vary in these examples but their heights are about 25x30 cm. and their lengths are about 50x60 cm.

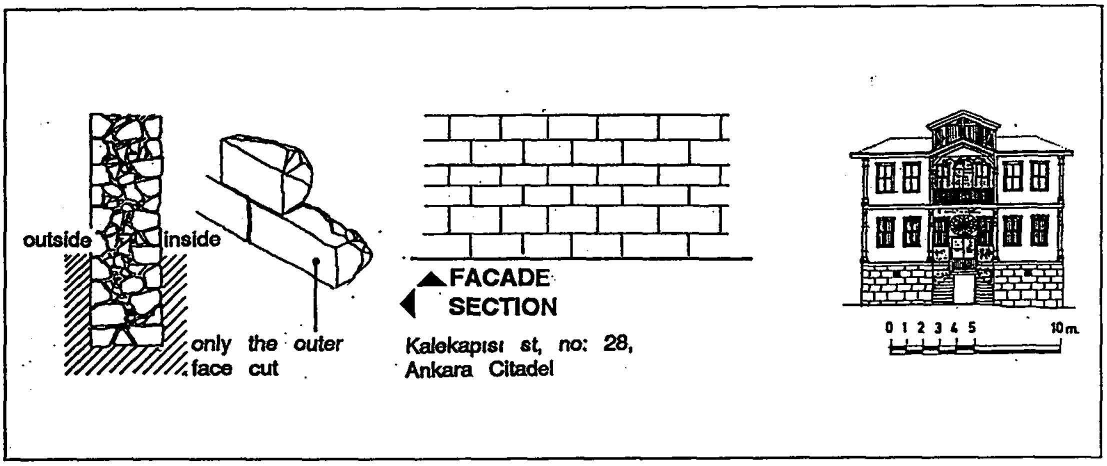


Figure 3.16 Use of Cutstone Coursing in Ground Floor Masonry Walls

In the mud brick masonry walls two different types of units were used. The bigger one called (Kafesçioğlu, R., 1949: 10,25) "*ana*" and the smaller one called "*kuzu*"[15]. The dimensions of these units show small variations because they were handmade products. This differentiation in units partly explains the various thicknesses in mud brick masonry.

The dimensions of bigger units varied roughly from 24-30 cm. in width and in length and 10 cm. in thickness. Though, the common units are in 28 cm. in width and in length and 10 cm. in thickness. Half size of the bigger unit is used for the small ones; their dimensions are varied from 12,5-15 cm. in width, from 24-30 cm. in length and 10 cm. in thickness. These units were laid in common bond in the construction of mud brick walls that has a thickness varied between 50-80 cm.

Some vertical timber elements were also used in the mud brick masonry walls parallel to the use of timber beams. This construction technique is completely different from the system that is mentioned above in discontinuous foundations. The vertical timber elements (studs) do not continue through the whole storey. They can be accepted as vertical elements forming a vertical frame in the mud brick masonry similar to the timber beams placed in the wall.

This technique does not show a systematic application; they only used it in some sections of some houses which are defined as "composite masonry or framed masonry" for Ankara houses in this study. The house in Samanpazarı, at Keklik st., 2 resembles this case as a late building. In the inner and outer faces of the masonry walls, the timber vertical elements placed between the beams were used to support the masonry section. During the restoration of the house at Keklik st., 2, when the plaster was removed, the vertical elements which were used regularly were noticed in the masonry section. These vertical elements formed the frame between the ground floor level and the wall plate, as shown in the Figure 3.17.

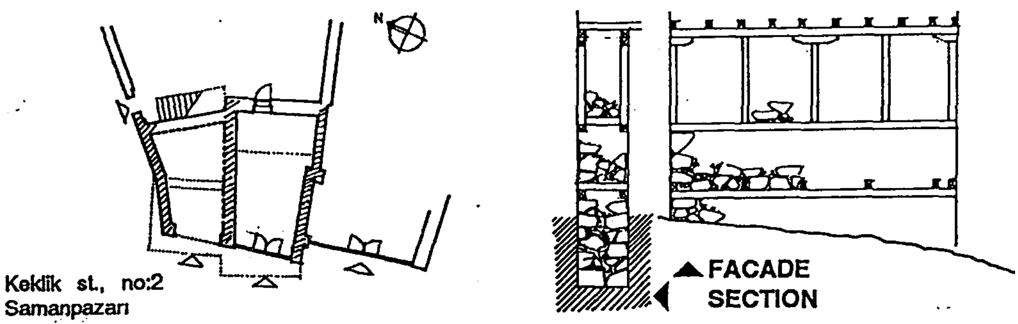


Figure 3.17 Use of Vertical Timber Elements in Masonry Ground Floor, the "Framed Masonry".

In most of the houses, in a part of the masonry wall or on some facades, this type of timber supports and in this study it is referred to as framed masonry, can be seen. Nevertheless, this does not indicate a certain structural system, it is not regular and it is not systematically applied in the houses and not even in the whole facades of a single building.

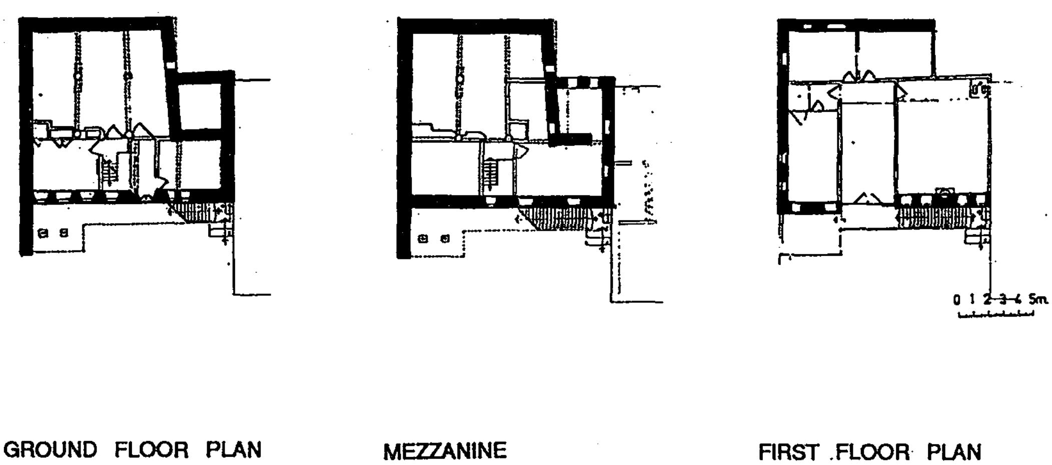


Figure 3.18 Use of Masonry Service Wall in Upper Floors, (Şahin, N., Morçöl, E., 1993).

The continuation of one or two masonry walls of the houses to the upper floors, as a service wall, that contains the fireplaces, cupboards, niches, etc., is a characteristic of older houses in Ankara. Also in some examples the masonry walls may continue in the mezzanines, then, after the first floor the timber framed section starts. The houses shown in Figure 3.18 represents this case. In later examples with adjacent order, the fire walls between the buildings were built up to the roof structure parallel to the building regulations introduced after 1860's.

3.5.2. Timber Framed Section

The section between the masonry base and the roof structure were built in timber framed system in Ankara houses. The timber-framed walls and the floors are the components of the timber-framed system. The timber-framed structure is basically formed of structural and auxiliary elements. In this study, the main elements forming the timber framed structure, their relation with each other and their combinations in the construction process will be defined in respect to Ankara examples.

3.5.2.1. Structural and Auxiliary Members

The structural members that altogether form the main frame of the timber-framed construction are the Main Post, the Foot Plate or Sill, the Wall Girder or only Girder and the Brace. The auxiliary members are the stud, the window and door post, the upper and lower window sill, the upper door sill or lintel and the tie-beam that shape the facades according to the character of the infill material and the openings (Figure 3.19).

<u>Main Post:</u> Main posts define the main axis of the buildings that are placed at the corners of the spaces in timber framed structure (Figure 20). The cross section of the main posts is usually 10x10 cm., but their length varies according to the floor height. The main posts are set on the floor plate and the wall plate is placed on top of the main posts supported by the timber headings. The main posts are assembled the upper and lower elements with one, two or maximum three nails; they do not contain almost any joints.

In the later houses, the main posts were decorated with the pseudo capitals and bases, trying to give the expression of a stone column in Neo-classic style by timber covering (Yavuz, A., 1984:169). In some others to give the impression that the lower posts were thicker, the faces

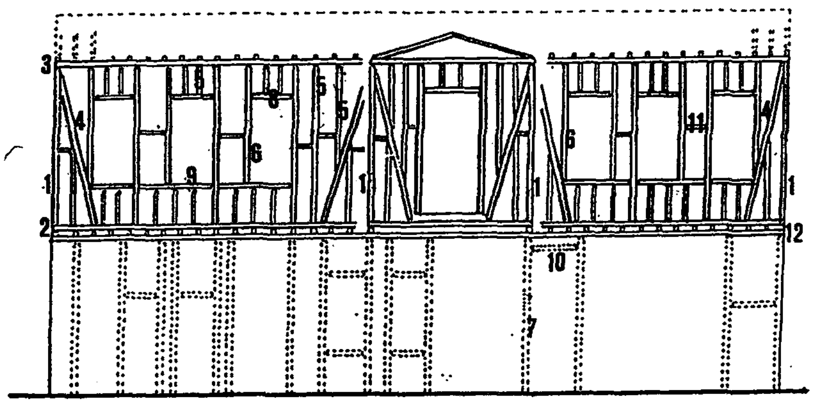


Figure 3.19 Structural and Auxiliary Members of Timber Framed Structure, (Morçöl, E., 1989).

of the posts were covered with timber (Figure 3.20). In the *taşlık*'s of the earlier houses there are main posts that support the open hall above. The thicknesses of these posts are with a minimum of 10x10 cm. Further, they are usually thicker with a cross section of 15x20 or 20x20 cm. centimeters. The timber logs that have a thickness about 30 cm. were also used as main posts.

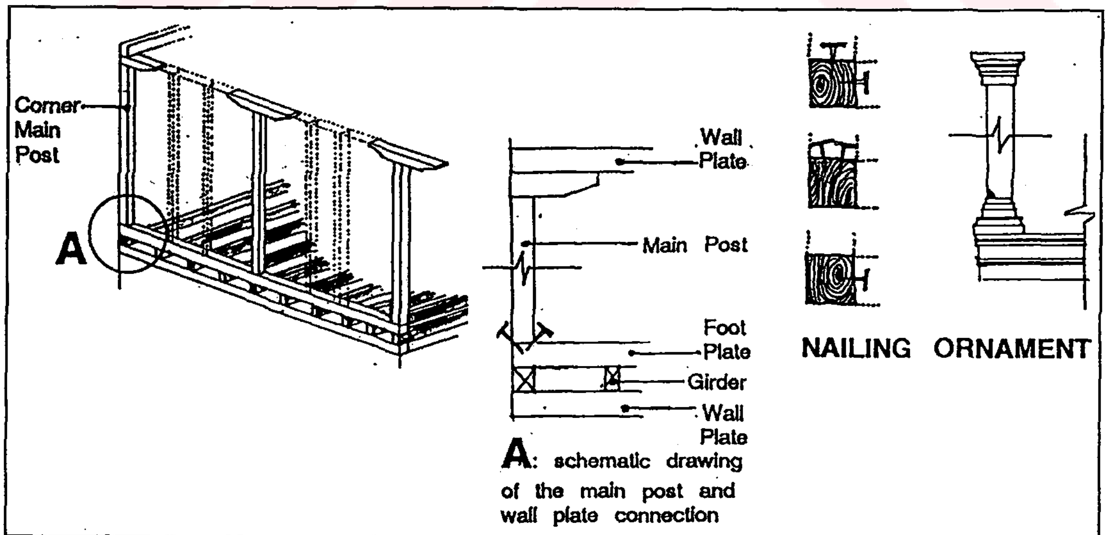


Figure 3.20 Use of the Main Post in Timber Framed Structures

Window-Door Post(s) or Studs (Secondary Structural Posts): In the timber-framed system, the vertical elements used to frame the openings are called window or door post, according to the opening they define; though, if there are no openings in the walls, the distance between the main posts is divided by the studs regularly. The cross-sections of these elements are usually smaller than the main posts that are about 5x10 cm.

The existence and the number of the openings define the organization of the window or door posts. The upper and lower sills for windows and the upper sill for the door is located between the window and door posts. If there are many openings on the wall, the clearance between the posts is defined according to the dimensions of the infill material. The clearance between the two studs or the post should be enough to replace one mud brick or brick unit in common bond or the bricks in herringbone bond. Subsequently, the solid parts of the walls are divided with the tie-beams with appropriate distances to place the infill material. The span between the window or door posts and the main posts is divided regularly by the studs and supported by bracing elements if there are not many openings, like one door or one-two windows.

If the wall is completely solid there might be several studs placed regularly in each 40 or 60 cm. and supported by bracing elements. In some examples where the studs are used regularly, other supporting timber elements were not used, but this does represent the common use.

Above all these definitions, the use of windows or door posts and the studs do not present a systematic order, besides even in the same building there might be irregular uses.

Foot Plate: The beams on which the main posts were set are called the foot plates. The cross-section of the foot plates varies around 10x10, or 10x15, or 15x15 cm. Foot plates are connected with the main girders on the walls which form a horizontal frame in the structure. The floor beams or joists that are put in a row parallel to the shorter side of the space are placed under this frame.

In the connection of the girders and the foot plate, there are special details or joints in the plane passing from the masonry base to the timber-framed structure. The elements simply overlap each other and some times they are fixed with nails; Figure 3.20 shows this simplicity. In some cases (Figure 3.21-A) the edges of two timber members, a rectangular section is removed from both elements and then they are placed overlapping each other, this can be called as a false lap joint.

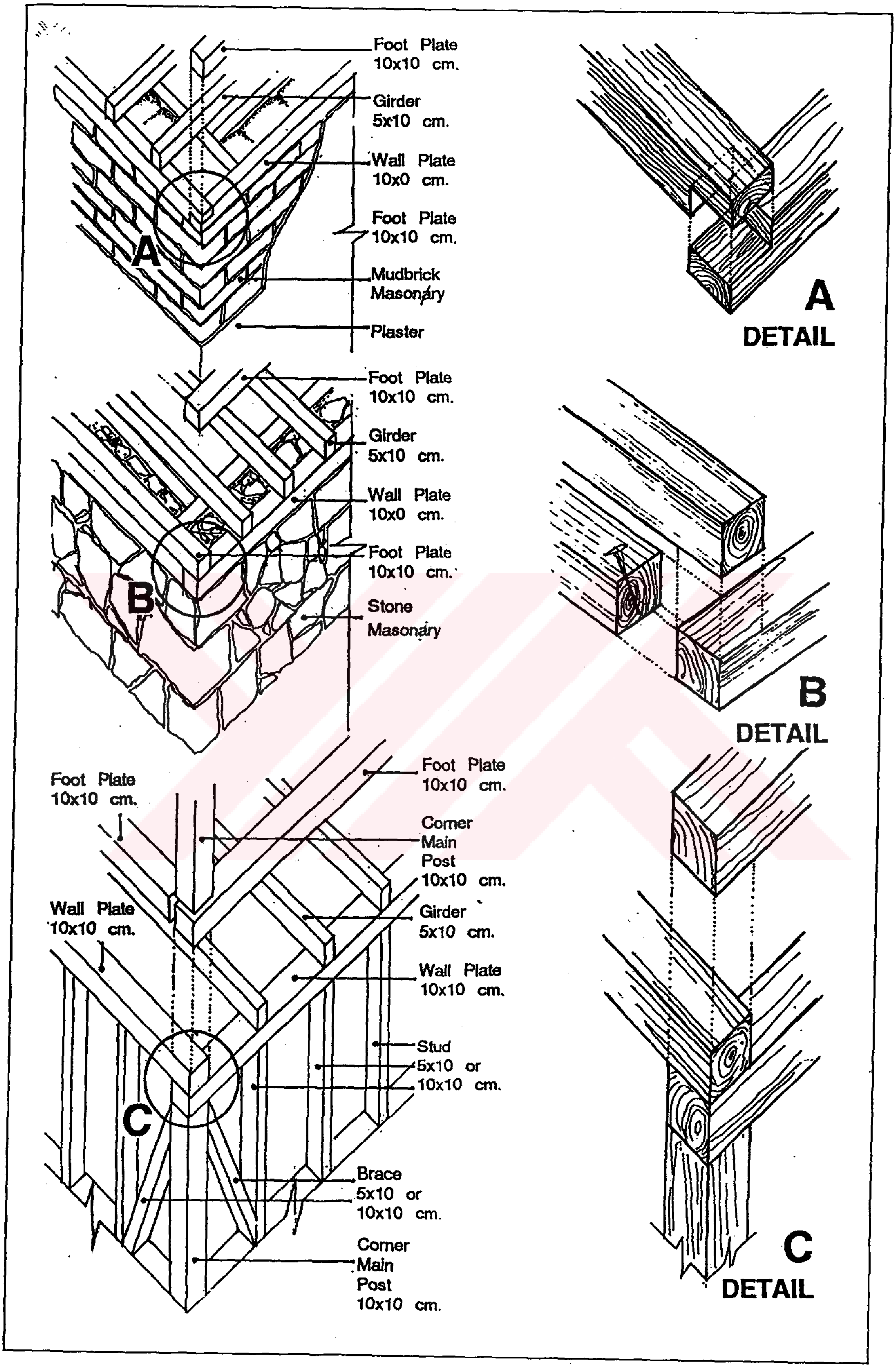


Figure 3.21 Connection Details Between the Masonry and Timber Framed Sections

At the end of the masonry base first the wall plates are set on the inner and outer edges of the wall; then, the floor girders are placed on top of them. In this construction the floor girder located at the end, is used as a foot plate for the following main posts. Perpendicular to the floor girders, another foot plate should be replaced for the main posts of the upper floor. As a result, the setting levels of the main posts that are placed on the perpendicular walls differ from each other. In the plain passing from the timber-framed section to the upper timber framed part the same details were used. If there is a use of double floor girders in each plain type, from masonry to timber or from timber to timber, the floor height naturally increases. The use of double floor girders which is called "*bulgurlama*" in Anatolian terminology will be defined in section 3.5.2.2.

Wall Plate: The timber element, combining the main posts and carrying the floor girders, is the wall plate placed in the wall. The cross-sections of these elements vary like the floor plates; they are about 10x10, or 10x15, or 15x15 cm. The details for connection are also similar as mentioned above. The A, B, and C type connections that are represented in Figure 3.21 are used but the common one is the C type.

Primary Bracing Elements: The primary braces supporting the corner and the main posts were frequently used in the timber-framed section of Ankara houses except the ones that have regular and many studs. On the contrary, in some examples there are braces supporting the whole main posts or the studs of the facade. It should be mentioned that, due to this variety, there are no unchangeable rules in the use of the bracing elements. As a result, this variety, the characteristics of the common and the special types can be searched.

The primary bracing elements are placed between the foot and wall plates, but the secondary ones are shorter elements that do not continue through the facade height. The cross sections of these elements, for the primary ones in general, change about 10x10 or 5x10 cm. Besides them, there are some others varying from 5 to 7 cm. in width and from 10 to 15 cm. in thickness.

The connection of braces with the main posts or the wall plate and foot plate are shown in Figure 3.22, the common one in Ankara is the type B. The braces are placed within the carved out grooves on the foot plate (Figure 3.23-B3). In some others, left just tangent or cut diagonally and nailed on the foot plate (Figure 3.22- B1,2). The upper parts of the braces are cut from one or both sides appropriate to the corner and nailed to the main post (Figure 3.23-A1, A2, A3).

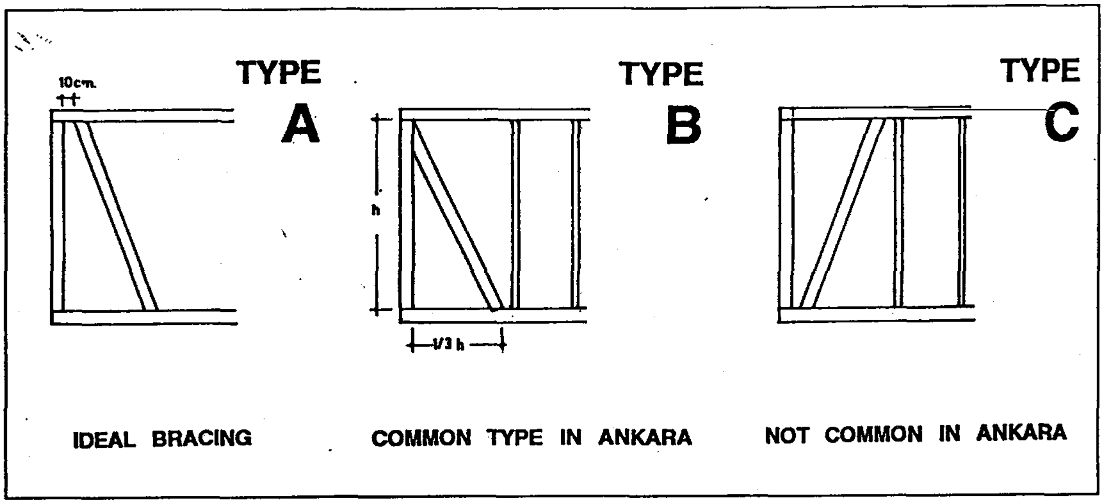


Figure 3.22 Primary Bracing Elements

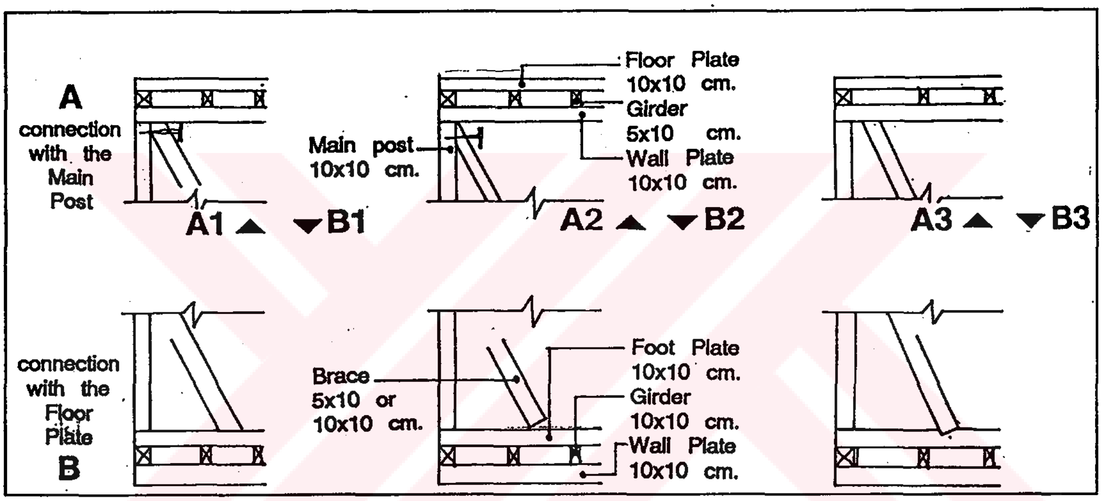
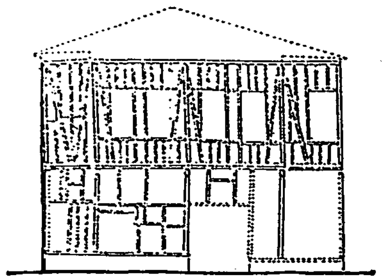


Figure 3.23 Connection Details of Primary Braces with the Main Post and the Floor Plate

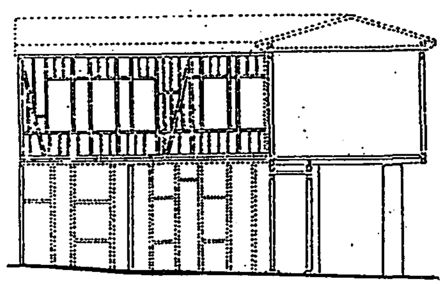
The lower span of the brace is usually 1/3 or 1/4 of the main post. The bracing type shown in Figure: 3.22-C, is very popular in the European houses built with joints that are not used in Ankara houses (Harris, R., 1989; Charles, F. W., 1990: 15-106; Brunskill, 1971: 18-33; Gerner, M., undated)[16]. The nailing of braces to the main posts is not structurally the most ideal solution (Figure 3.23, A), but that is the most common type in Ankara (Eser, L., 1970:71, V:II; Taymaz, H., 1977: 102-104, V:II).

<u>Secondary Bracing Elements:</u> The secondary bracing elements do not continue through the floor height between the wall and the floor plates. Their height is about 1/2 or 1/3 of the floor height. They support the studs, windows and door posts and window sills. In the houses built in the 19. c., the cross braces used in the upper and lower parts of the window sills are used also for decorative purposes besides framing the infill material. In some earlier houses, the main posts are also supported by the secondary braces (see Figure 3.24).

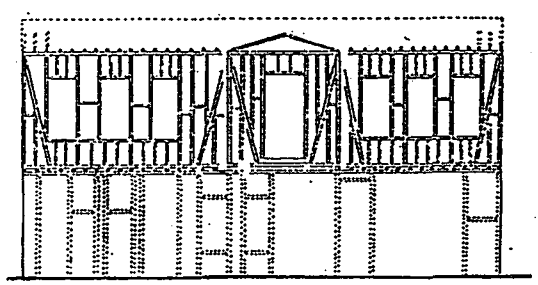
A
EXISTENCE OF OPENINGS
COMMON ORDER **BRICK INFILL**



Eskici st., 2; Yahudi Qu.



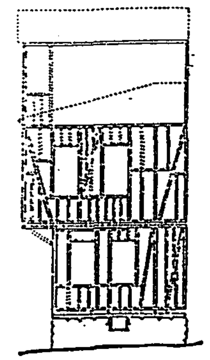
Eskici st., 2; Yahudi Qu.



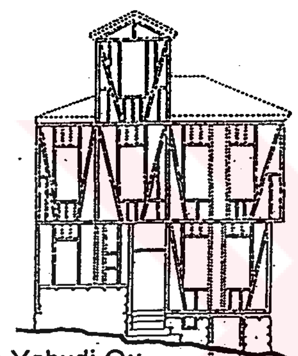
Eskici st., 4; Yahudi Qu.

GROUP 1

A
EXISTENCE OF OPENINGS
COMMON ORDER **MUDBRICK INFILL**



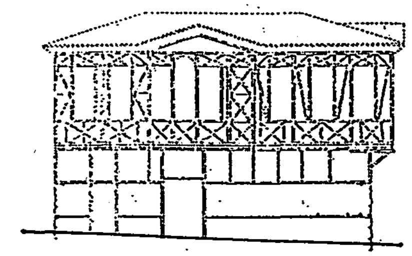
Kalas st., II; Yahudi Qu.



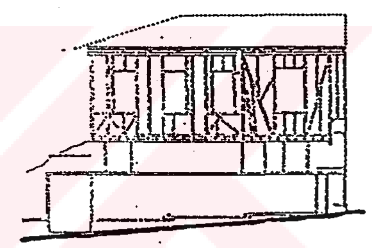
Kalas st., II; Yahudi Qu.

GROUP 2

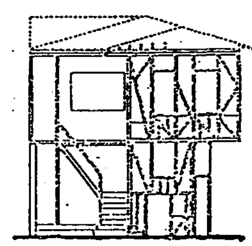
B
EXISTENCE OF OPENINGS
UNCOMMON VARIATIONS OF COMMON ORDER BY ADDITIONAL DIFFERENT ELEMENTS AS CROSS BRACE - SHORT BRACE **BRICK INFILL**



Kalem st., 2; Erzurum Qu.



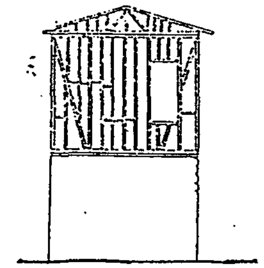
Yamanlar st., 14; Yahudi Qu.



Yamanlar st., 14; Yahudi Qu.

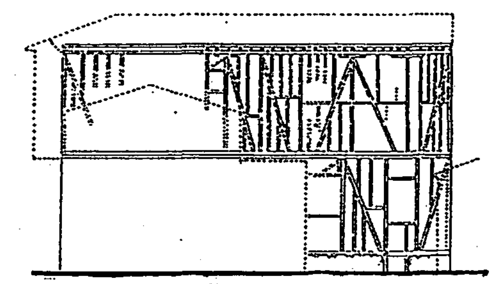
GROUP 3

A
NONEXISTENCE OF OPENINGS
(Except later additions) COMMON ORDER **BRICK INFILL**



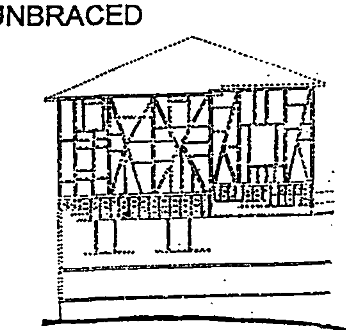
Eskici st., 4; Yahudi Qu.

A
NONEXISTENCE OF OPENINGS
(Except later additions) COMMON ORDER **MUDBRICK INFILL**



Eskici st., 2; Yahudi Qu.

B
NONEXISTENCE OF OPENINGS
(Except Later Addition) UNCOMMON VARIATIONS OF COMMON ORDER BY ADDITIONAL DIFFERENT ELEMENTS AS CROSS BRACE - UNBRACED



Doyran st., 9; Kaleiçi

GROUP 4

Figure 3.24 Bracing Elements (Morçöl, E., 1989)

3.5.2.2. Timber Floor Construction

Timber floors were constructed by placing the floor girders that usually have a cross-section about 5x10 cm. on the wall plates. The floor girders were put in a row that consists of single or double layers. The upper surface of these girders are covered with timber panels or bricks to form the floor pavement. The construction of the floor varied according to the type of the wall system and the location of the floor.

The floor pavement of the service spaces like stable, storage, etc., that are placed in the ground floor, was covered with pressed earth in the earlier houses (see Figure 3.25).

In the inhabitable spaces like kitchen or winter rooms, the floor was covered with timber panels. It is quite difficult to observe which details were common in the floor construction of the ground floor before examining them.

If the ground floor construction was built at the same time with the building, there were two alternatives. In the first one a stone platform inside the foundation walls was left where a timber beam could be placed on. On top of this beam, the floor girders were placed usually parallel to the short side, as shown in Figure 3.25, a. The stone platform is built in a minimum 20 or 30 cm. above the ground and an air space is left for ventilation over the pressed earth.

The top of the floor girders was covered with the timber flooring panels perpendicular to them. A timber plinth surrounded the edges of the space, where the flooring and the wall met.

In the second alternative (Figure 3.25, b) a separate platform was not built, the timber beams on which the floor girders set, were inserted into the walls. Afterwards the same construction steps were repeated to built the timber floor. This type is quite common in the mezzanines that are placed in the masonry section. The disadvantage of this system is that the replacement of the deteriorated timber floor ends and the beam inside the wall is difficult.

A third type of floor construction became common in the houses where the ground floor was transformed to an inhabitable level (Figure 3.25, c). In this type the beams carrying the floor girders are placed on top of the timber posts that are located at the edges of the space. Most of the traditional houses in Ankara, built in the 19. c. have their ground floor transformed to an inhabitable storey; so that, most of the houses should have an original flooring system as mentioned in the first and the second types.

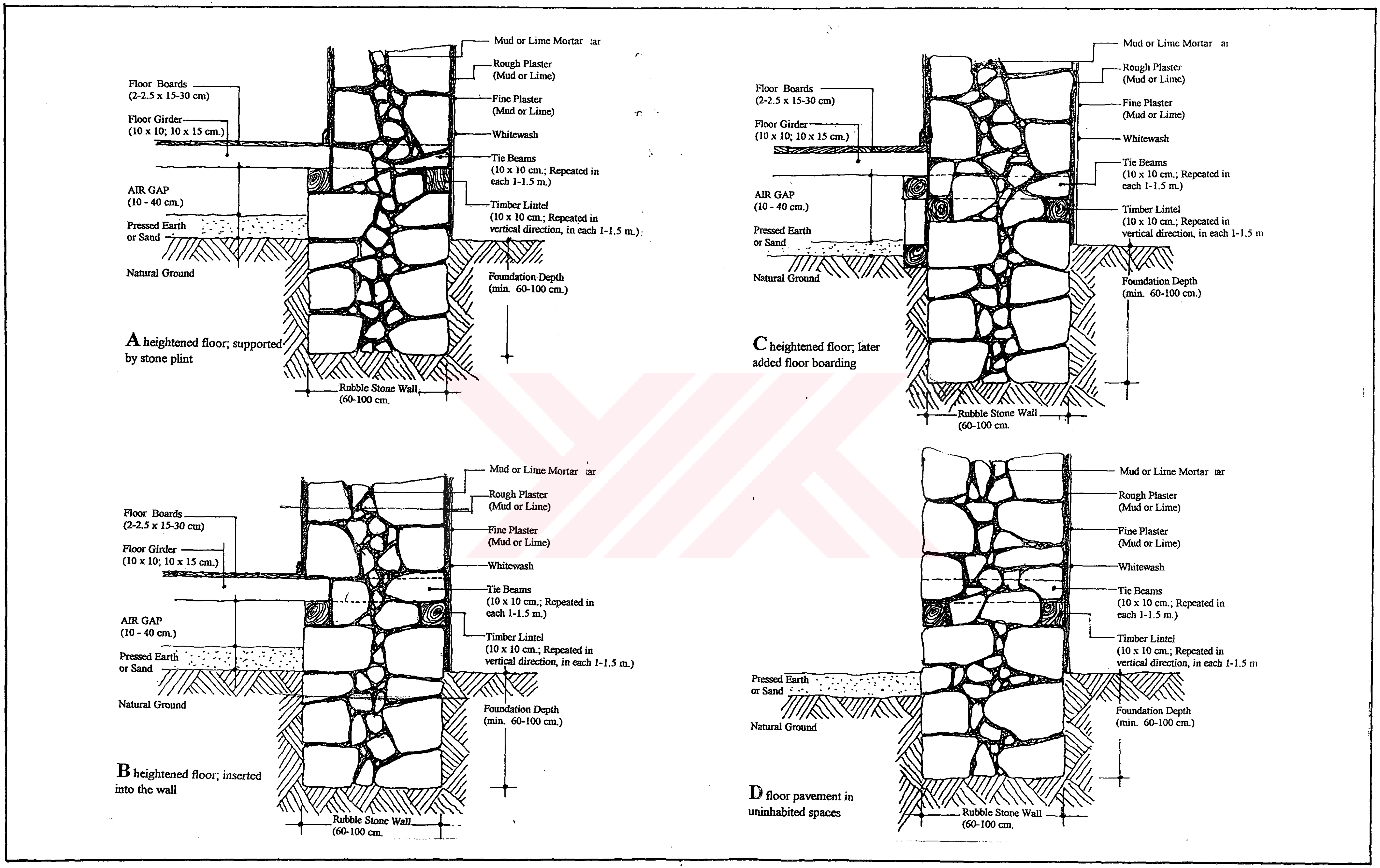
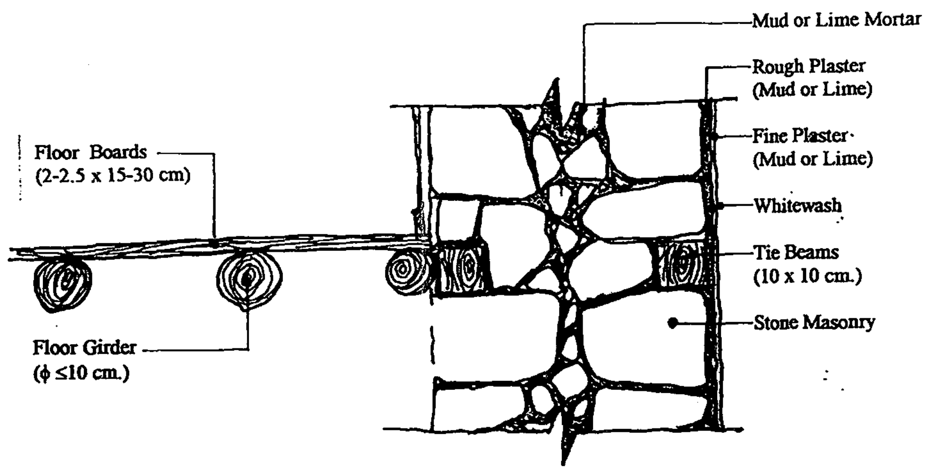
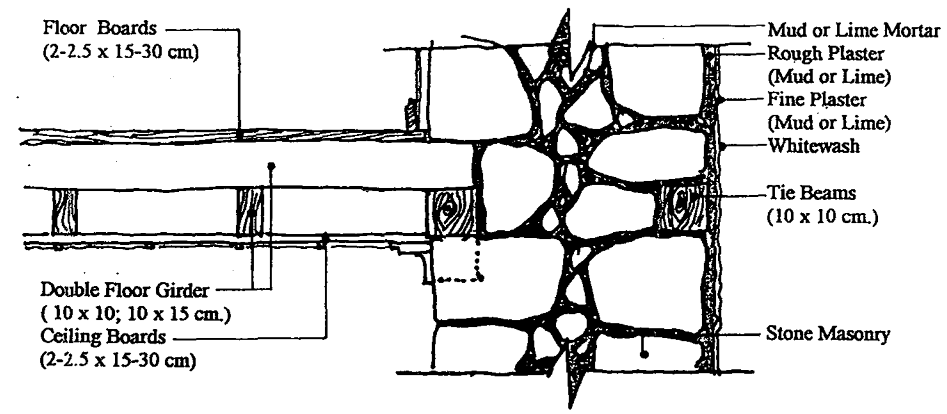


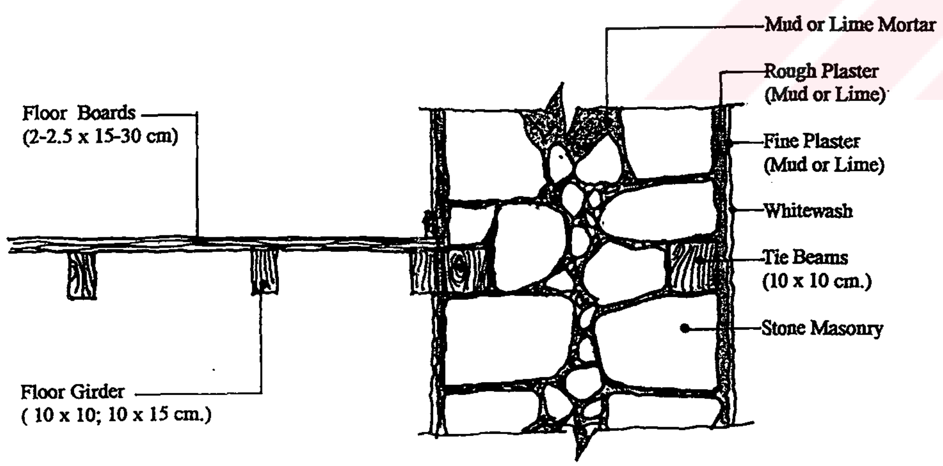
Figure 3.25 Floor Types in Basement or Ground Floors



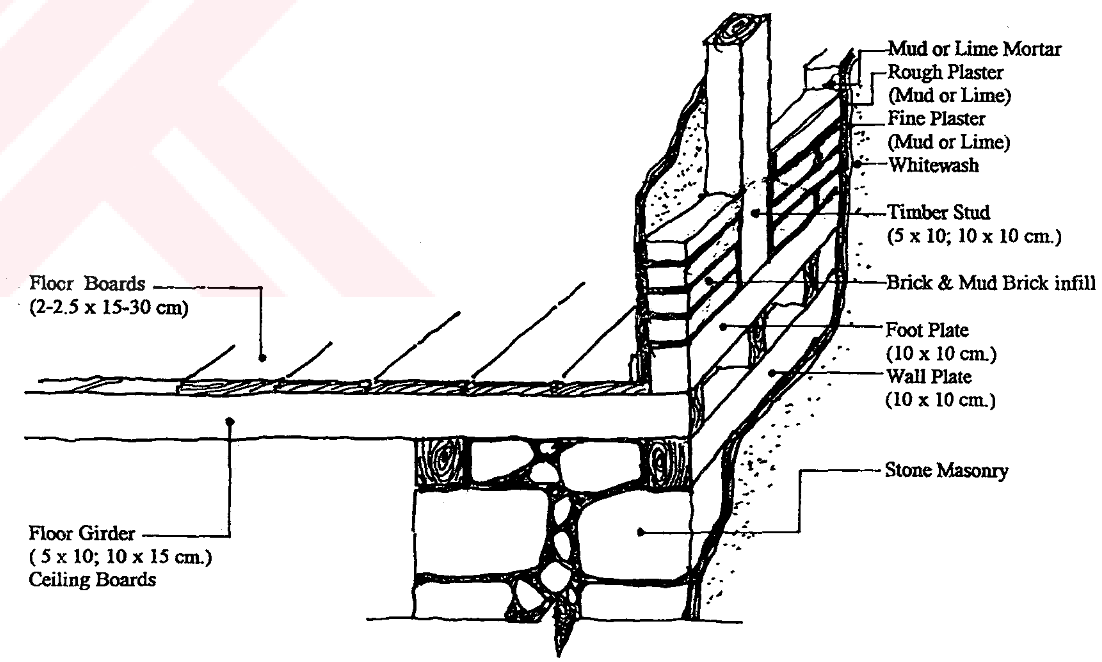
A floor girders in log form



C double floor girders perpendicular to each other

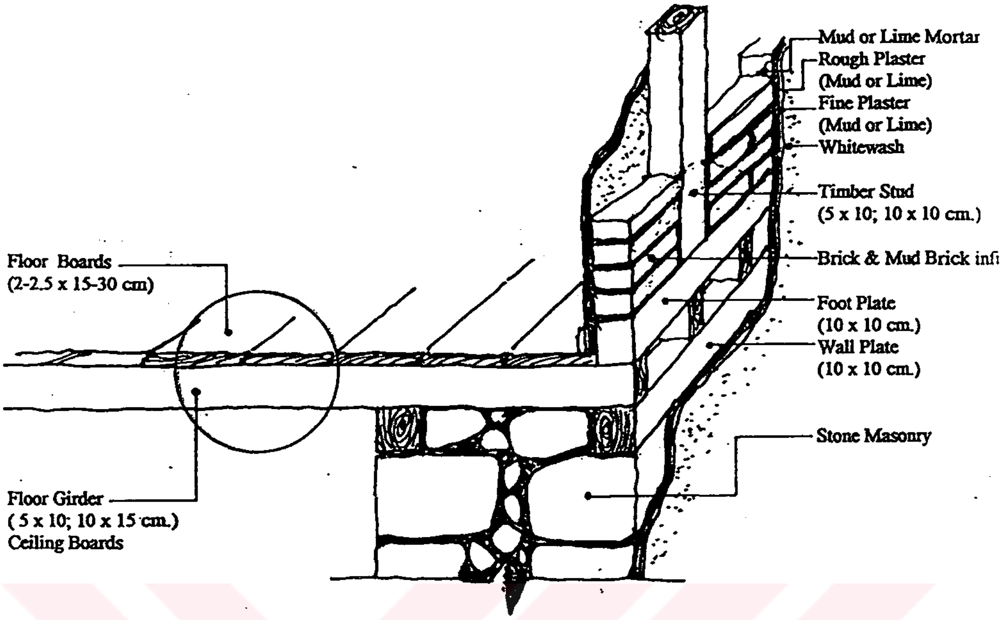


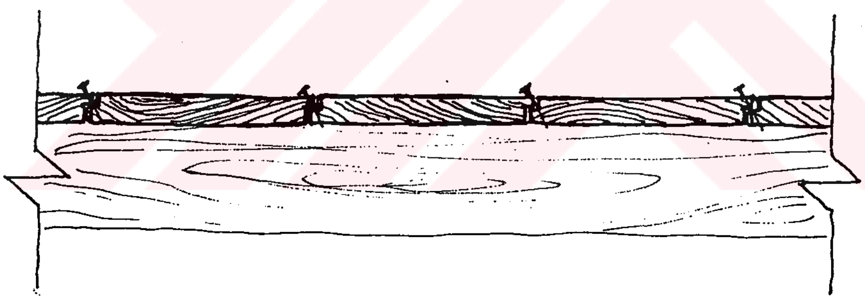
B floor girders in rectangular form



D floor construction in timber framed section

Figure 3.26 Timber Floor Construction Types in Upper Floors





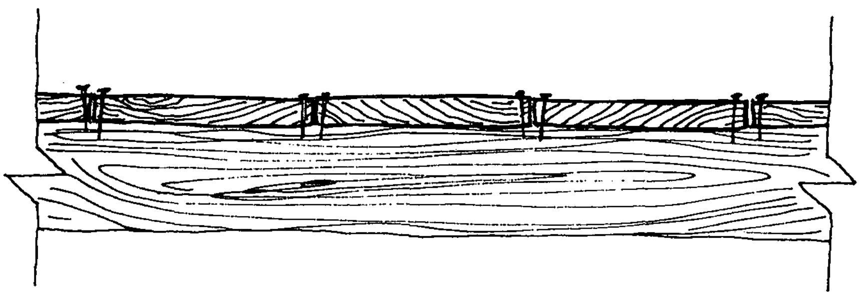
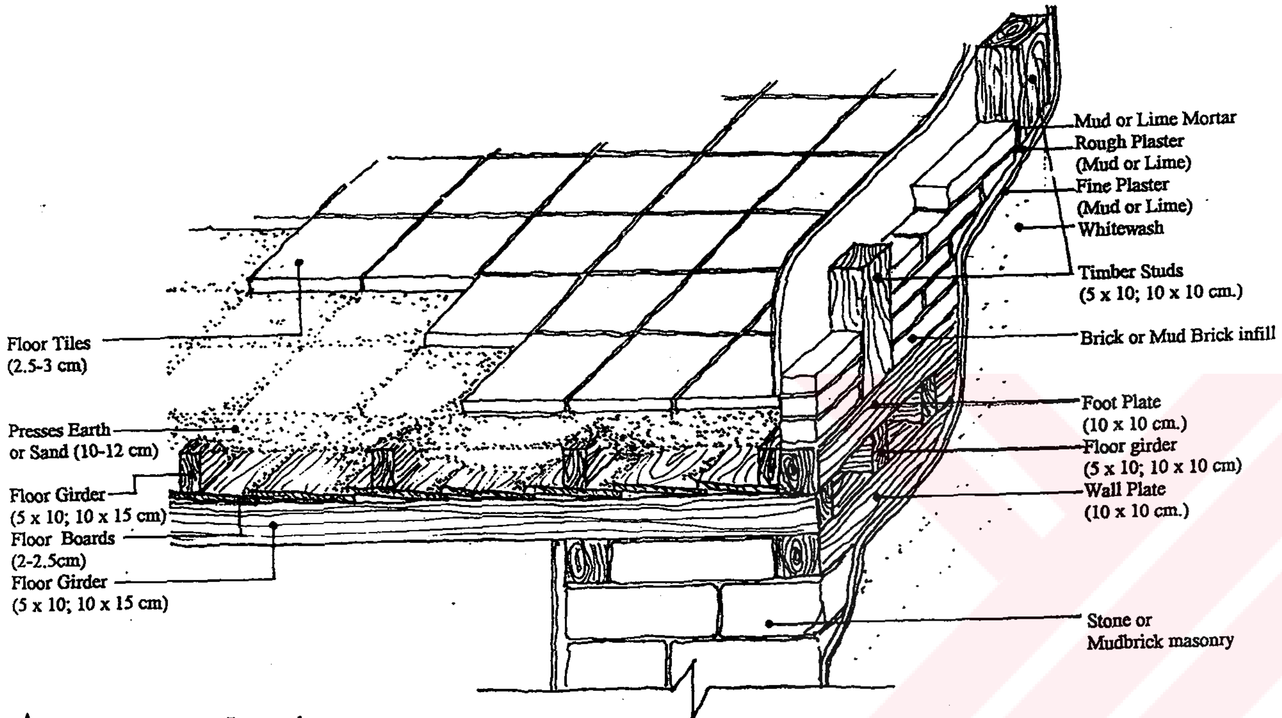
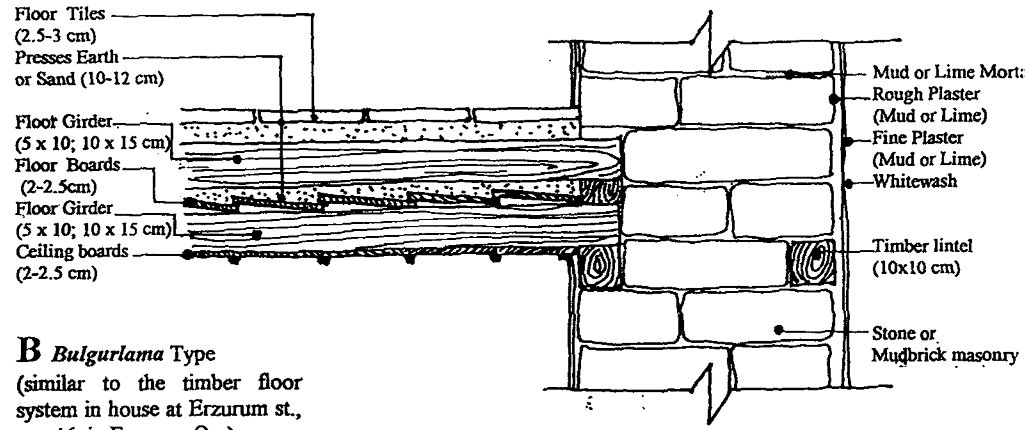


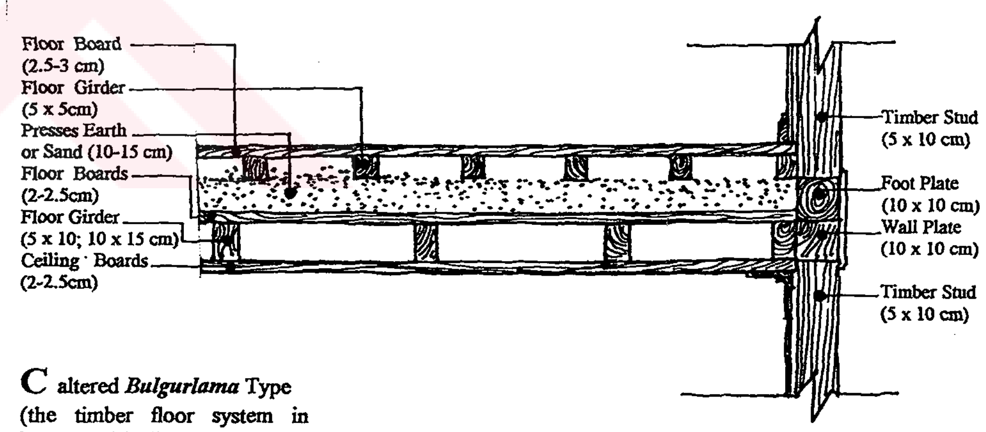
Figure 3.27 Connection of Floor Boards to Floor Girders



A Common Double Layered *-Bulgurlama-* Type



B ***Bulgurlama*** **Type**
(similar to the timber floor system in house at Erzurum st., no: 46, in Erzurum Qu.)



C altered ***Bulgurlama*** Type
(the timber floor system in house at Keklik st., no: 4, in Samanpazarı Qu.)

Figure 3.28 Double Layered Floor Types *-Bulgurlama-*, covered with floor tiles

The wall plates and the beam were placed on the inner and outer faces of the walls and the space between them was filled with infill (stone or mud brick) material at the end of the masonry base (see Figure 3.26). On top of this plain the floor girders are placed and the foot plate that forms the base of the main posts is set on the edges' perpendicular to the floor girders. When the construction of the wall is completed, the floor girders are covered on both faces and the construction of the floor is completed (see Figure 3.27).

The doubled layer (Figure 3.28), the earth filled floor type that is locally named *bulgurlama* was quite common probably in the early houses. In this type, after the first floor girders were completed they were covered with the rough timber panels afterwards, then the second floor girders, usually perpendicular to the one below were set. The gap between the timber panels and the upper face of the second girders was filled with pressed earth or sand for isolation. Thereafter, the squared or octagonal shaped tiles were paved on the pressed earth and the courses filled with a water proof hydraulic mortar (*Horasan*). In the late examples, the timber panels were also used for covering the above isolation.

3.5.2.3. Projections as a Part of Floor Structure

In timber-framed houses in Ankara, the projections are used in the main room or in the hall built as a part of the floor construction. In the earlier examples, the *sedir* that is the sitting platform located as an inseparable part in the projection was built together with the projection. The projections can be classified in three groups according to their structural systems as protection with overlapping elements, projections with bracing and the simple type.

The protection with overlapping elements or "Ankara type" in it popular definition, is formed by the timber beams overlapping each other (Figure 3.29). In this earliest type, the material used in the construction of the projection is exaggerated in comparison to the load carried by them; though, the span projected by this type may reach up to 1.50m.

Two sub groups can be derived according to the construction technique of the Ankara type of projection. In the "A type", the beams overlapped each other and they repeated in certain distances. In the "B type" the beam layers perpendicularly overlapped each other and sometimes they were even jointed together. In both sub groups the gaps in the beams were filled with brick. "A type" is commonly used in the projections placed on the corners.

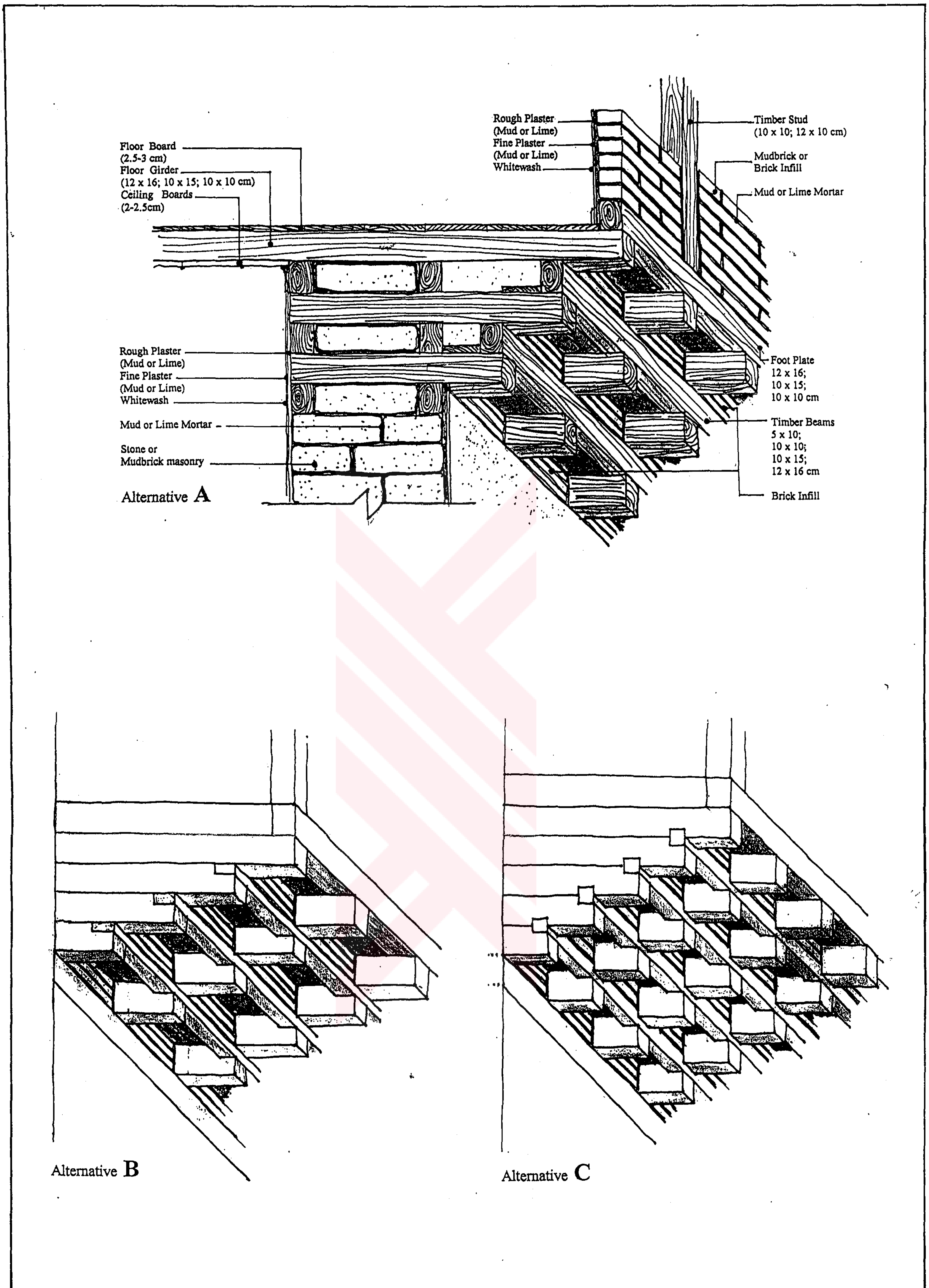


Figure 3.29 Projection with overlapping elements or "Ankara type"

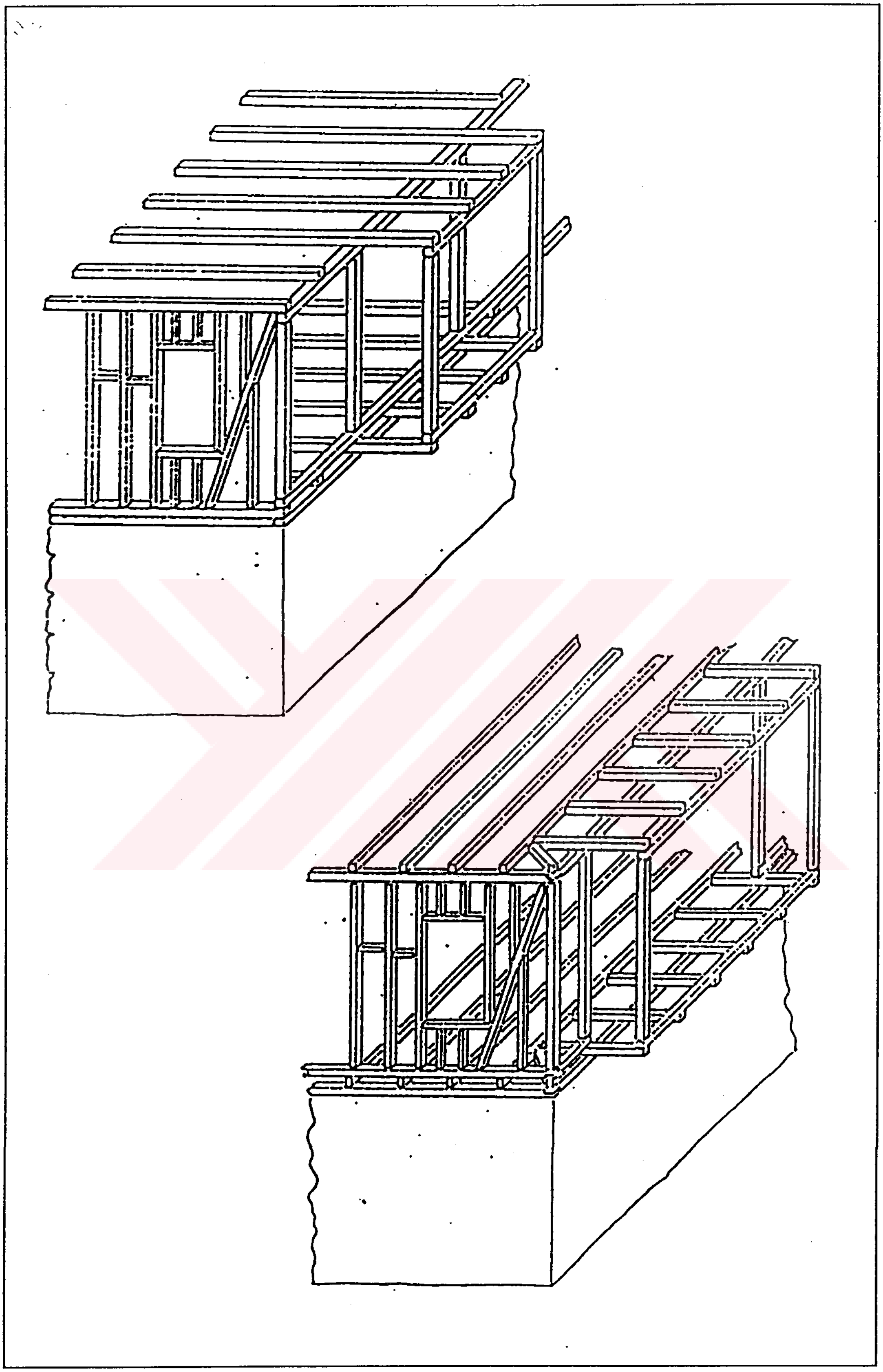


Figure 3.30 The Simple Type or Projected Type (Morçöl, E.,1989)

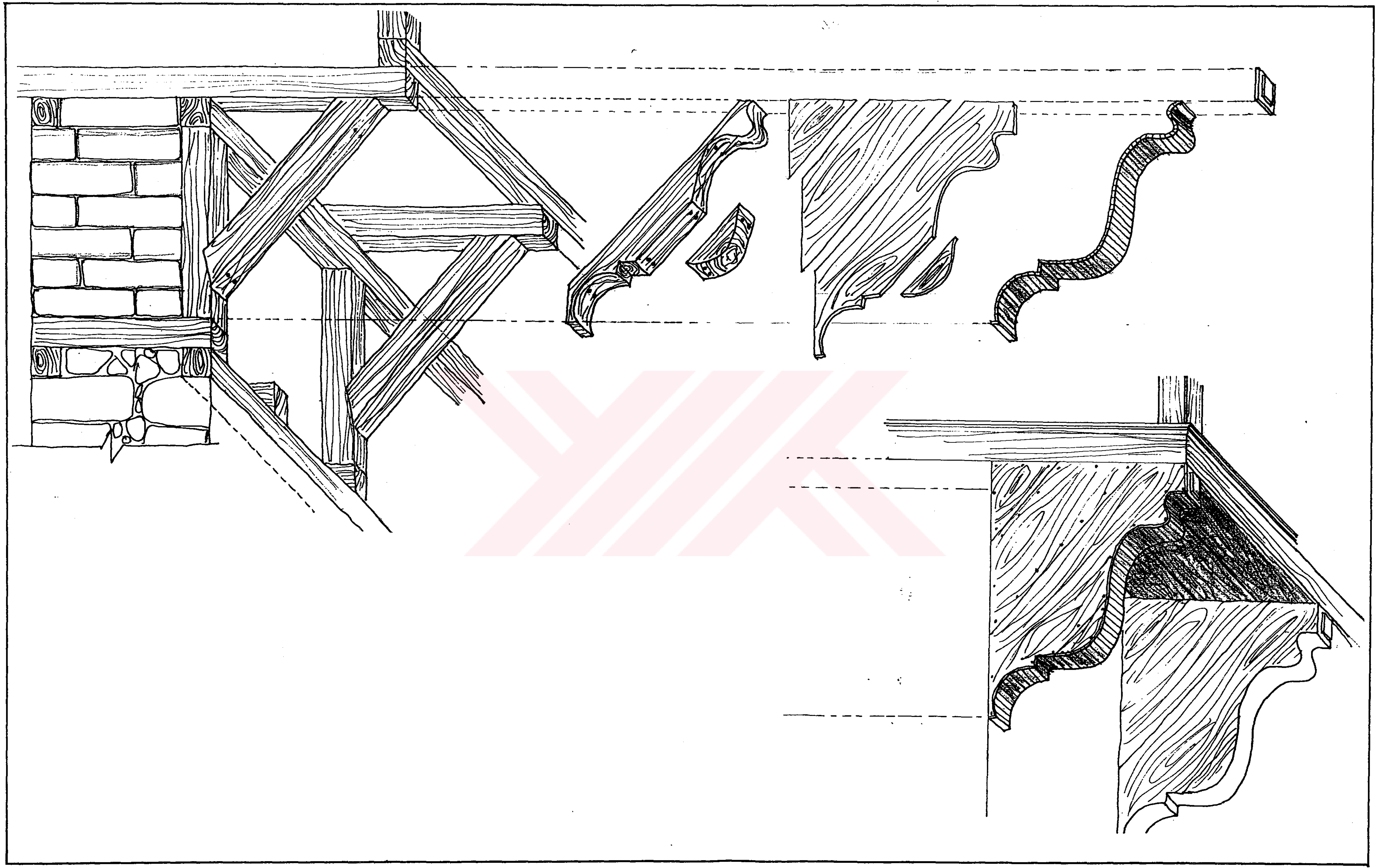


Figure 3.31 The Projection With Bracing Elements

The simple type projection was used both in the early and the late houses that have projections extending about 50 to 60 cm (see Figure 3.30 above). The triangular, trapezoidal and rectangular forms utilized in these projections, are used especially to correct the small distortions of the upper level spaces. This type is constructed simply by projecting the floor girder above the wall structure and it is more popular in modest and small houses.

The projection with bracing elements, can be accepted structurally as a derivative of the projected type was supported by two or more bracing elements. Decoration of the surfaces of the braces with pseudo timber elements was also a common feature of this type that was used comparatively in the late houses (see Figure 3.31 above).

The facades of the projections and the openings were designed according to the facade order but there are almost always windows placed on the projections oriented to the street. In some examples the roof of the facades are built separately from the roof structure of the building.

3.5.2.4. Ceiling Construction

The ceilings in Ankara houses are the most decorated elements of the building. The decoration patterns that are used in the ceilings were mentioned before in section 3.4.2. The construction technique of the ceilings in the ground floor and the upper floors shows some variations. The ceilings of the ground floor that is of the service spaces are not covered. In these spaces the floor girders of the upper floor are left open. In mezzanines or in the middle stories of the houses, the floor girders of the upper floor are covered underneath by timber ceiling panels.

Later, a geometric order was given to the ceiling by timber laths placed in accordance with the joints of the panels. One or more rows of profiled timber bands go around the edges of the ceiling. In the floor below the roof structure the same system is repeated underneath the roof or the ceiling girders.

In some examples there might be different levels designed according to the hierarchical order of the spaces as in the main room of the house at Erzurum street, 46. In that case shorter beams attached to the ceiling girders are used beneath the levels encircling the space. These levels were covered and decorated later. Repoussage technique was used commonly in the central boss of the ceilings.

3.5.2.5. Connections of Timber Elements

Joints are peculiar in the connection details of timber elements in Ankara houses. The elements overlap each other and are attached by nails. The common connection details of the timber elements were given in section 3.5.2.1.

In none of the connections between the structural elements, joints were used, this is a prevailing feature of timber framed constructions in Anatolia. In the regions where the timber is the basic construction material such as north-west and central sections of Anatolia, even in Safranbolu the structural timber elements except few simple ones, are not connected by joints, but they get together with by overlapping each other or by nailing (Kafesçioğlu, R., 1955: 66; 1949: 40-43; Günay, R., 1981). Contrary to this, joints were popularly used in built-in furniture such as doors and windows, cupboards, etc.,.

3.5.3. Roof Structure

In Ankara houses, the roof structure is set on top of the upper storey ceiling girders or on the roof beams. The hanged roof with trusses is not treated. All the connections are fixed by nails and not by the joints similar to the other sections of timber framed skeleton system (see Figure 3.32). Setting of roof structure directly on to the ceiling girders of the upper floor is not common, because the geometry of the roof usually does not fit the order of the ceiling girders. To prevent from this disadvantage as a secondary layer the roof girders are placed above the ceiling girders according to the geometry of the roof. The ridge piece is supported by the corner king posts at the corners and the king posts between them are set on the roof girders. If these posts get higher, then they are supported by the braces. The distance between the ridge piece and the external edge of the walls are divided by purlins into one or two parts that define the slope of the roof.

The posts placed on roof girders support these purlins. In this use, the wall plate used at the end of the wall functions as the last purlin of the roof, if its level is suitable, otherwise a purlin is placed on top of the wall plate in order to arrange the slope of the roof. The posts carrying the ridge piece and the purlins are regularly attached to each other by the tie-beams, in different levels, to strengthened the roof structure.

By starting from the ridge, the roof purlins are placed on top of the rafters regularly in each 40 to 60 cm. by keeping the intervals equal after the slope of the roof which is determined by

1 Corner Post

2 King Post

3 Post

4 Ridge Purlin

5 Purlin

6 End Purlin

7 Rafter

8 Angle Rafter

9 Beam

10 Tie Beam

11 Brace

12 Roof Board

13 Zinc Sheet

14 Brick Chimney

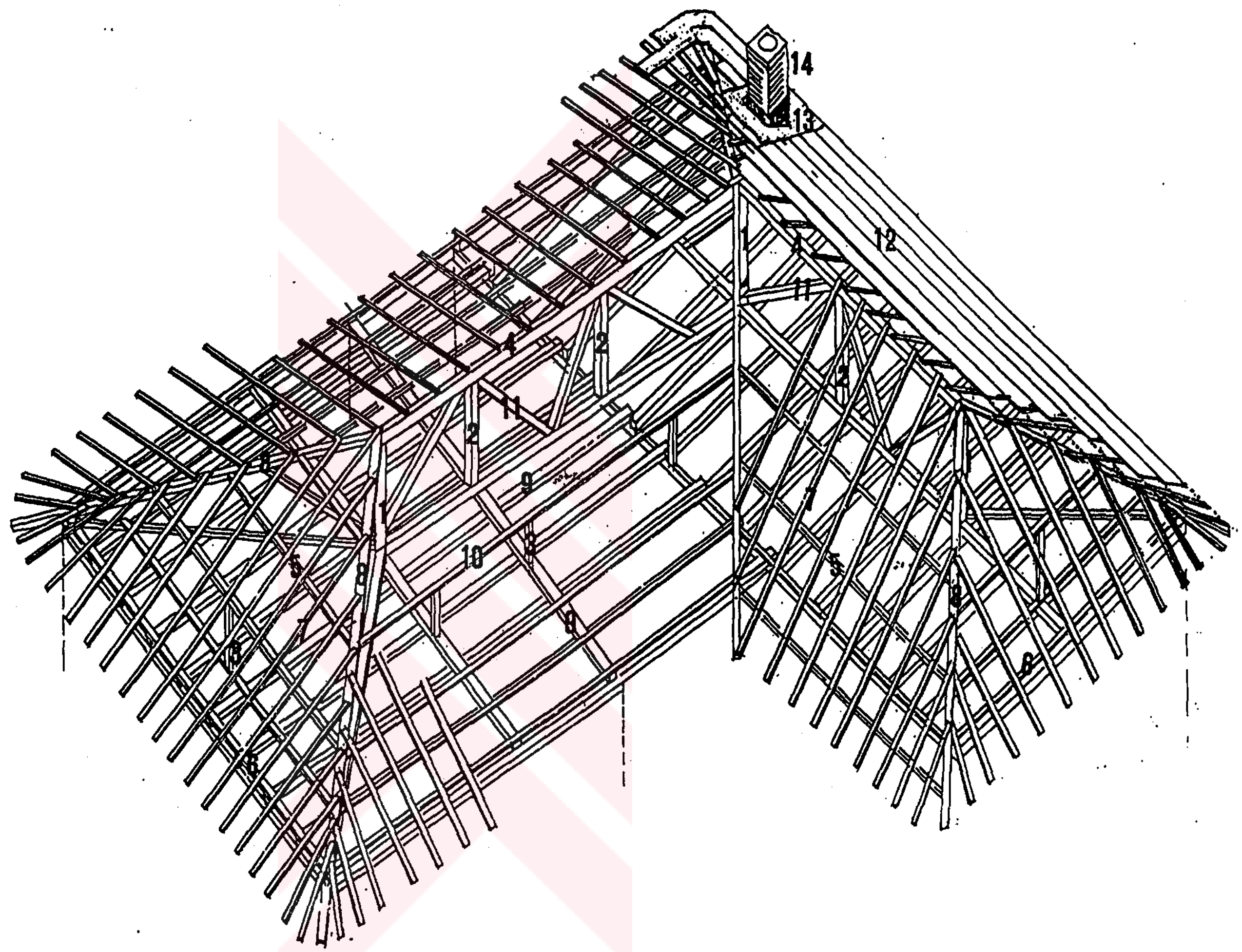


Figure 3.32 Roof Structure (Cingöz st., 20, Ulucanlar Qu.)

the rafters. Afterwards, the timber panels that have a thickness of about 2 cm. are covered on top of the purlins and finally the tiles are placed on top to complete the roof structure.

The ridge post and at least two angle rafters connecting the corner to the ridge, are all placed on top of the corner post that has a cross-section 10x10 cm. As a result of the poor workmanship, usually a level difference occurs in this connection point.

To avoid this problem, the angle rafters are attached from the sides to the rafters in some cases. Even though the levels are arranged properly in this rough cut, it does not produce a stable connection. The rafters are extended towards the outside of the exterior walls in order to form the eaves. If the lengths of the rafters are not suitable, timber pieces are added at the end of the rafters to form the eaves.

The rafters are attached regularly both to the angle rafter and the end beam, can not be joined from two points when the lengths of the rafters decrease near the external corners of the roof. By an angular placing, the rafters are tried to be fixed from two points in the mentioned case that forms a curved line at the corners of the eaves and becomes perceptible when the width of the eaves get longer.

This formation can be conceived for example in the wide eaves of Safranbolu houses but it can not be noticed easily in Ankara houses because the width of the eaves vary about 60 to 70 cm. Covering and decorating the eaves by timber laths and forming a geometric order was popular in Ankara houses. Especially in the early houses, the eaves that have a width reaching to 1.00 m. or more, is covered with highly decorated timber carvings. The widths of the eaves on hall facades are usually wider than the others.

There are original gutters in Ankara houses as that seen in Antalya. Though, in some houses there are lately added metal or plastic gutters and most of them do not function efficiently.

3.5.4. Construction Materials

Easily workable and available local construction materials that are stone, mud brick, brick, tile, timber, plaster and mortar are used in the traditional Ankara houses. Besides, the materials like glass and cast iron became popular in the late nineteenth century by the introduction of new materials and techniques. The definition of the common features of the materials used in Ankara houses, is the main interest of this study.

There are many specific sources on the physical and chemical characteristics of each material but these features are not mentioned in this study in order not to enlarge the text. Only the sources directly related with the material problems of the historic urban fabric in Ankara are mentioned.

The studies subjected on the traditional building materials in Ankara are quite limited. The sources including Ankara on regional scale refer to more general features of the traditional materials. In the formation of this section, besides the individual observations and surveys, all these sources were evaluated. The analyses on materials that necessitates a multidisciplinary work were left beyond the limits of this study; then, the study is based only on observations.

3.5.4.1. Stone

Stone is one of the natural material that is used as it is found in nature in the construction of traditional buildings in Ankara. As it has good resistance to the weathering conditions and an easily available material it has been used as the only material in the construction of the foundation walls up to 50-175 cm. It was also utilized both in the ground floor masonry walls and in the pavement of the courts and *taşlıks* in Ankara houses. Andezite is the most popular stone type preferred for these uses and it is available from the quarries near the city beside other types (Karpuz, C., Paşamehmetoğlu, G.H., 1992: 39-45). Rubble stone coursing with mud mortar is the common construction technique in stone masonry walls.

Ankara stone is a type of andezite stone (igneous, Volcanic) which is non-crystalline and has a very finely grained texture (Karpuz, C., Paşamehmetoğlu, G. H., 1992: 39-45). This stone is utilized in the all foundation walls and in some ground floors and mezzanines but, since it is difficult to work and to transfer, it was rarely used on other sections in Ankara houses even though there are stone quarries around the city.

In stone masonry walling, the stone pieces are not used as they come out from the quarries, they are shaped into smaller units by cutting. A special coursing was not used in rubble stone masonry (see Figure 3.16). The bigger blocks were placed at the external faces and the corners of the walls while the smaller ones are used for the inner section. The binding material is earth based mortar. In cut stone masonry, the stone pieces are used in alternate rows of different thicknesses (quite similar to pseudisodomic masonry). The height of the rows vary between 25-30 cm. while the length of the pieces change about 50-60 cm. The use of stone on the *taşlık* and courtyard pavements is also common. Besides the cut stone pavements, irregular stone blocks were used commonly on the pavements of *taşlık* and courtyard spaces.

3.5.4.2. Timber

Although, the forest areas around Ankara were always limited, timber was commonly used in Ankara houses. There are not detailed studies made on the type of timber used in Ankara houses but it is known that poplar, willow and more seldom white pine was used in the houses of the villages near to Ankara (Kafesçioğlu, R., 1949:5,11). In the near surroundings of Ankara, there are some regions rich in timber suitable for construction. While, the oak is found in the northern and eastern parts, the western parts of Ankara are rich in pine trees. The yellow pine (Pinus Silvestris) and different types of oak tree such as, Peduncled oak (Quercus Pedunculata, Saplı Meşe), oak with sessile granules (Quercus Hungarica, *Sapsız Meşe*) and other oak types (Quercus Castanifola, *Kestane Meşesi*; Quercus Cerris, *Kokar Meşe*) are found commonly in central Anatolia (Kocataşkın, F., 1965:2-4). The timber material was not extensively used in Ankara houses if compared to Beypazarı and Nallıhan that are the settlements near to Ankara. The difficulty in availability of timber might be the reason of this case.

Timber being an easily workable material, utilized in Ankara houses both for the structural and decorative purposes. The timber-framed systems are more resistible to the earthquakes because they are flexible structures. The length of timber elements vary according to their functions but it should be accepted that there was a standardization when their cross-sections are considered.

In the earlier houses, the timbers had thicker cross-sections such as, in the main posts and the girders varied between 20x20 cm., 15x20 cm. and 15x15 cm. The timber logs used as the main posts had a diameter about 30 cm. or more. However, the use of timber logs is not common for the houses built in the late nineties. The cross-section of the main structural elements are usually 10 to 10 cm., but there are also various sizes like 12x10, or 9x9 cm. The length of the timber elements vary according to the space dimensions and floor heights but they are maximum 4.00 or 4.50 meters in length. The cross-sections of the secondary timber elements is about 5x10 cm. The timber elements having smaller cross-sections that is about 5x5 cm. are usually used as tie-beams. The lengths of floor and ceiling coverings are varied, but their widths are around 15-30 or a maximum of 40 cm., and their thickness is about 2-2.5 cm.

In Ankara, the structural timber elements were not fixed to each other with joints as a continuation of the timber construction technique in Anatolia. They were fixed to each other by nails or they just overlapped each other. Contrary to this, in the built-in elements that are door, window, cupboard, *kafes*, shutter, central boss, etc., of the houses, especially in the old ones joints were used. Timber elements were used as reinforcing elements in the masonry sections. The whole roof structure, except the tiles over the roof, is made of timber in Ankara houses and the dimensions of the elements are the same as the ones that are mentioned above.

3.5.4.3. Mud brick, Brick and Tile

Mud-brick is the oldest building material used in Anatolia dating back to 5900 BC. when it was used in Çatalhöyük settlement (Naumann, 1975:45). Starting from the prehistoric period mud-brick was used similarly all over the world in the construction of temples, palaces, Citadels, city walls, and especially the houses (Eriç, M., 1980:80; Davey, N.,1961:19-31). Brick and mud brick as earth originated materials are not used in buildings as they are found in nature. They are produced by mixing of earth with additional materials in some processes.

Mud brick is an earth mixture with suitable proportions of sand, silt, clay and some organic matters (straw, animal hair, etc.,) which when mixed with water to a plastic consistency, can be moulded into the desired forms and dimensions. In the tests done on some mud-brick mixtures taken from the houses in Ankara Citadel, 15 to 19 % of lime was found in the composition (Altındağ Municipality, 1987: 261).

Certain type of soils produce more durable mud-bricks than the others. In most cases, the performance of a mud-brick mixture is largely dependent on the particle size distribution and the type of clay (Brown, P. W., & Clifton, J. R., 1978:139).

The physical composition of the soils used in the production of the mud-brick in Turkey shows different characteristics throughout the country (Balaban, A., 1964:3). The overuse of organic materials in the mixture and water decreases the resistance of mud brick under compressive stresses. The dissolution of the mixture in water is facilitated by the organic materials (Eriç, M., 1980: 84). The mud-brick units are produced in two sizes named as *ana* that is the bigger one and *kuzu* is the smaller one. These units are not produced in standard sizes, because they are hand made products. Different sized mud brick units were used in Ankara that are given in the table below.

Table 3.5 Dimensions of Mud-brick Units in Ankara

BIGGER UNIT - *ANA*	SMALLER UNIT - *KUZU*
24 x 24 x 10 cm.	24 x 12.5 x 10 cm.
28 x 28 x 10 cm.	30 x 15 x 10 cm.
30 x 30 x 10 cm.	

The common one between these bigger, square units has the measurements about 28 cm. by 28 cm. by about 10 cm. in thickness. These units were used in common bond that form the masonry mud-brick walls in 50 to 80 cm. in thickness.

Mud-brick is utilized in the ground floor masonry walls above the ground floor level and in the timber framed section as infill material in Ankara houses. The smaller mud-brick units that are produced according to the thickness of the timber-framed wall are used in the timber-framed section.

The basic materials used in brickmaking are clay, silt and sand that are mixed with water in certain percentages. The well-kneaded mixture is left exposed for a period depending on the weather and then some water is added to bring it to a plastic consistency and the units are formed to shape in wooden moulds. The bricks are laid flat on the ground to dry for a few days after which they are transferred to the kilns for firing. The traditional building elements manufactured in this process are brick, roof tile, pavement tile and the earthenware water or drain pipes.

The production of standard burnt bricks was one of the major tasks during the Ottoman period as it was mentioned before in section 2.2 with reference to the Sultan's orders. These standards refer only to the production of burnt bricks produced in İstanbul but it can be assumed that they were produced in the same standards in Ankara too.

The use of brick in the buildings was also supported by the building regulations in the late 19c. (Denel, S., 1982: LVIII). Because, brick is a fireproof material when hard fired, it was obliged to be used in chimneys[17]. Besides, the use of bricks in the sections below the windows that cannot be protected by the eaves and to use the *"bağdadi"* technique in the parts above the windows in order to get lightweight walls were also proposed in these regulations. So, bricks can be observed in the timber-framed section of the upper floors as infill material today, even in the earlier houses. These examples probably represent the alternation of the original mud-brick infills with the bricks in later interventions.

Burnt brick was used rarely in Ankara houses because it necessitated an elaborate production process. In the early houses it was only used in the places that are exposed directly to water, like on roof covering and the pavement of certain sections as roof and floor tiles. In later periods, it became popular as infill material. The surveys, done in Ankara Citadel, show that the thrashing and kiln bricks are fired at 700°C and 900°C and used in the buildings in various sizes. The sizes of bricks found in the Citadel are given below (Altındağ Municipality, 1987: 260-261):

Table 3.6 The Brick Sizes Used in Ankara Citadel (Altındağ Municipality, 1987: 260-261)

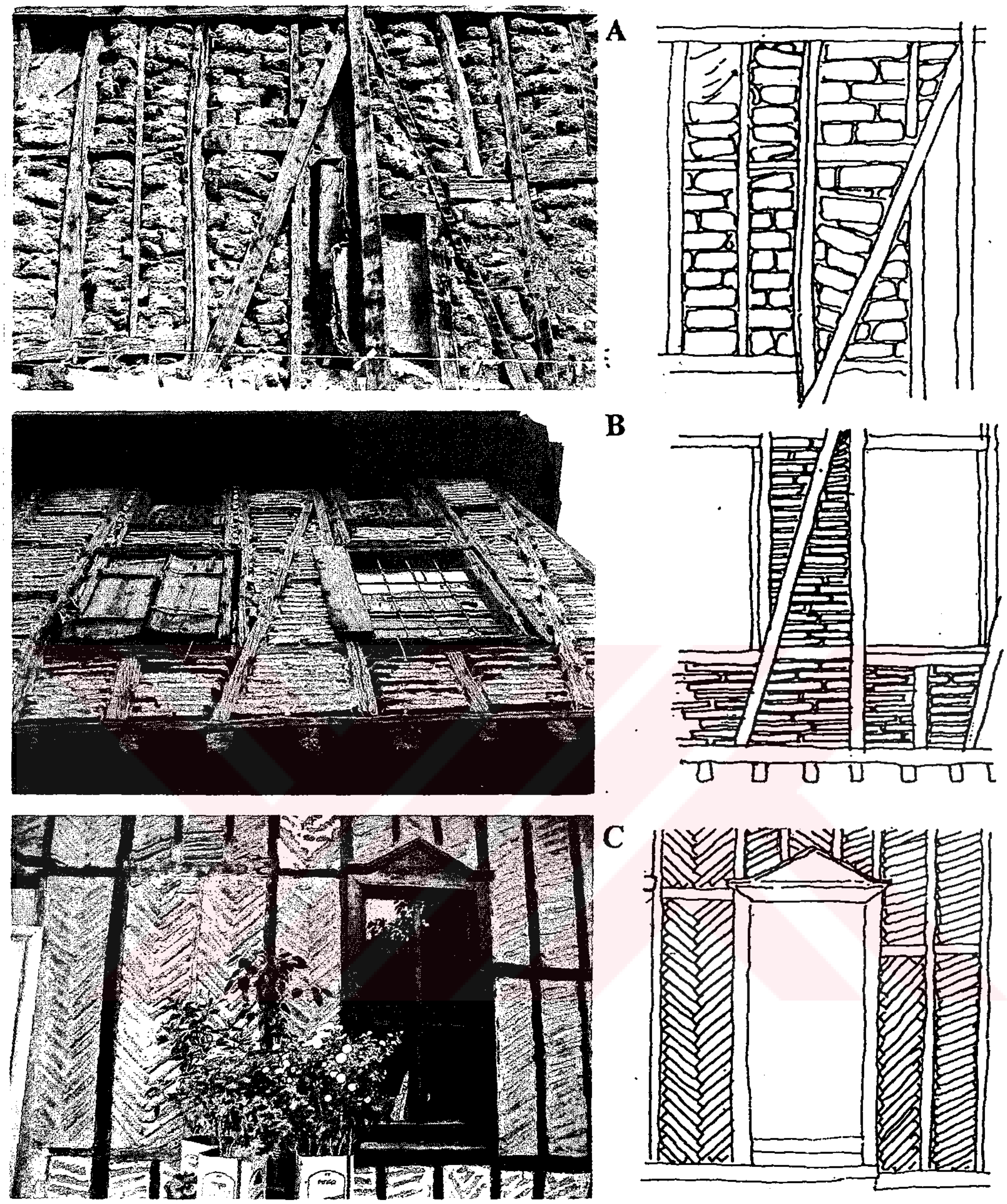
WIDTH:	10-11 cm.	14-15 cm.	10-20 cm.
LENGTH:	22-23 cm	25-26 cm.	25-39 cm.
HEIGHT:	7-8 cm.	7-8 cm.	9-10 cm.

The common, herringbone or diagonal bonds are used in timber infills and some decorations are made in brickwork on the upper floors of Ankara houses (see Figure 3.33). In later houses where there are timber-framed walls it was also used in the ground floor. Besides those, brick was extensively used in the alterations of mud-brick infill in an irregular coursing.

In original brick used examples, the facades of the brick infill frames are not plastered, only the coursing is made. Though, the roughly altered sections are usually plastered. The use of brick tiles in the pavements of hall, main room, *sekialtı* and winter room is common in the earlier houses. The thickness of the squared floor tiles is about 3 cm., and the other edges are 25-30 cm. The tiles are placed on the pressed earth layer in which the courses are filled with *horasan* mixture (hydraulic mortar).

As it was mentioned in the section 2.2 with reference to the historic sources, the earth covered roofs were not used after the 17. c. parallel to the addition of a secondary storey to the buildings. So, the early houses dated back to the 17. c. existing in the historic urban fabric has a roof covered with "alla turca" tiles, that have varied dimensions.

The length of the tile is about 32 cm., the large end of the is about 18 cm. and the narrow edge of the tile is about 12 cm. The roof is the most repaired section of the houses as it is exposed to weathering; therefore the original tiles of the roofs were extensively altered with "Marsilia" type of tiles in most of the traditional houses.



A Kalem st., no: 2; Erzurum Qu., Mudbrick infill.
B Cingöz st., no: 20; Ulucanlar Qu., Brick infill, horizontal bond.
C Eskici st., no: 2; Yahudi Qu., Brick infill, herring bone & diagonal bond.

Figure 3.33 Infill Materials in Timber Framed Section

3.5.4.4. Mortar and Plaster

In the 1848 Building Statement there are strict items for the use of *horasan* mortar in the masonry sections of the buildings (Denel, S., 1982: XL). As it is well known, the traditional *horasan* mortar was used commonly since the early times in the east, starting from Egypt and during the Byzantine, Seljuk and Ottoman periods (Akman, S., et al., 1986: 2-10). *Horasan* is a mixture that was produced by the mixture of rough and fine brickbats with lime and water and it has high resistance against compression stresses and water[18]. Nevertheless, when the Ankara houses are concerned it can be observed that the strict regulations on the use of *horasan* mixture in masonry sections were not practiced regularly, in place of that earth mortar was used.

As a binding material in masonry and timber framed sections the mud based mortar and the mud plaster was traditionally used in Ankara. The mud mortar is a mixture that consists of silt, clay, sand, straw and water; it has low resistance to water. Though, it is easy to produce and costs less comparatively to *horasan* mixture that was why the former mixture was preferred more.

The mortar and plaster analysis done on the samples taken from the Ankara Citadel show that four basic types of mixtures were used in the buildings (Altındağ Municipality, 1987: 261), these are:

1. Sand and lime mixture: Lime mortar, lime plaster,
2. Clay, silt, sand, straw and lime mixture: Mud plaster, mud mortar, mud brick,
3. Clay, silt, sand and lime mixtures: Mud mortar, mud brick,
4. Cement, sand and lime mixture: New cement plaster.

The first and the last mixtures between them were commonly used in the partly repaired buildings where brick is used. The combined use of brick and the cement based mixture shows that these interventions were done lately. The mortars used on mud-brick masonry walls were made of a mixture of clay, silt, sand, straw and lime (mud mortar). In the new buildings cement based mortars and plasters were naturally used in the Citadel.

The test results prove that the mixtures used in mud-brick, mortar and plasters consist of the same constituents and almost the same proportions. The aggregate ratio, according to the size of particles (Table 3.7) and percentage of lime as Calcium Carbonate (Table 3.8) have given below. To find the percentage of lime as Calsium Carbonate, the samples were dissolved in 5% HCl and the lime percentages determined accordingly.

Table 3.7 Aggregate Percentage in Plaster and Mortar Mixtures According to the Size of Particles

MATERIAL	AGGREGATE SIZE	% IN TOTAL MIXTURE
SAND:	The particles' sizes are between mm. and 20.0 micron	% 65-76
SILT & CLAY:	The particle sizes are between 20.0 and 2.0 micron (silt); the particle sizes are smaller than 2 micron (clay)	%24-35 (both silt and clay)

Table 3.8 Percentage of Lime in the Mixture with Reference to Mixture Types 2 and 3 (Altındağ Municipality, 1987: 261)

MATERIAL:	% of LIME
MUD BRICK:	% 14-20
MUD MORTAR:	%14-20
MUD PLASTER:	% 16-21

As seen in the tables, the lime ratio in the mud-brick, mud mortar and mud plaster is the same that might be a characteristic of the earth used in the mixtures. To make an evaluation about the case it is necessary to make tests on earth beds that were used as a source in making the mixture.

In the mineralogical analysis, done by the X-Ray diffraction method on the samples, the minerals like calcite, beta quartz, kaolin and illite were determined, together with minor amounts of soluble salts like sulfate, nitrate and chloride types. Under the light of these findings, it can be said that similar mixtures were used in the production of mud brick, mud mortar and mud plaster in the Citadel. These results were evaluated by the researches as follows (Altındağ Municipality, 1987: 261):

> *Sand ratio was kept in a level in the mixture so that does not change the plasticity. The clay minerals (kaolin and illite) used in the mixture have the limited expansion characteristics when they absorb water, they do not get affected by high relative humidity. Though, when the mixture has direct contact with water it disintegrates. The amount of lime present in the mixture is most likely the natural constituent of the earth bed and increases the stability of mixture and resistance to water.*

In these surveys, the mixtures were not separated as rough or fine plaster in the construction terminology. The proportion of organic materials were also not mentioned that might have been out of the scope of the limited study. Though, in the individual observations it was indicated that especially straw was used in the mud mortar and mud brick mixtures and some animal hair was added to the fine plaster in Ankara houses. Besides, lime plaster was also utilized as the last layer on the facades and in the interiors. Most of the houses were also colored with lime plaster by the late repairs.

Under the light of the historical sources that were mentioned before, the houses were not painted until the end of the 19c. After the establishment of the railroad, the facades of the houses directed to the station were plastered and painted in white (see section: 2.2-4). Owing to this, it becomes acceptable that the houses were only plastered with mud plaster and not painted till the end of last c., after that they were covered with lime plaster. As the plasters, that are directly subjected to external conditions, are the most altered parts of the buildings.

When the cross section of the plasters are observed, the cement based layers on the outer surfaces can be noticed besides the color layers by the naked-eye. It seems that the use of lime paint is still continuing but cement based plasters are more preferred compare to the original lime plaster in the recent repairs.

3.5.5. Process of Construction

The construction technique of traditional houses has no a specific process in Ankara. The construction technique carried by the pedlar's masters over the city borders created the formation of a common traditional construction practice throughout Anatolia which was discussed before in section 2.2. Besides, there were also local masters in Ankara working in the construction field. Since these masters who were busy in the field of construction regularly from the 16c. onwards did not have shops, their numbers and their specific professions are not definitely known. Still, the employment of stone masters from Ankara in the construction of Süleymaniye mosque proves that there was a strong construction tradition in Ankara since the 16c. Besides, Faroqhi also mentions that there were traveling masters producing mud-brick especially in 16c. around Ankara (See section 2.1.1).

In spite of the all these facts, Ankara houses can be defined as the more simple and domestic examples in Anatolia that are discussed before in the definition of the Turkish or Ottoman house definitions. Most of the old examples mentioned in the sources existing in Ankara at the beginning of the this century were more ornamented, more elaborate and comparatively bigger and the summer houses whose numbers were reaching to 10000 at the end of the nineteenth century are quite rare today in the historic fabric.

It is definite that; the building process in Ankara had developed in a parallel process with the other settlements for which the masters are mentioned in different sources. The construction period had to be limited with the spring and summer months, as it is today, depending on the local climatic conditions.

As a part of the building tradition in Anatolia, the building characteristics the size of the building, the quality and the amount of the material, the family size, the production activities in the family, the ownership of animals, the size of mohair manufacture at home and so on were to be outlined by the economic and social conditions of the owner. These conditions were the determinative of the variety in traditional urban fabric derived by the conditions of the family. The sizes of the parcel, relationship with the nearby streets and the neighbors and the orientation according to the climatic conditions were the other physical criteria that formed the building.

In the building process, firstly the construction materials that will be used in the building are prepared according to the economic conditions like, production of mud-brick, preparation, seasoning and classification of timber etc. In this process, some of these materials might be prepared beforehand by the owner like; slaking of lime, obtaining timber and stone, and some others.

After the preparation of materials, the foundation pit where the building will be erected was excavated. According to the character of the ground the depth of the foundation pit varies, in some cases it reaches up to 2.00 meters in Ankara to set on the rock base. Afterwards the foundation walls are made by using stone, mud mortar and bonding timbers (tie beams). Foundation walling continues through the external sides of the building and stone piers were erected to use under the internal axes of the building in suitable points. If there are semi-open spaces like *taşlık*, the boundaries of these spaces are also built with stone masonry (see Figure 3.34).

The foundation walls reached at least 50 cm. above the ground level and the masonry foundations were topped with timber beams placed both on the inner and outer edges of the walls. If the ground floor walls are also stone masonry this walling system continues still to timber section by leaving the openings in the wall construction. If, there is a basement floor, the openings for ventilation and the entrance are spanned by timber lintels.

If the ground floor is in mud-brick masonry, the mud-brick masonry walling continues through on top of the timber beams at the ground floor level. In this walling by placing the bigger and smaller units in sliding courses a stable walling is obtained.

It was mentioned before, that the timber frames was commonly used in some sections of the masonry in Ankara houses. If such supports are pre-planned in the masonry section, these frames were built first and then the masonry walling was filled in. If there is no such combined use in the masonry base, the timber beams are placed regularly in every meter and tied to each other in a changing order.

In the masonry section besides the openings if there is a kitchen, a chimney should be placed into the ground floor masonry and in this case the chimney can be built together with the masonry base. The chimney shaft reaches the roof by passing through the timber floors. Even though there was a rule to built the chimneys by brick masonry a determined assumption cannot be developed about the chimneys because there are not enough original examples thus they could not be observed systematically. The few visible existing fireplaces finished with gypsum curtains are placed in the stone masonry walls reaching up to upper levels.

If it is necessary to leave openings in the masonry sections, first the timber elements are inserted at the sides of the opening, then the framework of the openings is fixed at the edges. The timber lintels are two or three in number and sometimes more in number to be place throughout the thickness of the wall. These lintels with a cross section 5x10 or 10x10 cm. were placed as spanning elements at the top of the openings. If there are only two or three lintels, their upper faces of are covered with timber panels where the masonry wall will continue on. By using this technique the whole masonry section was completed before passing to the timber-framed section. The main posts forming the axis are placed and connected with the wall plate at the end of the masonry base, if there is space in the ground floor level.

At the end of the masonry base, the wall plates are placed on the edges of the masonry walls and go to the top of the division axis there are usually timber elements about 10x10 cm. in section. By this way, all the main posts in the ground floor that have discontinuous foundations form a frame with the wall plates of the masonry base in horizontal direction.

To on top of this frame, the floor girders are placed usually parallel to the shorter side of the space below, in each 30-40 cm. As a second row, the foot plates are placed on the outer edges of the walls, and the partition walls where the main posts, that supported by braces of the upper floor are set. Above the main post the wall plates are set again, both to connect the posts and also to place the floor girders of the upper floor. If there is a double layered floor, the first row of the floor girders covered with rough timber panels and a second row of girders was laid on in the perpendicular direction.

If there is projection above the ground floor, the load-bearing elements of the projections are built together with the floor of the upper storey. In the construction of Ankara type projection, the beams of the projection are placed during the construction of masonry walls. After, the support of the projection is completed, the floor is built by the continuation of the floor girders extended towards the outside. If there is a projection type with braces, the timber elements on which the braces are to be fixed are placed first in masonry walls during the construction. Later, the floor girders and the main girder carrying the floor girders under the projection are located above the braces. The decorations underneath the projection are done afterwards.

If there is a secondary timber-framed floor, the same order is repeated starting from the floor girders. After the completion of the timber section, the timber roof structure is prepared. To finish the roof and to cover it, is the first objective during the construction; the other finishing works continue step by step afterwards.

If the geometry of the roof suits the axis of the upper floor then the ceiling girders of the upper floor are used as the roof girder at the same time. Otherwise, the roof girders are placed on top of the ceiling girders that suit with the geometry of the room which is the most common case. The roof girders that are less in number than the ordinary ceiling girders are placed only under the ridge piece and the purlins. Primarily the corner king posts and the other posts are set together with the ridge piece of the roof.

The distance between the ridge piece and the external edge of the walls is divided at equal intervals by the purlins to give the slope of the roof. The angle rafters are set between the corners of the roof and the ridge piece keeping the slope regular. The roof posts that carry all the main structural elements of the roof are supported by braces and connected to each other by tie-beams in different levels. In all connections only nails are used, the joints are not used except a few simple ones. Above this main structure the rafters are placed in regular intervals then covered with timber panels about 2-2.5 cm. in thickness. Lastly, the timber covering of the roof is coated with roof tiles. In recent repairs the roof tiles are fixed to each other by cement based mortar or the tiles are replaced with the Marsilia type of tiles.

The edges of the chimney, which are very rarely found today, are coated with galvanize and the original details are lost. Today there is not enough information about the original finishing of the chimneys.

The eaves are built by the extension of the roof rafters about 60 to 70 cm. towards the outside of the walls. In some examples by the extension of both ceiling girders and rafters, two edged eaves were also applied. In such cases the face underneath was also covered and decorated.

If there is a *cihannüma* floor, that usually consists of one or two spaces with a staircase in the roof structure, firstly this section is built and its roof is closed. The roof structure of *cihannüma* is usually separate from the roof of the building and has a regular geometric form.

After the main skeleton and the roof structure is finished, the window and door posts are completed in timber framed section according to the openings on the walls. Then the solid sections of the walls are divided by the studs. The partition walls are located in the interior are built in the same order by replacing the posts around the doors, cupboards and niches.

Afterwards, the infill material is filled-in the timber frame and the floor pavements completed simultaneously. In the earlier houses with double floors, the space between the timber panels is filled with pressed earth to provide isolation and paved with timber panels or tiles. The tile courses are filled with a lime mortar (*horasan*).

If there is a built-in sitting platform in the space, the short posts that carry the platform are set on the floor and connected to each other. The lower part of this structure is also filled with earth if it is placed on top of a projection again for isolation then a timber covering placed on top of the sitting platform.

Timber pavement is used in the other inhabitable spaces; subsequently, the ceilings of the spaces are covered and decorated as the final works.

The built-in furniture of the internal spaces are set in their places like door, windows, cupboards, *sandalyelik*, *sergen*, etc. Lastly the plastering and the painting works are done to complete the building.

As a conclusion, when the details and the construction technique of Ankara houses are studied it can be observed that a rough and nonsystematic order is used in Ankara besides the continuation and the development in the building tradition. Even though, there are some rules and priorities these are not so strict and unchangeable. Owing to this, it should always be considered that each case may show differentiation from the point of construction process even if it is built in the same technique.

NOTES

(1) Besides those sources; the data's of the Arch: 507 Design Studio completed in fall semester, in 1994 and supervised by Akçura, N., Şahin, N., Morçöl, E., was also used in this study. The subject of the studio was Erzurum Quarter in Ankara and the students who participated in the studio are Z. Aktüre, E. Beken, G. Bilgin, M. Büyükhatipoğlu, E. Engiz, G. Kefu, G. Küçükal, E. Mıhçıoğlu, Z. Önen, E. Serttaş.

(2) Even though all these sources focus on the preservation problems of historic urban tissue in Ankara, they differ from each other when their methodology and the evaluations are concerned. This case does not give the chance to make mathematical and statistical comparisons practically. But even in this case some comparisons can be done as a generalization. The study on Ulucanlar district contain information on building plans and sizes as metric value that will be quite helpful for developing some standards.

(3) The author prepared the measured drawings of fourteen houses in 1/100 scale with E. Morçöl; addition to the existing documented houses.

(4) Especially the parcels adjacent to the big axis are subjected to master plan implementations before the designation of the historic site of Ankara. In those parcels the original ownership pattern has completely changed. The regulations of current master plan that is named "Ulus Historic Center Preservation and Rehabilitation Master Plan" and being in force since 1989s, based on the original (cadastrate) ownership pattern.

(5) Documented by N. Şahin and E. Morçöl in March 1993, in Ulucanlar quarter.

(6) see unpublished master thesis of M. Bahçeci, 1989.

(7) This house which is known as Yusuf Uğraş House was documented by M. Akok in 1946. During this study, the house was re-documented and the alterations and deteriorations were observed in this building by the author.

(8) I should especially thank to my colleague E. Morçöl for his guidance and critics in the formation of this section who works on structural characteristics of Ankara houses in his Ph.D. studies who kindly gave me the opportunity to use his papers and unpublished data's; Morçöl, E., 1989; Morçöl, E., Şahin, N., 1991.

(9) Kafesçioğlu mentions that the structural opposition between the upper and the lower parts of the houses is a common feature in the north-west region of Anatolia. Arel uses this interpretation as a constituent item in her Ottoman house definition. Kafesçioğlu, R., 1955 :48; Arel A., 1982: 34-35.

(10) The Ph.D. study of Morçöl's, that will answer many questions on Ankara houses, is still continuing.

(11) The restoration process of the houses at Keklik st., 4, Doyran st., 9 and Kireçli st., 4, were examined by the author. During this process it was noticed that timber cushions are not used below the foundation walls and the timber beams are also placed in each meter in the construction of the foundation walls. For detailed information see the references given below: Akçura, N., et al., 1991; Şahin, N., Morçöl, E., 1989.

(12) During the site surveys carried in Ankara in different periods, this observation was made as a coincidence in the foundations of a historical building that was adjacent to a new building in the process of construction.

(13) Early Bronze Age; BC. 4000, level XIX; BC. 2.000, level V.; Naumann, R.,1985:61-62, figure: 34, 58-67, 368-391.

(14) One of the common alterations done recently was plastering or coursing of stone walls with cement based plaster.

(15) The sizes of the mud brick units used in Bavlum that is a settlement near to Ankara varied roughly from 12 to 15 cm. in thickness, from 15 to 20 cm. in width and from 35 to 40 cm. in length as Kafesçioğlu mentioned. Kafesçioğlu, R.,1949:10,25.

(16) As it is known, in the north European countries such as England and Germany where the timber-framed tradition developed, the timber elements are assembled with joints to each other. In the use of structural elements and in the construction process there is a strict order repeated and developed in each century. This construction technique is completely different from the timber-framed construction technique used in Anatolia and especially in Ankara. In Safranbolu, the town where the timber-framed construction technique reached its highest level, joints were not used. Contrary to this, there are some similarities between the facade elements of Safranbolu and some German examples. The comparison of these structural systems is not the subject of this study but, the biggest structural difference between these systems proofs that the tradition of the timber-framed buildings in Ankara was developed in a transitory understanding, they are domestic and simple. Some sources subjected on timber-framed structures in Germany and England were consulted in this study as follows: Harris, R., 1989; Charles, F.W., 1990:15-106; Brunskill, 1971:18-33; Gerner, M., undated.

(17) 1. Ebniye Ninamnamesi, 1848, item:18; Tarik ve Ebniye Nizamnamesi, 1864, item: 24.

(18) The test results published by Akman and others shows that the horasan mixture has the same properties as the C class concrete mentioned in TS (Turkish Standards) 2848. In C class concrete the sand ratio is 1/5, that means that the ratio of the water to the cement is 90 %, the C class concrete has the dose 320 kg/m3.

CHAPTER IV

VISUAL FORMS OF DECAY and REHABILITATION PROBLEMS IN HALF- TIMBER ANKARA HOUSES

Historic houses have their own special structural and material characteristics and are subjected to a variety of interventions which have created problems and now require special solutions. Recognition of the causes of decay in a historic building is one of the most important stage when it is subjected to conservation. There are some recent researches on monumental buildings in Anatolia and especially on Ankara, focusing on material characteristics, their properties and problems of conservation. However in general, the information on historic houses in Anatolia is unfortunately quite limited and not in the detail appropriate for studies on rehabilitation. (Caner, E. N. et al, 1988; Tunçoku, S., 1993; Güleç, A., 1990,1991; Böke, H., 1992). Without this basic information related with the structure and materials of historic houses, it is very difficult to propose overall solutions for the conservation of them.

This present study is undertaken with an awareness of the extend of these problems and is willing to discuss the problems in this field in an advanced platform and bring the questions to the attention of other researchers for discussion. In this sense, the reader should always consider that this survey is based only on observations aiming to define "*the visual forms of decay*" and the proposals are developed only "*in the architectural scale*", which might be fulfilled in the future by the cooperation of other experts to describe the restoration practice.

In order to define the possible causes of decay on timber-framed houses, visual analyses have been done on a specific group of *twenty historic houses* which were selected from Ankara. These houses represent different periodical characteristics, they still function mainly as houses but have been subjected to alterations in order to obtain more dwelling units and are structurally in a relatively good condition.

As a methodology, the documentation of these 20 examples are prepared as a separate catalogue (see App. C). In the preparation of this catalogue the selected houses were originally documented in 1/100 scale, including information on their structural and material characteristics, their present use, together with the alterations and interventions they have undergone. The documentation on common defects and the types of decay in material were determined only by visual observations. The data coming from this documentation is evaluated throughout the charts which are given in the Appendix D. The general characteristics of these studied examples are introduced at the beginning of this chapter and they are used as direct reference in the definition of the decay types. Ankara houses have been subjected to various types of interventions and the qualities of these interventions are strictly defined by the social groups living in them (s. section 1.1.). For that reason, the social profile of the users and the type of interventions practiced by them have been studied in detail.

This chapter firstly presents the general characteristics of the houses selected, then the social profile of the users and the interventions done by them. Afterwards, the effects of these interventions and alterations on spatial character and dwelling standards are discussed. In the light of these, the visual forms of decay types and their possible sources are analyzed in detail with reference to structure, structural members, architectural elements, materials and service spaces of the houses selected in Ankara.

4.1. General Characteristics of the Examples Studied

The 20 selected examples, express the common characteristics of Ankara houses which were given in detail in Chapter III. As it can be seen from the Chart 1 (in App. D), the selected examples are the main buildings in their parcels where there are also some additional units. However as, these additional units do not represent the characteristic problems concerned in this chapter, the data related to visual decay forms are not presented for them.

In these 20 examples, most houses have a courtyard or a garden (75%) and 12 (60%) of them have one street facade while 4 (20%) of them which are placed on corner parcels have 2 facades facing the street. Only 4 of them (20%) are located inside a courtyard and these are the houses dated back to the earliest period. At present, in these 20 parcels there are a total of 52 separate building units, in which 20 are the main buildings, 7 are lately added dwelling units, 25 are service spaces and only 7 of these service buildings are original. The number of building units in a parcel vary between 1 to 7, and in 7 of the parcels (35%) there are single main building unit. In 5 of these parcels there are 2 (25%), in 3 of them 3 (15%) and in 2 of them there are 4 (10%) building units. There are only a single examples for parcels including 5, 6 or 7 building units (5% each). Usually, the number of later added dwelling units in the parcels is one. Though only in one of them (Erzurum, 48) there are 3 later added dwelling units, apart from the main building, only one of them is original. The number of service buildings in the parcels vary between 1 to 4, and in most cases the houses have only one service addition (25%). In 2 of these parcels the number of dwelling units could not be recorded, the remaining 18 parcels comprise 57 dwelling units. In the main buildings, which were the major items of the survey, there are a total of 59 dwelling units, of which 6 were uninhabited during the survey thus not documented and 5 were used as shops. Thus, the remaining 48 are dwelling units. Only 34 of these dwellings were documented in detail and a social questionnaire was given to the users with their consent (see Chart 1 in App. D).

The main buildings located in the parcels consist of two floors (95%; as ground and first) and in only one of them there are three floors (İnci St. 14). In 14 (70%) of the houses there is a mezzanine spreading totally or partially above the ground floor. Again in the house at İnci St., no. 14 there is a mezzanine above the first floor covering the floor underneath only partially (see Chart 1). The number of houses having a *cihannüma* on the roof is 3 (15%).

The structural system and construction materials used (See Chart 2) in these selected 20 houses present the same general characteristics mentioned in Section 3.5. They are constructed on a masonry base made of stone, while the ground floor and sometimes the mezzanine are constructed with cut or rubble stone and/or mud brick. The upper floors are made with timber frame skeleton system and infilled with mud brick or brick. The use of timber weather boarding on the external facades of the *cihannüma* is also seen in the late examples. The roofs are made of timber including the eaves and usually they have no gutters. The ceiling of the spaces are also timber while the use of plywood, cardboard or plaster is rare. The original floor pavement of the rooms and the main halls is mainly timber, together with floor tiles and rarely marble. Linoleum, screed or mosaic use in the main halls and rooms are later additions. The original materials used in the courtyards and *taşlık* spaces are stone where timber or screed are used during the later interventions. Originally timber is used as the main construction material in most of the other spaces like *köşk,* balcony, staircase etc.

The use of screed, mosaic or concrete in these spaces are part of later interventions. All other architectural elements are mainly made of timber like doors, windows, shutters, cupboards, niches etc. In addition to joinery, iron is used in the window or balcony balustrades in different periods and in some later added exterior doors. The use of gypsum and stucco work is recorded in the top windows, fireplaces and hearts of the earlier houses and niches in the cupboard combinations of later ones. Mud plaster, mud mortar and limewash are the original finishing materials together with the newly added materials like cement based plaster, whitewash and oil paint (see Appendix C).

Table 4.1 Structural System and Material Use in the Examples Studied

	Basement & Ground Floor Lev.	Ground Floor	Ground Floor Mezzanine	First Floor	First Floor Mezzanine	Second Floor	*Cihannüma*	Roof	Eaves	Gutters
Rsm:	15;75%	2;10%	-	-	-	-	-	-	-	-
Cs:+Rsm:	2;10%	2;10%	-	-	-	-	-	-	-	-
Rsm+Tf+M:	1;5%	-	-	-	-	-	-	-	-	-
Rsm+Tf+Un.	1;5%	-	-	-	-	-	-	-	-	-
Mm:	-	11;55%	4;20%	1;5%	-	-	-	-	-	-
Mm- Bm.	-	1;5%	-	-	-	-	-	-	-	-
Mm+Tf+M:	-	-	-	1;5%	-	-	-	-	-	-
Tf:	-	-	-	-	-	-	-	20;100%	20;100%	-
Tf+Mb:	-	2;10%	-	9;45%	1;5%	1;5%	1;5%	-	-	-
Tf+B:	-	-	-	2;10%	-	-	-	-	-	-
Tf+B,Mb:	-	-	-	4;20%	-	-	-	-	-	-
Tf+T						-	1;5%	-	-	-
Tf+Un:	-	-	-	3;15%	-	-	-	-	-	-
Z, P	-	-	-	3;15%	-	-	-	-	-	5;25%
Un:	1;5%	2;10%	-	-	-	-	1;5%	-	-	-

Abbreviations: Rsm: Rubble stone masonry; **Cs:+Rsm:** Cut stone masonry+ rubble stone masonry; **Rsm+Tf+M:** Rubble stone masonry + Timber Frame + Mudbrick infill; **Rsm+Tf+Un.**: Rubble stone masonry + Timber frame + Unidentified infill; **Mm:** Mudbrick masonry; **Mm; Bm.**: Mudbrick and brick masonry together; **Mm+Tf+M:** Mudbrick masonry + Timber frame + Mudbrick infill; **Tf**: Timber frame; **Tf+Mb:** Timber frame + Mudbrick infill; **Tf+B**: Timber frame + Brick infill; **Tf+B,Mb:** Timber frame + Mudbrick and Brick infill; **Tf+T:** Timber frame + Timber covering (weatherboarding); **Tf+UnI**: Timber frame + Unidentified infill; **Z, P**: Zinc or plastic; **Un:** Unidentified structural material because of plaster. First numerals in each column indicate the number of buildings, the following indicate the percentage.

Table 4.2 Material Use in Ceiling and Floor Pavements

	Ceiling:	Courtyard:	*Taşlık:*	Main Hall:	Main Room:	Room:	*Köşk:*	Balcony:	Terrace:	Kitchen:	Bathroom:	*Gusulhane:*	WC:
T	8;40%	-	-	14;70%	15;75%	13;65%	1;5%	-	-	3;15%	-	-	-
T, Pl	7;35%	-	-	-	-	-	-	-	-	-	-	-	-
T, Cp	2;10%	-	-	-	-	-	-	-	-	-	-	-	-
T,Cp,Pl	2;10%	-	-	-	-	-	-	-	-	-	-	-	-
T,Pl,Cb	1;5%	-	-	-	-	-	-	-	-	-	-	-	-
T+Ft	-	-	-		1;5%	-	-	-	-	-	-	-	-
T+Mo	-	-		-	1;5%	-	-	-	-	-	-	-	-
T+Ma	-	-	-	1;5%	-	-	-	-	-	-	-	-	-
T+Sc	-	-	1;5%	-	-	4;20%	-	-	-	-	-	-	-
T+Sc+L	-	-	-	-	-	1;5%	-	-	-	-	-	-	-
T+E+Sc+Ft	-	-	1;5%	-	-	1;5%	-	-	-	-	-	-	-
T+L	-	-	-	-	-	1;5%	-	-	-	-	-	-	-
L	-	-	-	1;5%	-	-	-	-	-	-	-	-	-
Ct	-	-	-	-	-	-	-	-	-	1;5%	1;5%	-	1;5%
Sc	-	8;40%	8;40%	-	-	-	1;5%	1;5%	2;10%	11;55%	7;35%	13;65%	14;70%
Mo	-	-	-	-	-	-	-	-	1;5%	-	2;10%	-	-
Sc+Mo	-	-	-	-	-	-	-	-	-	1;5%	-	-	2;10%
Ft	-	-	-	2;10%	-	-	-	-	-	1;5%	-	-	-
St	-	2;10%	7;35%	-	-	-	-	-	-	-	-	-	-
St+E	-	3;15%	-	-	-	-	-	-	-	-	-	-	-
E	-	2;10%	-	-	1;5%	-	-	-	-	-	-	-	-
E+Ft	-	-	-	-	1;5%	-	-	-	-	-	-	-	-
Un	-	-	-	-	1;5%	-	-	-	-	-	-	-	-

Abbreviations: T:Timber boards; **Pl**: Plywood; **Cp**: Cement plaster; **Cb**: Cardboard; **Ft**: Floor tiles; **Mo**: Mosaics; **Ma**: Marble; **Sc**: Screed; **L**: Linoleum; **E**:Earth; **Ct**: Ceramic tiles; St:Stone; First numerals in each column indicate the number of buildings, the following indicate the percentage.

Table 4.3 Material use in Architectural Elements

	T	T+Cs	CS+Mo	Cs+Sc	T+I	Stu	Gy	I
Main Staircase:	16: 80%	2: 10%	1: 5%	1: 5%	-	-	-	-
Windows:	18: 90%	-	-	-	2: 10%	-	-	-
Top Win.:	-	-	-	-	-	3: 15%	-	-
Window Balustrades:	-	-	-	-	-	-	-	4: 20%
Shutters:	1: 5%	-	-	-	-	-	-	-
Courtyard Doors:	10: 50%	-	-	-	-	-	-	1: 5%
Exterior Doors:	19: 95%	-	—	-	-	-	-	1: 5%
Int. Doors:	20: 100%	-	-	-	-	-	-	-
Cupboards:	20: 100%	-	-	-	-	-	-	-
Niches:	3: 15%	-	-	-	-	-	4: 20%	-
Fireplace:	-	-	-	-	-	-	3: 15%	-
Hearth:	-	-	-	-	-	-	2: 10%	-

Abbreviations: **T**: Timber; **T+Cs:** Timber and Concrete skeleton; **Cs+Mo:** Concrete skeleton covered with Mosaic; **Cs+Sc:** Concrete skeleton covered with Screed; **T+I:** Timber & Iron; **Stu:** Stucco; **Gy**: Gypsum; **I:** Iron. First numerals in each column indicate the number of buildings, the following indicate the percentage.

Table 4.4 Finishing Materials:

	Mp	Cp	Mp+Cp	Ww	Lw
Ex. Plaster:	13: 65%	6: 30%	1: 5%	-	-
In. Plaster:	2: 10%	7: 35%	11: 55%	-	-
Ex. Whitewash:	-	-	-	18: 90%	-
In. Limewash:	-	-	-	-	20: 100%

Abbreviations: Mp: Mud plaster; **Cp**: Cement based plaster; **Ww**: Whitewash (type is not identified); **Lw**: Limewash. First numerals in each column indicate the number of buildings, the following indicate the percentage.

4.2. Problems of Rehabilitation Originating from the Users

As already mentioned, when we try to define rehabilitation problems of Ankara houses, it can be seen that for the causes of decay, careless interventions are as effective as weathering conditions. The alterations and interventions practiced on these houses through the years, their reasons and types show great variety and lead to damage in the original material.

As it was discussed in the second chapter, the historic fabric in Ankara was densely inhabited and subjected to many alterations, repairs and renewals especially after the Republic.

Increasing housing demands caused the subdivision of houses to obtain more dwelling units. In the earlier interventions, done during the early Republican period, the traditional construction materials were still easily available and the construction techniques were still continuing. Thus, the technical quality of the interventions were high and quite near to the original. That is why, today it is difficult for us to differentiate some alterations done in that period. After 1960-70's, the historic fabric started to be used by lower income groups as transition areas (see sections 2.1, 2,4). Since then, while the dense usage is continuing, the quality of the interventions have changed in the negative direction according to the economic condition and demand of the users. Because, the quality of the interventions are restricted by the limited economic power and the minimized spatial demands of the users.

The entry of new materials into the construction market increased the possibility of new alternatives and cheap materials which started to be preferred by the lower income groups living in these areas. In order to define the reasons of these tendencies, types of alterations, their effect on the spatial organizations of the buildings and the types of decay derived from these interventions, we need to know more about the profile of the social group living in these areas. Because their demands are still, directly or indirectly, the main determinant factor in today's interventions.

4.2.1. Social Profile of the Users and Their Demands

According to other studies mentioned earlier (Altınsay, B., et al, 1988: 42,45; Altındağ Mun., 1987: 201,204; Akçura, N., et al., 1993: 100,104), today, the historic area in Ankara is still densely used by the lower income groups and their limited life standards and economic potentials determine the quality of the interventions. In this study, the inhabitants of the 20 houses have been interviewed to define their social profile and to get their satisfaction and demands about the houses they live in, in order to have their evaluation.

In the 20 examples surveyed, in which 74 % of the dwellers are tenants and 26 % are landlords. The ownership pattern shows that 22 % of the landlords own these houses as inheritance, while 67 % of them have purchased the house (see Chart 6, Col.: 6,7; App. D). When the life time of the landlords is considered, it becomes clear that only 33% of the landlords who purchased the houses are living there for more than 11 years. The ones who inherited their houses are living there to a maximum of 7 years (Chart 6, Col. 31; App. D). This means that 67% of the landlords living in these areas are not the original owners who or whose family built these houses and there is a new tendency towards the houses changing hands. The origin of the new owners vary (Chart 6; Col. 30; App. D), but all are originally from outside of Ankara, like; Konya-Ürgüp, Kayseri, Samsun, Sivas or from the near vicinity of Ankara (Kızılcahamam, Polatlı). This evidence becomes more important when the profession of these landlords is concerned (Chart 6; Col. 18; App. D). Three of the landlords are craftsman, two of them own a small enterprise, one is an officer, one is a worker and one is in a marginal sector. So, the owners living in these houses are belonging to lower income groups and 74% of the owners who no longer live in these houses are probably in better economic conditions now.

The social profile of the tenants living in these houses, which form 74%, show that they too belong to lower income groups. The incomes of the tenants could not be documented but the rent prices and mechanical tools owned by them provide an opportunity to make an approximation about the income groups of the dwellers. The rent prices, vary between 200.000-2.500.000 TL (Oct., 1994). 50% of the rents are between 500.000-1.000.000 TL, and 33.3% are between 200.000-500.000TL. So in general 83.3% of the rent prices are below 1.000.000 TL (Chart 6, Col.: 8; App. D).

Table 4.5 Distribution of Rent Prices:

Rent Price range	#	%
x <= 500 000 TL.	8	33.3
500 000 > x <= 1 000 000 TL.	12	50.0
1 000 000 > x <= 1 500 000 TL.	3	12.5
1 500 000 > x <= 2 500 000 TL.	1	4.2
TOTAL:	24	100

Table 4.6 Period of Living in the House (Chart 6, Col.: 31)

PERIOD:	LANDLORDS:		TENANTS:		TOTAL:	
	#	%	#	%	#	%
Less than 1 Year:	-	-	5	20	5	14.7
Between 1-3 years:	4	44.4	4	16	8	23.5
Between 5-7 years:	2	22.2	3	12	5	14.7
Between 8-15 years:	1	11.1	7	28	8	23.5
Between 15-25 years:	1	11.1	4	16	5	14.7
Above 25 years:	1	11.1	2	8	3	8.0
	9	100	25	100	34	100

The occupation of the household heads (here onwards HHH) are classified in some groups like craftsmen (copper maker, painter, tailor, carpenter), worker (cleaner, cook, waiter, building worker), small enterprise (businessman / tradesman like restaurant owner, driver) marginal sector (yogurt seller, milk seller), officer and retired.

The distribution of occupation of the HHHs according to ownership pattern is given in the table below which shows that most of the users are workers (38%) or the ones occupied in the marginal sector (18%). In 8 dwelling units (24%), a first degree relative (wife, daughter, son or brother) is also working beside the HHH (Chart 6, Col.: 28,29; App. D).

Table 4.7 Occupation of Users (Chart 6, Col.: 18, App. D)

	C	%	W	%	B	%	Ms	%	O	%	R	%	TOTAL	TOTAL %
TENANTS:	2	8	12	48	1	4	5	20	4	16	1	4	25	100
LANDLORDS:	3	33	1	11	2	22	1	11	1	11	1	11	9	100
TOTAL	5	15	13	38	3	9	6	18	5	15	2	6	34	100

C: Craftsman; W: Worker; S: Small enterprise; Ms: Marginal sector; O: Officer; R: Retired

Table 4.8 Age Distribution of the Users

Age Group:	#	%
0-6 ages:	16	14
7-11 ages:.	7	6
12-17 ages:.	13	11
18-21 ages:	12	10
22-60 ages:	64	55
above 60 age:	4	4
TOTAL:	116	100

Number of people living in these 34 dwelling units is 116 and 47% of them (54) are males while the rest 54% (62) are females. 41 % of this population is below 21 year and 4 % is above 60 (Table 4.8).

The education level of the users is quite low. 47% of the HHH's and 77% of the spouses of the HHH's have completed primary school. In general the number of people who finished primary school form 47% and who finished the secondary or high school forms 23% (see table below and Chart 6, Col.19-27; App. D).

Table 4.9 Education Level of the Users

	B	%	P	%	S	%	J	%	U	%	N	%	TOTAL	%
House Hold Head:	-	-	16	47	13	38	1	3	-	-	4	12	34	100
Spouse of HHH::	-	-	24	77	3	10	-	-	-	-	4	13	31	100
Other Fam. mem.	15	29	14	27	11	22	1	2	3	6	7	14	51	100
TOTAL:	15	13	54	47	27	23	2	2	3	3	15	13	116	100

B: Before primary school; P: Primary school; S: Secondary & high school; J: College; U: University; N: None, Uneducated

Although all the users are coming from outside of Ankara their place of origins vary. Some sub-groups can be identified according to the place of their origin. 29% of the users are coming from Konya and some of them are sharing the same house, 12% are from Çorum, 9 % are from Kayseri, 9% are from Sivas, 6% are from Isparta, 15% are from the settlements near to Ankara (like Kızılcahamam, Polatlı, Elmadağ,) and the rest 15% are coming from different cities like Yozgat, Ürgüp, Kastamonu, Kırşehir, Isparta, Kars, Güdül (see Chart 6, Col.:30; App. D).

Most of the users were living in the same quarter (47%) and in the historic quarters of Ankara (18%) before they moved to the house in which they are living now. 24% of the users were formerly living in the squatter quarters or out of the historic quarters of Ankara like Keçiören, Dörtyol, Dikimevi, Emek, Türközü, Dikmen, Kayaş. Only 12% of the users are directly coming from other cities like İzmir and Kayseri (Chart 6, Col. :32; App. D). Most of the users are not planning to move to another house or quarter (68%, see Chart 6, Col. 39; App. D). The ones who want to move to another house (32%) are planning to go to the new developing areas of the city like Sincan, Eryaman, Batıkent, Dikmen which partially serve to lower income groups (64%). The ones who are not satisfied with their houses are willing to move to another house in the same quarter or in the historic area (27%). A small group forming 9% are planning to turn back to their village or city (Chart 6, Col. 39; App. D).

Most of the users are satisfied to live in this neighborhood (91%). They define the positive features of the quarter they live in as; good neighbor relations (41%), central location (21%), cheap rents (5%), quiet (2%) and healthy (2%) neighborhood, because they own the house (2%), sunny (2%), the high ceilings are considered healthy (2%). The negative features of the neighborhood are; it is lousy (5%), dirty (2%) and not centrally located (2%). 10% of the users could not answer this question even though they are usually satisfied from the neighborhood.

These conflicting results can be evaluated by different disciplines but it is clear that the users are not really aware of the problems of the neighborhood they live in, but they are generally have complains (a total of 42 answers were collected, see Chart 6, Col. 33,34; App. D). When the same question is asked specifically about the house or the dwelling unit they are living, it is seen that 50% of the users are still satisfied from their houses, when the 44% is not and the 6% has no answer.

The problems that the users put for about the houses are; service spaces are insufficient or do not exist at all (kitchen, bathroom, WC; 19%), the houses are small (14%), old (12%), difficult to heat (7%), the roofs leak (5%), there is no water (5%), they are not functional (2%), the structural conditions are bad (2%).

However beside these problems, the users are satisfied because the houses have private courtyards (5%), the rents are cheap (5%), they are comfortable (7%) and easy to heat (2%). 14 % of the users did not answer this question (a total of 42 answers were received; see Chart 6, Col. 35,36).

Even though the economic potential of the users are limited, 91% of them have made small repairs in their houses. 5 houses (9%) which are used by the landlords are completely repaired. The most common repair done by the tenants is renewal of plaster (26%) and whitewash (36%). In addition to these, there are other repairs like: glazing windows (7%), mass addition to the *taşlık* or courtyard (3%), partial wall repairs (12%), covering of *taşlık* pavement with screed (3%), installing electricity supply (2%), opening new windows (2%).

4.2.2 Types of Alterations and Interventions

As it was mentioned before, the first effect of dense usage is the partition of the houses. In the examples surveyed for this study (Chart 3; App. D), the most common type is dividing the houses horizontally (40%) or vertically in the ground floor and horizontally in the upper floors (40%). In horizontal division, each floor can be used by a separate dwelling unit, which is obtained by the addition of some components (like staircase, wall or service spaces, etc.). Vertical division in the ground floor and horizontal division in the upper floors is common if the building is located on a trade zone and the spaces in the ground floor are suitable to be converted into shops (15%, only in 3 examples). The division of houses both vertically and horizontally is valid only in 20% and in especially larger buildings. Vertical division alone is not observed in any of them.

The number of dwelling units that a main building comprises (excluding the courtyard and the dwelling units there) varies between 1 to 6 (Chart:1; App. D). In the selected examples, the most common practice with 40% was to divide the main building in the parcel into 2 dwelling units (8 bldg.). The houses divided into 3 dwelling units form 15% (3 bldg.), and into 4 dwelling units are 20% (4 Bldg.). There is only one example to houses used by 5 to 6 dwelling units (5%), and two houses are used by single families (10%). So, in the 20 buildings that were surveyed there are altogether 59 dwelling units (detailed survey and social questionnaire was carried out only for 34 of them), located only in the *main building*, so the average dwelling unit number can be calculated as 2.95 for the historic houses located in historic area of Ankara.

However the average dwelling number in each *parcel* is 3.16. This calculation is done according to the 57 dwelling units in 18 parcels. Because the total dwelling number in two parcels could not be determined. So the average value increases when the newly added dwelling units in the courtyards are concerned. Approximate values were also given before in earlier, studies on the historic fabric in Ankara. These results show that, the houses which are originally designed for a single big family, started to be used by separate dwellers today and this created the division of the houses.

For the division of the houses, addition of masses to the courtyards or to the buildings becomes necessary. In the courts of 50% (10 bdlg.) of the houses there are mass additions as service spaces or dwelling units. Only in four of the surveyed examples, the mass additions to the courts are done, to be used as separate dwelling units (Chart 1; App. D). Mass additions to the main building is also a common feature which is observed in 68.4% (in 13 of 19) of the houses and usually made for service purposes. There are also space additions inside the buildings, which are obtained by the division or alteration of an existing space. In 55% (11 bdlg.) of the buildings there are at least single room additions. In 75% (15 bldg.) of the studied houses there is a kitchen, in 70% (14 bldg.) there is a bathroom, in 90% (18 bldg.) there is a WC addition (Chart 3; App. D), inside the buildings.

Furthermore, elements are added to utilize the newly developed dwelling units. The most common intervention of this type is the addition of a wall which is seen in 95% (19 bldg) of the houses. Other element additions are doors (90%; 18 bldg.), windows (65%; 13 bldg.), staircases (45%; 9 bldg.), cupboards (20%; 4 bldg.) and a shelter (15%; 3 bldg.). Closing the original open main hall (40%; 8 bldg.) and *taşlık* spaces (5%; 1 bldg.) in the houses dated back to the earlier period in which these elements are more in line in relation to their limited number.

The alteration of the existing elements according to the spatial needs of the dwelling unit is also a common intervention type in these buildings (Chart 3; App. D). Element alterations vary extending from material change to alteration in dimensions, form and location. Most of the time it is not possible to make a classification in this variety because each case resembles a specific solution. In the catalogue descriptions these variations are given in detail for each building. The common techniques used and the materials changed during these alterations are shown in Chart 4 in Appendix D and are also discussed in the following section 4.2.3.

The most common alteration is the change of the floor pavement which is in the form of covering the original timber or stone pavement with screed or the renewal of the original timber pavement. 90% of the houses are subjected to this type of intervention. On the contrary, alterations of ceiling boards is rare (25%) and is seen partially in the deteriorated sections of the houses. In this type of intervention, the original ceiling boards or girders are usually kept in their place and cardboard or plywood is placed on top of them. But in some examples the original ceiling is completely renewed with new timber boards, like in the house at Gelin st., 12 (Figure 4.1.).

Alteration of window sashes, enlargement or reduction of door or window frames are also common (50%; 10 bldg). Alteration of a window to a cupboard (*gusulhane*), a fireplace to a door, and enlargement of original windows are the types of interventions seen in the same house at Gelin st., no: 8 (Figure 4.2.).

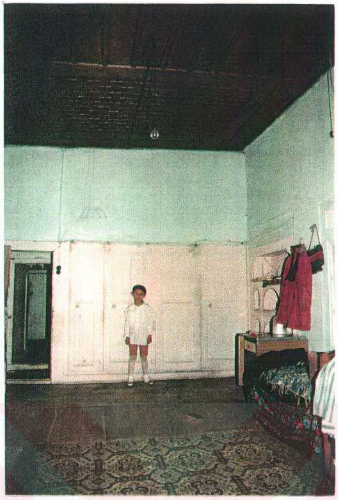
Alteration of an existing staircase with a new one by changing its dimensions (like in Eskici, 2), alteration both its location and material (Kalekapısı, 10), alteration of the material by keeping the original location and dimensions (like in Gelin, 12), covering the timber staircase with screed (like in Öksüzler, 17) are some examples of staircase alterations which are observed in 50% of the houses (see Figure 4.3.).

Alterations by removing some parts of the cupboards to obtain an opening or a service space, or removing of cupboard doors are the other types of interventions practiced on architectural components (35%).

Removing certain existing elements in order to attain a new spatial arrangement is also a common intervention. The traces of some original built-in furniture like fireplace (4 bldg), *sedir* (4 bldg), partition frame (5 bldg) and cupboards (4 bldg) which are no longer serving their original function are noticed especially in the earlier houses. Beside that, the removal of wall, staircase, window or doors are also done for the new spatial arrangements.

The removal of original ornamented ceilings or timber panels from the walls, probably for sale, are also documented in the house at Cingöz street, no: 20. The ceilings and floor pavements of the first floor of the house at Gelin St., no: 12 are all removed and renewed with timber and some original ceiling timbers are also used on the later added partition wall.

The effect and scale of these additions and interventions may change according to the scale and character of the building, the standards of the dwelling unit and especially the techniques and materials used which will be described in the following section.



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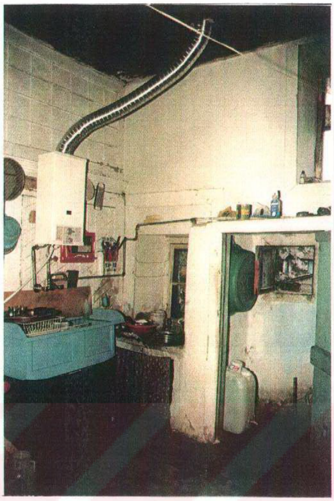

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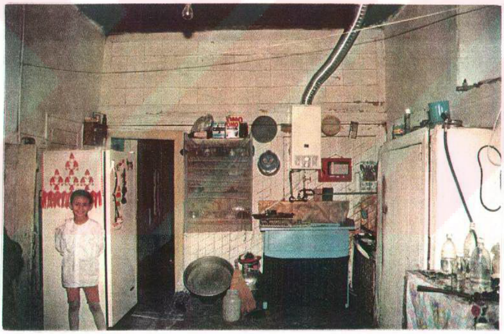

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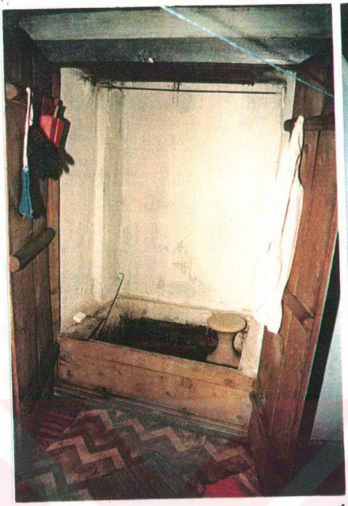
1) Partly altered ceiling boards in the main room
2) The former ceiling boards of the main room are used in partition wall in the kitchen
3) Partition wall in the kitchen

Figure 4.1 Alteration Types: Gelin st., 12, in Ulucanlar Qu.



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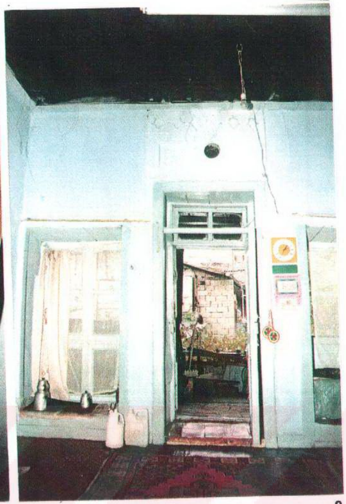

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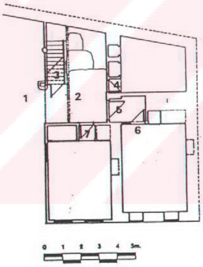
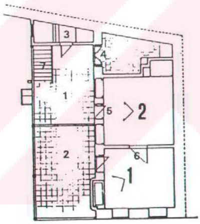




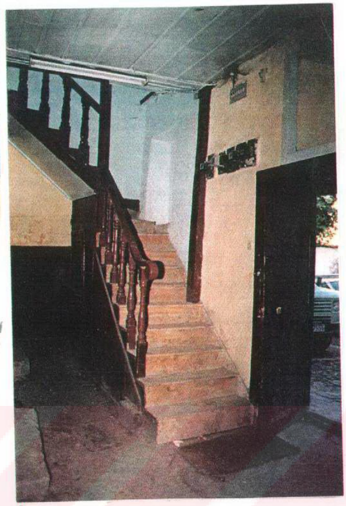
* figure > in plan indicates photo angle

1) Original fireplace *-ocak-* transformed to a door

2) Original window transformed to *gusulhane*

Figure 4.2 Alteration Types: Gelin st., 8, Ulucanlar Qu.

1



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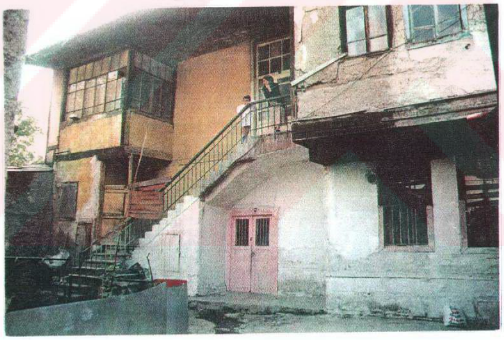
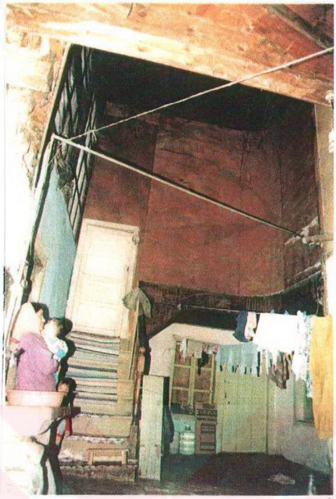


1) Öksüzler St., 17, Ulucanlar Qu., covering timber staircase with cement based screed
2) Eskici St., 2, Yahudi Qu., alteration of original staircase by changing its dimensions
3) Gelin St., 12, Ulucanlar Qu., renewal of timber staircase with concrete

Figure 4.3 Alteration of Original Timber Staircases



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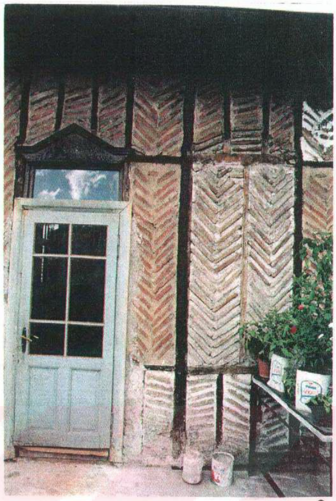

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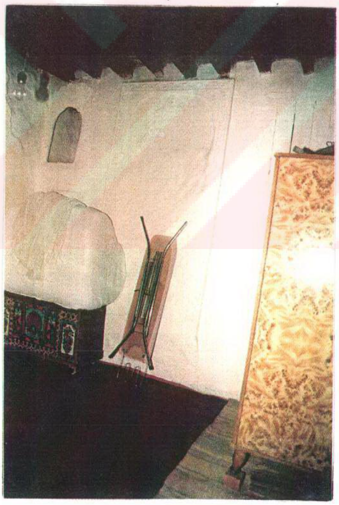


1) Eylül St., 1, Ulucanlar Qu., closing of former *sofa* with plywood

2) Eskici St., 2, Yahudi Qu., alteration of a window to a door and closing of a window

3) Cingöz St., 20, removal of an original fireplace *-ocak-*

Figure 4.4 Alteration Types

4.2.3. Common Techniques and Materials Used in Alterations and Repairs

The common techniques and materials used in the alterations and repairs show a variety, however certain groupings can be made to define the conventional tendencies in these interventions. To do this, the same as to the typology given on the alterations in different scale in the former section, these techniques and materials are defined here with the same headings (Chart 4, App. D).

As it was mentioned before, there are mass additions done both to the main building and to the court. Here the ones done specifically to the main building are mentioned because the other ones are not direct causes of decay on the building and they are a part of the discussion on infills in parcel scale. Mass additions to the main building is a standard intervention which is observed in 70% of the buildings. In 5% of the main buildings, the construction technique of the addition is unidentified (Chart 4, Col.1). In the mass additions, timber frame construction system is more common (30%) alongside the concrete skeleton system (20%) and brick masonry (10%). Use of timber and concrete frame system as a combination is quite rare (5%).

As a major alteration type, wall additions is seen in all buildings and the use of different techniques or combined techniques is also possible in these interventions (Chart 4, Col.2). In most of the wall additions (70%) inside the building, timber framed walls are used. Use of brick masonry is also common in the interventions on external walls (10%). Use of timber framed walls and briquette masonry (10%), timber framed walls and brick masonry (5%) and concrete frame with brick masonry (5%) are also recorded side by side in the same buildings which might refer to interventions done in different periods.

The addition of a staircase to the main building is also common (50%), which is usually of timber (40%). Addition of a staircase with a concrete skeleton system is rare (5%; at Öksüzler, 36) and the use of both techniques that is both timber and concrete skeleton system in simultaneous interventions on the same building is also recorded at Eskici St., no: 2 (5%).

In 75% of the houses, new timber made windows are opened. The opening of a new door is an intervention seen in all the houses and usually the new doors are made with timber (95%) but there are also iron made outer doors (5%).The addition of a cupboard is not common (30%) because most of the spaces have original cupboards. But in some examples all timber made cupboards (25%) and/or the use of timber frame with plywood infill (5%) was also recorded. Closing the *köşk* or the staircase with a timber framed, tin sheet covered shelter which are both later interventions is also seen in 10% of the houses (Chart 4, Col.4,6,7).

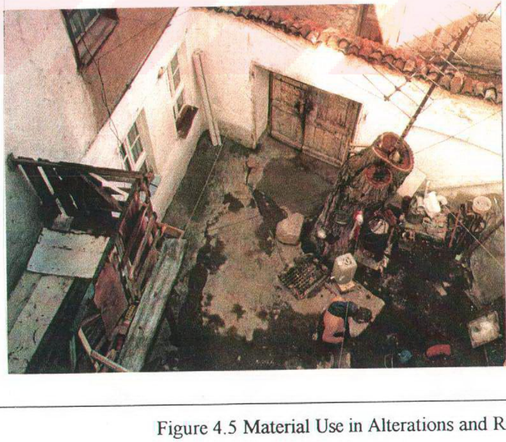
1

1) Sarıkadın St., 69, Erzurum Qu., mass edition to back facade

2

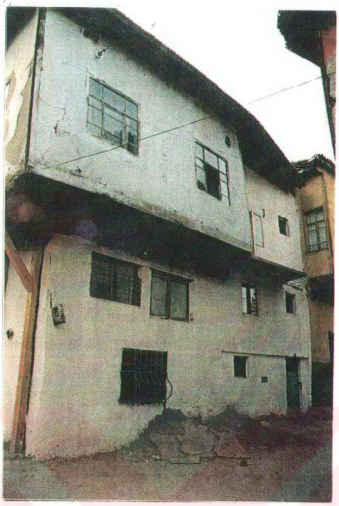
2) Kalekapısı St., 10, Kaleiçi, new window openning in ground floor for new function

3



3) Yağcılar St., 1, Yahudi Qu., covering of original stone paved courtyard with screed

Figure 4.5 Material Use in Alterations and Repairs



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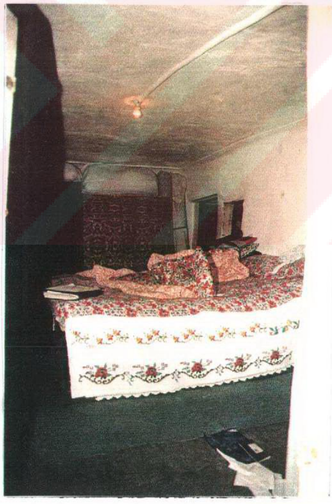


1) Uzunkavak St., 25, Ulucanlar Qu., post addition to support projection and balcony addition with concrete system to the street facade
2) Eylül St., 1, Ulucanlar Qu., addition of a partition wall with briquette material
3) Öksüzler St., 17, Ulucanlar Qu., plastering of timber floor boards with cement based plaster

Figure 4.6 Material Use in Alterations and Repairs

In the alterations done to an existing element, for purposes of repair, we see the use of new materials. Eventhough the alteration of staircases is not common (20%), putting a layer of screed on a timber staircase (5%), alternating it with a concrete framed staircase (10%) or replacing the original timber staircase with the same material (5%) are the alternatives (Chart 4, Col.8).

Overlaying screed on the timber floor boards of the ground floor spaces is a very common method used in 85% of the houses, while it is not usually preferred for the upper floors (5%; Chart 4; Col.9,10). The use of screed, mosaic or ceramic tiles is quite common for the floor coverings of the service spaces. Screed is the most favorite material between others because it is cheap and easy to apply and it is seen in 55% of the kitchens, 65% of the bathrooms and 80% of the WC's (Chart 4, Col.11-13).

Use of ceramic floor tiles (5%) or mosaic (5%) in the kitchens, bathrooms (CT:5%; M:10%) and WC's (CT:5%; M:15%) are not common and they are usually seen in the dwelling units inhabited by the landlords. Covering of stone paved *taşlık* spaces with screed (50%) or timber and screed in different parts (5%) are the type of alterations for *taşlık* pavements. While most of the buildings have no a courtyard or a courtyard paved with stone (55%) 45% of the rest which had original stone pavement in their courtyards are also covered with screed to obtain a smooth surface (Chart 4, Col.15).

If there is no big damage, alterations on timber ceiling boards is not that common. Complete renewal of the ceiling boards with timber is seen in only one example, the second floor of the house at Gelin st., no: 12 (5%). If the timber boards are decayed or there is water penetration, temporary solutions are preferred and those ceilings are covered with oil cloth (5%), cardboard (5%), plywood (10%) or with the combinations of these materials (like cardboard and oil cloth at the same time; 5%). In some examples the decayed timber ceiling boards are plastered (15%) which is not also a suitable and permanent solution.

Compared to other parts of the buildings, total renewal or and regular repair of the roofs, by the users, is quite extensive. Because of their limited economic power, usually the users have no possibility to make complete repair but 50% of them are making partial repairs when there is a need, like the renewal of broken tiles, the renewal of decayed timber boards or pieces and the repair of gutters etc. On the other hand, 25% of the users are not able to make any roof repair (Chart 4, Col.17).

Decayed parts of the external walls are renewed with brick masonry (10%), concrete skeleton frame (10%) and/or both techniques are used in the same building (5%). In 75% of the buildings, even though the external walls are decayed, no repair was recorded (Chart 4, Col.18). The addition of some timber posts to buildings, with the aim of reinforcing the timber structure, is a technique rarely used and it is seen only in the interiors of the 25% of the houses. However,the use of this technique is more abundant in the reinforcement of the deformed projections in Ankara houses (Figure 4.1-1).

The exterior plaster is the most decayed finishing material. Since total renewal of plaster is costly, complete renewal was only done in 30% of the houses and always with cement plaster. The deteriorated sections of the plaster are repaired partly in 20% of the houses. The exterior plaster of 50% of the houses is in poor condition but they are not repaired (Chart 4, Col.20). The condition of the interior plaster is comparatively better and in 75% of the houses it is renewed. In 60%, it is renewed with cement based plaster, in 5% with mud plaster and in the remaining 35% the plaster renewal could not be identified.

Total renewal of exterior white wash is recorded in 40% together with partial renewal in 10% of the houses and in some of them limewash is also used. Interior whitewashing, especially with limewash, is quite common and it is seen in 70% of the houses. In 25% the type of paint could not be distinguished but renewal of paint is recorded. The whitewash in 5% of the houses needs renewal (Chart 4, Col.23).

The timber elements are oil painted in 45% of the houses. While 40% are painted only in the interior and 5% are partially painted in the exterior. The timber elements in 5% of the houses are not painted neither in the interior nor in the exterior. The condition of the oil painted timber elements are generally good, in comparison to the ones which are not painted at all. Beside these later interventions, in two houses Gelin St., no: 8 and Erzurum st., no: 48 the original ceiling paintings are still in-situ but in a deteriorated condition.

As mentioned before, electricity is supplied to all houses, but water is supplied to 75% of them (Chart 4, Col.25-26). The kitchen sinks made of mosaic (40%), ceramic (15%), steel (15%) or timber are installed in the lately added or the original kitchens. In 25% of the kitchens there is no sink even though there is a space separated as the kitchen (Chart 4, Col.27).

All the toilets in the houses or in the courtyards are alla turca type, there are no closets. In 75% of the toilets there are mosaic toilet stones, in 15% there are ceramic ones, however these are only found in the dwelling units used by the owners. And in 5% of the houses there is no toilet stone but instead the screed pavement is adopted to the related purpose (Chart 4, Col.28).

4.3. Dwelling Standards and Change in Spatial Character in the Examples Studied

Interventions and alterations practiced in great variety with the purpose to divide the houses into smaller dwelling units effect the spatial character and organization of the houses extensively, furthermore they also create decay in material and structure. Therefore, in most cases it becomes impossible to read the original plan scheme of these houses.

In fact, this study does not aim to define specifically the values to be preserved in historic houses considering that this is the decision which should once more be reviewed and given by the restorer architect during the conservation of a building. On the other hand, to put down the observations on the common alterations and interventions that effect the original characteristics of the houses and that change the spatial organization and make the plan scheme unreadable will be helpful for the restorer architects.

With this aim, the effects of these alterations and characteristics of the newly developed dwelling units are tried to be defined here in plan scheme of the houses. The following criteria can be used for the definition of the existing dwelling standards in these houses like: size, density, furnishing. which will be briefly discussed here. In addition to these, the condition of service spaces and their standards will be introduced at the end of this chapter in section 4.4.4.

The size of the present dwelling units vary, because the spatial organization of these houses did not originally show a standard order. Each one was designed according to the standards and needs of the owner when the building was erected.

Today, the average room number per dwelling unit is 3.1 in the surveyed 34 dwelling units, including all inhabitable spaces used as living room or bedroom and excluding the circulation areas and uninhabitable spaces in each unit. The size of the dwelling units seems convenient to the contemporary standards when the average family size is accepted as 4 people.

But when we look at the distribution of the room numbers in the dwelling units, a heterogeneity can be noticed. This heterogeneity actually has a positive value since it gives an opportunity for these units to be used by families in different sizes. Dwelling units with 2 rooms form the most common group (38.2 %; 13), while the units with 4 rooms are 23.5 % and the units with 3 rooms are 20.5%.

The average family size is 3.4 people in the 34 surveyed dwelling units and the families with 4 people is the most common group with 38.2 %. The family size with 3 people form the second group with 35.3 % where the couples, singles and other bigger families with 5 people form the rest 26.5 % (see Chart 6, Col. :9; Chart 7).

Table 4. 10 Distribution of Room Numbers per Dwelling Units

# of Rooms:	%	# of Dwelling units:
2 rooms	38.2	13
4 rooms	23.5	8
3 rooms	20.5	7
5 rooms	11.8	4
1 rooms	2.9	1
6 rooms	2.9	1
TOTAL:	100	34

Table 4. 11 Family Size in Dwelling Units

# of Person	%	# of Dwelling units:
4 people	38.2	13
3 people	35.3	12
5 people	11.8	4
2 people	8.8	3
1 person	5.8	2
TOTAL:	100	34

When the family size is related with the dwelling size, problem of dense use and under use becomes apparent. The 29.4 % of the dwellings have no density problem, if the standard ratio between the number of person per room is accepted as 1. But, in 41.1% of the dwelling units, this ratio is below standard which means that they are densely used. Beside that, 29.3 % of the dwellings are under used where the ratio between the number of person per room is above 1. So, the density problem becomes apparent in these houses in which 31% are below standard and densely used while 29% are above standard and are underused.

Table 4. 12: Density (number of room per person)

Definition:	Range:	# of Dwelling units:	%
Overuse:	$0.3 <= x < 0.5$	1	2.9
Below standard:	$0.5 <= x < 1$	13	38.2
Standard:	$x = 1$	10	29.4
Above standard:	$1 < x =< 1.5$	7	20.5
Underuse:	$x < 1.5$	3	8.8
TOTAL:		34	100

The furnishing in these dwelling units is another problem. Since the insides are already equipped with built-in furniture the new standard furniture are usually not suitable and they effect the spatial quality of the spaces negatively.

In fact, the users usually do not have many furniture, because their income level is quite poor and they especially use the existing original cupboards inside the rooms. Selection of furniture is a most subjective preference and it is not one of the basic interests of this study, but the author wanted to lead the attention of the reader to this point by giving some examples about the uses and furnishings in the dwelling units.

4.4. Visual Forms of Decay in the Studied Examples and Their Possible Causes

The decay in time, is an unavoidable process for the buildings and materials. Even if it is not completely possible to prevent "decay", it is strongly possible to limit it by understanding the characteristics of structure and materials used and by controlling the negative factors which lead to decay. The first stage for such a study, is to record and to define the types of decay in a building which may lead one to diagnose their causes. In this section the visual forms of decay observed in the structure, the structural elements and materials are introduced with special emphasis on the selected examples and their possible sources are defined which may be derived from the weathering conditions, from the later interventions done by the users and from the neglect of repair and maintenance. The surveyed examples themselves and the collected data evaluated in Chart 5 (App. D) are used as direct references in this presentation and the terminology introduced in Chart 5 is also used in the text with reference to the types of decay in structure or material (Figure 4.8).

4.4.1. Decay in structure

J. Pryke points out that " *many problems of instability occur in the first ten to fifteen years of a building's life. Current structural movement should be attributed to specific, usually recent causes*" (Benson, J.; et al., 1980:32). Major structural deformations observed in Ankara houses resemble this argument. In this section typical decays in different parts of the selected examples are given which are documented in the Catalogue (Appendix C) and certain other examples, not included in the catalogue but which introduce the problem more properly, are also mentioned.

The major sections of timber houses (Figure 3.11), consisting of the masonry base, timber framed section and roof, behave as a whole and are much stronger than structurally essential, so they can tolerate some changes in load distribution. In Ankara houses which have major structural problems, the reasons are twofold. The first one is usually based on extensive material decay which resulted from lack of periodical maintenance, like in Kurt st., no:1, in the Citadel (Yavuz, A.,1984:171) where the major problem was not structural but the materials were exposed to all kinds of weathering conditions and completely decayed in time and some of them have even fallen down causing the present structural problems. The second reason for major structural problems which is noticed in the selected examples are the recent changes and especially those affecting the foundations.

1. Removed original chimney, altered tiling
2. Loose and/or missing tiles
3. Poorly altered original tiling
4. Rain flow through the inadequate connection between the Allaturca and Marsilia type tiles; due to poor workmanship causing wetting of roof boards underneath the tiles
5. Narrow eaves without gutters
6. Sagging purlins of roof causing distortion
7. Open rafter ends decayed due to weathering
8. Inadequate or damaged rain water gutters
9. Lack of gutters
10. Lack of rainwater pipe
11. Lack of rainwater gully, causing build-up of water source and damage to foundations
12. Deteriorated timber eaves due to weathering
13. Unventilated roof space, roof timbers susceptible to insect and fungi attack

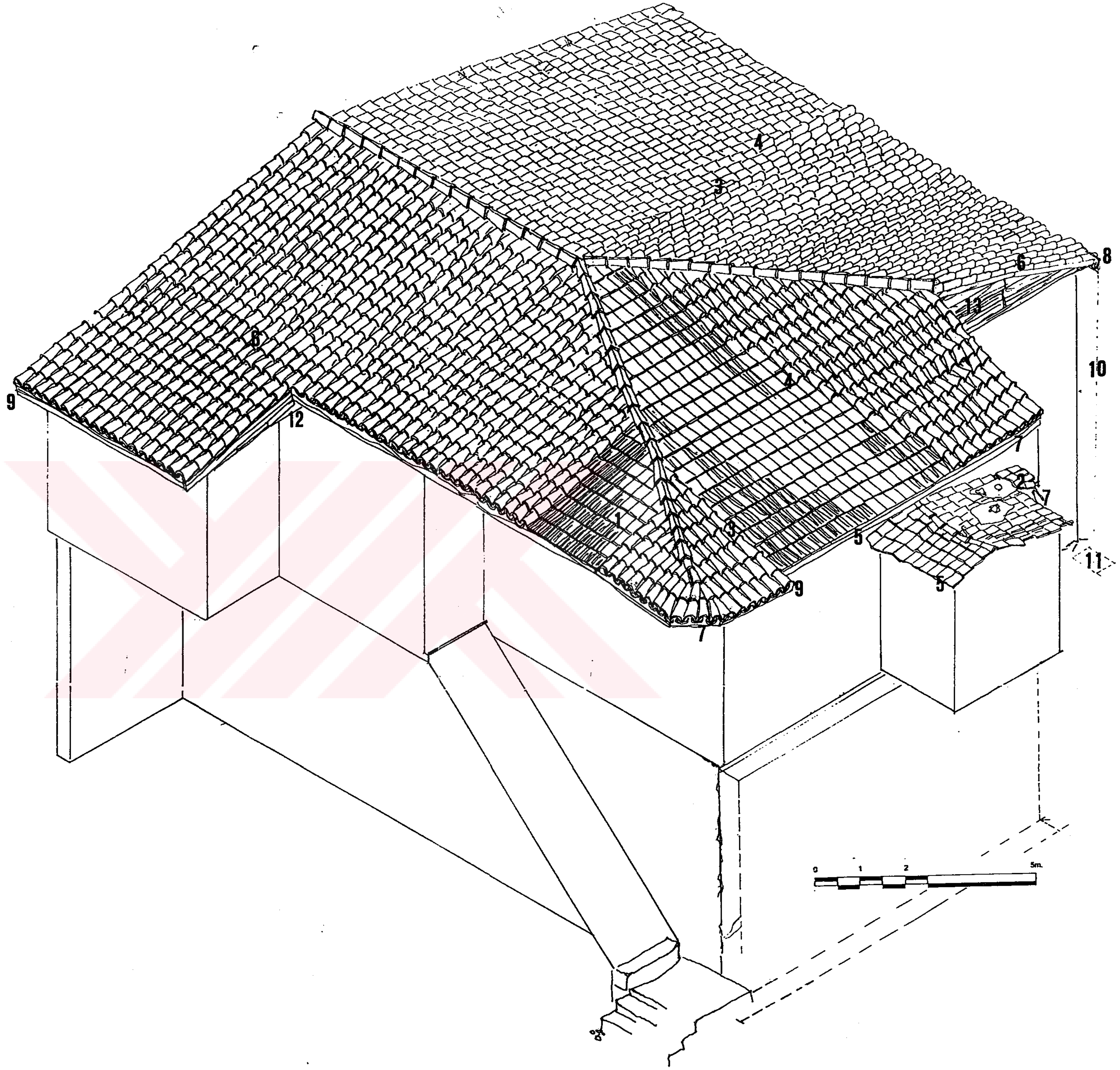


Figure 4.7 Typical Forms of Decay in Ankara Houses; Condition of the Roof of the House at Erzurum St., 48, in 1994

1. Loss of render and mortar in stone masonry due to rising damp and rain splash
2. Cracks and fissures on render and plaster
3. Mass addition to facade
4. Decayed timber work due to weathering (discoloration)
5. Window frame added to close the open *sofa*
6. Distorted floor boarding
7. Later opened hole for stove pipe
8. Decayed window sills due to direct rain water
9. Decayed timber threshold
10. Elevated ground level, causes wetting of mud brick masonry by rising damp
11. Closed top windows
12. Removed or broken timber shutters
13. Altered window
14. Mud brick disintegration and surface erosion due to rainwash
15. Disintegrated infill panels
16. Enlarged window
17. Altered window sashes
18. Broken stucco work in top windows
19. Removed floor tiles
20. Loss of plaster
21. Cracks and fissures on plaster
22. Deformation and bulging out of timber framed wall
23. Altered floor pavement
24. Stain on decorated timber work

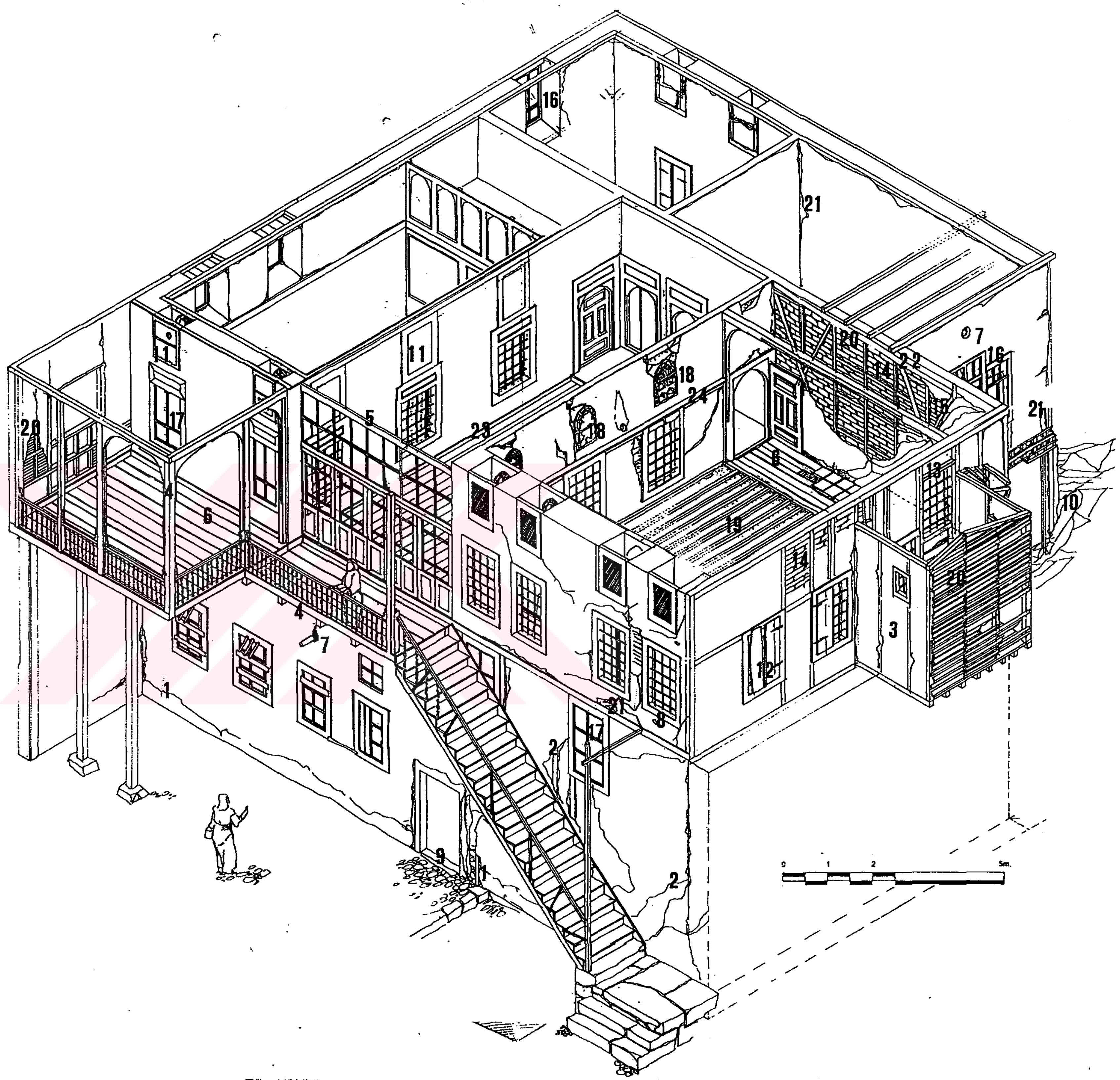


Figure 4.8 Typical Forms of Decay in Ankara Houses; Present Condition of the House at Erzurum St., 48, in 1994; corrected & redrawn after M. Akok

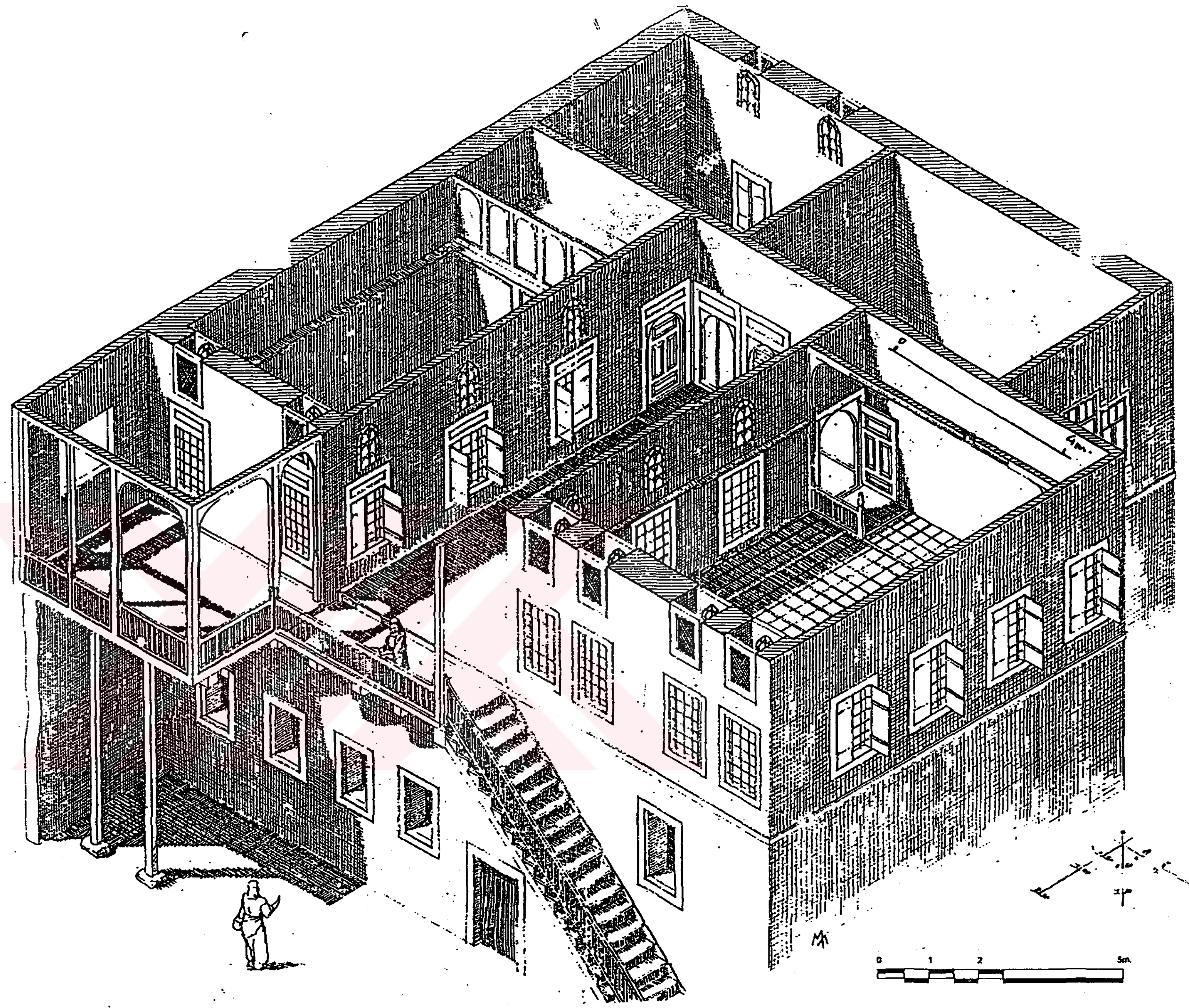


Figure 4.9 Condition of the House at Erzurum St., 48, in 1946 (Akok, M., 1946)

The structural condition of the examples are generally good (55%) or fair (25%) because this was one of the criteria's in the selection of the buildings as specified in the methodology of the thesis. The structural condition of the remaining 3 examples (15%) can be defined as poor and only 1 example (5%; i.e., Öksüzler, 17) has important structural problems (Chart 5; Col. 1,6). In 35% of the houses there are partial deformations like;

i. settlement in one section of the building (like in Sarıkadın, 67, 69);
ii. deformation or collapse of the main structural elements in a single space, in the building (like in Erzurum, 48; Öksüzler, 13) or;
iii. there is complete deformation on one side of the building resulting from foundation settlement (like in Kalas, 11).

Some of these partial deformations can be recorded throughout the whole of that section of the building where there are different settlements in the foundations (25%; Chart 5, Col. 3, App. D).

4.4.1.1. Decay in Foundations

The nature and conformation of the soil, climatic conditions, orientation of the building and the changes in the nearby environment are the factors affecting the stability of structure as a whole and especially the stability of the foundations. As it was mentioned in section 3.5.1.1., the traditional houses in Ankara are usually erected on a rough and rocky base even in the plain areas where foundation depths are changing between 60 cm. to 200 cm. to reach the rocky base underneath the ground surface (Altaban, Ö., 1987:7-15). Therefore problems due to movement in clay subsoil is quite rare. But there may be foundation movements in the buildings mainly due to the three reasons given below.

a. The foundations might become inadequate and/or loose their balance under excessive loading or differential loading placed upon them due to alteration, rebuilding and extension. Differential loading might be the outcome of the form of the foundation system. In composite foundations (Fig:3.12) where the internal timber posts are placed apart from the stone foundations framing them, they do not behave as a whole as the continuous ones. In such cases there might be different settlements belonging to the first construction phase or to the interventions. When there is excessive loading on one section of a building (e.g., a mass addition) effecting the masonry walls, cracks may occur on the foundation walls which result from different settlement. In the case of the construction of a new building adjacent to the old one, the structural balance of the old house may be distorted. During the construction of a building adjacent to the rear side of the house at Yağcılar st, no: 1; the back masonry wall of the old building was renewed for constructing the foundations of the new building. This rear wall settled later and caused deformations in the horizontal elements of the old building (see the survey sheets in the catalogue in App. C and the photographs of the building and Figure 4.10.).

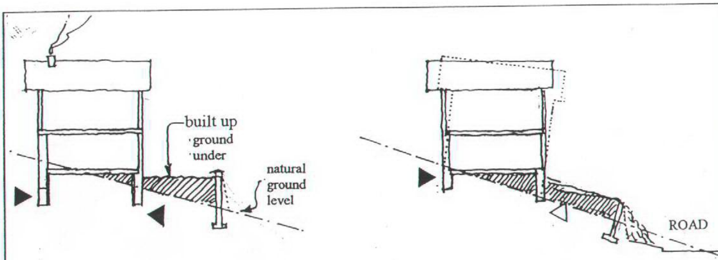
b. The foundations may not be deep enough and may be exposed to weathering due to the lowering of the original ground level by the changes in the circumstances or by the removal of nearby masses. Changes in the circumstances by altering the natural ground level (i.e., opening a road, constructing a new building adjacent to the old one, removal of former one) cause these types of problems in foundations.

c. Distinct material decay in the stone masonry due to the dampness and soluble salts in the subsoil may cause a breakdown in the composition and homogeneity of the structural mass (see Figure 4.11).

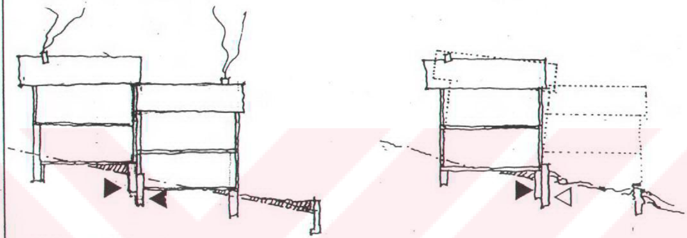
The dampness in the soil (ground) rises up by capillary action through the wall. The rising water from the soil is not pure water but contains living organisms and some water soluble salts (nitrates and chlorides). When the water evaporates, the salts carried by the water crystallize in the evaporation zone (Oxley, T.A., Gobert, E.G., 1985:33). Rising damp, in fact, is a slow process but continuos wetting and drying cycles cause deposition of these salts in the walls.

As the soil salts are hygroscopic, they also attract the moisture in the air and keep the wall surface damp (BRS Digest, 2nd.series/ 27; Oxley, T.A., Gobert, E.G., 1985:33-40). The deposition of the salts by rising damp can be recognized by laboratory analysis.

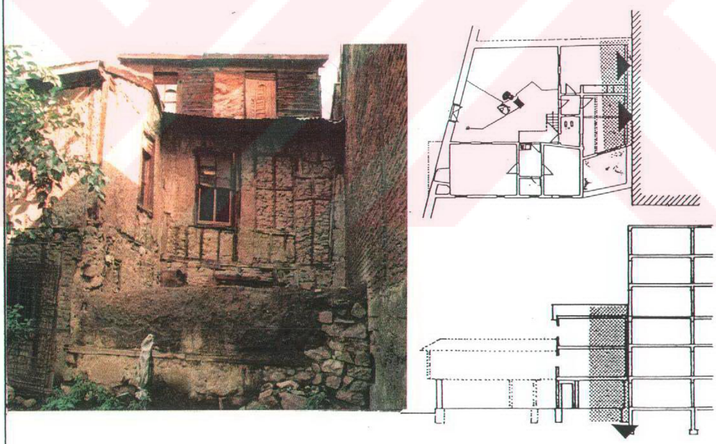
However, the visible signs of rising damp can easily be noticed in Ankara houses as discoloration, stains, flacking and powdering on the stone and plaster surfaces, sharp changes from wet to dry zones near to ground level and presence of surface salts as white efflorescence. Rising damp greatly effects the walls of timber framed houses in Ankara, which are all made with materials capable to attract water by capillary action and have no damp proof courses. Moreover the detachment and the fall of the plaster skin may be seen. Besides, if a weak mortar is used in the stone masonry, it deteriorates quickly and disintegrates from its place by the effects of rising damp and the masonry wall may loose its stability (Figure 4.11.).



A) Openning a new road



B) Removal of nearby masses



C) Construction of new buildings, Yağcılar St., 1, Yahudi Qu.

Figure 4.10 Foundation Settlements due to Changes of the Original Circumstances

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1) Effects of rising damp in the house at Sarıkadın St., 43, Erzurum Qu.

2) Effects of rising damp in the house at Sarıca St., 7, Ulucanlar Qu.

3) Schematic drawing showing the mechanism of rising damp and rain splash next to screed paved areas

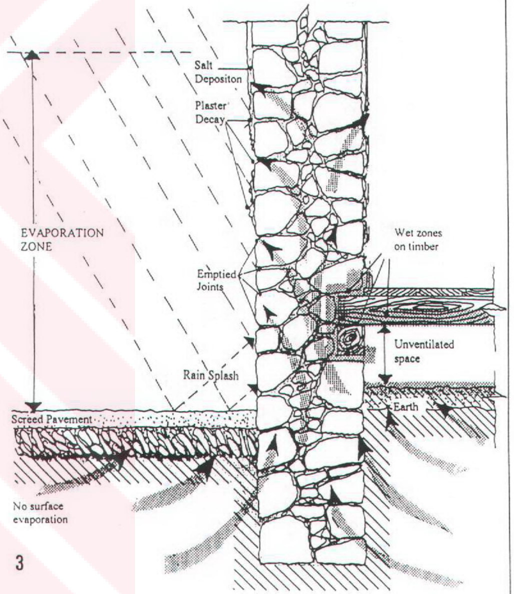

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Figure 4.11 Effects of Rising Damp

In rare cases, with the effect of dampness and soluble salts existing in the soil, the masonry section underneath the ground may soften in time and this section could be prone to crush under excessive loads. This process may lead to the formation of cracks and structural problems. If the conditions in the soil do not change much and the foundations are not subjected to excessive loads, the lower sections of the foundations, under the ground level, still keep their balance even in the presence of the sulphates, salts and dampness.

On the upper sections, just above the ground level, where rising damp reaches, different swelling and shrinkage of materials in masonry base occurs and then degradation of mud mortar and timber elements may start. As mud mortar and plaster have low mechanical properties when compared to stone, erosion first starts there. First the plaster erodes and then the joints get empty as a result of this process. The loss of binding material causes disintegration of stone pieces from their original place. Starting from the exterior facade of the walls, the stone pieces start to fall and this process moves deeper through the thickness of the wall with time if no caution is taken. The presence of soluble salts also increase the speed of degradation (Figure 4.11,: Emptied joints in the stone foundation of Sarıkadın, 43).

Similarly rising damp can create a problem in a covered solid floor (screed or asphalt), in direct contact with the ground. The use of screed or asphalt is quite common in the ground floors of Ankara houses and also around them. It stops the evaporation of water in the soil and causes absorption of water by the walls. Water can normally rise up between 60 to 150 cm above the ground level but depending on different factors like: properties of wall material, supply of water, rate of evaporation ,etc. When the surroundings of the exterior walls are covered with screed or asphalt without any drainage, the rising damp problem will increase because the evaporation of the soil water is terminated by the pavement. As most of the original street stone pavements are covered with asphalt today, this problem is widely seen on the street facades of the houses in Ankara. Covering of stone courtyards with screed, creates the same problem in the courtyard facades of the buildings (Figure 4.11.). The screed (cement based) is rich in soluble salts and these salts move from screed to the original materials. The increase in salt concentration causes the attraction of water in the original material which affects the speed of deterioration. In addition, rising damp causes erosion on the mud brick masonry sections of the ground floor walls above the stone base. Timber is similarly effected from rising damp. Beside degradation of the material itself (see sec. 4.4.3.2), their duty as tying elements in the masonry will be reduced.

As it can be seen, eventhough there are not structural problems, rising damp is one of the important factors affecting the foundations. In fact water in all forms is one of the major agents of decay for building materials, as its presence is essential for most of the physical and chemical actions. Because, most of the building materials (stone, mud brick, brick, mortar, plaster etc.) as they are porous, they have an ability to attract water by capillary action.

Apart from rising damp, the other sources of dampness in a building may be rain penetration and condensation. There sings and effects will be dealt in other sections, however a summary on types and signs of dampness are given in the table below which can be helpful for recognition of the problem. Furthermore to make a correct diagnosis on the source and extend of dampness problem, periodical observations and measurements are necessary. For techniques of measuring dampness and detection of salts, which the users may need, the following references can be used: Oxley and Gobert (1981:16-40,88-99); Massari, G. (1982, 1977); Boztepe, M. (1987).

Table 4.13 A Diagnostic Table for Dampness, (Oxley, T.A., Gobert, E.G., 1985:98)

EVIDENCE	CONDENSATION	RISING DAMP	PENETRATING DAMP
Moisture readings at the margin (especially the upper margin) of the damp areas	***Gradual*** change from wet to dry	***Sharp*** change from wet to dry zone	Usually ***a sharp*** change from wet to dry zone
Moisture readings in skirting and floor in direct contact with wall	***Low*** readings	***High*** readings	***High*** reading in lower part of wall affected
Are there many mouldy patches?	Yes. They may be relatively dry at the time of survey	Very rarely	Sometimes
Is mouldiness especially noticeable behind pictures and furniture or in corners or enclosed spaces?	Yes	No	No
Soil salts, including nitrate, in wallpaper or in a scraping from the wall surface	Absent	Present	Absent [a]
Moisture readings taken at various depths in the wall using Deep Wall Probes	High at the surface, lower at depth[b]	High all through	Generally high all through. Higher towards the source and often lower towards wall surface
Sources of water vapour[c] additional to those normally met (e.g. flueless gas or oil heaters, much drying of laundry) are present	Probably one or more of these is present	These are not affected by water vapour sources, but may themselves act as a source, aggravating condensation	

[a] Rising damp may not produce a typical salts deposit if it is derived from residual water of construction in a concrete floor slab.

[b] Dampness in the thickness of a wall may be due to intersititial condensation, but in this event the inner surface of the walls is usually dry.

[c] Further evidence that dampness due to condensation is available if it is shown that the damp areas are likely, at times, to be colder than dew-point measured during the survey. Due allowance must be made for the possibility that conditions are somewhat different at times when survey is impossible, for example, when a space is occupied and warmed only for a few hours each day.

4.4.1.2. Decay in Vertical and Horizontal Elements

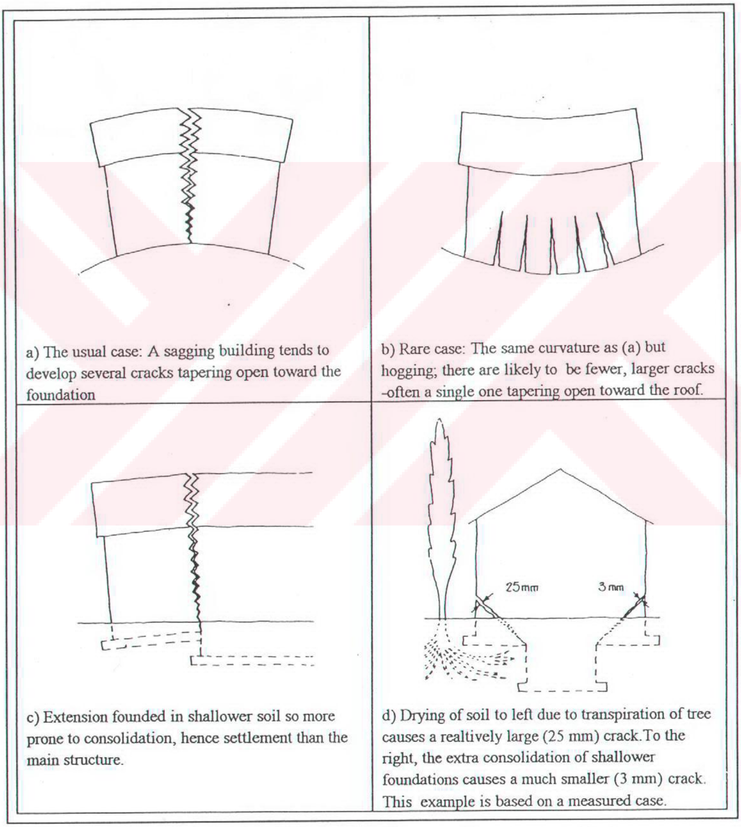
Structural deformation in vertical and horizontal elements in Ankara houses is quite rare. Deformation or detachment of some vertical elements (walls) is recorded only in 30% of the Ankara houses and especially in the timber framed section. Deformation or sliding in horizontal members (ceilings, floor girders; boards) is also not common which is seen only in 15% of the houses (Chart 5, Col. 5, App. D). The masonry sections above the stone plinth, which are either made with mud brick or rarely with stone, are usually in good condition, however the buildings with stone masonry walls are almost always structurally sound when compared to the mud brick ones. Three of the selected examples have stone masonry in their ground floors and none of them has structural problems (see the survey sheets of the houses at İnci st., no: 14, Zülüflü st., no: 18, Erzurum st.,no: 46 in the catalogue in App. C). But in the mud brick walls erosion of the material and the mortar are usually related to rising damp or rain penetration.

Apart from the structural problems, some cracks are noticed in the studied examples though most of them non-structural. They are observed on the finishing or between the timber frames and infill materials. Eventhough, structural cracks are not recorded in the selected examples, it may be helpful to review them as they are usually the indicators of a structural problem especially in the masonry sections.

Combination of different types of effects like movements in ground, overloading of building or the ground where the building is erected, dampness, soluble salts originally existing in material or transferred later by other materials or from the ground, temperature changes and some sources creating regular vibration may cause cracks. Direction, regularity, extent, width, depth, alignment, sharpness of edges of the cracks and their movement give clues about their origin. They all should be recorded and observed periodically before any remedial work. The verbal information taken from the users or to use telltales will be helpful in the diagnosis (see Figure 4.12).

The vertical cracks in a sagging building, which are widest near the foundations and narrower towards the roof (Figure 4.12.b), or a vertical big crack in the masonry, widest at top and narrower downwards to a hair crack near the foundations (Figure 4.12.a) indicates that there is soil movement underneath the building. The direction of the taper indicates the type of movement in the soil. The former type occurs when the soil below the foundation is soft or becomes softer (i.e. from water movement) and it causes sagging at the center of the building because softness is more tolerable at that point (Benson, J., et al. , 1980:35). In the latter case when the soil is soft at the edges of the building, the side walls can not function buttressing and the crack occurs.

Different settlements may result from soil movements far from the center of the building or if the foundations are discontinuous (Figure 4.12.c). Diagonal cracks on the corners near to the foundations may occur from partial soil movement, for example when there is a tree near to the corner. The trees, causing extra drying of the soil may create big cracks (Figure 4.12.d). These may result from the strength of the mortar used.



a) The usual case: A sagging building tends to develop several cracks tapering open toward the foundation

b) Rare case: The same curvature as (a) but hogging; there are likely to be fewer, larger cracks -often a single one tapering open toward the roof.

c) Extension founded in shallower soil so more prone to consolidation, hence settlement than the main structure.

d) Drying of soil to left due to transpiration of tree causes a realtively large (25 mm) crack. To the right, the extra consolidation of shallower foundations causes a much smaller (3 mm) crack. This example is based on a measured case.

Figure 4.12 Cracks in Buildings (Benson, J., et al. , 1980:35)

Structural cracks in masonry walling is not seen in the selected examples and in general it is quite rare. In these rare cases, cracks are not as clear cut as in the new buildings because the binding material (mud mortar) is much weaker than the wall material itself. The shifting of the whole wall, forming an opening either horizontally or vertically following the mortar joints, are quite rare because of irregular coursing in rubble stone masonry and properties of the materials. However, there are many shrinkage cracks at the junctions of timber frames and infill materials which tend to be of equal width along their length. Beside that there may be shrinkage cracks resulted from the use of incompatible materials. This type of cracks are observed in Ankara houses, on the plaster between the timber elements and infill material. Nonstructural small cracks on plaster may occur from different physical and chemical processes like salt accumulation, dampness or local thermal changes (Figure 4.13.).

The timber framed section, consisting mainly of vertical, horizontal and bracing elements has a great elasticity and it is tolerable to deflection, cracking and distortion. Boarded floors and ceilings, timber partition walls and pitched roof provide a stiffness and buttressing to the walls. This ability of timber structures should always be considered and architects should not over-react to the signs of failure when there is not any evidence of continuous movement. Separation of vertical timber frames from the main structure may be due to foundation problems, deflection or shrinkage. As the junction points are not strong enough (only connected with nails, see sections: 3.5.2.1, 3.5.3.5) the disintegration of some walls from the timber sections is seen when there is settlement in one section of the foundations (see the catalogue in App. C, Kalas st., no: 11; Öksüzler st., no: 13, back walls separated from the roof structure).

Disintegration of infill panels is another common problem observed in vertical elements although it does not directly effect the structural stability. In case of use of unplastered brick and lime mortar as infill material between the timber framed sections, as these three materials have different shrinkage capability, cracks first occur between the infill panels and the timber elements. The disintegration of infill panels as a whole or the loss of brick elements may happen later when the lime mortar looses its binding character (Figure 4.13). If plastered mud brick is used as infill material with mud mortar, a similar type of degradation occurs after the erosion of plaster. In such a case, the mud mortar erodes firstly before the mud bricks. In this combination, instead of the loss of infill material surface erosion is more common (see the facade photographs of the houses in the catalogue in App. C: Gelin, 8, 12; Yağcılar st., 1; Zülüflü, 18;). If the building facades are exposed to direct rain flow, which could not be protected by the eaves, gutters and projections, first the plaster disappears, then surface erosion starts on the infill materials. The lack of plaster creates problems for the

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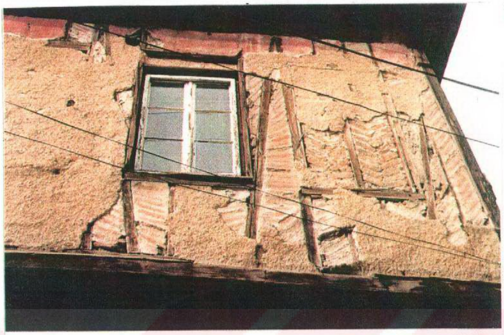

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1) Shrinkage cracks on timber framed section

2) Disintegration of brick infill, Kalem St., 2, Erzurum Qu.

Figure 4.13 Decay in Vertical and Horizontal Elements inner wall surfaces causing dampness penetration through the wall section by capillary action.

The horizontal timber members of the buildings are subjected to different types of decay according to their location in the building. If there is a major structural problem, like foundation settlements or so on, these members are naturally deformed or disintegrated from their place as a result of this failure. Accidental loading on any section of the vertical elements may cause, cracking, deformation or break down in the timber materials. Beside these actions derived from structural deformations of buildings, horizontal timber elements are subjected to specific causes of decay which might be effective in the long run.

The tying members of walls, wall and foot plates, the ends of floor girders placed on top of timber elements on the exterior walls are exposed to exterior conditions if they are not covered by any material. To be exposed to sunshine and dampness may cause degradation in the properties of the timber material. The timber horizontal elements located near ground level or the roof structure are either effected from rising damp or from roof leakage (Figure 4.11). As these sections of the buildings are not properly ventilated, they are more open to the effects of living organisms (like moulds, fungus, insects). Since these sections of the houses are the most unreachable parts of the buildings, detailed observation on the existence and the extend of the problem created by these organisms could not be done properly.

Rain penetration (for evidences and signs see table 4.13. above) through the exterior facades of masonry or infill sections of timber framed houses may be due to high porosity of material (especially on mud plaster or mud brick) or a failure in pointing (stone masonry, brick infill) and lack of plaster. The damage of rain wash on mud brick infill and masonry facades of houses with narrow eaves, is also a common problem in Ankara houses. The plaster which is protected by large eaves or projections on the upper floors are relatively in better condition even though there is no periodical maintenance or repair on plaster. In most of the houses common problems of plaster are their swelling, complete loss or fall from the wall surface. The wall sections under the window sills are secondarily subject to rain wash on the facades where the plaster is falling down.

The damages resulting from moisture in Ankara houses increase when new materials are introduced in the buildings. The use of impervious materials in jointing or in plaster work and oil paints increase the damage done by dampness. The porosity of originally used lime or mud plaster and mud mortar permits the evaporation of the water held by the walls. When the jointing is renewed with cement-rich mortars, the water that had penetrated through the cracks and by rising damp within the walls, cannot evaporate as it did before with the mud mortar. So, it tends to evaporate passing through the masonry material by causing damage to it. Similarly, impermeable plaster and paints have similar effects which stop the movement of water from the walls, that causes detachment of renders and paints from the wall surface and then accelerates their fall (Hughes. P., 1986).

Beside the extensive degradation of timber elements used on the exterior sections, the decayed ends of the girders placed on top of the wall plates on exterior facades is another problem. Although it is not common, if they break down they may cause partial deformation.

In Ankara houses, the original double layered floor girders -*bulgurlama* type- filled with earth or sand and covered with floor tiles have specific problems (see the survey sheets of houses at Erzurum st., no: 48, Gelin st., no: 8 in the catalogue, in App. C). The floor tiles are usually removed, as they are broken and/or they have a flaking problem. Some of the still in-situ ones are covered with screed or with cement mixture. The soluble salts in this new material are transferred to the floor tiles by water and they cause cracking in the original material. Moreover these salts move towards the timber girders and the ceiling boards underneath, causing degradation of these materials also.

In double layered floor girders filled with earth and covered with timber boards, the crumbled pieces of earth particles falling through the deformed board edges create a problem for the users. This detail which was originally used for isolation, needs perfect workmanship and good jointing between the boards and today it is a problem which should be solved according to contemporary standards. The covering of either earthen floors in the ground floor or timber ones in different floors and especially in service spaces creates similar problems by the insertion of incompatible materials (see the survey forms in the catalogue, in App. C., for examples from screed and double layered girder floor boards: Cingöz, 20; Sarıkadın, 43). The effects of these actions on material will be detailed in the following sections.

Beside rising damp and rain penetration, condensation can also be effective especially for the materials used inside the buildings. The water vapor produced in a house by the users (for example from heating system or during cooking, washing etc.) is the source of condensation. In fact, studied houses in Ankara are not homogeneously heated and none of them have central heating system. However other sources of condensation also exist in these houses and their effects are observed during the surveys.

At high relative humidity conditions, if the surface temperature of the material reaches to the Dew Point Temperature (DPT) of air, condensation may occur either on the surface of a porous material (surface condensation) or inside it (interstitial condensation). The presence of the moulds is often the indicator of condensation which need water for growth (for evidences and signs see table 4.13. above). Water deposition as a result of condensation, may be excessive in some cases causing the formation of actual pools of water on the floor, saturated clothes in wall cupboards and decay of window and door joinery as it was detected in the selected houses. Large areas of rising or penetrating damp, walls or floors not properly dried out after construction or later interventions may increase the amount of the water in air and cause condensation in other parts.

Condensation may usually occur at lower levels where the surface of the wall is cool, starting from the corners and extending along the length of the wall. This pattern looks like rising damp and can be misleading. If the water vapor produced in a house can find leakage to escape, there would be no problem. But later interventions in a house may increase the condensation, for example closed chimneys, addition of service spaces with poor detailing inside the house etc., which are quite common in Ankara houses.

Condensation does not occur only in the spaces where water vapor is produced. Water vapor may condense on the colder surfaces of spaces, like the stair-well, unheated rooms or on the surfaces like single glazed windows, cold water pipes etc. If the timber window frames with single glazing are not well maintained (at least regular painting) they may be subject to condensation. The use of high conductive materials (like a concrete lintel or floor pavement) create local cold and impermeable areas known as 'cold-bridging' which cause condensation.

Even though not common, condensation may also reach to roof spaces. If the roofs are covered with non-absorbent lining under the tiles or an other material (like metal or asbestos decks), condensation may occur underneath this lining. This may not cause decay on the sheeting but creates a risk for rotting the timber boards or the rafters underneath.

4.4.1.3. Decay in Roof Structure

The roofs of the buildings are the most regularly maintained sections of the houses in comparison to other structural sections. Therefore, major structural decay in roof could be observed only in 20% of the buildings.

To make observations in the roof structure was quite difficult and usually impossible. Therefore, the information on the condition of the roof structure was collected from the users, as well as from the traces on the ceiling of the upper floor and from the exterior where the timber eaves, gutters and missing sections can be seen.

But in some cases, where there are no ceiling boards under the roof, the roof structure was observed and recorded like in the houses at Erzurum 48; Sarıkadın, 43, 67; Cingöz, 20. In 30% of the houses, the missing or broken tiles of the roof is a problem. In 55% of the houses there is no gutter under the eaves, which is one of the major problems related with the roofs. Some parts of the gutters are lacking in 10% of the houses and in 30% they are broken. Totally 30% of the houses which have gutters need repair (Chart 5; Col. 9; App. D) while 55% need the installation of gutters and 15% of the houses have their gutters sound and do not need any repair. By these observation it becomes clear that, 15% of the roofs are in good condition and 55% are in fair condition while 25% are in poor and 5% in bad condition.

Major structural damage may also cause deformation in the roof. However, roof leakages are the most important factors causing damage in different parts of the building. As the timber roofs of Ankara houses, have simple details, without isolation layers, there are many types of timber decay mainly resulting from rain penetration (for evidences and signs see table 4.13. above).

Rain may penetrate through the structure because of lacking of gutters or as a result of faults in rainwater disposals (gutters and downpipes) and inadequate plumping. On the roofs, leakage resulting from poorly capped chimneys, in adequate detailing against rain water on chimney skirts (cement flaunching), displaced roof tiles, narrow eaves, lack of or defected gutters and rain water pipes; while on the walls and openings, leakage through the defected render, rain splash at the skirts of the walls, defected window sills and poorly painted window frames, lack of thresholds preventing rain flow in the exterior doors are the typical defects seen in houses and the main causes for rain penetration.

In Ankara houses, the pitched roofs are covered simply with roof boards and the roof tiles on top. Sometimes, for aesthetic reasons, the eaves are covered from underneath also and they usually have no gutters.

The alla turca type of roof tiles are not originally connected to the timber boards and they can be removed easily. That is why in recent interventions cement mortar is commonly used to fix the original tiles to each other. Or, as a rather more primitive solution, stone pieces are placed on top of the tiles to stop them from falling or flying.

The Marsilia type of tiles are more resistant and they can be tied both to each other and to the timber boards underneath the roof. But in any case, broken or falling roof tiles are a common problem which needs periodical maintenance. However, this is usually neglected and the leakage from the roof cause degradation of both the roof timbers and the ceilings underneath. The cement mortar used to fix the tiles to each other creates salt accumulation even on the roof timbers (see the surveys sheets of the houses at Sarıkadın, 69; 43; Cingöz, 20; Erzurum, 48, in the catalogue, in App. C).

When the gutters are broken or do not exist at all, this cause a problem on facades. They are exposed to rainwash and especially the broken gutters on one section of the facade create a local source of water. At adjacent roof edges, poor detailing causes water leakage through the walls. During the first quarter of our century, when the use of stoves became popular, most of the chimneys lost their function were probably removed from the roofs because of the difficulties in solving isolation details. Today, in most of the buildings there are stove pipe holes opened through the windows or through the walls directly facing the street.

4.4.2. Decay in Architectural Elements

Related to the change in the living style, some of the built-in furniture in earlier houses lost their function and this caused their alteration or removal. In the traditional houses dating back to late 19. and 20. century, these elements are no longer used. The houses which have older features are poorly adapted towards this sense and most of the original elements are removed. Fire places and their curtains made of gypsum, *sedirs*, partition frames, floor tiles etc. were the elements subjected to these interventions. The ones still existing are not well maintained, they are in some cases partly altered and in others they are left to complete decay (See photos, Gelin, 8, 12; Cingöz, 20, in App. C).

Similarly, the elements still functioning, like windows, doors, cupboards, ornamented ceiling boards, niches, shelves are also altered according to new tendencies or because they lost their functionality resulting from the changes in the building (like structural deformations and decay in material itself). In this procedure, the windows are enlarged, guillotine window sashes altered with winged ones, the low door openings are heightened, etc. Apart from these conscious interventions these elements are also affected from the actions which cause damage or deformation in structure or in material.

As it was mentioned before, most of the architectural elements in timber are oil painted, but there is also some decay in this material. In the buildings subjected to regular maintenance there is almost no problem in the oil paint of the timber elements (25%). In the house at Zülüflü st., no: 18 even though all the timber elements (especially ceilings) are not painted there are no major problems of paint. In the house at Gelin st., no: 8 the timber elements are usually not painted. In the remaining 25% of the houses, there is flaking (25%), erosion (5%), cracks (40%) and missing of oil paint (5%).

Any defect or deformation in the structure, directly affects the frames of the openings and the original window or door wings and they no longer fit to their frames properly as they originally did. This problem cannot be disregarded when there is air flow through the window frames. Altering the window sashes does not usually solve the problem, because to produce a window sash inside a deformed frame was not easy. The window sashes, frames and especially the outer sills, as the elements having direct contact with rain water, are decayed more easily. So, the sills are the most deteriorated sections of the windows.

The flow of water and its damage on the whitewash and plaster of the walls can easily be identified from the exterior wall sections underneath the windows. The condensation of water on the inner surfaces of glass in a heated space also increases the decay of the window sashes. Another common problem is the lack of putty fixing the glass to the window sash. In original design, the glass was fixed only by small nails to the sashes. They rust easily and do not function well, and not completely able to fix the glass to the window sashes. As a later intervention we can see the use of putty in fixing the glass.

The disintegration of window sashes from the frame is a common problem seen in 65% of the houses which causes flow of air and rain penetration through the sashes. The bad joints between the glass and the window sashes (35%) and missing of putty is a big problem (60%), besides broken (60%) or lack of glass (25%) in the windows (Chart 5, Col. 23, App. D).

Stucco work is seen only in the earlier houses (15%) as stucco frames in top windows and in the curtain and borders of the fireplaces and hearts. The major problem in stucco work is disintegration from the timber frame as seen in the house at Gelin st., 8 and Cingöz st., 20 and broken or complete missing parts that was recorded in all the earlier houses where stucco work exists (Chart 5, Col. 24, App. D). The stucco top windows are among the architectural elements that have deteriorated a good deal. Even though there are not many examples of them, the stucco work and colored glasses are missing or broken in the existing ones.

Similarly, the fire places and their gypsum made curtains are usually removed. Some traces of fire places can be seen (see the photographs of the houses at Kalekapısı st., no: 10; Cingöz st., no: 20; Erzurum st., no: 48; Gelin st., no: 8 in the surveys forms in the catalogue in App.C) but they are not functioning anymore.

The interior doors are usually in good condition if there are no structural deformations or a special source of decay (like dampness) in the building. The lower sections of the doors in the service spaces are decayed as a result of swelling and shrinkage. The exterior doors are usually altered or newly inserted to the buildings after the division of houses to a number of dwelling units. But the original main entrance doors or the courtyard doors are usually still in their places. Removing the doors from their original places and placing them to another space is also common (Eskici st., no:2, door in *taşlık*). However, doors are in a better condition, because most of the timber made doors are not directly exposed to weathering conditions like the windows.

Most of the cupboards in the buildings are still functioning and in good condition. But some of them are removed to enlarge the spaces after the division of the houses (Kalekapısı, 10; ground floor), and cupboard wings are removed or altered in some houses (Sarıkadın, 67). Construction of new cupboards as a continuation of the tradition with timber and plywood is rarely seen (e.g., Gelin st., no: 12). The gypsum made niches between the cupboards, which are common in later houses, are in good condition.

Floor tiles are seen as an earlier feature only in four of the houses (20%). In most cases they are all removed from their original place (in 3 of them, 75%) or overlaid with screed (25%). In the ones which are left in their original place they are broken (75%) or there is problem of flaking (25%) on their surfaces (Chart 5; Col. 24, App. D).

The screed pavements which are widely used especially in service spaces are actually harmful for the neighboring materials but they themselves are in good condition except the regular dampness problem (50%) and cracking on their surfaces (25%). In some cases partial loss and missing of the material is observed (20%; Chart 5, Col. 26, App. D).

Use of Iron in window and balcony balustrades is seen in 40% of these houses both in the earlier or in the late examples. Furthermore, iron is also used in the joints (i.e., nails, door knobs, hinges and the like). The major problem detected in iron mongery is its getting of rusty resulting from oxidation (Chart 5, Col. 27, App. D).

The deformations on facade projections is relatively common apart from the deformation in the main structure. If the timber system, carrying the projections are constructed separately from the floor girders, there might be deformation in these elements. As a caution for such cases reinforcing the projections by timber posts, placed underneath in front of the facade, is seen (Figure 4.8, a: Uzunkavak, no: 25). The material decay depends on the places of use but their types and possible sources are common which are referred in the following section.

4.4.3. Decay in Material and Finishing

Choice, location, treatment (size, cut, distribution) and properties (porosity, composition, durability, compatibility, etc.) of materials are naturally important factors related with possible sources of decay. Common materials used in timber houses were mentioned before in section 3.5. Here we will try to define the forms of decay which were visually recorded on and to give their possible sources on these materials as briefly as possible in reference to the examples studied in detail. In this discussion only those materials directly related to structure, that is stone, mud brick, brick, timber, mortar and plaster, are covered leaving aside glass, iron, stucco, and wall paintings.

4.4.3.1. Decay in Stone:

Stone use in the timber framed houses in Ankara and also in Anatolia is quite limited. As it was mentioned in the Chapter 3, it was only used in the foundations and sometimes on the ground floor as rubble or rarely as cut stone masonry. However, most of the typical stone defects which affect the surface character of the material and which are observed in cutstone masonry structures, could not be observed in Ankara houses (for types of decay in general see Schaffer, R.J., 1972: 10; BRE, 1975/177). This is because the rubble stones used in the masonry sections are usually plastered. For this reason here we will not go into detail about the possible sources of all types of stone decays but we will mention the ones mainly observed in the examples selected for study.

Stone as a material may decay by itself when it is subjected to weathering conditions as a result of changes in mechanical (loading), physical (temperature changes, dampness, frost action), chemical (soluble salts, atmospheric pollution) conditions and biodeterioration. The properties of neighboring materials like combination of different stone types (i.e. combined use of sandstone and limestone or magnesian stone), iron, cement, mortars and plaster affect the durability of stone material causing some chemical and physical changes in its structure.

If the properties and durability of the materials used together are different from each other, their weathering conditions will naturally be different and some of them will deteriorate quickly resulting decay in the neighboring material. Iron clamps, straps, window door or balcony ferramenta may cause cracking, splitting and lifting on stone surfaces, due to volumetric expansion and rusting of iron material.

Similarly, use of strong mortar or plaster may cause cracking and advanced decay in stone. If the salt concentration in the neighboring material (mortar, plaster or stone) is higher than the material itself this may cause the removal of soluble salts from the neighboring material to the stone itself and create efflorescence and cryptoflorescence which result in cracking, splitting and/or spalling of the stone(BRE Digest, 1975/177; Torraca, G., 1982: 31-36; Ashurst, J. & N:, 1989a: 3; Schaffer,R.J.; 1972: 56-70; Lehman, J., 1971: 35-44; Arnold, A., 1981: 13-23).

In the selected examples, the stone used in the ground floor level or in the ground floor as a whole is subjected mainly to rising damp and rain splash that resulted in the loss of mortar and the emptied joints in stone masonry, which is seen in 50% of the houses. As this problem is discussed in section 4.4.1.1. further detail is not given here.

Surface erosion on single rubble stone pieces is detected only in 10% of the houses. Because the masonry sections are plastered, the original material could not be noticed in 25% of the houses which are certainly stone. In the examples where the stone masonry is visible, that forms another 25% of the houses, no decay is detected (Chart 5, Col. 13, App. D). Salt deposition is observed only in three of the houses which have plastered rubble stone ground floor walls (Chart 5, Col. 13-17, App. D).

As the observations on selected examples were done during the summer months, salt deposition could not be detected in most of the houses. Therefore, in reference to the data collected from the surveys for this thesis, salt deposition does not look like a drastic problem for Ankara houses. Yet salt deposition is one of the most important action causing decay in stone and all other porous materials. Identification of the salt deposition is important for the buildings because it may affect the procedure of the restoration work. That is why it will be discussed in further detail in section 4.4.1.1.[1]

In addition to soluble salts, atmospheric pollution and plantation in or on the stone material may cause decay. Though atmospheric pollution (Torraca, G., 1982: 38-46; Schaffer, R. J., 1972: 24-41) is really important for cutstone and decorated stones, their effect is not that significant in Ankara houses. Similarly, biodeterioration resulting from the growth of trees, ivy, seeds, other creepers and bacteria, algae, fungi, lichens which do not seem to be important here (Schaffer, R. J., 1972:73-82; Richardson, B. A., 1976: 225-228; Caneva, G., Salvadori, O., 1988: 183-203).

4.4.3.2. Decay in Timber

Timber is used almost in all sections of the buildings both for structural and for decorative purposes where the hardwoods and softwoods[2] like poplar, willow, oak, pine are common in Ankara houses (See section: 3.5.4.2.). The properties of wood; like, hardness, resistance to stresses, permeability, moisture content, workability, etc., change according to its type (for properties of different types see Eldridge, H.J., 1974:110-121). Because wood is an organic material, having an anisotropic cellular structure and it is hygroscopic (Komar, A., 1974; Vurdu, H., 1985), it is subjected to decay under certain circumstances.

The properties of wood are greatly affected by the moisture content like other building materials. Practically, moisture in wood is found in two forms; as free (or capillary) and hygroscopic (or bound) water. Free water fills all cell cavities, inter-cell spaces and vessels. Hygroscopic water is found in cell walls (Smith, R.C., 1973:6). When wood is dried, firstly the free water and then the hygroscopic (bound) water is lost. There will not be any dimensional change when free water moves but there will be contraction or shrinkage when the bound water moves.

Because of its anisotropic structure, the volumetric change (shrinkage or swelling) of wood in three directions differs. The shrinkage is small in the fiber direction, averaging less than 0,1% and it ranges about 5 to 10% in the tangential direction and ranges between 3 to 6 % in the radial direction (Stamm, A.J., 1971:3-4).

If the free water evaporates, but the cells still contain their hygroscopic moisture, the wood is accepted as at "fiber saturation point" and moisture content corresponds to a range between 23 to 35%. In general, wood having a moisture content of about 35% and over is accepted as "moist" or "freshly" felled, and 15-20% as air-dry and 8-13% as room-dry (Komar, A., 1974: 340-).

Wood hygroscopicity is the capacity to absorb water vapor from the surrounding air. So, the absorption depends on the temperature and the relative humidity of the air and moisture content of timber fluctuates accordingly. Fluctuations in the moisture content of the timber, from zero to the fiber saturation point, cause corresponding volume changes in wood, during swelling and shrinkage accompanied with some deformation.

Timber, which is one of the most common materials used in Ankara houses is subjected to different types of degradation. The ones affecting the surface are; discoloration (85%), glue stains (5%) fiber formation (65%), salt accumulation (70%), whereas insect attack (20%) and fungi attack (5%) affect the mass of timber.

4.4.3.2.1. Surface Degradation of Timber

Discoloration and surface degradation is seen in most of the examples studied, especially on external timbers where the color turns to dark brown or gray. The color change of timber basically results from sunlight or ultraviolet radiation which break down the wood molecules and leads to the formation of new compounds at the surface. If the surface is dry the color of wood turns to brown. If washed by rain water, its color turns to gray. That is why, the color of timber elements on the facades taking much rain takes a gray color while the facades which do not get wet turn to a dark brown color. However the effect of this reaction is negligible and influence only the immediate outer surfaces of the timber elements and the surface grain tends to become more visible. It does not affect the structural performance of the timber elements (Carey, J., et al; 1986: 60; Stamm, A. J., 1971: 2-3).

Whitening or salt accumulation is usually observed on the timbers used indoors, especially on the ones which get wet under the screed paved floors of the service spaces or under the roof boards below the roof tiles. Beside discoloration, glue stains resulting from the use of some irreversible chemicals (like adhesives used to stick the oil cloth, cardboard on to the ceiling boards) are detected rarely in some houses (like in ceilings of Öksüzler, 17;Chart 5, Col. 12).

4.4.3.2.2. Mass Degradation of Timber by Fungi Attack

In the selected examples, timbers effected by fungi could not be detected. One reason for this might be because the roofs or basement floors are the unreachable sections of the buildings and they are usually locked or closed. In such a limited survey, based only on observations, their detection was not possible. Though the surveys done on houses in the Citadel refer to (Altındağ Municipality, 1987:260) fungal decay which is especially observed in sections subjected to dampness, like the outer facade skirts touching the ground, the north facades, wall sections around the lavatories and around wash basins in the kitchens.

Fungi attack causes the softening, discoloration, shrinkage and lastly cracking of timber. The presence of oxygen, suitable food (the wood substance itself), optimum temperature (for most of them, 20-22 °C) and a moisture content over 20% are fundamentals for the growth of these organisms. The temperatures between 0-10 °C retard or completely stop the growth of fungi (Cartwright, K.ST.G., Findlay, W.P.K., 1958: 26-224; Ashurst, J.& N., et al., 1989:2; Bravey, A.F., et al, 1987).

Unventilated spaces, especially the basement floors and roofs are the most suitable places for fungal growth. They can also be found under the timber boards of ceilings or timber framed partition walls. For their recognition it is essential to make detailed observations and sometimes to remove the finishing materials (like boards and plasters) might be necessary. For an exact biological distinction laboratory tests done by the professionals are essential.

Recognition of fungi types is not easy and not possible by a limited survey (BRE, 1985/299; Carey, J., et all; 1986: 59). The fungi itself (in any stage of the growth) and defected timber should be searched for a correct diagnosis through laboratory tests. Although there are some researches on wood borers and fungi, in different zones in Anatolia, they are for the trees and the lumber production in forest zones (MPM, 1988; Serendiz, O.A., 1981; Toker, R., 1967; Tarım Bak., 1962). There is no specific research on wood rots for building timbers. So, this problem has to be studied on traditional building timbers in Anatolia.

4.4.3.2.3. Mass Degradation of Timber by Insect Attack

Insect holes are not detected in many of the indoor timbers which are painted but they are recognized on some external structural timber. In such a limited survey it could not be noticed whether wood boring insects are still active or not. Rotted timber, is noticed only in 5% of the houses in the sections exposed to dampness through the roof. This problem could be noticed more extensively if all the basements and roof structures could be studied in detail. Although, most of the time these spaces are not practically reachable and are not open to observations.

The presence of exit holes on the exterior surface and narrow tunnels opened parallel to the fiber orientation of timber elements, by either larvae or by the mature beetles, are the signs of insect attack. The existing wood dust and pellets produced by the larvae during their boring in these tunnels, the form and characteristics of the tunnels and the size of the exit holes give information about the species of the insect but even in this case the identification of the type of wood-boring insects is not easy, without professional experience.

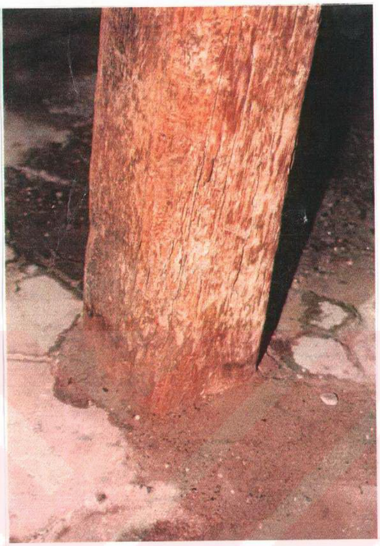
As a matter of fact, identification of damage done by insects from the exterior is not possible. The number of holes can be a measure, but to take a cross-sectional sample is necessary to see the complete decay. Even if some holes are detected, the insects may not still be active in that timber element. Prior to remedial work this possibility should also be checked for an effort to keep the original timber elements as much possible in their place. There are various types of insects, which infect the building timbers but remedial treatment for them is not the same or may not be necessary for some of them. In BRE Digest (1986/307:2) insects are grouped in three categories according to the damage they cause which is given below in Table 4.14.

Table 4.14 Insect types According to Damage Category (BRE, 1986/307: 8)

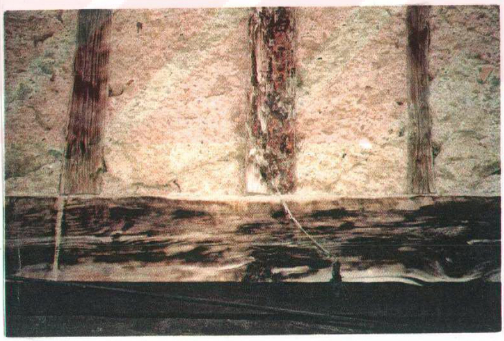
DAMAGE CATEGORY		REMEDIAL MEASURE REQUIRED
A	Insectiticidal treatment usually needed	A few insects are able to cause serious damage and require and insecticidal treatment; with the exception of the death watch beetle, they all attack sound, dry wood. Some can cause structural damage (e.g. Death watch beetle, House longhorn beetle) and with these a structural survey may be necessary.
B	Treatment necessary only to control associated wood rot	Some insects are only to able to feed on damp wood, rotted by fungi. Since they cannot attack sound, dry wood the remedial measures necessary to control wood rot will prevent further infestation by these insects.
C	No treatment needed	Damage by insects which attack green or partially dry timber may be incorporated into buildings but the insects have usually been killed during timber drying, therefore no remedial treatment is necessary.

Some infected timbers are detected in the selected examples in Ankara (Figure 4.14). But, whether they are active or not and their type could not be determined. However, it is generally observed that wood rotting fungi and wood boring insects are not so common in the timber houses in Ankara (for a statistics on UK see Carey, J., et al.; 1986:65). Local climate characteristics, timber types, pretreatments might be the reason for that and this subject needs further examination.

On the contrary we should specifically mention that there is limited research on wood boring insects in building timbers in Anatolia[3]. In the surveys done by O. Özkazanç on houses in the Citadel (Altındağ Municipality, 1987:260) insect problem is commonly detected on building timbers. Hylotrupes Bajulus (House longhorn beetle) and Anobium Punctatum (Common furniture beetle) were detected in the timber elements used in the buildings.



1) Cingöz St., 20, Ulucanlar Qu.



2) Sarıca St., 7, Ulucanlar Qu.

Figure 4.14 Insect Attack Detected in the Examples Studied, Cingöz st., 20 and Sarıca st., 7.

4.4.3.3. Mud brick, Brick and Tiles

4.4.3.3.1. Forms of Decay in Mud Brick

General characteristics and use of mud brick and brick in Ankara houses were given in section 3.5.4.3., where it was also mentioned that, while mud brick is used both in the masonry sections above the stone plints and in the timber framed sections, brick is used only in timber framed sections as infill material. As binding material, mud mortar or rarely lime mortar were used in mud brick masonry walls which were originally protected by mud or sometimes with lime plaster and consequently they were whitewashed or limewashed.

Decay in mud brick is the most common problem noticed in 70% of the houses, both in the masonry and the infills of the timber frames. In 10% of the houses the condition of the plaster is quite good, so there is no damage of mud bricks. In 15% of the houses the infill material could not be identified because of the plaster. However surface erosion (70%), loss of units (20%), detachment from the timber frame (5%) and slipping out from its original place and loss of mortar and emptied joints (15%) are observed on mud brick material when there is loss of plaster (Chart 5, Col. 14, App. D).

The main problem, for mud brick walls is water in all its forms. Since clay is the binding element in the mixture, water may cause the resolving of this constituent. While, simply rain splash or inadequate drainage in the foundations may cause rising damp, rain penetration through the walls may deteriorate the mud brick walls easily.

In fact, rising damp in mud brick walls is extremely slow and it is not as active as in other masonry walls (stone or brick) because these wall sections are protected below by stone plints, on which the mud brick masonry was constructed and by wide eaves at the roofs, in Ankara houses. If mud brick units have direct contact with the soil, as a result of rise in the former ground level in some sections the speed of rising damp may increase, creating a local damp zone (as in rear facade of house at Erzurum st., no. 48, see the photos in the survey sheets in the catalogue, App. C). Evaporation and salt crystallization processes are quite limited to a confined band above the ground level and they are not as intense as in stone or brick masonry (Torraca, G., 1976a: 161).

For these reasons, rain penetration is a more drastic problem for mud brick, used in masonry or in timber framed sections, if their surfaces are not well protected and regularly maintained. The mud brick walls, washed and eroded by rain, are the most common problem in the houses studied in Ankara. Besides the lack of periodical maintenance, some recent modifications in the plaster work like the application of cement based plasters are also the causes for the deterioration of mud brick. The components and combinations of newly used mixtures, which are not compatible with the original material in the interventions, may create problems for the mud brick walls if they are stronger than the mud brick itself. They stop evaporation by creating an impermeable dam effect that cause damage in the mud brick.

Apart from these physical factors, bees, rats and some plants that prefer the mud brick, can be harmful both for the users and for the mud brick walls (Ashurst, J. & N., 1989; Torraca, G., 1976; Bullock, O.M., 1976).

4.4.3.3.2. Forms of Decay in Brick and Tiles

In addition to the use of some burnt brick products in chimneys, fireplaces, hearts, floor pavements, roof covering and in the drainage pipes, the brick was used as infill material in the timber framed sections in Ankara houses. The use of bricks in the sections below the window sills, together with the *bağdadi* technique above, was recommended by regulations, during the last quarter of the 19. century in the Ottoman period, to obtain a lightweight structure which can resist better to fire and rainwash (Denel, S., 1982: LVIII). Today, there are examples of brick infills used only in the main timber framed facade of the houses like in the house at Zülüflü street, no:18 in Erzurum quarter. Standard brick production was an elaborate process in the Ottomans (See section 2.2). The quality of the brick is related to its properties, to the ratio of sand and clay used in the mixture and to the manufacturing process (see 3.5.4.3. and Ashurst, J. & N., 1989b: 46-48).

Brick units used in Ankara houses show variety in their production and size. Even in the same building, different types of bricks were used, next to each other, in the timber framed panels. So, their properties may vary accordingly which can be checked by laboratory tests (Figure 3.33). The condition of the burned bricks are relatively better and they have no surface erosion but some cracks and rarely, falling of small pieces can be seen. The most common problems of the brick infill are; the detachment from timber structure (25%) sliding out of the brick panels or the brick pieces from their place (10%) and the emptying of joints (20%; Chart 5, Col. 15). The problems may arise either from the brick infill or timber frame if not from both.

Like other porous materials, brick is also affected from dampness, soluble salts and atmospheric pollution showing similar mechanisms. Water can enter through the cracks on a defected surface or through the cracks within the joints and penetrates through the wall by capillary action. Soluble salts existing in the material (in clay) itself, transferred from the neighboring materials or from the soil, are carried by water and they crystallize inside the pores of the brickwork (Schumann, I., Franke, L., 1993: 103-117).

Salt crystallization resulting from rising damp is not common in the examples studied, because brick is used only on the upper floors where rising damp can not reach. However, soluble salts existing in the material or coming from the newly repaired joints can dissolve and spread by rain penetration. Chemicals carried by Portland cement used in repairs or restorations, may cause serious damages to the brickwork. Besides, they increase the salt content and they also transform the less harmful salts into more harmful ones (Caner-Saltık, E., 1991: 53).

4.4.3.4. Mortar and Plaster

4.4.3.4.1. Forms of Mortar Deterioration

Decay of mortar on the surfaces, where there is loss of plaster as a result of rain wash and rising damp, is observed in 65% of the buildings in different scale. Surface erosion of mortar (60%) and missing of material from the joints (50%) which is the advanced form of the erosion are the major types of decay observed in mortar. The mortar between the rubble stone pieces in the masonry base is eroded by rising damp and rain splash from the ground. In 15% of the houses, where the stone base is newly plastered this problem is not yet noticeable. The mortar between the mud brick units in the infills and in the masonry sections are the first degraded parts when there is lack of plaster. If the facade is directly subjected to rain water, following the erosion of the mud plaster, both in masonry and timber framed sections, the erosion of the joint mortar and the mud brick itself starts (Chart 5, Col. 16; see the back facade of house at Yağcılar st., 1, in App. C).

In principle, a proper mortar should be durable, strong against the rain and frost actions, satisfactorily elastic to adjust to minor movements in the masonry and be able to carry the load designed for but not stronger than the adjoining stones or bricks. For this reason, properties of a compatible mortar mixture change according to the characteristics of the materials used in the walls[4].

There are various types of mortars used in historic buildings and especially in late interventions. These various mortars are mainly mud, lime and cement types. Between them, mud and lime mortars are originally used in Ankara houses. Mud mortar is an earth based mixture consisting of sand, silt, clay and some organic materials (like straw or hair). The analysis of different types of mortar and plaster mixtures, which were identified in Ankara houses and given in section 3.5.4.4. show that lime is included as a stabilizer in the proportions of 14 to 21 percent in mud brick, mud mortar and mud plaster mixtures.

Mud mortar is used both in the stone plinths, and in mud brick infills and masonry in Ankara houses. Lime mortars consisting of sand and lime, are used only in brick infills which are more resistant to water and allow the buildings to breath easily (Altındağ Municipality, 1987: 261; Wingate, M., 1988: 9-12; Torraca, G., 1982: 70).

In fact, mortar deterioration results mainly from two reasons, which is lack of regular maintenance or improper repair with incompatible materials. The problems resulting from dampness in mud brick walls can easily be observed in this material in a more drastic form. The mortar in the wall sections near to the ground are the most deteriorated parts, because of rising damp, in which the joints are emptied both by rising damp and by rain splash. Especially on the corners of the buildings wind effect accelerates the loss of mortar (see photos Sarıca st., no 7, Sarıkadın st., no: 43). The erosion of mortar on the facade is related to lack of maintenance. When mud plaster is washed by rain and mud mortar is exposed, it erodes easily. This problem is quite common on mud brick infill and masonry walls which could not be protected by eaves or projections.

4.4.3.4.2. Forms of Plaster Deterioration

Mud plaster used in Ankara houses show similar characteristics with mud mortar and have the same particle size distribution and lime ratio (see section 3.5.4.4., Table 3.6-7). Two coats of mud plaster is commonly observed in the examples studied. The inner coat is rougher and includes bigger pieces of straw, while the outer coat includes finer aggregates and animal hair or very fine straw pieces. Gypsum plaster or limewash is used on top of the plaster. Limewash has various colors, especially at the interiors.

As the buildings are not regularly maintained, the condition of exterior plasters are amazingly bad. On most of the facades, where mud brick and mud mortar erosion has started, plaster is almost completely lost. In relatively better ones, there are big cracks or fissures and partial loss in the parts which are exposed to direct rain or rising damp. The condition of interior plaster is better, but detachment of plaster from the wall surface and fissures can be noticed where there are some local dampness problem.

Decay of external plaster on the facades, washed by rain, is seen in various scales almost in each building. Erosion or disintegration (50%), loss (50%), detachment from the wall surface (35%), flaking (15%), cracks and fissures (40%) are the forms of decay in plaster. In most cases the combined effects of these failures can be seen on different parts of the same facade. In the house located at Gelin st., no: 8 and the one at Sarıca st., no: 7, the external mud plaster is almost completely lost while in some others like Cingöz st., no: 20; Eskici st., no: 2; Öksüzler st., no: 36; Eskicioğlu st., no: 18, the plaster is wholly renewed but there are still some cracks, fissures color changes on the plaster (Chart 5, Col. 17).

The condition of the exterior whitewash is poor the same as the external plaster. There are problems of flaking (30%). detachment (20%), fissures (40%), erosion (15%) loss (10%) and color change on exterior whitewashes of the buildings and these can also be seen as combined effects (Chart 5, Col. 19).

The condition of interior plaster is relatively better if there is not a constant or regular dampness source through the roof or the wall or leakage from the installations. Only in 5% of the houses there is erosion, in 80% there are fissures and cracks, in 50% there is detachment of plaster from the wall. Only in 20%, the interior plaster has no problem and in these both the interior and the exterior plaster is renewed (Chart 5, Col. 18). The condition of the interior whitewash is good except some fissures (80%) and detachment of paint from the plaster (20%). Flaking of interior whitewash is also seen in 5% of the houses (Chart 5, Col. 20).

In most of the houses, where the original plaster can be seen, the lime wash is already eroded on the exterior facades. In others, less permeable modern cement mortars and plasters are commonly used totally or partially on the exterior facades of houses. The use of Portland cement in mortar and plaster creates serious problems for the original materials because they are stronger, less permeable and rich in salt concentration. As they do not allow evaporation, moisture stays inside the walls or inside the pores of other materials. Soluble salts contained in these mixtures moves towards wet zones and causes efflorescence on stone and brick surfaces and whitening on timber elements. As there are some organic materials in the mixture of mud brick, constant dampness under the plaster causes further deterioration in mud brick (Ashurst, J. & N.; 1989b,c; Ashurst, J., 1985; Sayre, E.V., 1976: 191-201; Milner, J.D., 1976, Torraca, G., 1976b: 207-209).

4.4.4. Decay in Service Spaces

The dwelling standards are quite poor when we consider merely the existence of the service spaces, not to mention their quality. As it is seen from the Table 4.15 below, in 15% of the houses there is no separate space for the kitchen and in 24% of the houses where there is a space for the kitchen there is no water supply. In two of the houses the kitchen is not a separate space but a kitchenette is placed at the corner of a space (Sarıca, 7; Yağcılar, 1). In one of the dwellings located in Öksüzler street, no: 17, the kitchen is in the courtyard. A small space separated as the kitchen in the first floor is not equipped yet. In 6 dwellings (18%) there is no kitchen. The dwellers who have no kitchen are using a cupboard or a part of a space (a room or an entry) as the kitchen but without any installations.

In 53% of the houses there is no bathroom. In 16 of the dwelling units (47%) there is a separate space serving as a bathroom. In one of them, the bathroom is located outside of the unit, in the next building and used commonly (Eskici, 2; DU: 2). In the first dwelling unit located at the house in Sarıca st., no: 7 there is both a bathroom and a *gusulhane*. The quality of the existing bathrooms is very poor and in 20% of them there is no water supply.

In 11 of the dwellings (32%) there is a *gusulhane*. However in 14 dwellings (41%) there is neither a space as bathroom nor a *gusulhane*. In two of these units, the dwellers are using the WC even though it is very small and in a poor condition. In the others the dwellers are using plastic containers to take a bath. In the houses where there is a separate space used as the bathroom there is no *gusulhane* and at present, the original *gusulhane*'s are used as cupboards. In 11 of the 18 houses (56%) where there is no bathroom, there is a *gusulhane* but there is no water supply in the *gusulhane*'s except one example.

All the dwelling units have a WC, but only 62% have a WC inside the unit. The others are placed in the courtyard (18%) or in the *taşlık* (15%). In two other examples the WC's are not inside the house but in another building in the courtyard and one of them is a common WC shared by other dwellers (Eskici, 2; DU: 2; Yağcılar, 1). In 35 % of the existing WC's which are usually located out of the house in the court or in the *taşlık* there is no water supply (Chart 6, Col. 47-51).

Since almost in 24 % of the houses there is no water supply inside the house there are taps in the courtyard (39%) or in the *taşlık* (62%). All dwelling units have electricity supply and only in 12% there is instantaneous water heaters (electrical shower) for hot water supply. In the other 88% there is no hot water system. The houses are heated by a stove and wood or coal are used as fuel (Chart 6, Col. 56-59).

Table 4.15 Existence of Service Spaces and Water Supply (Chart 6, Col. : 47-51)

	Kitchen:	Bathroom:	*Gusulhane*:	WC:
Inside the DU:	28	15	11	21
%	82	41	32	62
In the courtyard:	1	-	-	6
%	3	-	-	18
In the *taşlık*:	-	-	-	5
%	-	-	-	15
Out of DU, Common	-	1	-	1
%	-	3	-	3
Out of DU, Private	-	-	-	1
%	-	-	-	3
DU has service PRESUME:	29	16	11	34
%	85	47	32	100
No service space:	5	18	23	-
%	15	53	68	-
Total # of DU:	34	34	34	34
Water Supply only from courtyard	22	12	1	65
%	76	80	9	65

The quality of the service spaces is usually poor. The dwellings used by the owners and subjected to complete repair are relatively in better condition, like the units in Eskicioğlu, 8; Eskici, 2; Öksüzler, 36. The service spaces in these houses are covered with ceramic floor tiles and ceramic washbasins and the toilet stones are used with proper installations. However, there are also improper cases in the dwellings which are used by their owners whose income is very low, like in Gelin st., no: 8; Öksüzler st., no: 17.

For example in the dwelling unit, in the first floor of the house at Gelin st., no: 8, has a space used as kitchen which was originally the "*sekialti*" section of the main room. There is no installation in this space, and it is rather a storage than a kitchen. A poorly made timber wash basin, located in the open hall, is used for water supply. Because of the poor installation of water pipes they freeze in each winter. The kitchens or kitchenettes used by the tenants also do not have proper installations. Placing a concrete bench and a mosaic or a steel wash basin is the standard use. The pavement of the kitchen spaces are usually covered with screed in these units which creates other problems on the timber floor boards.

The quality of bathrooms and WC's represent same quality or even worse. Most of them are located in the *taşlık* spaces in the ground floor and paved with screed. In many cases the same space is used as the bathroom and the WC when the dimensions are suitable. But there is no cuvette or shower basin or douche tap in the bathrooms. There is only a space named as the bathroom and a poorly drained floor pavement. Closets are not used in any of the WC's, either in the ones used by the owners or by the tenants, even though its drainage is more suitable for these structures. Mosaic toilet stones and rarely ceramic ones are used in the WC's because of the living habits of the users (Photographs from examples of these spaces showing the good and the bad ones).

These results representing the density and the distribution of the types of decay in the structure, in the roof and in the materials might be helpful to understand the scale of the problems in order to propose sound and overall solutions. Beside that they might serve as an outline for those who are busy in organizational level and responsible for developing standards and techniques for the preservation of historic timber houses and these aspects are the most neglected topics of conservation practice in Turkey today.

NOTES:

(1) It is known that, the sources of soluble salts are numerous and quite variable. The material itself may contain salts, but it may also be transferred from external sources like neighboring material from the soil (SO_4, Cl^-, NO_3), atmosphere (SO_4, NO_3^- from acid gases, sea salts, etc.) and the use of improper methods for cleaning and preservation ($CO_3^{=}$). Besides the biological growth (plants, mosses, algae, lichens, fungi, etc.) may also be a source of soluble salts causing damage on the material.

(2) This is a botanical distinction and does not refer to the relative hardness or softness of that particular kind of wood.

(3) The report written by Dr. Oktay Özkazanç who is a member of "Forest Research Institute" in Ankara refers the detection of Hylotrupes Bajulus and Anobium Punctatum in Mahmut Bey Mosque (Kasabaköy-Kastamonu). Quoting to Dr. Özkazanç, M. Onat (1980) also refers in his master thesis to some insect types which were detected in Hazeranlar Konak (Amasya).

(4) Analyzing historic mortar is not easy but by using some modern and old methods a lot of data can be obtained on their properties and problems. As these methods are not the main subject of this study, they are not defined in detail but some references can be given for the reader as follows: Erlin, B., Hime, W.G., 1987: 8-10; Teutonico, J.M., 1988.

CHAPTER V

RECOMMENDATIONS AND PROPOSALS FOR REHABILITATION

As it was mentioned before, historic traditional fabric in Ankara and in most of the settlements are the "deprived areas" of the cities and they have their own specific problems as Historic Sites. Therefore developing rehabilitation and conservation programs for such areas needs a series of studies on: physical and social characteristics, values and problems of the site, developing financial sources and improvement of special organization schemes etc. These aspects are discussed in a general context in the introductory chapter but they were not detailed further to limit the thesis only to the technical aspects of rehabilitation.

By virtue, using the existing building stock both for economic and social reasons became a developing public interest in the Western world since the end of the 19. century and the Western World developed some means for rehabilitation (Dobby, A., 1978:71-97; Johnson, J., 1979:49-58). Developing standards for rehabilitation, forming new organization schemes for the conservation of historic sites were tried in different examples in Europe especially after 1965's. In each of these examples different socio-political approaches are represented in each of them[1]. This experience brought into discussion historic site preservation with all its aspects for the first time the international level and the common criteria were defined and strongly emphasized in the Amsterdam Declaration of 1975, as an output of the seminar held for the European Architectural Heritage Year. This declaration was

> *concerned with the conservation of the architectural heritage in the context of urban planning, the responsibilities of local authorities and citizens' participation, social problems of integrated conservation, legislation and administration, technical and financial means for conservation and restoration operations, practical measures for improving the urban environment in historic quarters, and the future of the architectural heritage in the year 2000*' (Dobby, A., 1978:111).

Thus "Housing Rehabilitation" became a topic between other conservation issues and "Integrated Conservation Programs" based on the consideration of social factors were encouraged in planning works.

Nevertheless, in Turkey, for the reasons that were discussed in section 1.1. the public demand did not force the system strong enough to develop some policies for housing rehabilitation. However, housing rehabilitation has become a comparatively popular issue after 1975, parallel to the discussions on preservation master plans which need developing new means both in administrative and practical aspects.

As this thesis aims to concentrate on the technical aspects of rehabilitation, the above mentioned general aspects are not discussed in detail. However, even in such a limitation the definition of "*standards for rehabilitation*" became a key issue also for this thesis and both for the conservation architects and the other disciplines interested in rehabilitation. Because, the quality of today's practice is far from to define a developed rehabilitation standard and still there is no demand for it. This thesis aims at making a contribution to fulfill this gap.

Actually, developing housing standards has a subjective nature in itself which may change according to the benefits and demands of the user. In this discussion the role of the conservator or the architect is usually not the determinative one. At the moment, the benefits and economic power of the owner (or the sponsor) who is the client for the architect determine the standards for rehabilitation and conservation, together with the condition and the value of the house. In such a discussion, the key issue for a conservator or an architect is the determination of the profile of the "client" whether he/she is the user of the house or only the sponsor of the rehabilitation or both.

As it was mentioned, in the methodology of this study in Chapter I , this question was limited by accepting the "owner as client", as the user and the sponsor at the same time, and the person who is living in his/her house, which forms about 30% of the residents in the historic fabric in Ankara today. Even in such a limitation, the definition of the standards is still open to discussion.

To limit this discussion, this study accepts the current living standards of the users, in the sense of spatial organization, as optimum standards which can be developed by minimum improvements. So, the benefits and demands of the users are taken as the determinative of the spatial design when "*they are not contradictory with the historic values of the house*" (see sections 4.3., 4.4).

In further researches, these standards can be studied specifically and improved for different cases, depending on the characteristics of each historic site. In the light of the examples studied in Ankara, the common tendencies of the owners in the interventions can be listed as follows:

1. The houses are big for one family and they are divided into new dwelling units to rent them out,
2. In such a division, to obtain standard sized units is not necessary; units different both in size and in their comfort conditions can be utilized to serve the distinct demands of the tenants (a single, a couple, etc.,),
3. The divisions or alterations must be applied by minimum interventions and should be economic.

When rehabilitation is defined a process of reversing a building to a state of utility for a contemporary use, through the repair and alteration by preserving the characteristics of the building which are significant to its historic, architectural and cultural values (see section 1.3.; Secretary of Interior's, 1983:5).

The mentioned demands of the owners do not seem contradictory with the aim of preservation and rehabilitation if they can be utilized by proper techniques and materials. Though, as it was mentioned in detail in Chapter IV, this is not the case for Ankara houses. The interventions done by the owners are defective as much as the weathering conditions and they are the important causes of decay in these houses because, techniques and materials are quite poor and not proper with the original materials. If these interventions on the houses can be directed with appropriate methods for conservation, a certain group of houses can be preserved only by "*dictating the correct guidelines*" to their owners.

Within the above specified limits, this chapter was formed as a conclusion of this thesis in light of the common problems mentioned in Chapter IV. It aims to draw guidelines to the owner-client and/or the architect who is responsible for the preservation and rehabilitation of a historic house, by improving its standards with appropriate methods and materials. In this context, prerequisites for running the job according to the current legal procedure are defined and the deficiencies of this process are discussed at the beginning of this chapter.

In addition to that, some guidelines are produced and necessary studies which can direct the conservator architect for an accurate restoration process are defined. Then, in the following sections, some technical proposals are developed for the restoration practice with reference to the most common problems observed in the interventions which are mentioned in the Chapter IV.

As methodology, the outline of the Chapter IV is followed in this chapter too, to set a parallelism between the problems and the proposals which will provide an ease to the reader about the possible sources of decay and the proposals for their remedy. In this context, this chapter is formed as a comprehensive conclusion rather than a compact conclusion including only some guidelines. Because, it is acknowledged that, to stress some common practical problems in detail would be more propitious for the execution, throughout such a conclusion.

5.1. Current Procedure: Standard Documents and Surveys

In Turkey today, the practice is such that, an architect who has no experience in conservation can prepare a "restoration" project for a monument or a house, even though the preparation of this project necessitates certain qualifications. There is no legal providence to prevent this application. Whereas, for a complete restoration project an architect should have enough expertise to document, survey, evaluate the historic building for which she/he is interested to prepare a restoration project[2]. If the architect is able to do these or if he/she is a restoration architect, he/she should supervene the simplified flow chart below prepared for a registered house in accordance with today's practice (Figure: 5.1.).

When a group of buildings or a single house is documented, listed and registered, whether it is in a built environment designated as "site" (historic, urban, etc.) or not, within the following three months all these registered buildings should be evaluated and their conservation categories determined (as 1,2,3 rd; Preservation Act 2863/ Item: 18). This should be done by Regional Preservation Councils (*Bölge Koruma Kurulları*; here onwards RPC's) according to their historic, architectural, cultural values and characteristics of the registered buildings. After this pre-decision, the current master plan rights on that building become invalid and RPC's prepare the "Transition Period Construction Rules" (*Geçiş Dönemi Yapılanma Koşulları*) for that specific site.

These rules are implemented till the preparation of the Preservation Master Plan for that site or the settlement. The local authorities and Registration Offices are all to be informed about this procedure and the list and categories of the registered buildings as well as the newly defined "Transition Period Construction Rules" (Preservation Act, 2863/ Item: 17). This procedure practically aims at the conservation of registered buildings by forbidding their destruction in the first hand and makes a pre-evaluation by grouping.

When a private estate is registered and designated as 1st. or 2 nd. group, it is exempted from tax (Preservation Act 2863/ Item: 21). Thus, the owner can apply to the Tax Administration for immunity of tax for that building by proofing that his/her building is registered. After the registration stage, the local authorities are expected to present the Preservation Master Plan (here onwards PMP) to the RPC for that designated area, within one year (Preservation Act 2863/ Item:17). However, this is not the actual case for most of the preservation areas in Turkey, because the preparation of these plans takes longer than expected. For example, even though the designation of preservation sites in Ankara was done in 1980 (decision of *GEEAYK* dated 12.4.1980, numbered A-2167), a partial preservation plan including Ulus could be completed only in 1989 (Bademli, R., Kıral, Ö., 1992: 128).

The Citadel, Ulucanlar, Erzurum districts still, do not have a preservation plan. When the PMP's are prepared by the municipalities they should be approved by RPC's. If there is no contradiction between the local authorities and the RPC, the approved preservation master plans can be executed by the local authorities (see Figure 5.1 below).

Still, for the restoration project of each single registered building, RPC has the authority for approval prior to the approval of the Municipality. In this process, after the identification of the building groups, the owner of a registered house can put a petition for an intervention to his/her building. If the owner wants to make simple repairs only (like roof repair, plaster renewal etc.) he/she should apply to the Development Directory of the Municipality (*İmar Müdürlüğü*) for a license (see stage III in Figure 5.1). Alternatively, if the owner wants to restore his/her building, he/she should prepare the necessary documents to apply to the RPC first. In this application, the RPC asks for the documents listed below:

1. Complete measured drawings of the building, preferably in 1/50 scale,
2. Photographic documentation of the building,
3. A descriptive report of the building and its history (optional, not valid for all regional councils),
4. Preferably a registered copy of the in Preservation Master Plan showing the position of the building or the actual Master Plan if the former is not available (with reference to Stages I and III in Figure 5.1).
5. The Title Deed of the estate (from related Registration Office),
6. Restoration project prepared according to the Registration Group (I, II, III etc.).

settlements depending on the agreement between the local municipality and the Chamber of Turkish Architects in that city. However, it is an obligation for the buildings in Ankara. Following that, the owner should apply to the Development Directory for the approval of the restoration project and to obtain the authority for the construction. When all these procedures are completed, the owner may practically start the execution of the restoration project (see stage III in Figure 5.1).

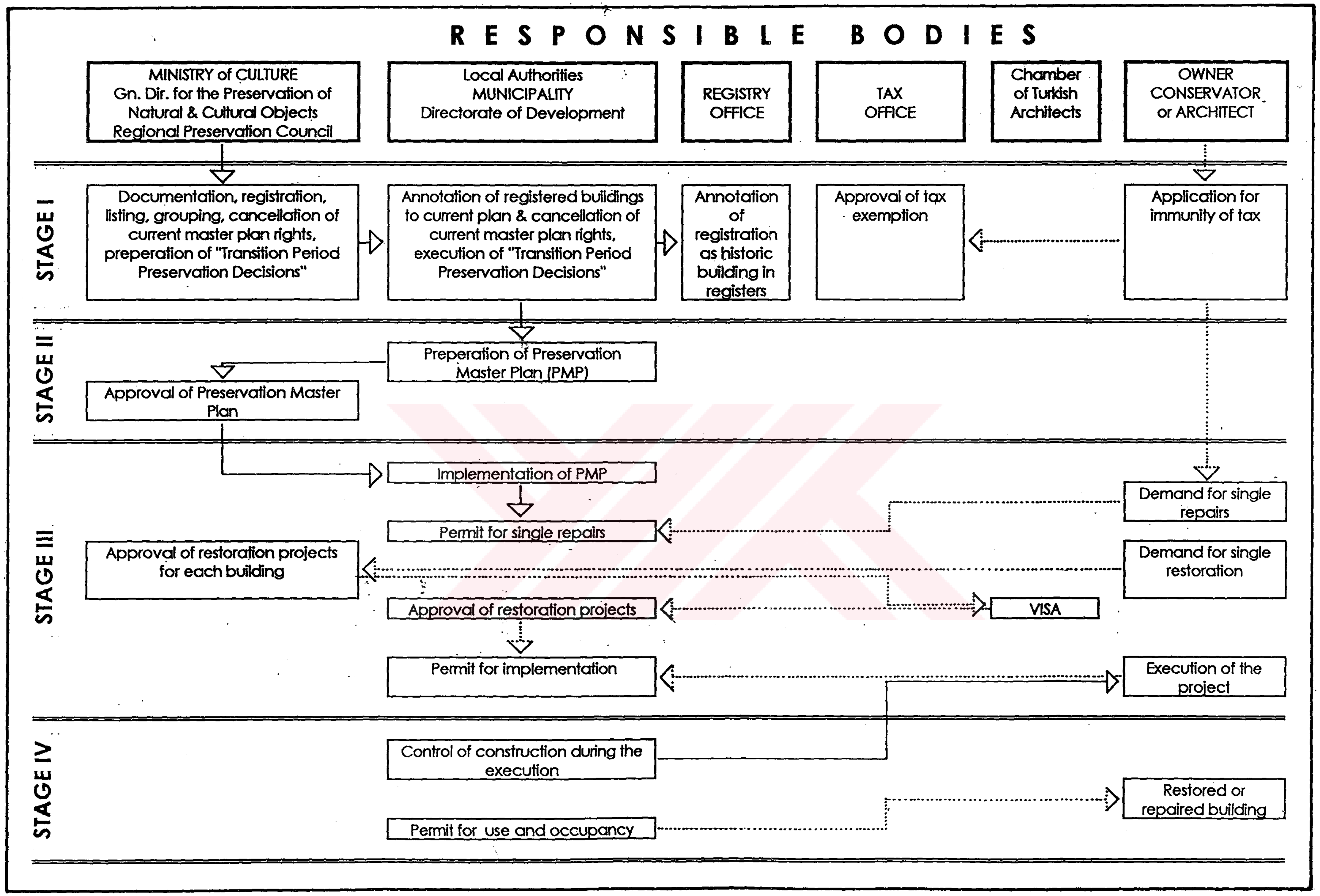


Figure 5.1 Flow Chart Showing in a Simplified Manner the Current Legal Procedure for the Restoration of a Privately Owned House (based on the Preservation Act numbered 2863, dated 1983 and related regulations).

In principle, the execution process, continues under the responsibility of the Development Directory of the related Municipality, though in practice, there are no effective means for controlling the implementation. However if an illegal application is coincidentally noticed by a member of the Ministry of Culture or other bodies, they can go to Court, to stop the application. When the execution is completed, the owner should ask the Municipality for an accommodation license. If the construction is appropriate to the approved project, the authority is given to the owner.

If we criticize the above summarized procedure, which takes shape according to the current legal means; in practice it has many deficiencies, when it is investigated in detail. In planning stages, nonexistence or lack of regulations related to preservation and rehabilitation works; formation of the RPCs, in which the members of the RPC's may be qualified in their specific field but not in relation to historic preservation, the absence of standards for execution and officers in the municipal bodies skilled in the field of conservation are the most questionable points in this procedure. Although criticizing these means is not the main aim of this section, some aspects should be emphasized on historic house rehabilitation and preservation which derive from this decision making process prior to execution.

Firstly, as it is known, the ''evaluative grouping criteria'' (for this terminology see Üstünkök, O., 1987) is used as a criteria for implementation and the result is reconstruction of the historic buildings with new materials by keeping their formal architectural features rather than restoration. This application is especially valid for all 2nd and 3rd group houses and also for many 1st group ones (see: court case 1994/254 of 4. *İdare Mahkemesi*, on Latife Hanım Kiosk in İstanbul as an example to 1st group buildings and see the following sources for 2nd group applications: Kaya, Ö., 1993; Güven, İ., 1988; Genim, S., 1984).

For the 1st group buildings, to preserve the original structure and the original building materials, besides the historic, architectural and cultural values of the property is an obligation. For the 2nd and 3rd group, the rules are more flexible, so the building can be reconstructed by retaining its volumetric dimensions only. So, the projects developed for these buildings do not take into account the preservation of either the original structural system or the original material. This approach is also valid for most of the 1st group implementations. The RPC's usually except the reconstruction of a historic building by approving the restoration projects which use the original materials only in finishing. On the one hand this is a common tendency of all the RPCs, yet on the other hand, in the current procedure, there is no means forcing the owners or the related bodies to make necessary surveys for preserving the original structure and material.

If we look at the documents submitted for approval prior to a restoration project, it can be seen that these documents do not include the researches on: the structural system and materials of the building, their characteristics and condition, suitability of the building to the function, information on water and electricity supply systems, cautions against fire, the methods and techniques which will be used in the execution for preservation, etc. Without these surveys it is not possible to take correct decisions and to define a correct restoration process but neither the RPCs nor other related bodies have any demand for these surveys. Thus, it can be said that, in practice, the approved restoration projects are far from fulfilling the information, which is a prerequisite for a complete restoration work.

So, there is an urgent need to define the standards for the preparation of restoration projects which are aiming at preserving the historic, architectural and cultural values of the buildings by keeping their original structure and material characteristics as much as possible. Such a standard, will be useful for the owners, architects and responsible bodies, to set up the common guiding rules[3].

In today's practice, the main decision maker for a restoration project are the RPCs. The Municipalities cannot take any responsibility at this primary stage, they only approve the projects accepted by the RPCs, and give authority for execution followed by the license for accommodation (or use). The responsibilities of the municipalities are limited only to verify if the execution is fitting to the approved restoration project or not.

Thus, there is a gap between the planning and implementation stages and it is not clear who the controller of the execution is. The Municipal bodies have preferred to leave this responsibility to the RPC's, as the decision maker, but the RPC's have no means to control the execution. The officers in the Development Directory of the Municipalities who are not experts and/or skilled in conservation are responsible for this duty. Besides, they have no means, as code of practices which they can use in execution as they have for new constructions. So, this practically means that there are no control mechanisms during the execution which can make sure if enough effort is provided to preserve the original structure and material of the building and if the chosen conservation techniques are proper for each specific case or not. Even if the standards for restoration projects are developed and applied properly, this will not fill the gap between planning and execution. To fill this gap, developing code of practices for conservation and establishing new control mechanisms in the body of the Municipalities[4] specialized in the field of conservation, are necessary measures which should be taken for the control of the execution process.

5.2. Approach to rehabilitation: The conservator's role

Considering the deficiencies in the legal and administrative system mentioned above, it is difficult to define the role of the conservator, in housing rehabilitation. However, in a general sense, aiming to fulfill the gaps in the current system, some criteria can be developed to define the approach and role of the conservator in the rehabilitation and conservation of a building (house):

1. The aim of rehabilitation is to preserve the *historic, architectural* and *cultural values of a property* by keeping its original structure and material characteristics as much as possible.

2. The *distinguished original spatial qualities and architectural characteristics* should not be destroyed. The *removal or alteration of any historic material or distinctive architectural features* should be avoided as much as possible.

3. The changes which may have taken place during a period, which has *acquired a significance in its own time*, should be respected and recognized as the evidence of history and development of that building. Though, alterations that have no historic values and are not compatible with the spatial character, structure and material shall be eliminated.

4. The maximum effort should be made *to provide a compatible use for a building which requires minimal alteration.*

5. Deteriorated architectural elements and details should *be repaired as much as possible rather than replaced.* In replacements which are unavoidable, the *new material should match the material being replaced in composition, design, color, texture and other visual qualities and be compatible* with the neighboring materials.

6. Repair or replacement of missing architectural features should be based on *accurate duplications of features, proved by historic or physical evidence* rather than assumptions or through the comparative study done on concurrent buildings.

7. The *new design* for alterations or additions to an existing building should be *compatible with the original building* and should not destroy the *significant historic, architectural and cultural values* of the original building and the environment in which it is located.

8. The chosen *conservation techniques* for any repair should not damage the original building materials and should be *reversible.*

9. The new additions and alteration should not be *damaging the original structure and materials* and preferably they should be easily removable when it is necessary.

To provide these criteria, an extensive documentation of the building will be necessary which includes: measured drawings showing all the architectural features and deformations in the building, a research on the historic background of the building, an analysis on the structural system and materials, decay on structure and material, etc. (Figure 5.2).

Analyzing the structural system, its condition and the determination of the properties of the original materials are very important in preservation to choose the type of intervention techniques and materials which will be used in restoration. Similarly, recognition of structural and material problems resulted both from the weathering conditions or from later alterations are important both to improve the condition of the building and to preserve it properly. Preparation of a restitution project showing the different stages in the life of the building and trying to the reach to an original scheme is necessary, prior to an evaluation of the historic, architectural and cultural values of the building. Only after these, a restoration project can be prepared for implementation, showing the techniques and materials which will be used; repairs and renewals of the decayed elements and materials, surface cleaning or preservative techniques, and the chosen new function.

In fact, all these surveys and preparation of a restoration project -in its current understanding in Turkey- are only the "*initial stages*" in a real conservation activity. As the survey, evaluation and decision stages are the initial stages in the whole conservation process there needs to be more studies for the individual activities and stages in the purpose of definition of the execution process. For that reason, to decide on the type of an intervention, studies in pre-execution are essential. In addition to that, execution process may involve some unforeseen studies which come up suddenly. For example, the stability and condition of the timber frame work in a plastered building cannot be totally checked before the documentation and control of all timber elements. The removal of plaster or opening some inspection holes may be necessary for complete identification. This survey can be done at the initial stages of the execution. The new findings may change the type of intervention and/or the stages defined earlier.

Because of these features, the execution process in a restoration work is completely different from the construction of a new building. So, in the definition and organization of the execution process for conservation works, all these aspects should be considered and a lengthy period should be scheduled for execution in order to provide this flexibility.

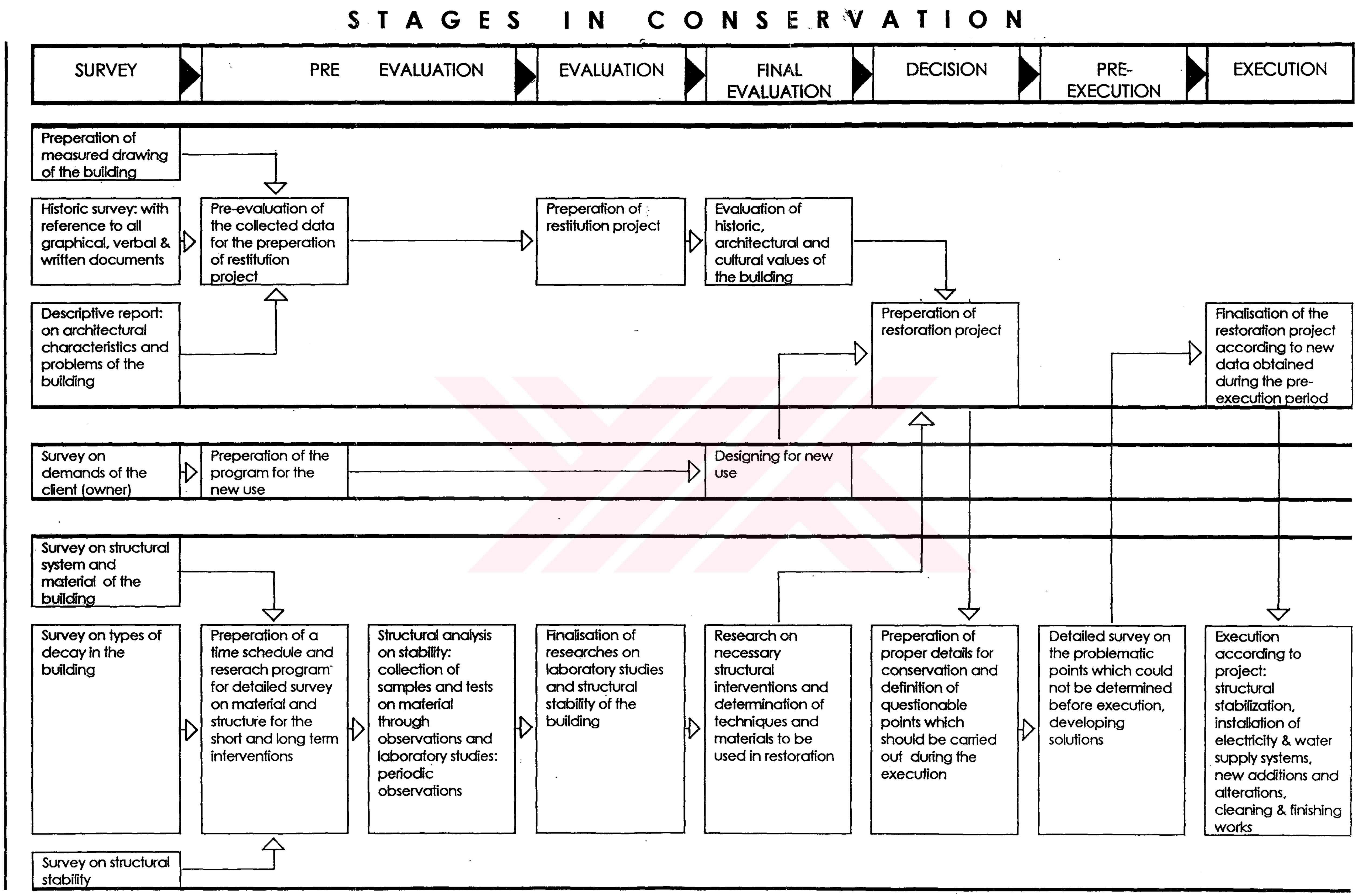


Figure 5.2 Flow Chart Showing An Accurate Conservation Processes for a Historic Building

Some of these surveys mentioned above can be done by the conservator architects, while for some others multidisciplinary works are essential. To evaluate the structural capacity of the building, to make diagnosis of the problems and the properties of materials and to choose the proper methods for solutions, the contribution of other experts will be necessary. The conservator architect, should always be aware of the extend of these problems, and his/her role at this stage is to collect, coordinate and finalize the data produced and interpreted by other disciplines for the conservation and rehabilitation of the building.

As to define the common types of decay on structure and material and to develop proposals derived from these is the main interest of this study, the following sections will focus on these subjects to guide the conservator architects. Though, different types of problems are mentioned in Chapter IV, the architect may confront with specific problems which are not included in this study; or the ones which are referred may not be appropriate for some specific cases. As each historic building has its own features and problems, to develop recipes valid for all types of problems is not possible and also not accurate for conservation. Hence, the reader or the conservator architect should evaluate this study as a guide which shows how to approach to a historic building and its problems to arrive at a correct diagnosis.

5.3. Securing Structural Stability

As it was mentioned in section 4.4.1.1., the structural stability of timber framed houses can be inspected under three headings: as masonry section (including foundations), timber framed section (vertical and horizontal elements) and the roof. In fact all these sections behave as a whole and any damage occurring in one section of the building effects the others. As the materials and techniques used in these three sections of the building differ and as they may represent special problems depending on their location, each section and element of the structure should be documented in detail and their relationship should be evaluated prior to any intervention.

For a correct diagnosis of structural stability, a correct documentation of the structural system showing: all the elements, deformations, cracks, decay in material, documentation and inspection of the current and former neighboring buildings and the identification of all alterations that have taken place in time should be documented in detail. Furthermore, checking deformations or cracks by regular observations is also necessary to understand whether they are still active or not.

Structural deformations are not so common in Ankara, as the timber framed buildings were usually structurally over designed and quite tensile. For this reason the architects should not over react to signs of failure which they face in these buildings, unless these failures are active. The structural balance reached by the building during the time, should not be disturbed for inactive failures and deformations. However, if there are deformations still continuing, their reasons should be determined and some precautions should be developed. Before any intervention, the architect should also have enough information on the materials of the building and their properties which will guide the architect to choose correct techniques and materials in the design and execution processes. Because the compatibility of the new materials with the original ones has primary importance for healthy intervention.

5.3.1. Preventive Measures for the Masonry Section and Stone Foundations

As it was mentioned in section 4.4.1.1. (a, b, c), one of the most important problems is the different settlements in foundations. If the settlement has caused some earlier deformations, which are no longer active, it is better not to make any intervention and to keep the balance reached by the building. However, if there is a settlement due to overloading of a certain section of the foundations (i.e. resulted from later additions) and the movement is still continuing, gradual removal of the overloading might be necessary to stop this action.

Similarly, changes of load in the adjacent parcels and the near surroundings of the building may cause different settlements in the foundations. In such cases, if the problem can be solved by some extrinsic precautions (i.e. constructing some retaining walls or buttresses supporting the foundations, in place of direct interference to the foundations) these alternatives should be evaluated and preferred.

On the contrary, if the different settlement is too big, the deformation prohibits the use of the interior spaces properly and is still continuing; intervention to foundations might become inevitable. Prior to any intervention the reason of the problem should be correctly identified and preventive measures should be developed for the success of the chosen method.

5.3.1.1. Reinforcement of Foundations

If there is local a settlement, jacking up of the effected section with spanner operated jacks (at about 600 mm) and filling the gap with masonry or concrete by pinning at top will be possible (for jacking techniques: Caron, P., 1988). Jacking up the corners up to 100 mm or more may also be possible though this technique alone may not be sufficient for the complete solution (Benson, J. et al, 1980:37). However, for local settlements that, occurred under the main posts carrying the structure in composite foundations, jacking up can be a proper method. In some of the Ankara houses, as the outer masonry walls were not combined with the main posts, placed inside the building, the foundations behave separate from each other. In such cases, after the prevention of the source of the movement, the main post can be jacked up to eliminate the deformation (Figure 5.3).

Local underpinning may be suitable for most of the settlement problems in the foundations, although it is a difficult and complicated work and it necessitates careful workmanship and the use of expert aid (Bowyer, J., 1980:25-27; Benson, J. et al, 1980: 39). Before any application, identification of the cause of the settlement and its elimination is needed, otherwise underpinning will not stop the action in the foundations and it may continue even after the intervention (i.e., if the soil has softened underneath the foundations as a result of a local water source; i.e. from faults in drainage, periodic accumulation of water on certain sections next to foundations etc.). If underpinning of the foundations is inevitable, the work must be carried out with great attention and full supporting works should be provided if there is any danger of structural movement during the execution. Local underpinning will affect all the masonry sections above the foundations subjected to intervention. Therefore, the timber framed upper floors which are carried by the masonry walls, should be carefully supported to take the load from the surface of the masonry wall to be underpinned. Similarly, in stone or mud brick walls, if there are any openings immediately above the underpinning work they should also be strutted carefully prior to any intervention. The depth of the underpinning should be determined by inspection and testing on site and decided after the cause of failure is identified.

Different techniques can be used for underpinning like sequence method, pretest method, pile method, injection method. Each of these methods has some advantages depending on its use (Bowyer, J., 1980: 19). The common method of underpinning for the domestic houses is the sequence method where the length of the wall to be underpinned is divided into sections, each being around 1-1.5m. in length (Benson, J., et al, 1980:38-39). Then

> *the foundation is opened up in sequence beginning at one end and the subsoil excavated to a depth equal to the underside of the proposed new concrete foundation and for the width required. The concrete to form the foundation is poured to the correct design depth, with continuity steel in the form of mild steel bars inserted in the wet concrete, projecting from the end of the new foundation to link up with the*

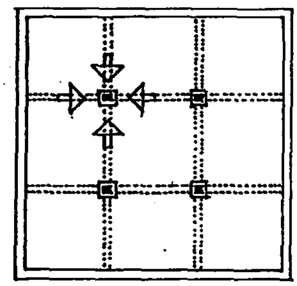
adjacent section. Care must be taken to cast concrete against a vertical board provided with a splayed batten. The face of the concrete should be well covered with neat cement grout before the adjacent section of the concrete is poured. Care must also be taken to avoid opening the excavation for any length of time, otherwise drying out of the subsoil will cause further problems (Bowyer, J., 1980: 18-19).

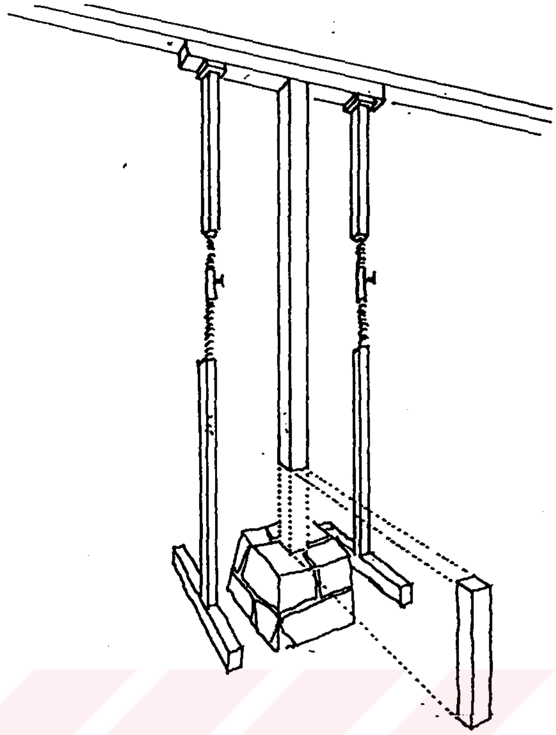
In this system, the vertical gap between the existing and the new foundation can be filled up by stone or foundation bricks laid in cement mortar. The edges of the new foundation should be bonded properly to the existing foundation in order not to cause further problems of settlement between the old and the new sections. The gap between the top of the new foundation and the bottom of the original wall should be filled in or "pinned up" with proper materials to consolidate the masonry wall above (see Figure 5.3).

The use of reinforced concrete is still quite common in strengthening operations of structural systems because it is structurally sufficient and easy to apply (for some earlier examples on the use of concrete in the restoration of foundations see: H., Heufers (1975: 35-39), P., Beckmann (1975: 44-49), H.J., Engel (1975: 50-54). Though, today it is known that, it creates many problems as it is not compatible with the original materials like stone and mud brick. The use of cement mortar as binding material in stone or brick infills or the use of reinforced concrete in underpinning without a sound isolation (like pining up with impermeable materials) will create a source of salt for the original masonry sections above. The salts existing in these materials will be carried up, by rising damp, towards the original masonry sections. So, if underpinning with reinforced concrete is unavoidable, the architects should be very careful about this problem in order not to cause further damage to the original material.

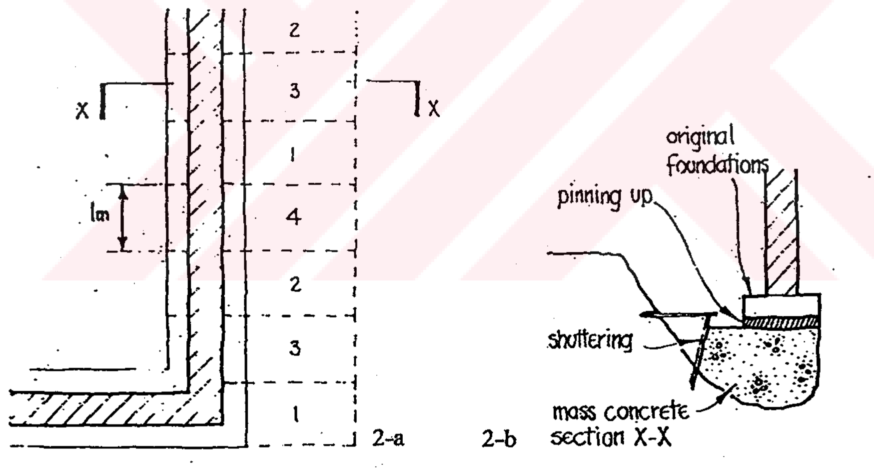
5.3.1.2. Precautions against Rising Damp

The second important problem observed in the foundations and masonry sections near to the ground level of the selected houses is rising damp. As the aim of all the damp-proofing works is to obtain a wall as dry as possible, to find the sources of rising damp is very important prior to any intervention. Before developing any preventive measures, correct diagnosis and elimination of rising damp sources are necessary. Depending on the type of sources, different methods can be used to cure the problem of rising damp partially or totally from the walls. Though, the likely effects of changing the moisture content of the walls and removal of salts after any intervention, should be considered prior to any treatment of rising damp (Ashurst, N, & J., 1989b:5).





1) Jacking up the main post and insertation of a new piece



2) Underpinning the foundation (Benson, J., et.aL., 1980:39)

Underpinning by site contractor. Get careful workmen and use expert aid in supervision for the first few times. If there are very concentrated loads, eg a narrow pier between windows in a high building, this will need needling and propping expertly. A pits should be dug down to good soil (usually this is not more than double the depth of foundation). Dig pits in sequence about 1m wide, all the number 1 pits as the first round of underpinning. Do not start the second round till 48 hours after the pinning up of the first round pits. All number 1 pits should be dug and inspected as an investigatory exercise. If good ground variesin depth work from deepest pit towards hallowest to avoid risk of undermining completed work. B excavate leaving the bottom firm and fill a nominal 1:8 mix or BS 5328 Prescribed Mix grade C10P, preferably with SRPC mix of rapid hardening cement to within 75mm of the underside of the foundation. (No reinforcment or special shear keys between pits of successive rounds are needed.) After setting a mix of 1 rapid hardening cement: 3 fine sand should be rammed in the 75mm gap (pinning up). A dryish mix is used; one that holds together in a ball when squeezed in the hand. Keep a record of work actually done.

Figure 5.3 Jacking up the Main Posts and Underpinning

It is known that, modern damp proof courses (dpc) were never used in traditional construction techniques in Anatolia in general or in Ankara in particular, although it became compulsory for examples in England since 1875 by the Public Health Act (BRS Digest, 1968/27: 1).

On the other hand, as it was mentioned with reference to selected examples (section 4.2.1.1.), the main reason of rising damp is the covering of the near surroundings of the houses (both from interior and exterior) by screed or asphalt. These impermeable materials stop the evaporation of the ground water through the surface of the soil and the ground water can only move towards the masonry walls which are made of porous materials like stone and mud brick. Besides, the screed pavement which is made with Portland Cement is itself a source of salt deposition as it is rich in salt concentration.

Combined action of these two factors, increase the rising damp and cause efflorescence on walls near to the ground level. It was noticed that, even in the existence of screed or asphalt covering, the maximum height that the rising damp reaches is about 1 m. which is an important sign showing the extent of the problem. So, removal of these impermeable materials surrounding the walls will at least decrease the level of the rising damp and salt deposition on the masonry sections near to ground. Similarly some other factors may be a source for rising damp like frequent washing of the pavements, flower beds or any other source causing collection of water next to the masonry walls, etc.

Complete prevention of rising damp is possible only by insertion of dpc to the foundation walls with proper details. Insertion of dpc is a difficult and expensive treatment and it is impracticable for some masonry walls, for instance the stone masonry walls having a rubble core (see for different methods: BRS Digest, 1968/27:2-5; for critics Ashurst, N. & J., 1989b: 5-6). On the other hand, installation of dpc may consequently also create further structural problems during or after the operation. Thus, it may not be appropriate for all the cases.

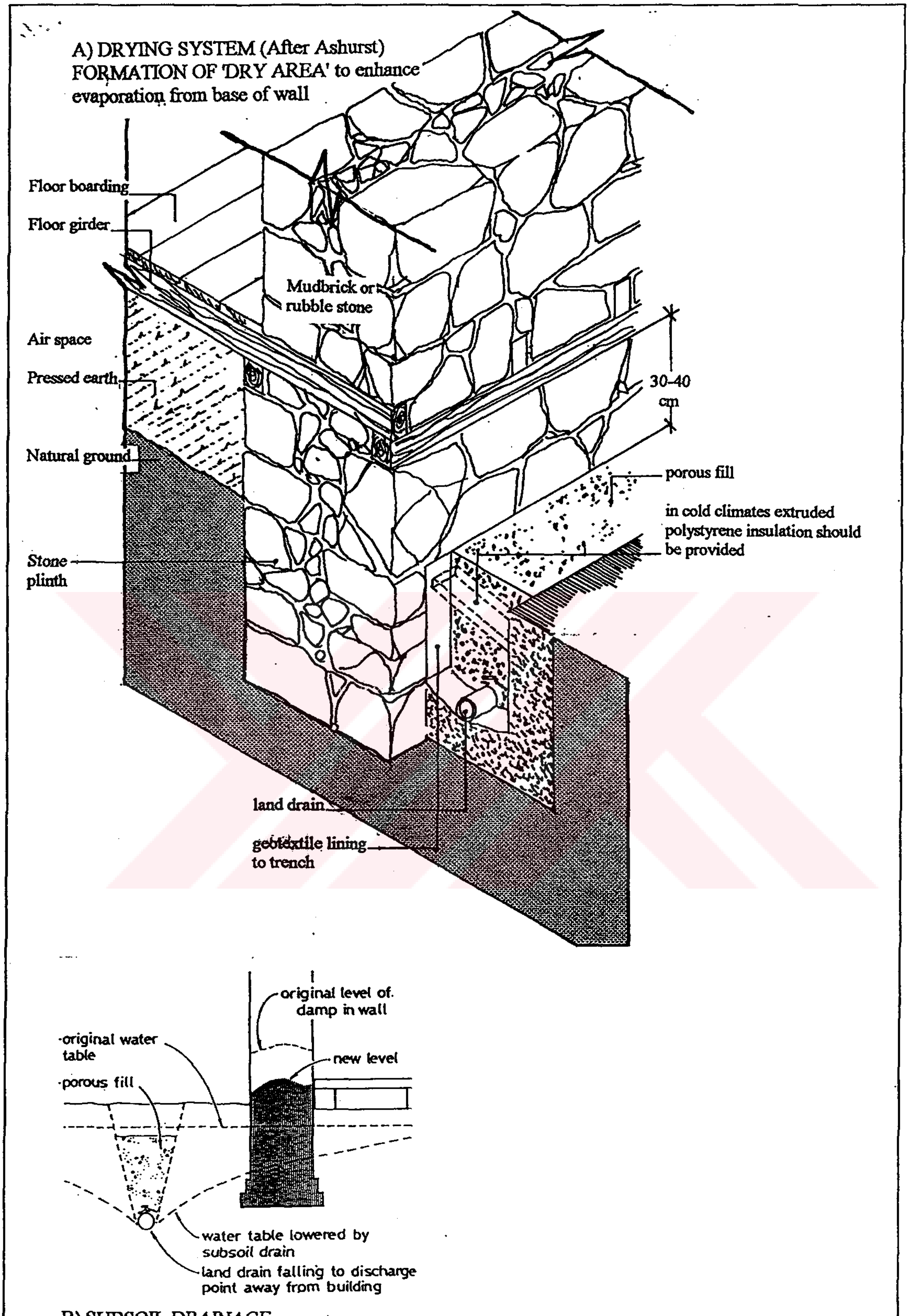
For these reasons, insertion of dpc may not be applicable in some cases for the houses both for practical and economic reasons. So in such cases, the problem can be controlled by other methods. There are some chemical and electro-osmotic systems and drying aids for controlling rising damp which all have some advantages and disadvantages (see Ashurst, N.& J., 1989b: 6-9; BRS Digest, 1968/27: 5). Between them, the most proper methods for Ankara houses can be the utilization of some drying aids, which may not provide a complete prevention of rising damp, but a control of it in an acceptable level.

For instance, the removal of dense impervious materials (like screed pavement, dense cement and hydraulic lime pointing, cement plaster etc.) adjacent to the walls can encourage the drying in the first hand. Such drying aids can be satisfactory to minimize rising damp problems and create a possibility to use rather simple methods. In addition to that, significant drying can be achieved by building a drainage system around the foundations which provides evaporation of the site water from the outside (Figure 5.4).

Provision of air drains and dry areas at ground level as a traditional method can be used for the houses, especially for the ones having a basement or the ones that do not have a separate basement but have inhabitable spaces in the ground floor which are raised from the ground level, and have a ventilation space underneath (30-40 cm is sufficient). The original details of Ankara houses give an opportunity to the use of this technique in many cases (see figure 3.25 floor types in ground floor). The main principle in this method is to isolate the inhabited spaces from the wet ground with a retaining wall and a ventilation space, and to provide maximum drying out of the wall below ground level.

Turkish Standards (here onwards TS) 2469 (1976) defines building drainage for different purposes including the ground water and site water drainage. It can be criticized that it does not cover information on proper drainage systems for historic buildings (the importance of this differentiation is not mentioned in the standards) but it can at least help the conservator architects to develop some measures for a proper drainage system. In some cases to support the drainage system, some finishes can be used for the part of the foundations inside the ground. TS 3128 (1990) and TS 2469 (1976) which are developed only for new buildings (concrete skeleton), defines the standards for design and protection of the buildings against ground water. If this standard can be reviewed for its use in historic buildings some of bituminous materials listed in TS 3128 can also be used in conservation.

Another system which is extensively used in preventing rising damp, is the insertion of "high capillary" tubes to increase the drying out in walls. The earthenware tubes are inserted, in previously drilled holes, with a shallow angle of 10-15°, penetrating through 2/3 of the wall thickness. The mortar in which the tubes are bedded should be as weak and as dry as possible. This system has also some disadvantages related with the properties of the earthenware tubes (i.e., deposition of soluble salts, slow evaporation rate, etc.). Its effectiveness is limited and it can even increase local humidity in some conditions (Massari, G., 1977). For this reason it should not be preferred for historic timber houses.



B) SUBSOIL DRAINAGE
(Ashurst, J.&N., 1989b:5)

Figure 5.4: Control of Rising Damp by Drying Aids

If effective any damp proofing intervention will create new patterns of moisture movement and it will cause removal of soil salts existing in the walls and their deposition on plaster during drying. As the drying out of the walls and their reaching to a new moisture balance will take a certain time (about one year or more), during this time salt deposition on plaster surfaces may continue until they dry out completely. Thus, if the plaster can be removed after allowing enough time for deposition, it will be a complementary treatment for the walls as well as for their desalination. So, at this stage if possible, delaying the process of replastering, to permit complete drying out will be better. On the other hand, if the building is replastered immediately after the damp proofing interventions, the deterioration of the new plaster should be expected. In this sense, sacrificial plasters may be used as a means to help the extraction of soluble salts in the walls.

Jointing of the stone and mud brick masonry walls which were affected from rising damp will also need rejointing. If it is done immediately after the intervention for rising damp, similar problems like replastering can also be seen on the joints. On the other hand, in some cases, when the joints are too much emptied, and there is the problem of stone or mud brick pieces falling off, repointing must be necessary eventhough the repairs may soon have to be repeated (see also section 5.5. on materials).

As it was mentioned in section 4.4.1.2., the most common problems in masonry walls above their foundations are not caused from structural problems but they are usually a result of material decay. In the selected examples studied for this thesis, major structural cracks are not observed in the masonry sections. However, the possible types of cracks and their reasons are discussed in section 4.4.1.1.-2;. It should be once again emphasized that, if the cracks in the building are not active, and not disturbing the structural stability of the building, there may not be a need for intervention, but they should be periodically observed. When there are big structural cracks in the masonry section, above the foundations, this may point out to a problem in the foundations. In such cases, if intervention becomes necessary, the methods proposed in section 5.3.1. can be used to strengthen the capacity of the foundations. If there are other non structural cracks (like on plaster or infill materials) different precautions can be taken depending on the peculiarities of the problem.

The disintegration and/or bowing of the masonry walls, which is a problem usually associated with foundation failures can be rarely seen. If the problem in the foundations is not active or kept under control, tying the bowing masonry walls back to the sound sections of the structure can stop further movement. In this application, proper methods can be developed by the architect depending on the extent and characteristics of the problem. For tying stone masonry walls, steel rods can be preferred.

If a timber framed wall is bowing which is observed in some of the selected examples, the same precautions can be taken for them. Before that, the joints of the bowing wall and its relation with the upper and lower sections of the structure should also be controlled. Because, bowing of the timber walls may either be associated with the problems in the roof structure or in the masonry section. In any case, by tying back the bowing walls, the architect should neither expect to restrain the original form of the structure nor to stop further movement if the cause of the foundation failure (or roof failure) is not prevented. Though, when the source of the movement is controlled, tying back the bowing walls will prevent further movement of the elements adjacent to that specific wall.

5.3.2. Preventive Measures for Horizontal and Vertical Elements

As it was mentioned in chapter IV, with reference to the techniques and materials used in interventions, most common structural problems seen in timber framed sections are a result of later interventions practiced for reasons of occupation like; cutting off structural timber elements to make an opening, addition or removal of some partition walls, removal of some studs or tie beams, alteration of infill material, etc.

Beside the weathering conditions, such alterations may change the structural balance of the timber framed section and/or may cause partial or total deformation. The symptoms of these causes which are observed in Ankara houses are usually decay, deformation or cracks in timber elements or in the timber frame, disintegration of infill panels and other such problems observed in incorporated materials like, mud brick, brick, mortar and plaster.

5.3.2.1. Initial Survey for Structural Repairs in the Timber Framed Section

Prior to any structural repair, understanding the timber frame as a whole, inspecting symptoms of decay and determining their sources of origin is important, especially when there are extensive structural problems affecting the whole system. In some cases where there are major structural problems, professional aid of a skilled engineer might be needed to evaluate the structural state of the building considering the load-bearing capacity of each structural element and joints in the structure. This can be done by the preparation of detailed structural drawings and by visual inspections.

As the timber framed houses in Ankara are usually plastered or their structural members are hidden under some finishing elements, to remove the plaster or to form some inspection openings might be necessary for an accurate investigation. If the plaster or the finishes are too valuable, x-rays or thermovision cameras can be used through the finishes, to determine the framing layout and the dimensions of the timber elements. Although they are non-destructive methods, full scale investigations are cost prohibitive and may not be available. Therefore, to prepare some inspection openings might be inescapable. To minimize the number of these openings and to find the exact points to open up, drilling some holes to use bore scope can be helpful (Hutton, T. C., et al, 1991:5-20).

The timber elements inserted in the masonry walls (beam ends, tie beams etc.) may decay easily due to the wall keeping damp as the result of rising damp, rain penetration and/or condensation. For this reason, especially the inserted portions of these members should be examined in detail by removing the masonry material around them in order to inspect whether they are decayed or not.

Surface examination of the timber elements do not usually demonstrate the extent of the problem related with wood rotting organisms if there are no fruit bodies or insect holes on the surface. For a correct diagnosis, different types of boring or drilling instruments can be used like the standard type electric drill. The resistance of timber to the penetration of the drill will give some clues about the soundness of the timber member. If there is still some doubt, core samples can be taken and examined to check the presence of fungal spores or bore dust of insects.

Electrical resistance equipment, sound wave generators and ultrasonic test rings can also be used in the determination of decay in timber by measuring the speed of the ultrasonic pulses or sound waves passing through the timber. Beside these, determination of the moisture content of the wood will be advantageous both in defining the attack of wood boring organisms and the possible source of local dampness (for techniques see Grattan, D.W., 1989). This can be measured practically by moisture meters. When the timber members have a moisture content below the critical 20% level, they can be considered to be secure.

After the completion of these initial surveys, the decayed member and the extend of the problem can be determined. At the second stage these decayed structural members should be checked to find whether they are structurally sound or not. If the loads on the members are above the allowable stresses or if there are questionable points, determination of both species and the grade of defected timbers and their strength will be necessary by taking and testing some samples (Lindstrom, R., Stockbridge, J., 1988: 9-11).

Taking samples from the timber members and testing should be done by the experts and through the non destructive or low destructive methods in order not to effect the integrity of the timber members. The standards defined by TS 2470 (1976/11) on sampling methods for the determination of physical and mechanical properties of wood are defined specifically for new building timbers and are not suitable for such purposes.

The studies developed on structural stability, implementation tests for determination of load-bearing capacity of built-in structural timber (for e review see Seemann, A., 1988) and non-destructive or low-destructive techniques (endoscopy, thermography, test core sampling, etc.) for the investigation of the structural state of the timbers can be used in these surveys to minimize further damage to original timbers of the historic structures (Lindstrom, R., Stockbridge, J., 1988: 9- 11; Schweer, H., Volk, U., 1986: 142-144).

Between these testing techniques, the test core method developed by Rug and Seeman (1991: 31-37) can easily be used for determination of the compression strength parallel to the grain of old timber members. The application of this method is easy to manage and to handle and requires relatively less equipment and appliances.

Test core method is based on drilling some small holes and taking out some small specimens with a diameter of 15 mm and a length of 25-40 mm and testing these specimens (Rug, W., Seeman, A., 1991:31-33). Even though the size of the specimens used in this method are smaller than the "*standard testing specimens*" (i.e. as defined in TS 2470/1976), the testing results prove that they are competent with standard tests. Beside the determination of the strength of the specimens, other parameters and properties like bulk density or volume weight, the moisture content of timber, the pH value etc. can also be directly determined.

So, as this method is well suited to determine strength of in-situ built-in timber it also can be used in other investigations related with strength. The results of this test also points out that, there is a high correlation between the bulk density and the strength of timber. This enables the provision of quantitative data. Data particularly concerning the strength of timber, by the application of low-destructive methods and procedures for measuring the bulk density (Rug, W., Seeman, A., 1991:36).

As the strength of timber members differ according to the direction of the stresses applied (compression, tensile, bending), the function, the location and the orientation according to fiber direction of the timber member in the structure is important both in determining its strength and in repair techniques. After collection of all these data, it will be possible to evaluate the condition of all timber elements which need different treatments like:

1. Structural repair,
2. Non structural repair,
3. Surface treatment,
4. Fungicide or insecticide treatment

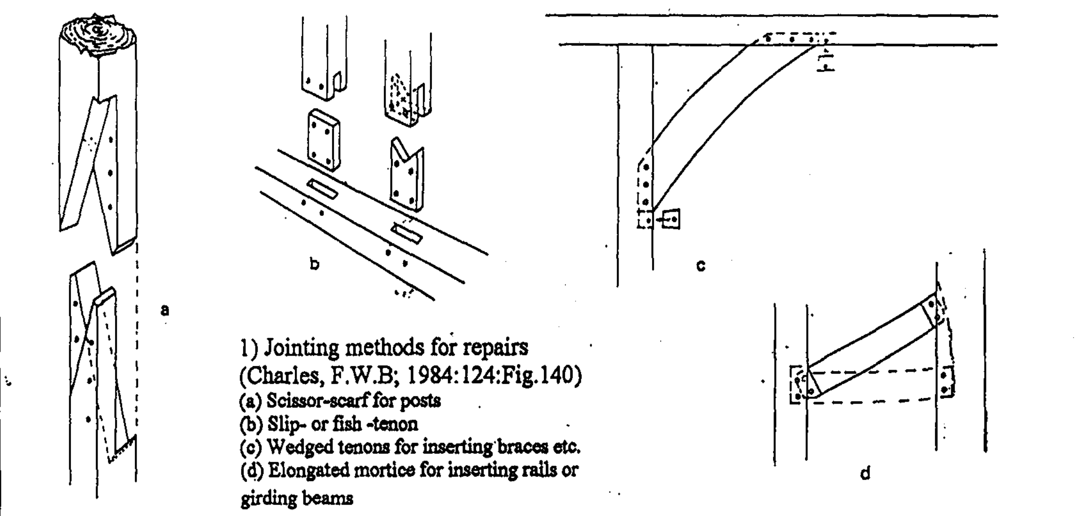
As this section is focused on structural problems in the timber framed section, the structural repair of the decayed timber members are detailed here as a methodology. Non structural repairs are introduced in the following section (5.4.) which includes the decay in architectural elements. As the surface treatment and fungicide or insecticide treatment are necessary for all types of timber members, whether they are structural or non structural, they are presented in section 5.5. under timber subheading.

In fact, in practice all these treatments are directly related with each other and their order of application should be defined at the beginning after the collection of all data. So, the reader should consider this separation as an output of the chosen methodology.

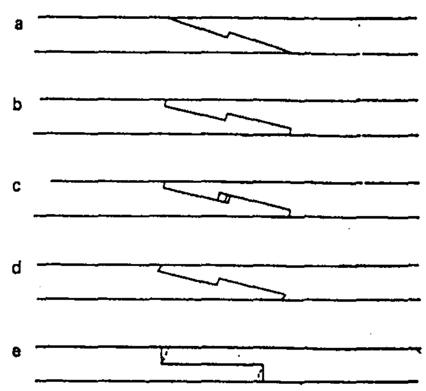
5.3.2.2. Structural Repair of Timber Elements

Principally, three methods can be used for the repair of a decayed timber member. Repair with timber, repair with substitute materials (like steel, resins and reinforced rods), and finally replacement with timber or substitute materials.

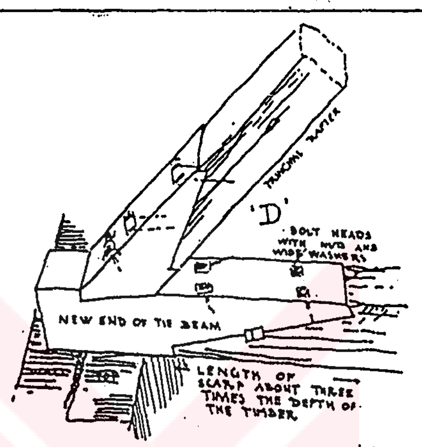
After the evaluation of the structural stability of the system and defected members, one of the above mentioned methods or their combinations can be chosen according to the type of problem and to practical conditions. The objective of restoring or replacing a structural member is of course to restrain the structural stability of the timber structure. Though this does not mean that, to renew the structural members as much as possible, will provide a better integrity of the structure. Opposing to the common acceptance, it is proved that the old timbers which have been subjected to stress and strain for hundreds of years have no less strength than the new ones (Rug, W., Seeman, A., 1991: 34). Considering this, in any repair, all necessary effort should be made to keep the decayed timber element in its place by restoring it rather then replacing. Such an approach will provide both preservation of the original fabric in its place and enable less extensive and less costly repairs.



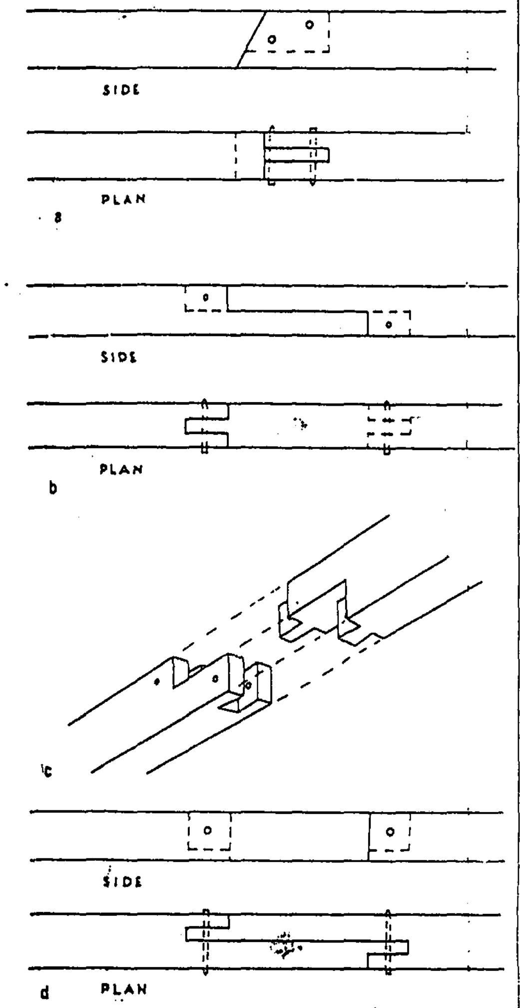
1) Jointing methods for repairs
(Charles, F.W.B; 1984:124:Fig.140)
(a) Scissor-scarf for posts
(b) Slip- or fish -tenon
(c) Wedged tenons for inserting braces etc.
(d) Elongated mortice for inserting rails or girding beams



2) Simple scarf joints
(Charles, F.W.B; 1984:124:Fig.139)
(a) Splayed tabled-scarf
(b) Tabled-scarf with stepped butts
(c) Tabled-scarf with folding wedges or 'key'
(d) Tabled-scarf with undercut- or 'squint' -butts which may have the same variations as above. This joint has to be engaged by sliding the two members together on their sides
(e) Half-lapped scarf with straight- or squint -butts
All above joints must be multiple skew-pegged

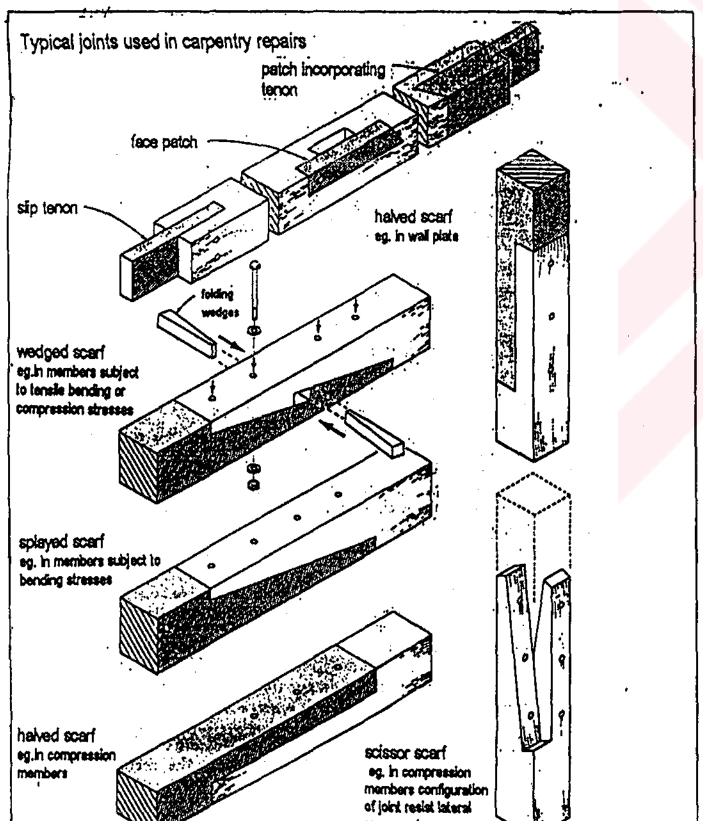


3) Repair to end of truss with new timber
(Powys, A.R.:1929)

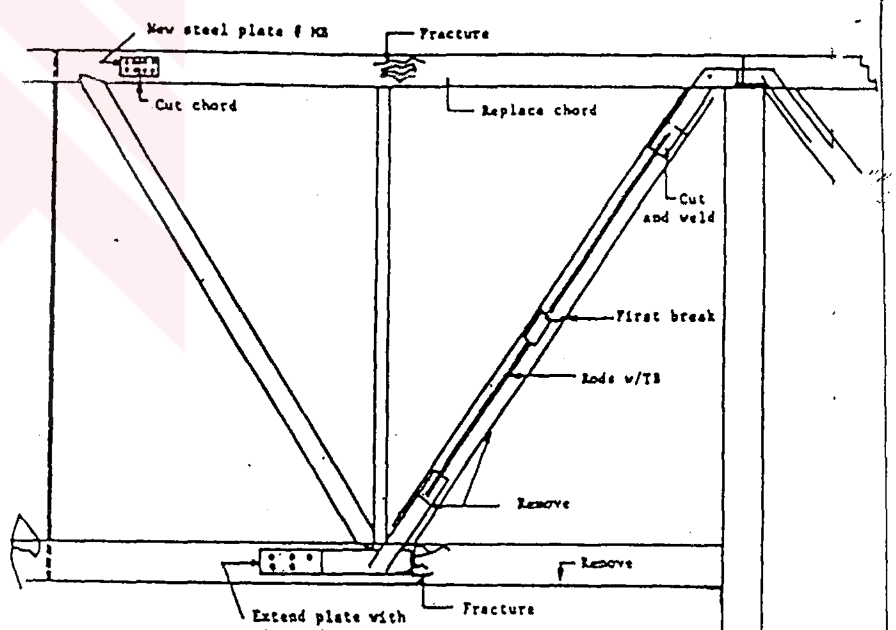


4) Further scarf joints
(Charles, F.W.B; 1984:125:Fig.141)
(a) Bridled-scarf
(b) Double-bridled half-lap scarf. This scarf may be splayed
(c) The same with lower bridle dovetailed to resist tension
(d) Bladed vertical half-lap scarf

Typical joints used in carpentry repairs



5) Scarf joints in traditional timber-to-timber carpentry repairs
(Ashurst, J&N., 1989e:12)
In the situations exampled, these types of repairs should always be considered first, rather than restorting to subsitute material.



6) Repair of diagonal member after tension failure
(ASCE, 1982:136-254)

Figure 5.5 Traditional Timber Repairs

On the contrary in some cases, repair with substitute materials may be necessary both for practical and technical reasons in order to solve the problem without disturbing the structural balance and integrity of the structure. In such conditions, replacing a timber element with a new timber or a substitute material may be necessary. At this point, the responsibility of the conservator is to choose the proper technique for the preservation of original fabric by evaluating all the collected data.

5.3.2.2.1. Repair with Timber

If a timber member is subjected to compression stresses (vertical elements like posts, studs etc.) and needs an intervention, to use new timber may be appropriate in the repair. In such a case, it may be essential to cut out the decayed section and insert a new wood to obtain the necessary cross-sectional area. Cuts should be made in a direction normal to the fibers and the fib of the grain in the inserted portion should correspond to the original one on the other side (Ashurst, J., & N., 1989e: 11). As the joints in this insertion will be subjected to both vertical loads and horizontal loads, the configuration of the joists should be able to resists these forces and two pieces should exactly fit each other with a complete contact. Use of water-proof and boil-proof glue on the contacting surfaces and screws or pins for insertion is recommended but the pins should not be relied upon to transmit any load.

As the timber has high tensile strength, parallel to its grain structure it will resist to cracking and split along the fiber direction unless there is no cut perpendicular to its grain structure (like a cut, a knot or a drilled hole). In the repair of a tensile member the same principles should be secured as in the compression members to keep the same cross-section. The old timber and the new timber pieces may also be joined to each other by mortice and tenon. If a timber element is subjected to bending forces, then the ends can be effected more easily and they should be repaired to strongly resist against these stresses. If the center of the element is effected, halving or plating in timber can be recommended (Figure 5.5 above).

In the repairs made with timber, both new and old timbers can be used though they should carry the same mechanical and physical properties with the decayed one in type, grain size and fiber orientation. Seasoned or kiln dried and if possible treated new timbers, should be used in repairs, otherwise the shrinkage of the new timber during drying may cause serious problems in the repaired section. If old timber is used, beside the other properties mentioned above, it should be checked for whether it is completely sound and not infected by the wood boring organisms.

5.3.2.2.2. Repair with Substitute Materials

Repair with substitute materials may be more appropriate in some cases where timber to timber repair looks inadequate. For instance, spliced bolted joint cannot be justified around the defected member due to loading or lack of access. Steel plates, stitch bolts and steel splices or epoxy reinforced repair techniques can be used in these cases.

In the repair of a fractured beam or a roof truss or a decayed beam end which is inserted into walls, stainless steel can be used as a substitute material in place of timber. The steel splices in various forms are widely used in the repair of decayed beam ends where the spoiled portion of the beam is renewed with the new sound timber and a steel plate is used to combine both pieces. The visible section of the steel splices can be concealed if it is necessary for aesthetic reasons. The form of the plate may be designed according to size and form of the decayed beam end.

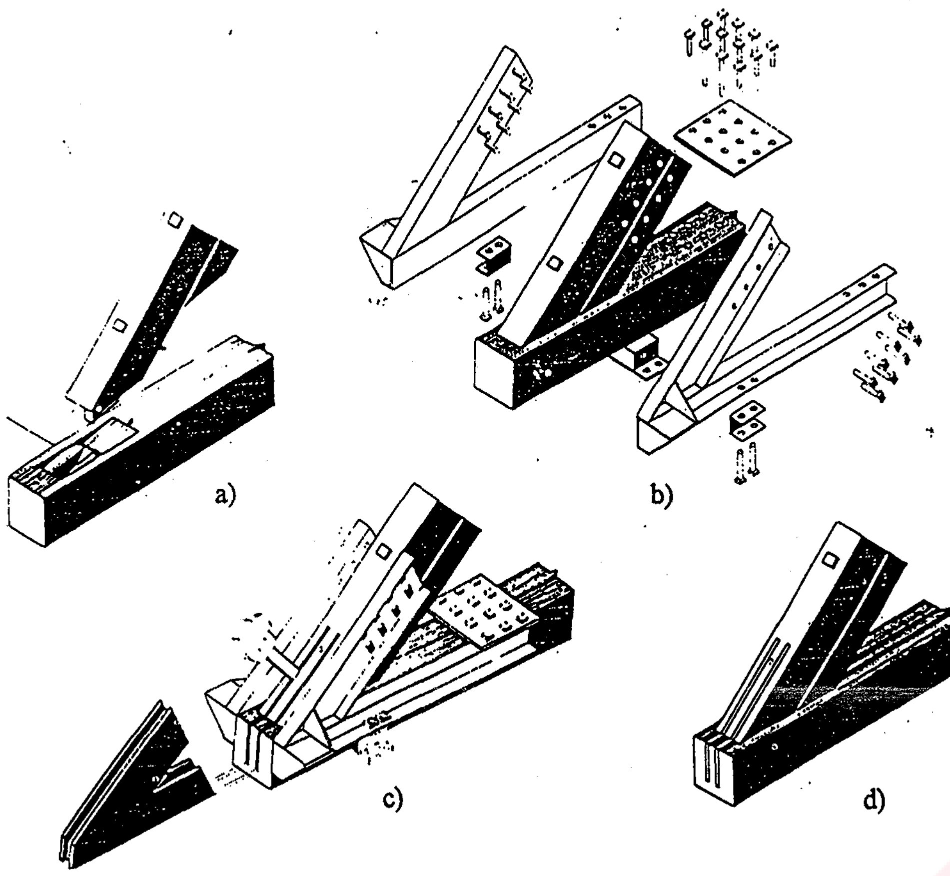
Plating a fractured timber member with steel, reinforcement with stitch bolts, bolt and plate collars are the other alternatives to support weakened timber members (see Figure 5.6). Some of these connections can be used according to type of decay and accessibility of the member (Colby, R. J., 1985:57-68).

In in-situ treatments, repair with epoxy resin is another alternative which was developed during the last three decades and originally used for non structural purposes. However today its use in structural repairs is becoming more and more popular (Colby, R.J., 1985:70).

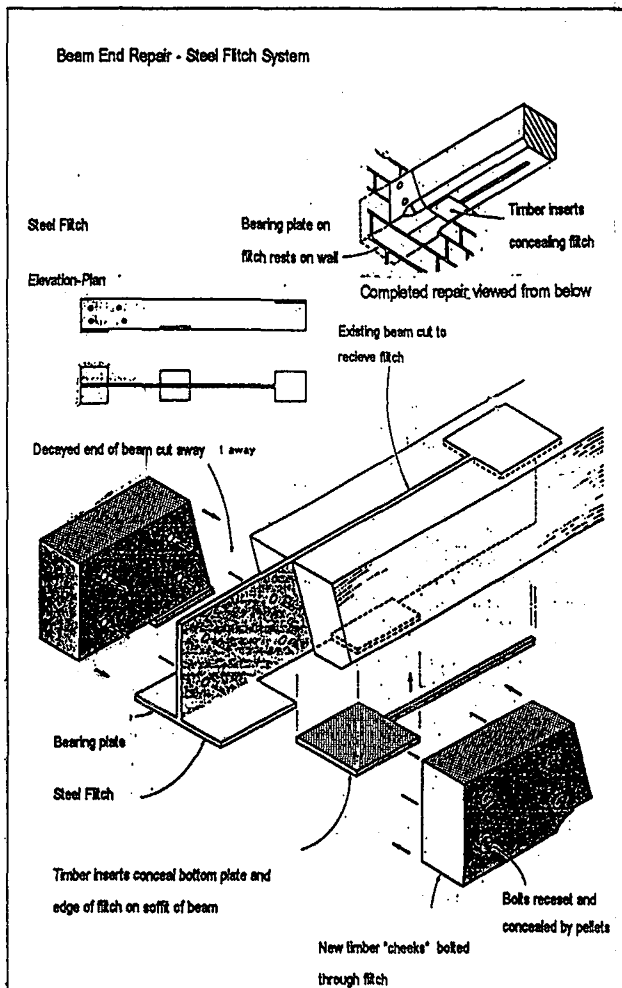
Nevertheless, as the resistance of the resin products against UV light and water is low in some mixtures and the strength properties of the material against bending forces is not well known, some conservators are hesitant to use these products (Colby, R. J., 1985:82-90).

In fact, the choice of the proper formulations and application techniques of resin products for structural purposes requires certain expertise. If they can be used by specialist firms experienced in the field, their use may become quite satisfactory especially for the preservation of the original timber members. Otherwise the conservator architects may be confronted with some problems in the use of the epoxy resin products in repairs (Rockhill, D., 1988:29-34; Anonymous., 1982:56-57; Cruden, A. F., 1989:31-43).

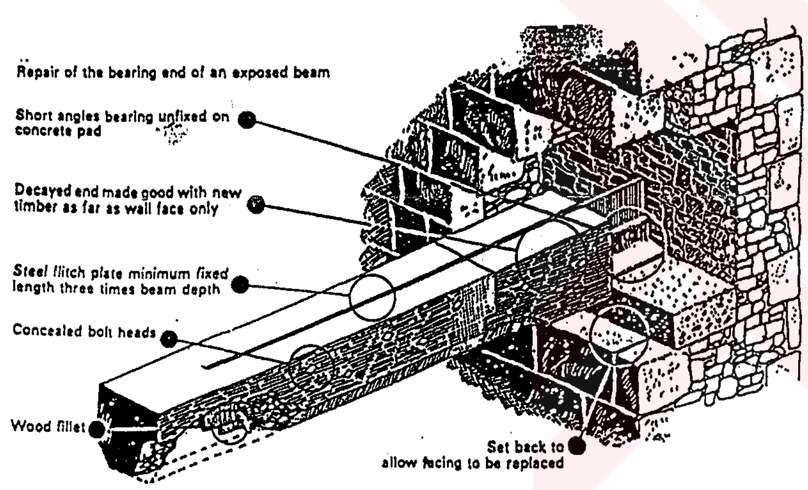
Epoxy resin acts as a filler but it also has structural value and excellent adhesive properties (Oates, D.W., Rickards, M, 1984). It has a wide range of usage in all sections of timber



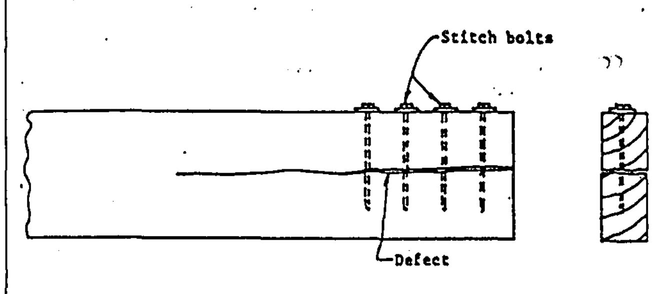
1) Rafter-tie beam repair using stainless steel plates
(Anonymous, 1982)
a) Detail of existing joint
b) Steel splint designed to support joint during repair
c) Saw cut made for insertion of steel plate
d) Steel plate bonded in epoxy, splint removed



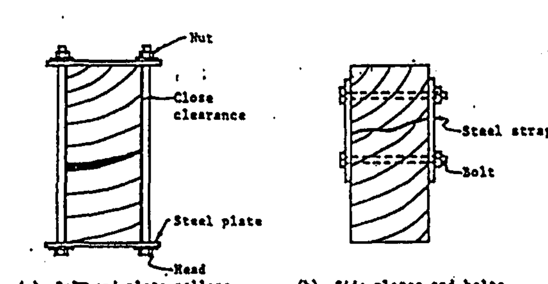
2) Beam end repair using a stainless steel flitch plate
(Ashurst, J&N., 1989e:18)



3) Reinforcing with a steel flitch plate
(Ministry of Public Buildings and Works, 1965)



4) Stitch bolts and a longitudinal split
(ASCE, 1982:136-254)



5) Alternatives to stitch bolts
(ASCE, 1982:136-254)

Figure 5.6 Repair of a Decayed Timber Members with Stainless Steel Elements framed buildings, from roof to beams both for structural and non structural repairs, and was practiced in many restorations in England, Holland, USA and Canada (Oates, D. W., Rickards, M, 1984; Colby, R. J., 1985).

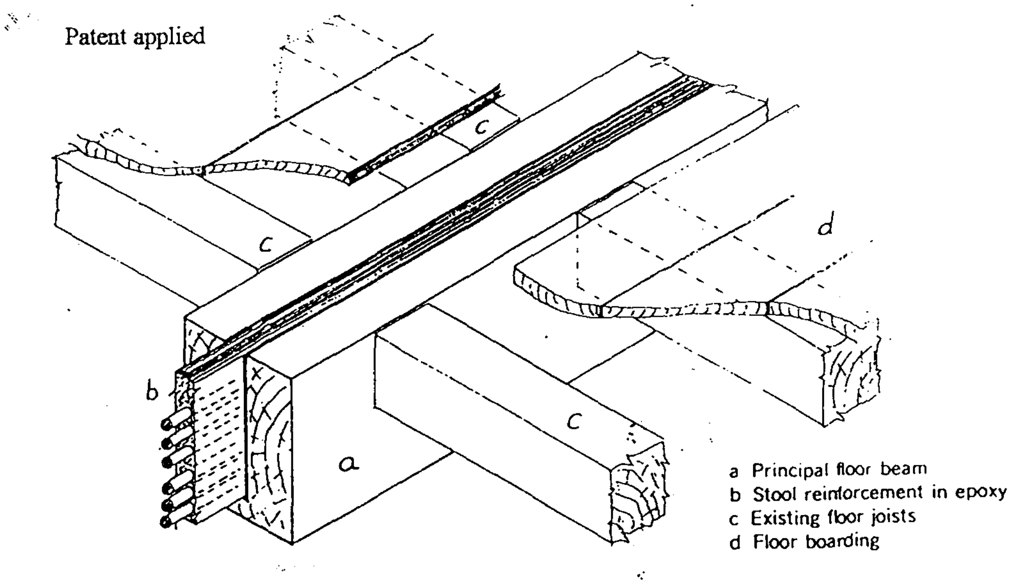
In the structural repairs, epoxy resin products are reinforced with steel bars or plates; or polyester resin glass fiber reinforcing bars. The purpose to use these bars is to stitch together unsound timber and to increase the shear strength of the member.

Figure 5.7 shows the application of two types of reinforcement materials each of them bedded in epoxy including a complete and partial beam repair and a beam end repair. In the case of using steel, steel bars are better than steel plates because they have greater tendency to bend and deflect with the beam.

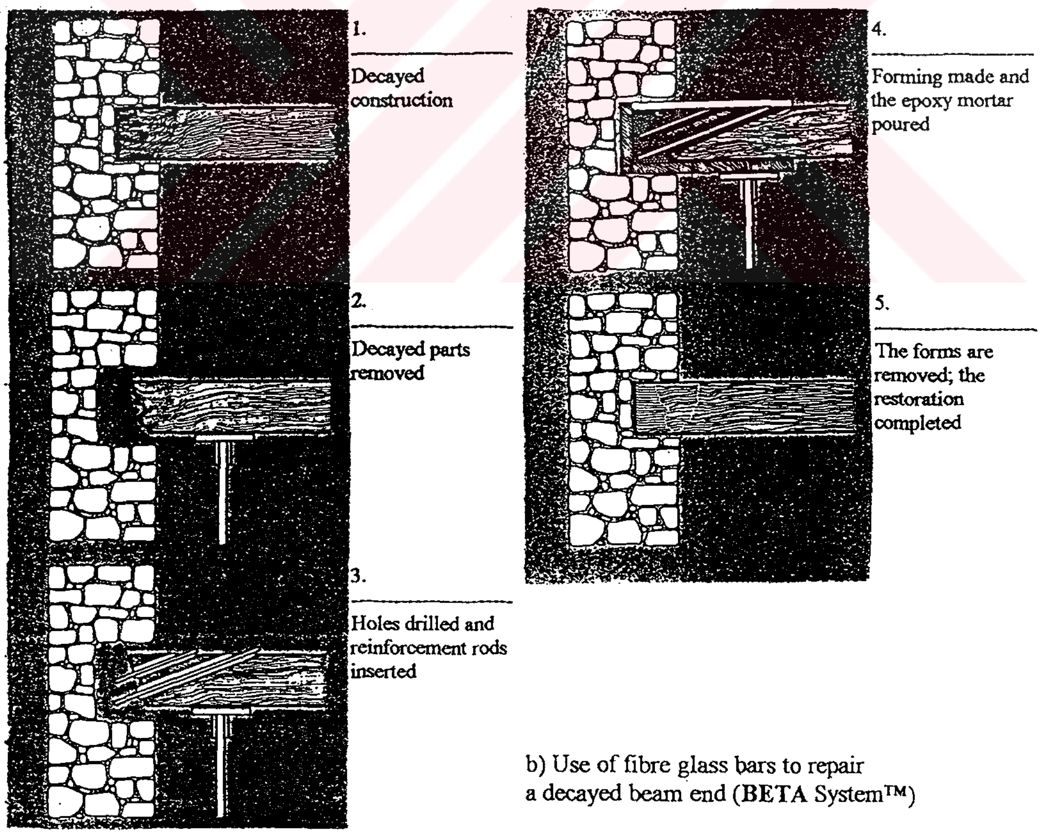
On the other hand, polyester resin glass fiber reinforced bars give more satisfactory results as they are more compatible with epoxy (Colby, R. J., 1985: 107). Specialist firms (for BETA^{TM} system see Sharp, B., 1978; Oates, D. W., Rickards, M, 1984) have patent techniques for structural reinforcement of decayed members and joints by using linking rods made of steel or glass fiber and epoxy resin as filler (Carey, J., et al, 1986b: 80; Colby, R. J., 1985:104-). In Ankara houses, this system is quite appropriate for the in-situ repair of the beam ends and in-situ strengthening of floor beams which have become over stressed due to overloading or cutting; or are subjected to additional loads due to change of use. However, this technique is not used in Turkey since no firm has yet got the patent for this system.

In the application of this system, some problems may arise from the rigidity in joint repairs. Reinforced epoxy resin repairs may produce rigid joints contrasting with the former flexible timber ones. This may cause break down in the structure after repair. In fact, D. W. Oates and M. Rickards (1984) point out that the flexibility of the joints can be determined during the design process by calculation and formulation of the epoxy resin product (Oates, D. W., Rickards, M, 1984:). In fact, this problem is valid for the timber framed buildings in Europe but not for those in Ankara as the structural timber members are connected with nails to each other and not with the joints.

In Ankara houses, if the reinforcement techniques with resin is to be used, this feature of the connections should be considered and they should not be changed. The flexibility of nail connected joints should be kept. This system can be used for reinforcement of the single elements but not for the joints. If the use of this technique is necessary, then the joints should also be designed flexible.



a) Use of steel bars repair of a decayed timber beam
(Oates, D.W., Rickards, M., 1984:10)



b) Use of fibre glass bars to repair
a decayed beam end (BETA System™)

Figure 5.7 Reinforcement of a Decayed Timber Member with Steel and Fiber Glass Bars Inserted into Epoxy Compound

5.3.2.2.3 Replacing with Timber or Substitute Materials

Beside the above mentioned techniques, if these techniques are not applicable for technical or practical reasons, the decayed members can be replaced with substitute materials. For instance, if a main beam with gigantic dimensions carrying the upper floors is completely decayed and not repairable, it will be necessary to replace it with a new one.

Principally, replacing with the original material should be tried, but if it is not possible to obtain a timber beam in that size, preferably stainless steel beams can be used. In any replacement the compatibility of the material with the old one as well as the neighboring materials is very important and should be considered first. The success of the repair is directly related with this criteria. Otherwise, the repair may cause further damage both in the structure and in the neighboring materials. The results of wrong interventions can be seen in Ankara houses today.

5.3.2.3. Repair of Walls and Disintegrated Infill Panels

Although the infill materials, partition walls and timber floor boards are not structural elements, these are discussed in this section because they are the inseparable parts of vertical and horizontal load bearing timber members in a structure. The present and the next sections focus on the problems in non structural vertical (partition walls) and horizontal (floor, ceiling boards etc.) timber elements with special emphasis on Ankara houses.

As it was mentioned in Chapter IV, disintegration of the infill panels from the exterior walls is quite common in Ankara houses. The main reasons for this problem are rain penetration, different shrinkage of timber and infill materials which cause cracking between the two materials and deformation in the timber members.

In Ankara houses, the common infill material is mud brick and its surfaces are originally plastered both from the interior and the exterior. When the facade plaster is washed away by rain or has fallen down, the erosion of the mud brick infill starts. Brick use as infill material in Ankara houses is also common. Disintegration of brick infill panels result from cracking in the bonding mortars, between the timber and brick elements, resulting from different shrinkage and deformation of the timber frames surrounding them. Since brick as a material is more stronger, surface erosion is not common on this material as in mud brick, even though the brick infills are not usually plastered. But different shrinkage and swelling between timber and brick infill panels creates shrinkage cracks in lime mortar as it is weaker than the brick itself. The expansion in the cracks formed in the joints between the mortar and timber result the lime mortar to break and fall off and consequently disintegration of the brick infill panels (Figure 4.11. Disintegration of brick infill panels). In principle, the infill material should be repaired and retained in-situ as much as possible to keep the original characteristics of the historic buildings. The recognition of the problems in infill panels and, if possible, elimination of their sources is a prerequisite to develop some precautions according to the extent of the problem.

If the frame and infill are not seriously defected, removal of overall plaster may not be necessary, accept some local decay spots like, the detached or pealed sections of the plaster. In such cases, local repairs or replastering, by using the original plaster and mortar mixtures, can stop further damage on infill materials. However, the condition of the exterior plaster in Ankara houses is fairly bad and the exterior plasters are almost completely missing. As a result of this, surface degradation of the infill materials and disintegration of the infill panels can be seen in most of the houses. In such cases, if a great portion of the original fabric is decayed, repair or partly renewal of the remaining sections can be practicable. If the problem is more serious, complete renewal might become necessary. In each case the renewal of the infill panels can be done principally by two ways, that is, either with the original material or with new compatible materials.

In Ankara houses a common tendency, which was noticed in the repairs done by the users, is the renewal of the eroded mud brick sections of infill panels with brick, because it is more resistant to surface erosion. Even though this technique looks reasonable, it cannot be applied to all the timber frames because it may affect load distribution and may advance the structural problems. In principle, the renewals should be made with the original materials. To do this, the composition and the physical properties of the old materials should be tested (both for brick and mud brick) and new materials (brick, mud brick, mortar and plaster) should be produced accordingly. Old bricks which are compatible with the originals can also be reused in such replacements if they are sound. Repairs should be done by copying the traditional techniques and by using mortars and plasters compatible with the original. Use of lime mortar at the edges of brickwork and the structural frame will create a flexibility by aiding the moisture to soak up and allow it to evaporate. In complete renewal of the brick infill panels, the bricks, their bond type and the mortar should be completely matched to the original.

Though, if the original materials cannot be obtained or reproduced for the repair of a single building, compatible materials can be used for replacement unless the infill materials have no decorative features like in brick paneling. In such cases, again the use of brick infill will be obligatory. However, if the building is in a real bad condition and an overall replacement of the infill panels is necessary -though it is not common- the use of new infill materials may be reasonable only for the mud brick or the originally plastered brick infills by hiding them underneath the plaster.

Figure 5.8 presents a collection of use of both traditional and substitute materials. The figure includes the details used in the restorations done by A. Fuat Tek in the Citadel of Ankara and some examples used in England by different conservation experts. Though in principle, these techniques look satisfactory and easily applicable. No definite information can yet be given on their long term performance. However, from now on, it can be seen that there is a risk in the detail of Figure 5.8-G, since the water barriers used inside the paneling may increase the interstitial condensation and may cause damage to the infill material in the long run. Besides that, a cement based plaster is used in the concerned detail. Whereas, the use of cement based strong mixtures are dangerous for the original fabric, as they are stronger than the infill material itself, they resist better but this will introduce decay in the neighboring infill material. In addition to that, as cement based mixtures are rich in salt concentration they will create a source for the neighboring materials and cause salt deposition on them. For the reasons already mentioned, even though Portland Cement plaster, plastic based paints and coverings are more readily obtainable, they are not recommended for rendering. The use of limewash and lime based mortars will be more satisfactory as they provide breathing to the original fabric.

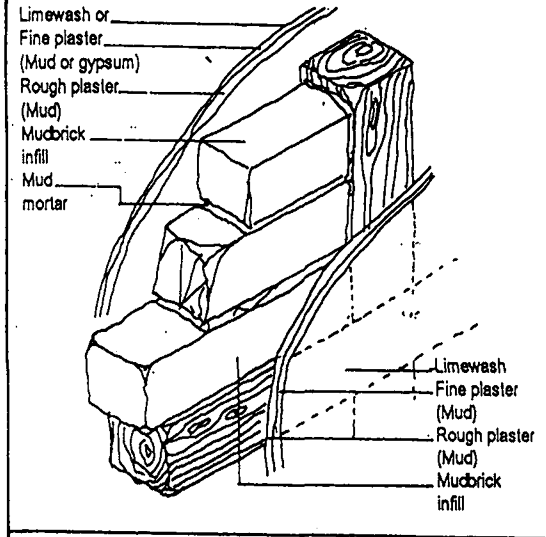
5.3.2.4. Addition of New Partition Walls:

Division of spaces is a common intervention type which is observed in Ankara houses. Such alterations may be quite reasonable if they do not change the spatial character of the building. In principle, the design of a partition wall should comprise the criteria summarized below:

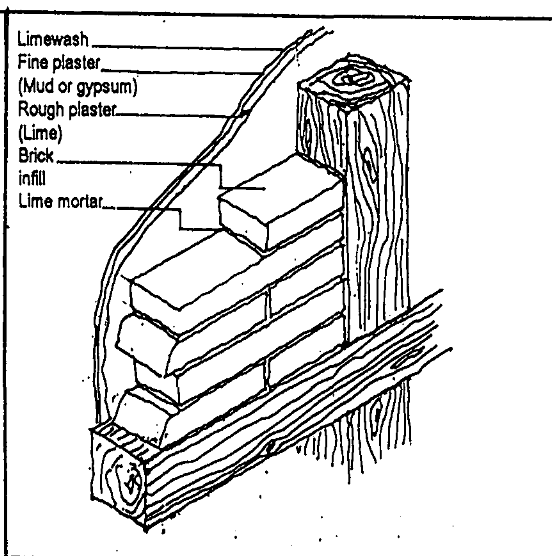
a. it should be easily constructed and removed when necessary, without giving any damage to the original fabric and structure,

b. the chosen material should be in accordance with the original and the neighboring fabric,

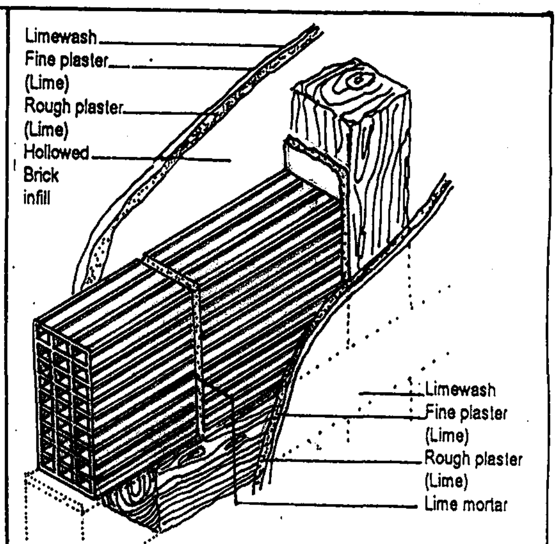
c. it should be lightweight in order not to cause any structural problem and it should have good heat and sound isolation properties.



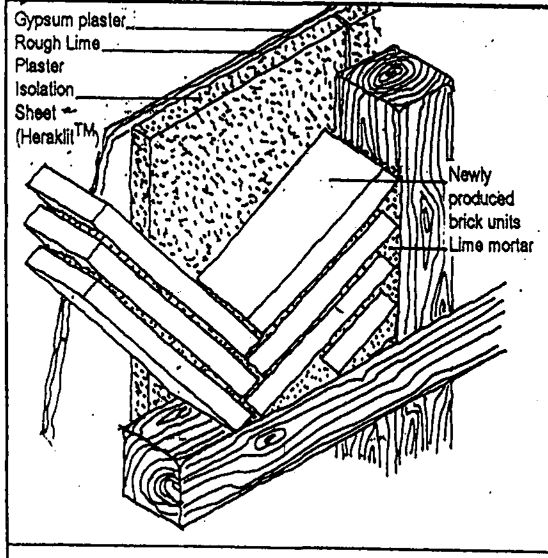
A: Traditional Mud Brick Infillings in Ankara, (by Şahin, N.).



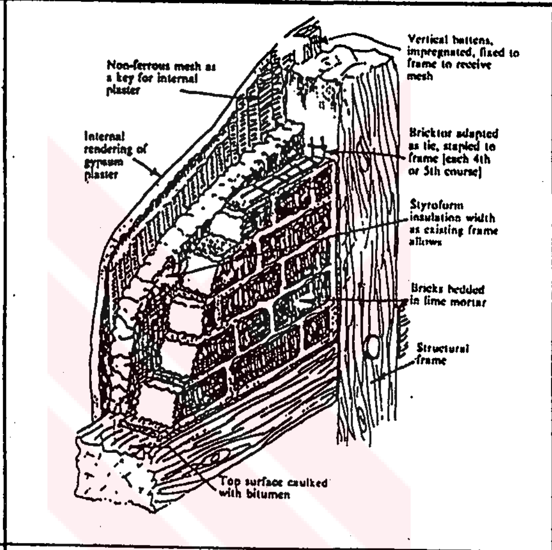
B: Traditional Brick Infillings in Ankara (by Şahin, N.).



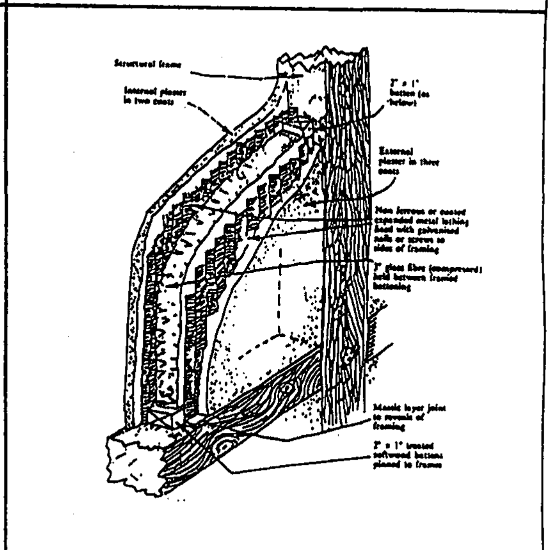
C: Hollowed Brick Infillings in Ankara Citadel, used by A. F. Tek. This detail is used in the infillings of the house at Doyran st. no: 9, in place of mud brick infill. The jointing mortar and plaster were reproduced with traditional techniques by the building masters brought from Çorum (after A.F. Tek).



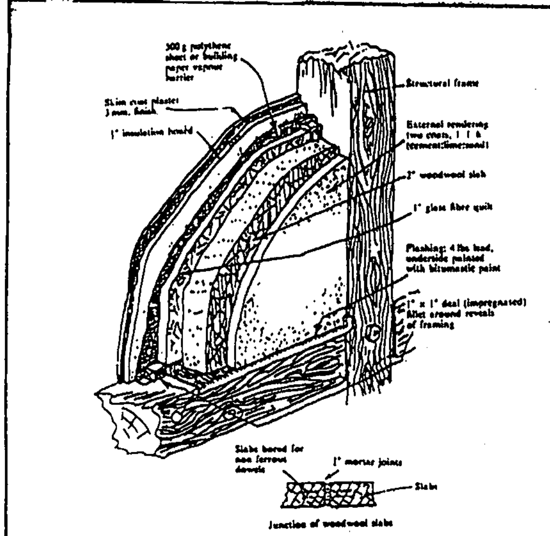
D: Brick Infillings without external plaster in Ankara Citadel, used by A.F. Tek. in a third group application, in house at Döyran st. no:5-6, in place of brick infill. The outer surfaces of the new reproduced bricks were covered with a water repellent, colorless preservative. The inner surfaces were covered with Heraklit™ panels behind the plaster. The external jointing mortar and the interior plaster were reproduced with traditional techniques (after A.F. Tek)



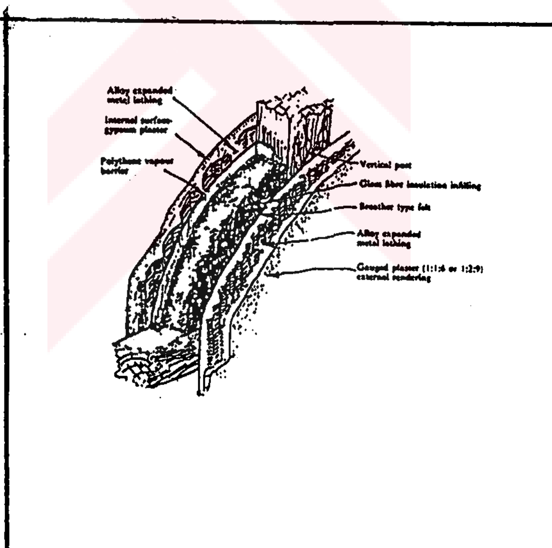
E: This modern brick nogging technique which was developed by A. Thomas which is comparable to former detail used by A.F. Tek. (Reid, K., 1989:10)



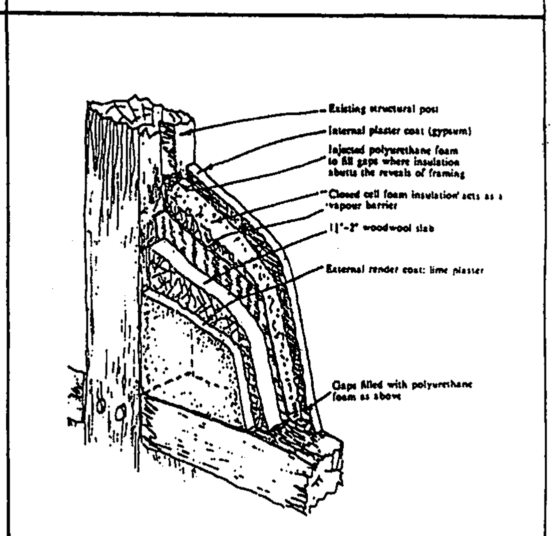
F: Glass fibre and plaster in expanded metal lath method, designed by D.W. Insall & Associates. (Reid, K., 1989:9)



G: This method was used by R. Melville in the renewal of infill panels to timber framed buildings in East Midlands (Reid, K., 1989:9).



H: This method was devised by the Architects of the Essex County Council according to the characteristics of the timber-framed buildings in the county (Reid, K., 1989:9).



I: This technique which was developed by A. Thomas is used in Hereford area for renewing panels (Reid, K., 1989:9). For further information see SPAB News, V:3, No:3.

Figure 5.8 Use of Traditional and Substitute Materials in Panel Infillings to Timber Framed Buildings

Considering these criteria different details can be produced. However, the simplest way which is compatible with the original structure of the timber framed houses is to use either timber or aluminum frames and some isolation panels covering them. Such frames can also be adapted to the deflected floors and ceilings without changing their form. Although different materials can be used for paneling such frames, gypsum wall boards can especially be recommended for this purpose.

TS 452 (1994) defines the standards for gypsum panels which has various types depending on isolation (water, heat, sound) properties. Gypsum boards can also be used for the partition walls of wet spaces (bath-room, WC etc.). TS 1475 (1991) gives the rules for the erecting of gypsum partition wall components and boards which are also suitable for construction of partition walls in historic houses. There are various firms in the market which are producing such systems as a whole. The user can ask one of these firms for installation or they can do it themselves, as the installation of such systems is quite simple (see Fig., 5.9).

5.3.2.5. Repair of Timber Floor and Ceiling Boards:

Boarding technique of floors and ceilings are somehow similar to each other accept the position of the boards. Besides, the ceiling boards are usually more ornate and have some panels and/or gypsum borders around them. In some cases they are all decorated with paints and some carvings as in the houses at Gelin st., no: 8, Erzurum st., no: 48.

This section focuses only on the problems of unpainted (undecorated) timber boards with reference to timber decay apart from the ornaments. For the preservation of well- painted and decorated ceiling boards special techniques will be necessary, which are not discussed in detail in this study. Though, the reader can find necessary information on this subjects in the following references: Tsoukalas,T., Psycha, I., (1991:193-202); Ballestrem, A., (1970: 69-74); Agrawal, O.P., (1971: 56-68).

As it was mentioned in Chapter III, there are mainly two types of floor boards in Ankara houses: as the single and double layered floor boards and both types represent different problems. The condition of the single layered floor and ceiling boards are better than the double layered ones unless there is not a special decay source or the floor is not subjected to wrong interventions. The timber boards may be subjected to decay by ingress of water from the external walls or through the leakage's in the roof or by insect and fungi infestation.

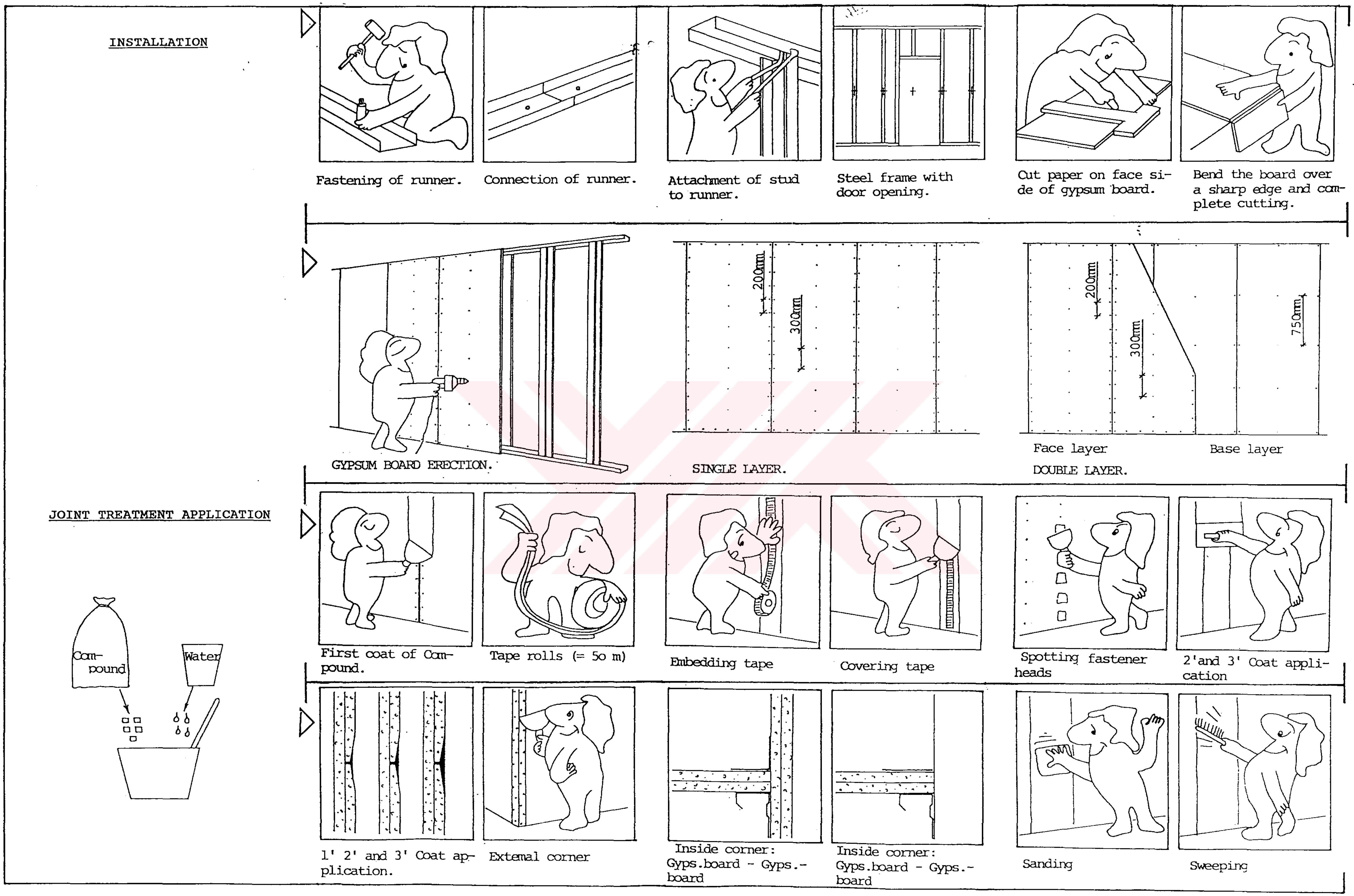
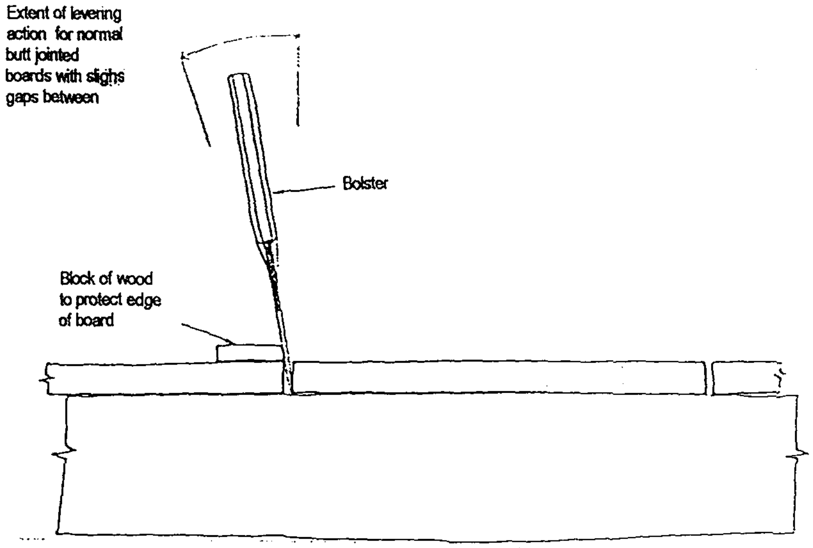


Figure 5.9 Installation of Gypsum Board Partition Walls (**Danogips™**)

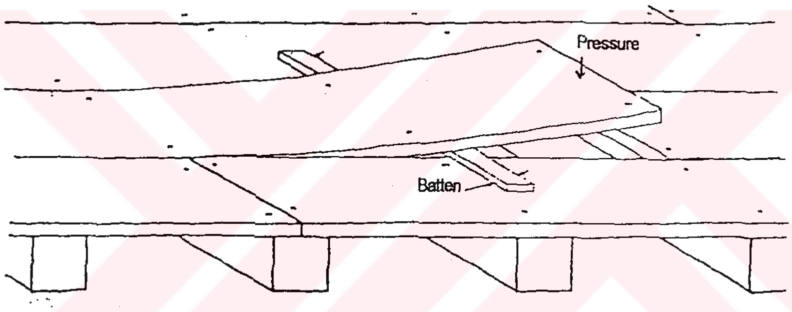
On the other hand, wrong interventions like: careless lifting and replacement of weakened boards (usually done for electricity or water installations), wrong positioned furniture, covering of floor boards with linoleum or screed may cause further damage on timber boards. When the boards are decayed and need partial repair or replacement it may be necessary to lift them. Lifting the boards without any damage is quite difficult, so even in the cases when there are big deformations but the boards are sound it is better to leave them without any intervention. However, if there is need, the boards can be lifted following the steps shown in Figure 5.10. This process needs great care and patience in order not to cause further damage. Even though relaying the floor boards after repair is easier, it also needs considerable care. For instance to use screws rather than the nails will be better if there are decorative ceiling boards under the floor girders. Besides, in case of a need, taking out the screws will be easier.

There may be partial problems in old floor boards like gaps, splits or broken edges. If they need repairs, insertion of small timber boards into the gaps, repair of splits with reinforcing timbers and insertion of new timber pieces in place of broken edges will be better than complete renewal of the decayed members. The gaps and splits on timber ceiling boards, underneath this double layered boarding, is a problem as there are inhabitable spaces underneath. Such decays on boarding, cause dust and earth (or sand) to fall through the gaps and splits. For strengthening decayed timber members, removal of floor tiles may be necessary. Their removal is always problematic if they are already broken and lost their strength which is a common case observed in the oldest Ankara houses. During removal, most of the floor tiles may break as they become fragile. In such a case they need to be reproduced. After the cleaning, repair and surface treatment of the timber members (both structural and non-structural ones), preferably the original isolation materials or new ones can be laid down, between the double layered floor girders (see Figures 5.10 and 5.11 for techniques). The old floor boards should not be sanded to clean their surface. If the boards had already suffered from insect attack though it may not be active anymore, sanding will remove the smooth surface of the boards. Stained or dirty unpainted floor or ceiling boards can be successfully cleaned by regular scrubbing with neutral pH soap and limited amount of warm and clean water (Hughes, P., 1988; Ashurst, J. & N., 1989e: 23-28).

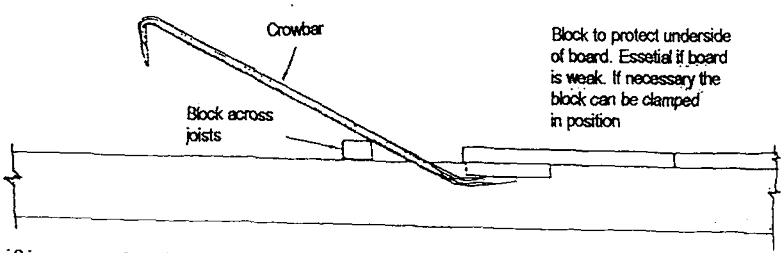
If removal of paint, stain or varnish is needed, repeated poulcing may reduce their effect whereas, if the result is not satisfactory, a solvent made up with American turpentine (not substitute) and acetone in proper ratios, which should be determined by an expert, can be used (Ashurst, J. & N., 1989e: 23-28). Further details on painted surfaces and surface treatment of timber can be found in section 5.5.2.



The first stage in lifting a butt-edged floorboard



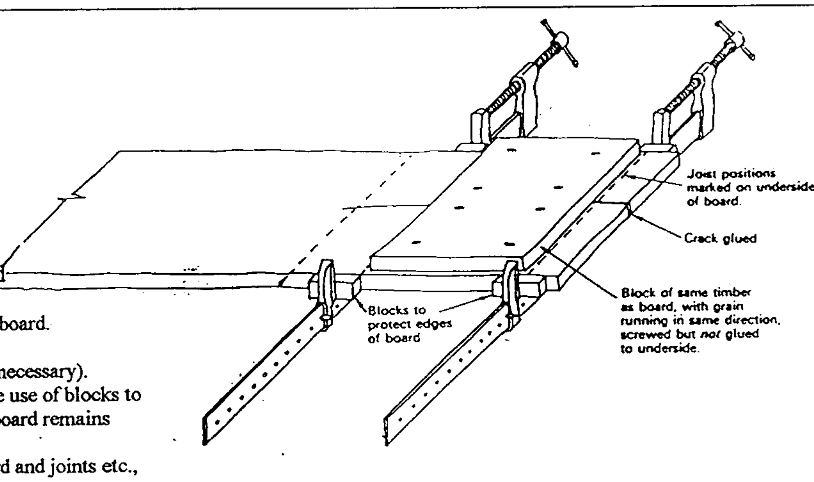
Easing up the first board

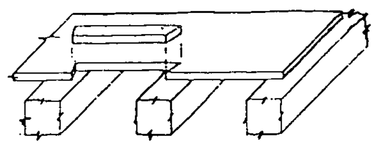


Lifting second and subsequent boards

Figure 5.10 Lifting of Floor Boards (Hughes, P., 1988)

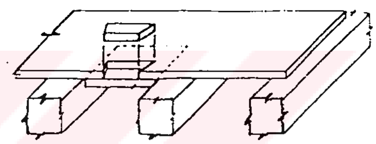
1) Repairing a split board
1. Lift board.
2. Mark joists position on board.
3. Clean out crack.
4. Remove warp/twist (if necessary).
5. Glue and clamp. Ensure use of blocks to protect edges and that board remains true.
6. Treat underside of board and joints etc., if necessary.



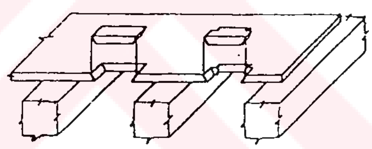


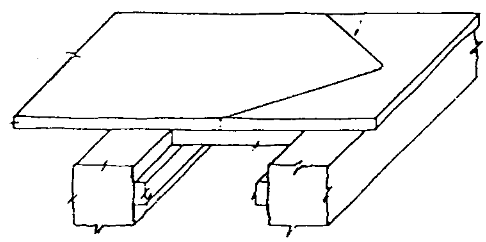
Dovetail splice—ends supported on joists.

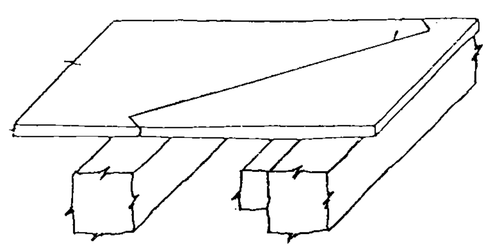
2) Repairing a broken edge
1. Lift board.
2. Choose repair type.
3. Mark joists positions on underside of board.
4. Select seasoned timber of same variety and match grain.
5. Cut out around broken edge of board.
6. Form new section to fit old, glue and clamp in position.
7. Carefully pare down new section to follow undulations of old. Do *not* pare down surface or edges of old board.
8. Treat underside of board, and joists etc., if necessary.
9. Relay board.



Dovetail splice—supported on block screwed to underside of board.







3) Splicing the end of a board at the edge of a floor (both illustrations)

Figure 5.11 Repairing a Split Board, Partial Renewal, Reinforcement of Weakened Floor Boards (Hughes, P., 1988).

Repair of double layered floors is more complicated. The double layered timber floor boards were originally covered with floor tiles which were laid on pressed earth. Today, these floor tiles are usually removed and the existing ones are in a bad condition and need special repair techniques. As this type of floor pavements are not common, maximum effort should be shown to keep the existing floor tiled pavements. The gaps and splits on timber ceiling boards, underneath this double layered boarding, is a problem as there are inhabitable spaces underneath. Such decays on boarding, cause dust and earth (or sand) to fall through the gaps and splits. For strengthening decayed timber members, removal of floor tiles may be necessary. Their removal is always problematic if they are already broken and lost their strength which is a common case observed in the oldest Ankara houses. During removal, most of the floor tiles may break as they become fragile. In such a case they need to be reproduced. After the cleaning, repair and surface treatment of the timber members (both structural and non-structural ones), preferably the original or new isolation materials can be laid down, between the double layered floor girders. There are various materials in the market which can be used for this purpose, although the conservators should find a proper material which will provide: complete isolation, easy application and removal when necessary, ability to bond to the material laid above on which the floor tiles can be set. On top of this isolation material, sand, special tile mortar or special screeds can be laid to replace the reproduced and/or the original sound floor tiles.

Besides these repair techniques, all timber members either infested by fungi or insects or subjected to surface degradation will need special surface treatments by using different preservatives. These techniques are discussed in section 5.5.2. with special references for in-situ applications.

5.3.3. Preventive Measures Against Roof Decay

As it was mentioned in Chapter IV, the roofs of the houses have been subjected to extensive repairs if compared to other sections and, most of the problems arise from the water leakage's through the roof. The roof covering of traditional Ankara houses simply consists of roof tiles and the timber boards underneath. So, if there are missing or broken tiles, splits or decay in the timber roof boards, water ingress is unavoidable which also effects the underlying structure. To stop water penetration, regular maintenance and repair; replacement of missing or broken tiles and roof boards are essential. The use of bitumen or similar roof coverings are not recommended for isolation since they do not allow the alla turca type tiles to be fixed and stop the breathing of timber boards, which may get damp due to condensation (Sell J., undated). Opening some proper sized vent holes at opposite sides will be necessary for the ventilation of the roof if such isolation sheeting was used under the tiles in former interventions. Ventilation of roof spaces will help drying off the roof boards which may get wet by condensation. In very special cases, if the whole covering should be stripped and replaced with another material, corrugated steel or fiber cement sheeting can be used with appropriate techniques (Ministry of Agriculture -USA, Topic No: T/FBS/06). Although most of them are altered with Marsilia type tiles, the original roof covering in Ankara houses is Alla turca type of roof tiles which cannot be fixed to the floor boards and they can slip easily. The use of cement mortar to fix these tiles to the roof boards or to place stone pieces to stop slipping are the common measures taken by the users against this problem. Using cement mortar is not a proper solution, in fact, it causes further decay on the timber boards underneath.

As an alternative to that, wood blocks can be glued to the back of the tile with epoxy resin following an order only in the problematic parts of the roof where the tiles are slipping because of strong winds (Sell J.,undated). The disadvantage of this method, the blocks will be permanently attached to the tile and tile cannot be re-used, however it is better than fixing with cement mortar. The Marsilia type of tiles can be fixed to the roof boards or battens by nonferrous wires and screws. While older Ankara houses have wider eaves which protect the facades against rain, the later ones have narrow eaves measuring about 50-70 cm in width and most of them originally have no gutters. The installation of gutters to all roof eaves is essential, whether they originally exist or not. The form, type and material of the gutters can be designed according to needs considering the roof form and aesthetic choices. The end of the rain pipes reaching the ground should be under control providing to take away the collected water far from the foundations.

The special problems of the chimneys could not be documented in the examples studied in Ankara. Though it is for sure that, the chimneys are more exposed to weathering and to atmospheric pollution and are subjected to combustion products and to condensation more than the other sections of the buildings. If the chimneys are not ventilated adequately, they tend to stay damp and this reduces their insulating quality and promotes further condensation. Hygroscopic salts, resulted from combustion, retain the moisture and furthermore permanent dampness will create an appropriate medium for frost action. All these actions will cause cracking in the brick masonry and decay in the mortar which forms the chimney. These actions, plus the poor detailing in the skirts of the chimneys and deterioration of zinc or lead sheets laid at the skirts, will cause further decay in roof and in the underlying structure (Benson, J, et al, 1980:16-25). The extent of the problems make the chimneys the most problematic sections of the roofs. This was the reason why the original chimneys were removed from the roofs in Ankara houses, when they lost their function, after the use of stoves became popular. Another problem for a conservator architect which should be evaluated in restoration projects is rebuilding the former chimneys which are no longer existing. However, considering the above mentioned problems, suitable details should be developed in order to repair the existing chimneys.

5.4. Preventive Measures for Architectural Elements

As mentioned in chapter III, most of the built-in furniture in Ankara houses, like doors, windows, cupboards, staircases, *sedir*s etc., are made in timber. Condition of these elements are generally good and do not need any repair accept some surface treatment. The relevant methods on surface treatment of timber comprising all types of in-situ surface treatments will be discussed later (in section 5.5.2.). Leaving aside these, the repair techniques of such non-structural timber elements, subject to decay, will be discussed in this section. Depending on the type and the extend of decay, a timber made architectural element may be subjected to three types of intervention, which are *consolidation, partial repair* or *complete alteration.* To decide on the type of intervention, the extend of the problem should be identified clearly.

Common problems seen in the architectural elements in Ankara houses, result from infestation and dampness, which can be observed especially on the external elements like windows and doors. As the interior spaces are kept dry and have a controlled micro climate, timber made architectural elements are in good condition unless they are not subject to a local source of dampness. For this reason, repair techniques of architectural elements are exemplified only on windows and external doors which are more subject to deterioration, whereas these methods can also be used in the repair and consolidation of other non-structural architectural elements.

Mortice and tenon joints are used in timber made architectural elements and these are different from the joints used in the structural system of Ankara houses. The use of heartwood originally in the architectural elements made them more resistant to decay. However, the use of untreated sapwood in the alterations carried for enlargement on windows or doors became popular to reduce the cost of alterations but increased the problems on external joinery. That is why, the existing old external joinery in the traditional houses are still in better condition than the renewed ones.

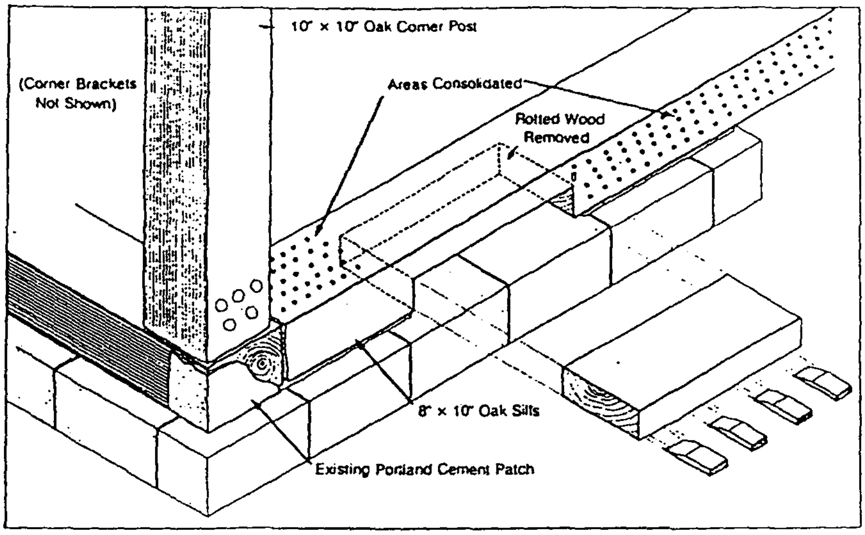
Even if the original external joinery is more resistant to decay, if their surfaces are not well maintained they will of course be subjected to gradual decay. In fact, as it was observed in the studied examples in Ankara houses, the windows and doors are comparatively better maintained, in contrast to the other external timber members. Windows, courtyard or external doors which are preserved by wide eaves, projections or by a shelter are not exposed to direct rain and are in better condition when they are not painted.

However as, not all the external elements can be preserved by such details, they will be exposed to rain and will be subjected to decay. The reason of decay in external joinery or interior elements may be various. Poor design, open joints, exposed end-grain, moisture ingress, breakdown of glazing putties, mastics or corrosion of glazing nails, reduced surface protection due to minor breakdown of existing finish, poor ventilation, etc. can be the reasons for decay.

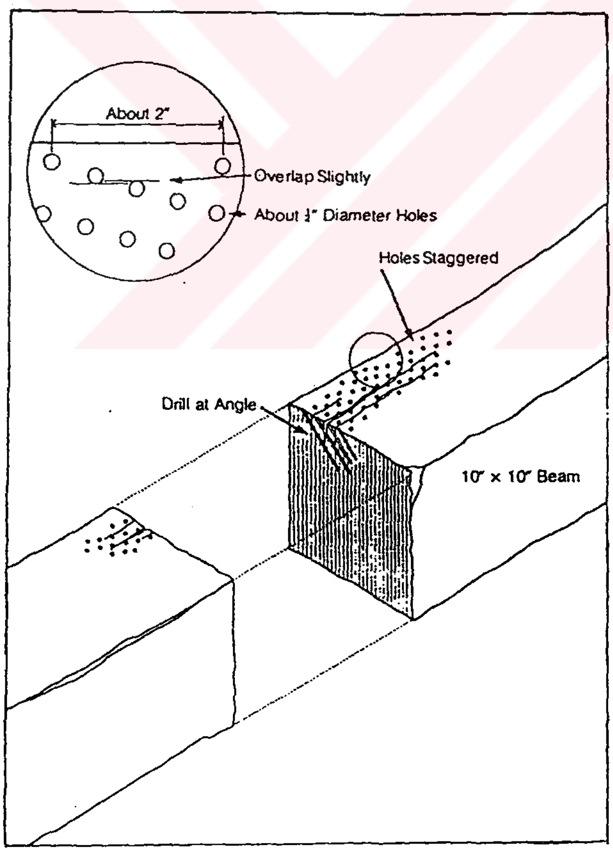
Especially the horizontal surfaces (sills or horizontal frames) and the joints in a door or window joinery are the sections which may easily become susceptible to decay as a result of these reasons. In such cases, renewal of the decayed members or repair of the decayed sections will be necessary. When there is local decay in these elements, where the surface exists but has been softened, consolidation of that section may give an appreciable result. If the decayed portion is big, but still not affecting the structural strength of the member, replacing the decayed section with a substitute material may be necessary. After all, if the member of a window or door has lost its structural strength, renewal of that decayed section with a new timber element that is compatible with the original one may be essential.

In both consolidation or replacement, resins with proper formulations can be used (Carlson, S.M. Schniewind, A.P., 1990, 26-32; Grattan, D.W., Barclay, R.L., 1988: 71-86; Oates, D. W., Rickards, M, 1984; 3-). Colorless, sufficiently strong, flexible, acting as an adhesive to loose parts, not creeping and relatively soft resins with low viscosity may be used to consolidate the softened sections in a timber member (Nakhla, S.M, 1986:38-44; Harris, R., 1977:902). For a proper application, no water repellent preservative should be applied on the timber before consolidation. Otherwise, it will reduce the effectiveness of the epoxy/wood bond.

The main objective in consolidation, is to fill the wood with epoxy by preventing trapping of any air within the material as it may cause a local weakness in the repair. To provide this, holes should be drilled in a way that they expose the end grain, as much as possible, to provide maximum penetration of the consolidant along the grain (Figure 5.12).



1) Repair of timber sill with packing and epoxy (Phillips, M.W., Selwyn, J.E., 1978)



2) Diagram showing pattern of holes in wood for introduction of consolidant (Phillips, M.W., J.E.)

Figure 5.12 Consolidation of Softened Parts in Timber Members

Then, the drilled holes can be filled with a consolidant until each one of them is filled up and no more can be absorbed. To avoid the leakage of consolidant from the cracks, shakes or insect holes; all visible holes, except the drilled ones, should be sealed with a wax prior to application (Colby, R. J., 1985: 76-80).

For both the replacement of decayed sections or filling holes and cracks in timber members, patching compounds which are the epoxy based composite materials can be used (Figure 5.13-14). Commercially, different types of patching compounds are available that are composed of epoxy based binders and fillers like ground slate, sand, wood floor, glass and phenolic resin microballons (Colby, R.J., 1985:80-82).

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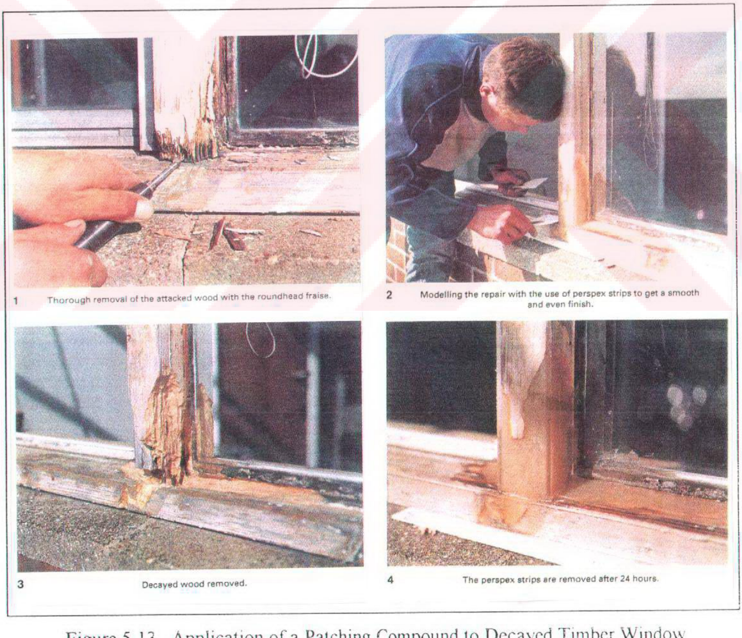


1 Thorough removal of the attacked wood with the roundhead fraise.

2 Modelling the repair with the use of perspex strips to get a smooth and even finish.

3 Decayed wood removed.

4 The perspex strips are removed after 24 hours.

Figure 5.13. Application of a Patching Compound to Decayed Timber Window (Window Care System™)

Figure 5.14. Insertion of a New Timber to Renew a Decayed Section (Window Care System^{TM})

For both the replacement of decayed sections or filling holes and cracks in timber members, patching compounds which are the epoxy based composite materials can be used (Figure 5.13-14). Commercially, different types of patching compounds are available that are composed of epoxy based binders and fillers like ground slate, sand, wood floor, glass and phenolic resin microballons (Colby, R.J., 1985:80-82).

A conservator architect should be careful in choosing the proper patching compounds which must be flexible and must be able to move with the wood substance itself according to the changes in temperature and humidity of the near by air. The effect of heat should also be considered if epoxy based consolidants or patching compounds are used as it gets softer and reduces its strength in case of high temperatures (Colby, R.J., 1985:80-82). Different mixing ratios and application methods can be used in the application of patching compounds which change according to the type and extend of the problem and the properties of the commercially available products. Application methods for patching compounds may differ depending on the type and specifications of the selected product and it is usually defined by the producers, which should be carefully followed. However, prior to an application, removal of the decayed section until reaching the sound wood, cleaning of surfaces from dirt and other dispatches should be carefully carried. After that, a treated new wood and the patching compound or only the patching compound can be inserted in the timber depending on the size of the removed section. The surface of the repair can be treated, to get a smooth and even finish, and after it dries out the surface can be painted. The Figure 5.14. shows application of a commercial method for repair of a decayed timber and insertion of a new timber by using patching compounds.

Apart from the mentioned techniques, if an architectural element is completely deteriorated and needs renewal, for a proper restoration the original design should be copied, if its details are completely known. Though, if the elements are missing, the new design produced according to data taken from the building and the comparative study will be helpful to the conservator architect. In fact, a conservator architect should show the maximum effort to keep the original architectural elements and especially the external joinery in their place. The renewal of these elements is practically not easy because old buildings usually have a certain settlement and small deformations and the architectural elements are also accordingly deformed. To produce new elements suitable to such small and immeasurable deformations will not be easy. However if the renewal is inevitable, the architect should consider the following factors for a proper reproduction of architectural elements:

- selection of suitable designs which limit moisture uptake,
- selection of suitable timbers (TS 1264, 1988/11; TS 5190, 1987/04; TS 6309, 1989/01 can be helpful in this selection),
- application of appropriate preservative treatments and regular maintenance of protective coatings (see section 5.5.2.),
- correct installation and site practice.

5.5. Preservation of Material and Finishing:

5.5.1. Preservation of Stone

As mentioned before, the use of stone is very limited in Ankara houses. Use of rubble stone in foundations or rarely in ground floors is quite common, though in some more elaborate and rich houses the use of cut stone masonry in ground floors can also be seen. For this reason, the surface problems that are the major concern of stone preservation do not form the predominant problems in rubble stone material used in Ankara houses.

On the contrary, as it was referred before, rising damp and the use of incompatible mortars and plasters are the main causes of decay in the stone sections of Ankara houses. The effects of these causes are observed in the form of emptied joints, detachment and fall of plaster and rarely salt deposition on the walls, up to the level where the rising damp can reach. While emptied joints is a common problem observed in 50% of the houses, surface erosion and salt deposition on stone masonry was observed only in a few houses. Because, the skirts of the external walls are more regularly plastered and painted with dark colors as a precaution against rising damp. In the houses where the ground floor is completely built with cut stone and lime mortars (like the houses at İnci st., 14 and Zülüflü st., 18) salt deposition could not be visually observed.

These results once again display that, rising damp is one of the most important problems in Ankara houses and it should be prevented. Alternative and practical measures that can prevent rising damp were introduced in section 5.3.1. thus they will not be repeated in this section.

After the prevention of rising damp, to repair the cut stone masonry walls, it will be necessary to fill the emptied joints and renew the plaster. The common application implemented against this problem in Ankara houses is re-pointing the decayed joints with Portland cement based mortars. Yet, this process accelerates the rate of the decay as this material is rich in salt concentration and is not compatible with the original stone and mortars.

For such renewals, the use of original mortar mixtures, which are commonly earth or lime mortars, which do not contain salt and are less resistant than the stone material itself are recommended (see also section 5.5.4.).

Another problem observed in practice is the use of wrong re-pointing of joints where strong mortars are used and the joints are flush with the surface of the stones. Figure 5.15 below, which was developed by Ashurst, J., (1985) gives a typical life cycle of a joint and a wrong repointing which accelerates the speed of deterioration. The stages numbered 10, 11 and 12 in the figure 5.14, illustrate the correct treatments and recommendations for a lime mortar joint.

TS 2848 (1977), brings the definitions and classifications according to characteristics, sampling and testing methods and commercial presentation of the mortars for masonry. As it accepts only Portland cement as binder in the mixture, it is not a standard appropriate for applications in historic stone masonry walls.

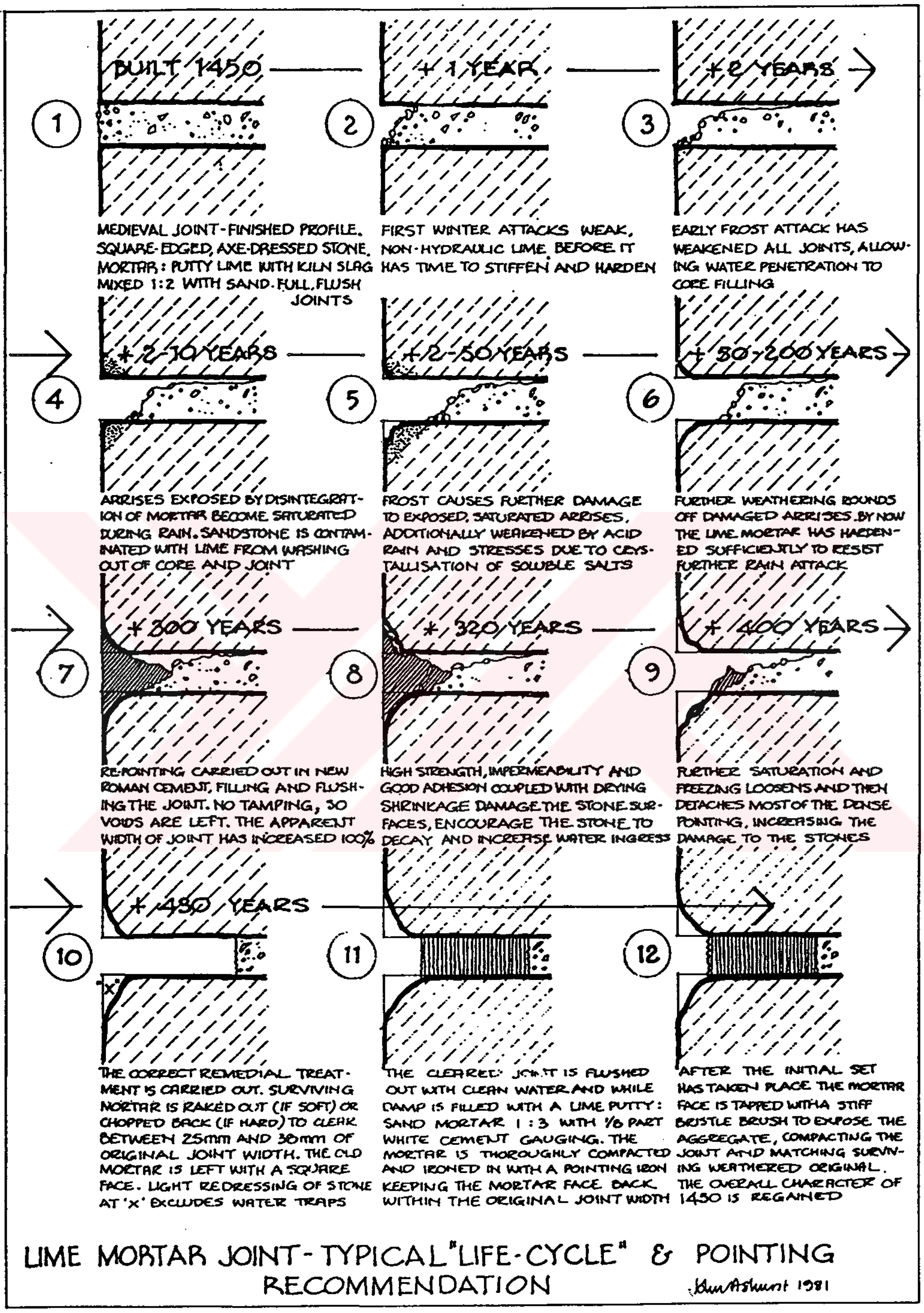


Figure 5.15 Typical Life Cycle of a Mortar Joint (Ashurst, J., 1985).

However, TS 2510 includes the standards for all types of masonry walls and brings the standards for the use of lime as binder in mortars for masonry walls. This standard, defining design and construction methods for masonry, can be helpful to an extend for conservators however it does not give references for the repair of historic masonry walls.

Salt deposition is a problem in Ankara houses but its extent could not be visually recorded and it is hoped that it can be correctly determined by future laboratory researches. Removing salts is necessary prior to any plasterwork repair, because it will increase the service life of replastering or re-pointing works.

As it was mentioned in section 5.3.1., any intervention done to prevent rising damp will change the moisture level existing in the walls which were previously subjected to rising damp. So, after the insertion of a preventive measure, the salts existing in the wall will be carried towards the surface and will deposit on them till the walls are completely dried. If these salts are not removed, they will later cause further damage both on the stone surface and on the renewed plaster. To prevent this, to remove the salts may be required preferably after the complete dry out of the walls.

Different techniques can be used for removing the salts deposited on the walls, however the most practicable one for Ankara houses is wetting the deposited stone surfaces thoroughly and then applying a poultice of wet powdered clay. When the stone subsequently dries, the salts are drawn into the poultice, which is eventually removed (BRED, 1975/177; Ashurst, J. & N., 1989a: 68-72). The operation may take a long time and may need to be repeated depending on the extend of the problem, however it will give satisfactory results to keep the renewed plaster longer. On the other hand, if there is not enough time for desalination, sacrificing the renewed plaster can be a second alternative which will be deteriorated within a year. It can be once more renewed afterwards but of course it will cost more.

If there is a problem especially on the cut stone masonry sections of the houses, like deposition of dirt and stain, which are not observed in the examples studied, cleaning of surfaces may be required. The cleaning work needs pre-investigation to determine its specifications. There are various cleaning methods like water spray, dry or wet precision grit-blasting (mechanical cleaning), wet poultices and jellies (chemical cleaning) which all have some advantages and disadvantages depending on the characteristics of the surface to be applied (Bell, F.G., 1991:133-138; Ashurst, J. & N., 1989a:43-67). In choosing cleaning methods, their short and long term effects on stone and the neighboring materials should be considered carefully (Torraca, G., 1988: 243-70).

5.5.2. Preservation of Timber

Structural repair, partial repair or consolidation of the decayed timber elements are discussed in the former sections with specific references on their use in a timber framed building. Preservation of timber made elements by using chemicals is a pre-requisite for an accurate conservative operation. As building timbers may be subjected to decay by dampness and wood-destroying organisms, different types of preservatives can be used to prevent the effects of these factors. Application methods and use of preservatives, either as a precaution or to prevent further decay, for pre-use and in-situ treatments, differ according to the condition and location of the timber elements.

5.5.2.1. Wood Preservatives

There are various types of substances which are commercially available for pre-treatment of timber or for in-situ operations. Practically an ideal wood preservative should have the following properties: high toxicity against wood destroying organisms, permanency, ability to penetrate deep into the wood, non-corrosive to metals and non-destructive to the wood itself, safe to handle before and during the operation (Bozkurt, Y., Erdin, N., 1988:15-16; Cartwright, K.ST.G, Findlay, W.P.K., 1958:283).

In Turkey, wood preservatives are classified in three main categories; as water borne, tar oil and organic solvent (Bozkurt, Y., Erdin, N., 1988:16). Each of these types has a particular suitability for a given application and an end use. For this reason the selection of the proper type and application method is very important prior to any use (see Table 5.1 below).

Tar oil type of preservatives, in which creosote is the main type, have a limited application for building purposes. The most common one between the water borne type preservatives is the CCA (Copper, Chromium, Arsenic) formulated ones, where each component has a different function. For instance copper is the fungicide, arsenic is insecticide and chromium acts as the fixing agent to give an end product which is clean, safe, non-water soluble and leach resistant, requiring no further protection though if required it can be painted or stained. Common uses of this preservative are the buildings under high risks, however it can also be used in farm buildings, cladding boards, timber above and below the dpc and tiling battens.

Organic solvent based preservatives are suitable for use out of ground contact, above dpc level, because they cannot resist the "soft rot" agents associated with ground contact. They are appropriate for treatment of interior building timbers, structural members and exterior joinery (BS 5268: 1989; BS 5589:1978; BS 1282:1975).

The common characteristics of the three main preservative groups are given in the Table 5.1 below which also includes the proper types for building timbers. However their end use is interchangeable in some situations. A more detailed information on the properties of these main groups and the application methods used for pretreatment of new timber in the wood production and treatment plants in Turkey can be obtained from the following publications of R., İlhan (1988: 136-149) and Y., Göker (1988a:176-184; 1988b: 185-192).

Wood preservatives can be grouped in seven categories as organic solutions, aqueous preparations, pastes, insecticidal smokes, solid plugs, creosote products and surface coatings. Each of them have different properties and application methods which can be chosen according to the type and extent of the damage in timber elements (HSE Guidance Note GS 46,1989).

There are no complete sources on types of preservatives, selection of treatment methods and safety measures in the use of preservatives in Turkish and for that reason the following sources and standards may also be helpful to the reader: BS 5268 (1989); BS 5589 (1978); BS 1282 (1975); for properties of commercially available products especially treatments of roof timbers see also: Forest Product Laboratory, 1989:13-15. Beside them non-toxic treatments for people by using Nitrogen or Carbon dioxide gas are being developed (GCI News letter, 1993). Although impregnation of timber prior to its use (pre-treated) is very important both for long term use of timbers and preservation of natural sources, in Turkey it is not commonly applied in practice yet. The obligatory regulations for pre-treatment of timber are not put in practice properly according to Turkish Standards, which are also not satisfactory for in-situ treatments in historic buildings (Toker, R., 1988: 122-126; Göker, Y., 1988a: 176-184).

The application method of preservatives are various, though it can be classified into two categories depending on its application field as pre-treatment and in-situ treatment. Impregnation of wood and wooden products prior to use is a process which starts from the time when the tree is cut and continues with its treatment with impregnation etc. and goes until to its use for different purposes. Different impregnation methods can be used in this process, depending on the development of relevant industries like immersion, hot and cold bath, vacuum/pressure, double vacuum/low pressure methods. For the condition of the wood impregnation industry in Turkey the article by Y. Göker, (1988a: 177-180) can be consulted.

Table 5.1 Preservative Treatment Characteristics (Carey, J., et al, 1986b:73)

PRESERVATIVE TYPE:	APPLICATION METHOD:	CHARACTERISTICS:	TYPICAL END USES:
Tar Oil e.g. Creosote	Immersion Hot and Cold tank Vacuum/pressure	Resists leaching Strong odor Can stain adjacent materials Treated timber cannot be painted or glued Tendency to "bleed"	Railway sleepers Telegraph poles **Fencing** Marine work
Water Soluble Salts (CCA manufactured to BS 4072- types 1&2) e.g. Hichson TANALITH C Rentokil CELCURE A	Vacuum/pressure	Can be used in any situation Non-staining Odorless Non-tainting Timber often colored green after treatment Increases moisture content of timber immediately after treatment Once treated and dry, can be painted or glued	Carcassing Agricultural and horticultural timbers Marine work Cooling Towers Silage clamps **Fencing stakes and poles** **Tiling battens** **Timber frames** **Sole plates** **Trussed rafters** **Roofing timbers**
Organic Solvent Based (manufactured to BS 5707: Part 1) e.g. Hickson VACSOL Fosroc PROTIM 80 Rentokil CELPRUF PK Cuprinol	Immersion Double vacuum Low pressure	Can only be used out of ground contact and above DPC level Resist leaching Rapid treatment cycle Can be painted or glued shortly after treatment No effect on dimension of timber Can be used for close tolerance work or precision joinery Cannot be used in direct contact with foodstuffs	**Joinery timbers** **Trussed rafters** Carcassing **Doors** **Timber frames** **Roofing Timbers**

However, the timber members in old buildings have not been usually subjected to any protective treatment. In some cases, where there are attack of wood boring insects or fungi, the timber members in that building may need in-situ preventive treatments.

As it was mentioned before if the moisture content of a timber element can be kept below 20%, it will not be subjected any fungal or insect decay. However, in uninhabited spaces like roof spaces or cellars and basements floors, which are not heated and may become damp by rising damp or rain penetration, timber decay may start easily. Prior to any preventive measures identification and elimination of conditions which favor the attack of wood boring organisms is necessary. This may even make preventive treatment unnecessary. However, as this is not easy and cannot be controlled regularly, preventive treatment for timber members will be needed to reduce risks for future decay.

5.5.2.2. Control of Fungi:

If a timber member has suffered from fungal decay, after rectifying the conditions that cause such attack, the type of fungi whether wet rot or dry rot should be identified as they require different treatments (Bravey, A.F., et al, 1987).

If wet rot is identified, effected or structurally unsound timbers should be replaced, and all the infested timbers should be burned immediately. With large members, only the effected sections can be taken out until sound timber is found. If the wet rot is placed only on the surface of a large timber member and if its core is still adequately sound, total replacement may not be necessary. As the wet rot often causes decay merely in the surface, its removal from the surface may reveal a structurally strong core. In both cases cleaning and spraying all infected areas as well as sound timbers with a wood preservative will be needed.

A dry-rot which can survive under seemingly dry conditions can develop also on masonry and under the plaster and it requires more drastic and extensive operations (Bravey, A.F., et al, 1987). To locate and eliminate sources of moisture and to promote rapid drying of the structure are the primary measures to be developed. In order to recognize the extend of the problem and to reveal the growth a full operation like stripping of plaster, removal of ceilings, opening up of floor boards and all adjacent pavements will be necessary. These should cover an area of about 1m around the infected zone. All infected timbers within 300-450 mm beyond the last indications of rot should be cut away. The safety margin may vary according to the condition of the neighboring timbers. Treatment by using some preservatives for the fungus within the masonry walls and all adjacent sound timbers will be required.

Pre-treated timbers should be used for replacing the infected timber elements. In addition to that, some supporting measures can be developed to eradicate further decay such as, installation of heating systems to the building, prevention of dampness leakage etc. (BRE Digest, 1985/299; Rodout, B.V., 1985).

The most practical and convenient method for surface application of fungicide fluid is brushing or coarse spraying for treating masonry walls. Fungicidial renderings, preservatives, plugs, pastes and irrigation through the drilled holes can also be used in treating masonry walls (BRE Digest, 1985/299:4-5). To treat the remaining timbers, a minimum of three coats of application with a proper preservative will be necessary. This will not kill the fungus inside the timber member but it will reduce the temporary risk of infection before the drying process is completed (BRE Digest, 1985/299:6). The use of treated timber in replacements is very important in addition to developing some preventive measures to provide the drying of the structure and to stop water ingress (BRE Digest, 1985/299:6-8).

5.5.2.3. Control of Wood-Boring Insects:

Identification of the insect type causing the damage and the condition, accessibility and the type of wood (like sapwood portions are more susceptible to attack) subjected to infestation are the initial stages to set a proper insecticidal treatment (BRE Digest, 1986/307). The aim of this treatment is to prevent further damage by killing wood-boring insects already within timber and to protect the timbers from further attack. As we mentioned in Chapter IV, not all types of insects are harmful, however the existence of any type of insect is an indication that the timbers in that building are capable to attack (Bravey, A.F., et al, 1987; BRE Digest, 1986/307). Above mentioned precautions, proposed against fungi infestation will also be required against insect attack.

However, timing of the treatment is important when insect attack is identified in a building. Because the insects are more harmful at larval stage which lasts longer (1 to 5 years) and they cause more damage to timber during this period. As larvae grow deep within the wood, they are not easily reached by insecticides applied to the surface. For this reason, only the young larvae which come out on the wood surface, the eggs laid on the wood and the adult beetles will be effected from the surface application. Nevertheless, these stages take only a short time in the life cycle of a beetle and occur generally during spring or summertime. This reproduction period varies depending on the type of the insects and can be determined accordingly (Bravey, A.F., et al, 1987).

So, the best timing for an effective preventive treatment will be the period when the beetles emerge and reproduce. As the surface treatment will effect only the areas near to the surface and the surface itself will be affected only for a few weeks, annual operations will be needed to prevent further decay completely (BRE Digest, 1987/327). Detailed research for identification of infestation will be necessary to understand the extend of the problem for whether there is a localized or total infestation resulted from an earlier or present dampness. Beside that, the identification of the species is also important to select the appropriate treatments (see Figure 5.16).

Cleaning of all infested area, cutting out and removing unsound timbers will be needed prior to any in-situ chemical treatment to allow direct access to the timber (BRE Digest, 1987/327). Pre-treated timbers should be selected in replacements however, if the repair techniques necessitate the use of untreated timbers (i.e. using epoxy resins, see section 5.3.2; 5.4), the new sections can also be treated later.

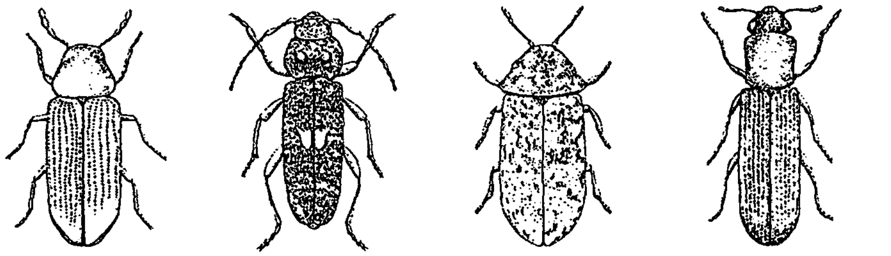
Organic solvent based or emulsion based liquids which can be chosen according to types of infestation can be applied by spray or brush on the surface of the timber allowing maximum penetration. Beside them the application of mayonnaise pastes to the surface, dichlorvos vapor, gas fumigation, smoke treatments and heat sterilization are the other methods that all have some advantages and disadvantages which can be also be used, depending on type and extend of infestation (BRE Digest, 1987/327: 3-6).

5.5.2.4. Surface Treatment and External Joinery:

As it was mentioned above, the treatment of timber by using some chemicals is a complementary operation for its preservation. However, wood preservatives are not usually designed or expected to serve as exterior finishes with the exception of tar oil based preservatives. Primary function of the preservatives is to penetrate and form a retained skin on and immediately underneath the outer surface of timber, to protect it against stain, decay, mould growth and insect attack. On the other hand surface coatings, such as paints and varnishes, are not able to give this protection to the timber alone. For this reason, timbers susceptible to attack, should be treated prior to any surface coating application (TRADA, 1984).

Surface coatings which are protective paints based on organic solvents are designed to give some protection and good appearance to the timber made elements. They can only be preferred for the external timbers which are directly subject to rain penetration and discoloration by the effect of sun light. It is a better policy to leave the original timber surfaces unpainted to preserve the original color and the texture.

As it was mentioned in Chapter IV, the condition of the original external joinery is comparatively better in Ankara houses. The likely reason of this, is the use of heartwood originally in external joinery. For the reason that the renewed or new external joinery are not usually manufactured from the qualified timbers (usually sapwood) and their conditions are not as good as the original ones. Both the original and new timbers are probably not pre-treated. Eventhough almost all the examples studied in Ankara have oil painted external joinery, the condition of the paints are generally quite poor due to neglect in maintenance. In any case oil painting should be avoided both for external and internal timber work.



	Common furniture beetle	House longhorn beetle	Death watch beetle	Lyctus powderpost beetle
Liquid (spray/injection)				
Organic solvent	Yes	Yes, on lightly damaged timbers	Yes; use irrigation or injection on large impermeable timbers	Yes, where sapwood is accessible
Emulsion	Yes, except for very large, active infestations where there is a risk of structural damage	No	No	No
Mayonnaise paste	Yes, though extra cost is rarely justified	Yes, on lightly damaged timbers	Yes, particularly on large impermeable timbers	Yes, where sapwood is accessible, though extra cost is rarely justified
Smoke	Yes, useful DIY treatment where finances are limited (use May-August)	No	Yes, for low but widespread attack where there is no risk of structural damage (use March-June)	No
Dichlorvos strip	Yes, particularly small infestations in roof spaces with low ventilation rates (use May-August)	No	No	No
Notes	Structural survey normally not necessary	Structural survey essential	Structural survey essential	Disposal of damaged timber may be cheaper. Kiln sterilisation or gas fumigation possible for moveable items

Figure 5.16 Summary of Appropriate Treatments for Specific Insects Commonly Found in UK (BRE Digest, 1987/327:8).

Paint failure on external timber and joinery usually starts at the ends of the bottom members where water can enter through the unprotected end grain by way of the opened joint. The failure may result from various reasons, like poor design, poor quality of paint and/or application etc. In any case, a paint failure observed in the external timber and especially in joinery, together with deteriorated wood, indicates a moisture problem. Prior to any surface treatment, identification and elimination of the source of the problem and the moisture will be necessary. On the other hand if the surface coating is applied to damp or infected wood it will actually increase the risk of decay by retarding the timber to dry out. After the eradication of the source of the problem and repair or consolidation and treatment of the decayed timber, its surface should be cleaned and prepared for the paints or varnishes. The best timing for painting work is autumn or summer seasons when the moisture content of the wood reaches its lowest level and this provides a long lasting and appropriate application.

When selecting surface coatings, to obtain a good application schedule from a reputable manufacturer, to follow his recommendations may give satisfactory results. The expectations from a proper surface coating are permeability, durability, ability to adhere, deep penetration, elasticity. The coating should be permeable and be able to keep the moisture content of the wood in an acceptable range (below 20%) where there is no danger of rot developing and should limit the amount of moisture movement. Because, too much and especially rapid moisture movement (alternate swelling and shrinkage) may cause warping, detachment of the paint film and opening of the joists through which water may penetrate to timber (BRE Digest, 1985/304; Kleive, K., 1984: 51-54). If impermeable coatings -like oil paints- are chosen, they will stop the evaporation completely which may increase the speed of decay in case of water penetration through a local source (Lyall, S., 1984: 44). Elasticity of the coating is also important. If the paints loose their elasticity at different temperatures and cannot move with the timber according to thermal changes, warping and detachment may occur on the paint (HSE, GS 46, 1989; BRE Tech. Note, No:24, 1979; see for an inappropriate paint application Park, S.C., 1986).

Paints and varnishes can also be used on interior timber elements like cupboards, doors, ceilings, etc. If provided that, the wood is sound and dry when it is painted, and the paint film is regularly maintained, it will remain sound for a long time. Floor boards which become dirty in use will also require some treatment. Furthermore abrasion and wear of the surface will also be rapid if the surface is left untreated. Unless the patina of the floor boards has no special value, they can be treated with suitable unburnished waxes or floor polishes.

5.5.3. Preservation of Mud Brick, Brick and Tiles

It was mentioned that, while mud brick is used both in the masonry sections above the stone plinths and as infill material in the timber framed sections, brick is used only as infill material in Ankara houses. The typical problems observed on these materials and their sources were discussed in section 4.4.3.3. (mud brick and brick) with reference to examples studied.

Decay of mud brick material is a drastic problem observed in 70% of the examples studied which basically results from lack of plaster. Because, the mud plaster which is susceptible to rain penetration may deteriorate easily. When the exterior plaster falls, erosion of mortar and surface degradation of mud brick walls may start easily. So, rain penetration or rainwash of the surfaces is the most important problem which causes disintegration of mud brick used both in the masonry or in the timber framed sections if their surfaces are not well protected and regularly maintained.

Loss of plaster and mortar in the mud brick infill, used in the timber framed sections causes disintegration and the fall of infill material in timber framed panels. Rising damp may also cause surface disintegration or decay in mortar joints of the mud brick material in masonry sections above the stone plinth, though its effect is more limited unless the mud brick units have a direct contact with soil.

Beside lack of regular maintenance, some renewals in plasterwork also cause deterioration of the mud brick material especially if cement based plasters are used in repairs. In such cases, as the new mixtures are not compatible with the original plaster and are stronger than the mud brick itself, they create problems for the mud brick walls.

The Portland cement based plasters are strong mixtures which stop evaporation of the mud brick units beneath the plaster, by setting up an impermeable dam effect that causes damage in mud brick. The wet zone between the plaster and the wall surface causes detachment of plaster and its fall in the form of big plate layers.

Insertion of new materials in place of the decayed mud brick sections (i.e. brick) may also create further problems since each material behaves differently in certain moisture and thermal changes as they change the homogeneity of the walls. The breaking in the homogeneity of the wall may cause local damages depending on the properties of the new material.

As it can be seen, the major problems observed in mud brick walls is always related with a problem of dampness. So, if mud brick walls or infills can be protected against the different forms of water (rain penetration, rising damp and or condensation) their preservation can be provided. For this reason, proper plastering of the external surfaces of the mud brick walls and their regular maintenance has primary importance.

At this stage, the choice of the proper mortar and plaster mixtures is very important. As there are no references and test results giving the properties of original mixtures yet, here it is not possible to give recipe's for proper mixtures. However in principle, the use of original mixtures can be recommended that will give the best result for repairs of mortars and for the renewal of plasters (see the next section).

If there is partial decay at a section of mud brick masonry or infill panels, the use of reproduced mud brick units is also recommended for replacement. In fact, a need for renewal of mud bricks in the masonry section will not be a problem for Ankara houses because apart from the surface disintegration the condition of the mud brick masonry sections is quite satisfactory. A need for the renewal of an external row of mud bricks in a masonry wall can be seen usually in the archeological sites, if the masonry walls have no roof structure or shelter on top. For such special cases, the methods proposed by J. Ashurst can be used (1989b:103).

However for Ankara houses, as such extensive problems are not seen, surface repair will be enough for the masonry sections. On the other hand, in some cases, if complete renewal of infill materials become inevitable, the new materials can be used in place of mud brick which was detailed before in section 5.3.2.3. If reproduction of the mud brick units is necessary for repair, the conservator will need to know the properties of the original mud brick mixture. Because, the performance of mud brick is directly related with the characteristics of its constituents which are sand, silt, clay and some organic materials (Torraca, G., 1982: 95-105).

However, properties of these raw materials and mud brick mixtures, produced by them, show great variety according to local features. An earlier study, done by Balaban in 1955 (1964:3), on the properties of mud brick used in Anatolia, shows that the sand ratio (particle size is over 0.074 mm) in the mixture varies between 22% to 86% and the ones with a sand ratio between 40 to 60% were found as the appropriate mixtures. As it can be understood from the table below, the ratios identified and found proper by each specialist for different cases show varieties (see Table 5.2 below).

Table 5.2 Mud Brick Mixtures

SAND	SILT & CLAY	SOURCE & PLACE
75-80%	20-25%	Balaban for Anatolia; (1964:3)
70-80%	12-15%	Clifton & Brown for US, (1978:140-)
50-85% (sand & gravel)	5-15% (only clay)	Ashurst, for UK, (1989b: 91)

These results show that, the mixture may have different quantities of raw materials but they may all be proper for an appropriate mud brick production, depending on the local conditions and their use. Likewise depending on the percentages of the raw materials in the mixture, the particle size distribution, etc., the manufacture and construction processes of the mud bricks have an influence on the properties of the material which may also change from one building to another. Hence, prior to ,taking any decision for conservation, determination of the physical properties of the mud brick mixture is important, which can be done by some laboratory analysis to identify the constituents and particle sizes in a mixture (Altındağ Belediyesi, 1987; Teutonico, J.M., 1988:73- 112; Ashurst, J. & N., 1989b: 43, 95)[5].

As, until now such analysis are not done on the mud bricks used in Ankara houses, it is not possible to give a recipe for the conservators which can be used for reproduction. Though, in principle, the use of the original mixtures is recommended, and this can be determined by the support of a conservation laboratory.

TS 2515 (1985) and the other standards referred in it (TS 2514/1985; TS 2514/1985) define the standards for adobe buildings, their construction methods, proper mud brick mixtures and earth based mortars which are commonly built especially in rural areas in Anatolia. This standard which is applicable only for single storey high mud brick masonry buildings aims to protect these buildings against earthquakes and floods. However, it can be adapted as a guide by the conservators, to bring proper solutions to their design for the repair of the mud brick sections of half timber houses. Burned brick products are commonly used in infill panels and floor boards in Ankara houses. Other uses, like in chimneys, fireplaces, hearts, drainage system could not be documented in the examples studied. As a result, related problems for such uses are not included in this study.

The common problems seen in brick infill panels are the disintegration and displacement of brick units and panels as a whole from the timber frame because of bulging and fractures in brickwork. Fractures may result from deformation or failure in timber lintels or tie beams or alterations and additions in timber frame. On the other hand, bulging of bricks may result from similar alterations in loading on the timber frame and occurs due to lack of bond between the bricks and joints at wall junctions (Ashurst, J. & N., 1989b: 56).

Apart from the changes in the timber frames, water penetration may cause bulging of the brick units by causing erosion and missing of lime mortars used in brickwork. Different thermal changes, between timber and jointing mortars, effects the strength of the lime mortars, which is weaker than the neighboring materials, and this results in the movement of the brick units. If the process is continuously repeated that may cause disintegration of the infill panel as a whole. The precautions that can be taken to prevent this damage were discussed in section 53.2.3. above.

A secondary problem, which is rarely detected by visual observations is surface degradation of the brick units like other porous materials, brick is also effected from weathering mechanisms like dampness, soluble salts and atmospheric pollution. The performance of brick is naturally related with its manufacturing process and when a single brick unit is deteriorated apart from the other sound units, it can be thought that the peculiar defects in that element may result from the manufacturing process. As the brick units used in Ankara houses show variety in production and size, they were also subjected to alterations and reuse. For that reason, to define the problems resulted from the manufacturing process may be very difficult and may not have primary importance.

On the other hand, the use of some chemicals for protection or some incompatible materials, like Portland cement based mixtures as mortar or as plaster, may cause such individual problems on the surface of the brick material. The salts contaminated in the neighboring cement based mixtures may be transferred, by water, to the brick material itself and crystallize inside the larger pores of the brickwork and further cause surface degradation. Surface coating chemicals, used to prevent water penetration, may also create flaking on the surfaces, as they stop evaporation of water inside the materials.

So the use of incompatible materials in the joints or on the surface should be prohibited in order not to cause any surface degradation of the brickwork. The use of original lime mortars will give the best result by regular maintenance for the preservation of brick material.

5.5.4. Preservation of Mortars and Plasters

Earth and lime mortars are the original types of mortars used in Ankara houses beside the Portland cement based ones which are practiced in later repairs and renewals. In almost each

wall section of the examples studied, mortar deterioration is quite common like, mortar deterioration resulting from dampness in the stone plinth or in the mud brick masonry washed by rain, and in the infill panels resulting both from thermal changes and rain wash.
Mortar deterioration in the stone plinth can be controlled by the prevention of rising damp which was pointed out in section 5.3.1. above. The loss of mortar becomes a common problem in Ankara houses, as earth mortar, used in the stone plinths, has low resistance to dampness. Besides, taking some preventive measures against rising damp, repair of the decayed mortar joints with lime mortar will be needed for an entire intervention. As the lime mortar is more resistant than the earth mortar, it will give better results and may be preferred in re-pointing the stone masonry sections. However, the depth of re-pointing should not be less than 25 mm and the new mortar should not be stronger than the older one, to provide the evaporation of the mortar inside the wall. Repointing work should be done after the measures taken to prevent rising damp in order to allow the walls to drying out as much as possible. If salt deposition is observed on wall surfaces it should be cleaned and the decayed mortar joints should be taken out until the sound mortar inside the joint is reached. Following these, repointing can be done by using the original or compatible mixtures which are determined by laboratory analysis (for evaluation of mortar deterioration see Erlin, B., Hime, W.G., 1987 and for methods of mortar analysis see Teutonico, J.M., 1988: 113-116).

The joints in the rubble stone walls should not be pointed flush with the face or proud of the face of the stone work. In pointing cut stone walls, the joints should not be repointed proud of the joint. The appropriate forms for re-pointing which are applicable for cut or rubble stone masonry are given in the figure below.

Repointing of mud brick walls or infills should be done with the original earth mortar and it must be weaker than the mud brick mixture itself. Original lime mortars can again be used in the repairs of brick infill panels by following the re-pointing forms described above, for stone masonry (English Heritage Leaflet, 1994).

In each repair, analysis of the original mortar mixtures will be necessary as there are no researches for Ankara houses. The recommendations developed for other historic buildings may not be appropriate for the repairs because each case represents different characteristics depending on local features. So, the conservator should ask help from a conservation laboratory for the analysis of the original mortars as this will be necessary for reproduction (see the reference for sampling and mortar analysis, Teutonico, J.M, 1988:113-122, 127-136).

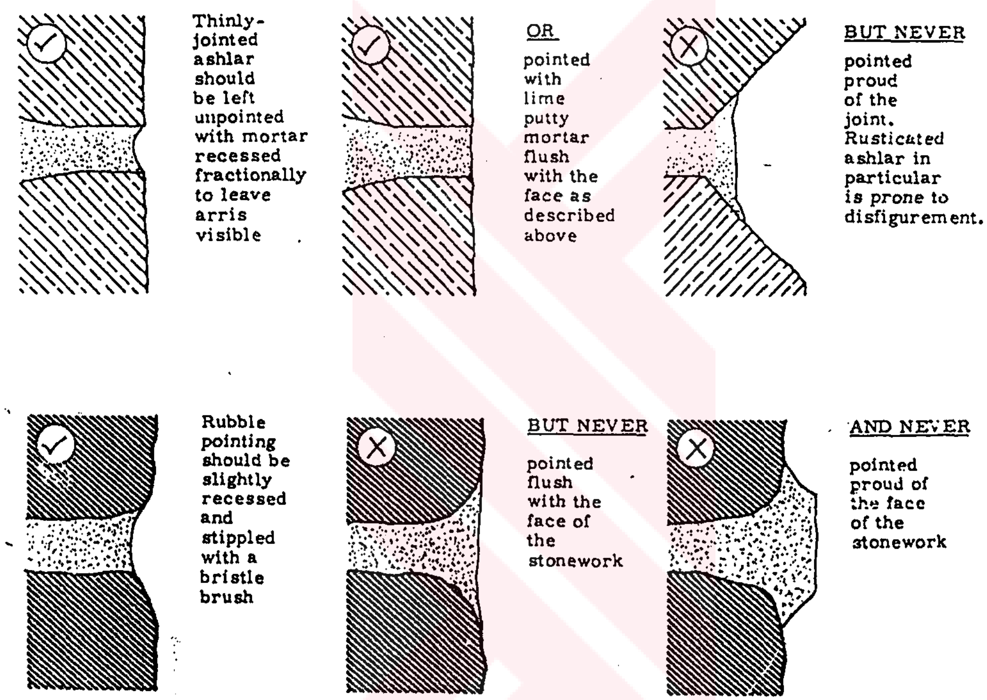


Figure 5.17 Mortar Joints for Rubble and Cut Stone Masonry (Davey, A., et al., 1978: 83).

The use of cement based mortar mixtures together with original mixtures should be strictly avoided. Their effects to the neighboring materials are pointed out with reference to each material. So their use is not recommended in any repair adjacent to the original materials.

As we continuously repeated with reference to each material and the structure as a whole, almost all the problems are directly related to the condition of the external plaster. If all the mortar joints can be protected and well maintained, and the plaster is continuously repaired, the preservation of the structure can be provided by preventing water penetration from the exterior surfaces.

As referred earlier, almost in 50% of the examples studied the condition of the exterior plaster is fairly bad. In the good ones the use of Portland cement plasters are common, whose drastic effects were discussed before. As the eaves are not wide enough, they are not able to prevent rainwash and because there are no gutters at the edges of the eaves the defects of rain becomes more serious for external plaster. So, the simplest recommendation to prevent the effect of rain is installation of gutters and replastering and maintaining the external renders.

Because the external plasters are extensively deteriorated and the final coating of the plasters do not usually exist, the last coating of the gypsum or lime plasters could not be documented in most of the houses. For the conservators, the lack of the final plaster layer may be a question for whether the building was originally plastered with lime or gypsum plaster. However in any case, to use gypsum or lime plasters as a final coat can give the best result for timber framed houses is recommended to protect the external facades. The standard defined for external rendering in TS 1481 (1988) and for the internal plasters in TS 1262 (1988) give the standards and application methods for plasters. Some of the mixtures proposed in this standards show similarities with the traditional plasters.

Mud plaster used in Ankara houses shows similar characteristics with earth mortar but the proportions of the aggregates and the ratio of lime differs (see section 3.5.4.4., Table 3.7). Two coats of mud plaster was commonly observed in the examples studied. The inner one is rough and includes bigger pieces of straw, while the upper coat includes finer aggregates and comprises hair or very fine straw pieces. Gypsum plaster or limewash is used on top of the plaster in various colors, especially for the interiors.

Both the exterior and interior plasters should be repaired and regularly maintained by using original plasters and lime wash. Lime plasters or gypsum plasters are recommended as these materials provide breathing to the walls (Hughes, P., 1987). The use of Portland cement based plasters which create serious problems for the original materials because they are stronger, less permeable and rich in salt concentration should be strictly avoided.

5.6. Rehabilitation of Service Spaces

As it was discussed in section 4.6., the condition of the service spaces is extremely bad in the examples studied. In most of them even the service space itself (kitchen or bathroom) does not exist. In others, where there are service spaces as spatial units, the standards are quite low. The ones which are used by the owners have better conditions but, the architectural details and the materials used are not appropriate for timber framed structures, and they may cause damage on the original materials in the future.

Most of these problems result from the alteration of traditional uses in the houses which are divided now to serve more dwelling units. This demand is not contradictory with the preservation of these houses subjected to rehabilitation, unless the division of the houses do not change the original spatial characteristics. This problem can be solved during the restoration process, by the preparation of a requirement program which is appropriate to the size of the building and points out the number of dwelling units that can be placed inside. To bring standard sizes for the dwelling units (like 2 or 3 room + a living room + kitchen, etc.) is not possible and also not aimed in the restoration of these houses. In place of that, to produce new dwelling units which can serve to different groups (like a family, a couple, a single, a student, a group of workers, a group of students etc.) is preferable, which also represents the actual uses and demand in these houses. Such alternate uses is more appropriate for these houses, which do not require a standard size or spatial arrangement. The new program which is proper to the spatial and structural characteristics of the house and satisfying the demands of the owners can be developed and adapted by the conservator. So, to divide the houses for different dwelling units is a part of the design process and standard proposals cannot be produced for them. For this stage, only the principles defined in section 5.2. can be recommended to the conservator for the rehabilitation of timber framed houses. However, for the technical problems, which were once more stressed above, some alternatives can be presented, which are commonly used in the installation of service spaces to timber framed houses. Apart from the size and the form of the service spaces, these technical details can be adapted to different types of wet spaces which are both expedient to these structures and satisfy the contemporary standards.

The most important problem observed in the service spaces is the covering of floor boards with Portland cement based screed. Depending on the economic conditions, this pavement may be covered with ceramic floor tiles. The latter is more common in the houses where the owners live and the walls of these service spaces are also covered with ceramic tiles. In such cases, the service space looks quite satisfactory and provides the modern standards for the user. However, the water used during the construction of the screed or leakage resulting from the cracks between the ceramic tiles create dampness problem for the timber boards and for the other structural elements underneath. This problem cannot be noticed from the service space but the damage can be detected by surveying the spaces underneath. As it was mentioned before with reference to materials used in these houses, the use of Portland cement mixtures can be very harmful for the neighboring materials by creating a source of soluble salts. Furthermore, water penetrating through the cracks carries these salts to the dry sections, in the neighboring materials. If the water can find a path to travel and evaporate, these salts are carried up to that section by water and crystallize there. On the other hand, water penetrating through the cracks which makes the timber floor boards and girders wet creates a suitable media for the growth of wood rotting organisms.

For this reason, in the installation of service spaces which are located on top of the timber floors isolation is extremely important. If a service space should be placed on a timber floor, complete isolation of the whole service space will be necessary to prohibit water penetration to the structure. Correspondingly, if the design of the floor pavement can also provide the evaporation of water inside the neighboring original timbers, this will prevent the decay of the timber elements even though they may get accidentally wet by water.

Figure 5.18 below illustrates few alternatives which are used in the installation of service spaces in different applications. Each alternative has advantages and disadvantages depending on application, cost and durability.

In the first alternative (fig. 5.18., A) the pavement mortar placed with a thickness about 6 mm (i.e. Lazemotlex™) when it is wet and reaches to an elastic consistency. The ceramic tiles are set into the mortar when it is still wet. If the ceramic floor tiles are too thin, the entry of mortar to the joints should be avoided by good workmanship. They should be left to dry out for 1 or 2 days, afterwards the pointing of the tile joints can be filled with the proper ceramic mortar. This alternative will provide a thinner covering which can be completed below the original threshold of the door. It is light and does not bring too much load to the structure carrying it. This application does not require a long time. However, it has disadvantages like, it necessitates a perfect workmanship and if the timber girders underneath move cracks may occur in the pavement mortar.

In the second alternative (Figure 5.18, B) which is a modest technique, the cement based screed pavement is leveled on top of the isolation sheet. The screed pavement provides a strong base for the ceramic floor tiles. However, it brings extra loads and the threshold height increases. The thickness of the screed layer should be a minimum of 40 mm and the floor tiles should be paved with 2% slope.

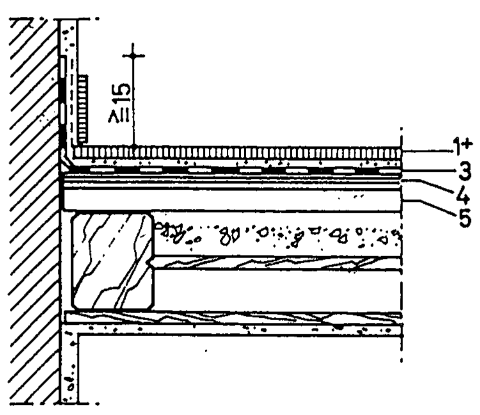
In the third alternative (Figure 5.18, C) which follows the same procedure of the latter application, in place of ceramic tiles a fine finishing (like a chlorine based polish, mineral pigments or fine mosaic) can be applied. It has a lower cost, but the fine polish creates a slippery surface which may be dangerous for the users (Bausteine Zur Selbsthilfe, Badeinbau, IBB, Erns & John, 1985: 70-71).

In three of the above presented alternatives, the choice of the isolation material is very important. It should be elastic enough and strong. It should be applicable as a single layer without any joint and it should preferably be a reversible material which can be removed, when there is a need, without any damage to timber floor boards and girders (i.e. like the polyurethane based foams applied by spraying).

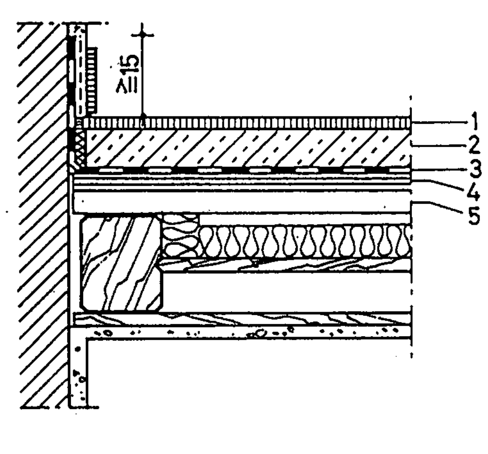
In the fourth alternative (Figure 5.18, D) which was used in the restoration of timber houses in Amsterdam, corrugated stainless steel sheets are used on top of the floor girders which have grooves laid perpendicular to the timber girders. Screed is placed on top and ceramic floor tiles and the washbasin can be placed on these. The grooved steel sheets provide air flow between the girders and the sheet itself, and they also work as isolator. In this detail the upper facades of the girders are not completely covered and if they get wet they have the possibly to dry out more easily.

The first three alternatives can be applicable in Turkey, as the materials used in them are available. However, the fourth one necessitates special production, as grooved corrugated stainless steel sheets are not commercially available in Turkey yet.

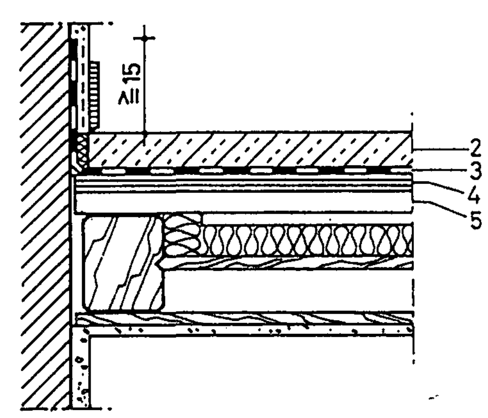
In the coverings on the walls of the service spaces, the first detail can be used or alternatively gypsum wall boards especially produced for wet spaces can be used. In both alternatives, the ceiling of the spaces should not be ignored. They may not be in direct contact with the water, but especially in bathrooms, condensation may increase the same problem for the ceilings also. If suspended ceilings are not applicable with a proper ventilation system, the bathrooms should be regularly ventilated by natural ways. Beside that, even when all the precautions are taken, keeping the floor pavement as dry as possible will be the responsibility of the user in order not to cause any leakage through the pavement.



A) Ceramic mortar and ceramic tiles on top



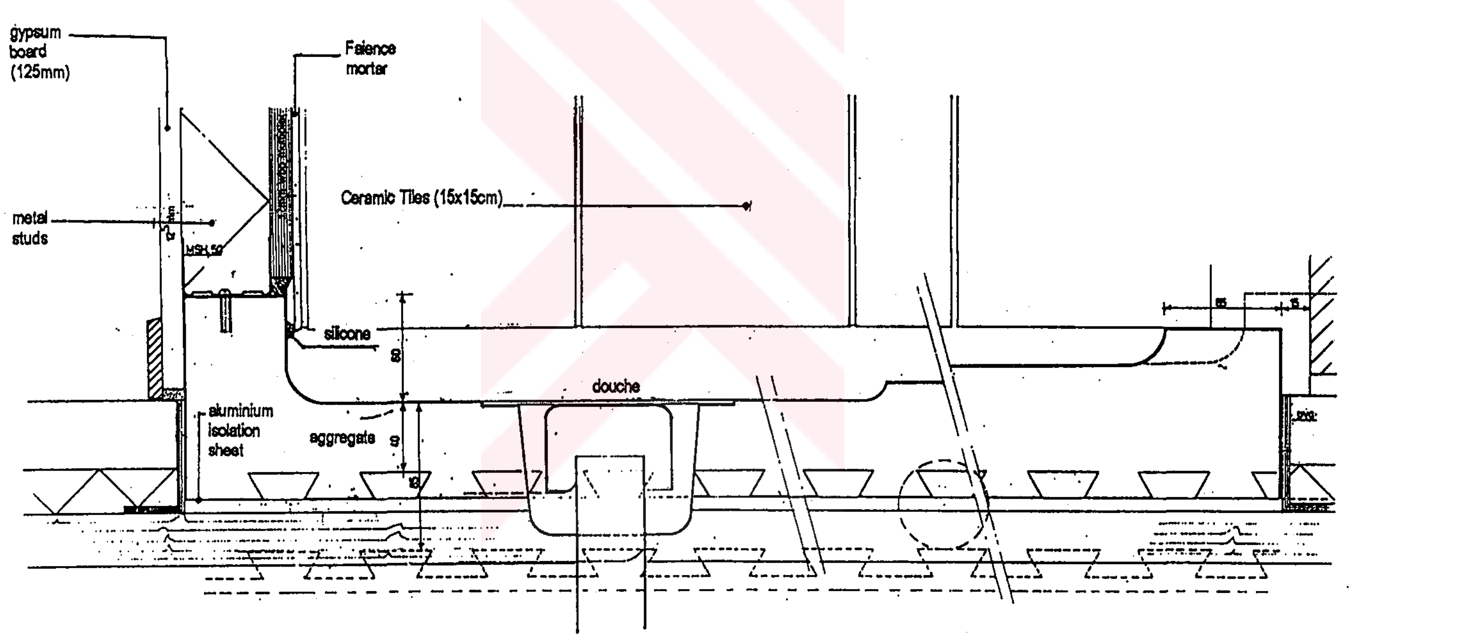
B) Leveling screed and ceramic tiles on top



C) Leveling screed without ceramic tiles

LEGEND for A, B, C

1) Ceramic tiles
1+) Ceramic mortar (ready-made product, e.g. Laxemoflex) and ceramic tiles on top
2) Leveling screed
3) Isolation sheet (2-5mm)
4) Plywood (24mm)
5) Timber girders; perpendicular to the original floor girders to allow ventilation of the space underneath the plywood covering (24mm)



D) Aluminium isolation sheet, screed and ceramic tiles on top

Figure 5.18 Some Alternatives for Installation of a Service Space on Timber Floor Girders (Ref: A, B, C: Bausteine Zur Selbsthilfe, Badeinbau, IBB, Erns & John, 1985: 70-71; D: J. Van Stight's Architect Office, Stichting Begijnhof-Andrieshof Amsterdam, 1985).

The ceramic closets should be used in all WC's and bathrooms which are less risky than the alla turca type toilet stones. In fact this choice is a common habit, however in alla turca type toilet stones, to control water flow is not easy and if any damage occurs in the pavement they will increase the risk for the timber elements underneath.

The above mentioned floor pavements can be used in bathrooms, "*gusulhane's*" and in WC's. However, as the floors of the kitchens do not get wet, like the other service spaces, the original timber floor boards can also be used with care. When necessary they can be cleaned by brush, soap and warm water.

The use of linoleum, above the timber floor boards, is a common habit especially in the kitchens. However this is not a good method because if there is a water leakage or the timbers underneath the linoleum get wet they cannot dry out easily. This may cause the growth of fungi underneath the linoleum. Similarly, the use of linoleum, all PVC based coverings in the wet spaces is not recommended. Because, sooner or later water penetration may occur through the joints as they are not usually well fixed (such as at the junctions where the water closet is fixed to the ground).

The installation of the water pipes and electricity fittings is very important in a historic house. The water pipes should be isolated properly against frost and the finest fittings should be preferred. They should be fixed to each other with great care and good workmanship in order not to cause any water leakage. During the installation of the water or electricity supplies, any damage especially to the structural members and the architectural elements which have great value in the house, should be avoided. However, installations should be arranged in an order so that they can be easily reached, removed and replaced without giving any damage to the original features (for examples see: Kay, G. N., 1989:5-7).

Central heating systems can be installed to historic houses considering the above mentioned criteria on the installation of water pipes. Homogeneous heating which will be more convenient for the building can be provided. Creating wet and dry zones in the buildings (basements, storage etc.) may cause local problems in the cold areas inside the house. Heating from the floors is not recommended for timber framed houses since they may necessitate cutting of structural girders and removing of all floor boards. Besides, there may cause extra problems when there is a leakage under the floor boards, because they are not easily reachable.

NOTES

(1) There are many examples of housing rehabilitation programs applied in Europe. Some of them which consider the users as apart of these programs are the successful ones. Kreuzberg experience of IBA, Govan-Glasgow experience of ASSIST can be given as the examples of such programs. The discussion on the organization scheme of the housing rehabilitation programs and the definition of priorities related with social groups living in these houses are not the subject of this study. But the reader can find some examples of such programs in the following sources: Şahin, N., Mimarlık, Berlin- Ulus; Johnson, J., 1979:49-58, and Benson, J., et al., 1980:92-120, for ASSIST and for other housing rehabilitation projects Benson, J., et al.,1980:121-158; Dobby, A., 1978; for England see: Burrows, G.S., 1968; Brett, L., 1968; Donald, I. & Associates;for different case studies from other countries see also Markus, T., 1979; Alomar, S., 1978; Harlen, M., 1967; De'Carlo, G., 1966.

(2) In Turkey, in academic programs in architecture departments giving a bachelor degree, the courses on conservation are usually elective ones and are far from to giving a methodology to the students for how to approach to a historic building or an object. Master programs in Restoration are limited to some universities like, METU, İTU, Yıldız Un., etc. About the problems in conservation education see the sources below: Üstünkök. O., 1977; Özdural, A., Üstünkök, O., 1972; Erder, C., 1977: 63-81, 1971: 1-8, 1967: 51-61.

(3) There are some standards for the preparation of a restoration project for a historic building owned by the Ministry of Culture. These standards are applied only for a limited number of buildings and they can naturally be criticized. Though, the experience of this application can be used in the definition of some standards for the preparation of restoration projects and the process.

(4) The ATAK group established in the body of the Ankara Great City Municipality, Directory of Development could be accepted as an example of this formation as the group is usually formed of conservators who were skilled in this field. But, it is known that their responsibilities and authorities are quite limited.

(5) Soil particles are usually classified as gravel (above 2 mm), sand (20 microns-2mm), silt (2 microns-20 microns) or clay (below 2 microns) according to their size. Furthermore the percentage of the total sample passing through standard sieves can give the ratio of coarse sand (1.18 mm sieve), medium sand (600 micron sieve), fine sand (300 micron sieve) in the mixture according to sieve method (BS 1975/1377).

CHAPTER VI

CONCLUSION

This study is produced aiming to fill a gap in discussions on the preservation of timber framed historic houses which form a majority within the present cultural heritage of Turkey. Timber framed houses which are subjected to conservation and rehabilitation studies have some common problems, related to the characteristics of the physical environment in which they are located. However, they also have some specific technical and practical conservation problems which are not extensively defined yet and the diagnosis of these problems becomes necessary to develop proper materials and techniques for the rehabilitation and conservation of historic timber framed houses. This thesis aimed to define these specific technical and practical conservation problems and to propose some techniques and materials for their preservation and rehabilitation.

In the first chapter of this study, the comprehensive extend of the conservation problems were pointed out with special emphasis on historic houses while defining the historic development of conservation issues in Turkey. The problematics of *historic house conservation* was classified according to their sources in terms of *historic development* and *changes in the circumstances* affecting these. Referring to these classifications, the study was focused on traditional Ankara houses with special emphasis on their conservation problems which show great variety but also resemble common types by being in a city which experienced a rapid urbanization process.

For the correct understanding and evaluation of historic houses and the processes in which they are developed, the evolution of the housing tradition and the developments in the construction tradition become important. In the second chapter, these aspects were studied and interpreted with reference to historic sources on Anatolia in general and on Ankara in particular. The *development and formation of the historic urban fabric* in Ankara and evolution of the *Anatolian house* were also detailed in this chapter by looking at the physical stratification of the fabric and the answers of the following questions on Ankara houses were searched:

1. Are these historic houses synchronic?, if not by looking into scholarship and building characteristics what kind of evolution patterns can be defined?

2. What are the procedures within the urban history that transform the housing construction tradition or are we able to define specific periods of change or an increase in the housing construction process?

3. How were the housing construction procedures? In what ways did they change. How much were they affected by the technology in terms of workmanship and materials and what were the definitive elements of this technology?

The pre-evaluation on the formation of the urban fabric was concluded at the end of the second chapter by dividing this process into three specific stages as:

1. Increase of vertical densities in the urban fabric, in the 17. century,
2. Increase of housing demand in the Capital, after the Republic,
3. The periphery of the traditional fabric to be surrounded with squatter housing.

The characteristics of these periods and the buildings grouped in each stage are defined in detail and the similarities were specifically pointed out between the production of traditional houses and squatters, some of which are the parts of the historic urban fabric today. These evaluations are used in the classification and selection of the houses which are presented in the later chapters of the study.

In the third chapter of the thesis the architectural and structural characteristics of Ankara houses were defined with reference to material published earlier and the data collected by the author. The construction process of timber framed Ankara houses were extensively described and visually documented in this section which was not discussed in earlier studies. Landuse in the historic urban fabric, building unit and location, mass characteristics and their heights and finally architectural characteristics such as plan schemes, facades, architectural elements, structural and material characteristics on the different sections of the buildings, etc. were discussed, classified and evaluated in order to determine the place of Ankara houses within the general frame work of the Anatolian house tradition.

In the fourth chapter, the rehabilitation problems deriving from the new uses and interventions done to the Ankara houses are described with particular emphasis on original structure, material and spatial characteristics of Ankara houses. As a methodology, 20 houses were selected from Ankara having different periodical and architectural characteristics and resembling common conservation problems observed in general. These examples, some of them which were documented before, were measured and documented again and the information gathered on spatial, structural, material characteristics and the visual forms of decay on these buildings were presented in the catalogue in Appendix C. The data collected by this survey was evaluated throughout the charts and that were given in the Appendix D.

In the fifth chapter; the current procedure for restoration of houses are introduced and criticized to define *an accurate preservation process.* Following that, the proposals that aim at the improvement and conversion of the houses for contemporary requirements, are suggested by evaluating the spatial capacity of the building and the owners' demand. Besides, some technical details and materials proposed that are compatible with the original fabric of the timber framed buildings which needs more practical proposals and technical solutions apart from the legal and administrative aspects of conservation in Turkey.

Definition and proposals of some technical details and materials that are compatible with the original fabric of the timber framed buildings, were developed with a comprehensive research throughout the reviewing of the experience practiced in Europe on rehabilitation of timber framed houses. However, specific receipts were especially not recommended on types and mixtures of original materials (like timber, brick, mud brick, brick, mortars and plasters) which can be used in repairs since there are no original surveys yet on these materials used in historic houses. It should be once more stressed that the definition of characteristics and reproduction processes of traditional materials are the subjects which need urgent researches in the future studies which can be carried out by multi disciplinary works.

Addition to these researches, to form *an accurate preservation process,* the problems arising from deficiencies in the current procedures should be eliminated beginning from that the documents submitted for approval to RPC's prior to a restoration project, which should also include the researches on:

1. the structural system and materials of the building,
2. their characteristics and condition,
3. suitability of the building to the function,
4. information on water and electricity supply systems,
5. cautions against fire,
6. the methods and techniques which will be used in the execution for preservation, etc.

In fact, the decision numbered 378 of the High Council of Preservation for Cultural and Natural Objects (T.C. Kültür Bakanlığı, Kültür ve Tabiat Varlıklarını Koruma Yüksek Kurulu),which was signed in Feb. 28, 1995 and which bears the title "Preservation Principles for Maintenance, Repair and Conservation of Immovable Cultural Objects (Taşınmaz Kültür Varlıklarının Korunma, Bakım ve Onarımlarına İlişkin İlke Kararları) includes some of the criteria's mentioned above. Although this decision (numbered 378) has some questionable points since it only brings the principles within the limits of the current Preservation Act (numbered 2873) and it is far from proposing a comprehensive procedure in organizational level, it still promising in defining the standards for the preparation of restoration projects. However, it is still arguable if it may have a sanction in practice as the decision numbered 378 spreads the responsibility of execution to other organizations like, the Municipalities, Chamber's of Architects etc. In any case, the newly brought standards for the preparation of the restoration projects which are aiming at preserving the historic, architectural and cultural values of the buildings by keeping their original structure and material characteristics, will be helpful both for the buildings and their owners as well as the conservator architects and responsible bodies to set up the common guiding rules.

As the preparation of the restoration project is the "initial stage" in conservation, the execution period is as important as the survey, evaluation and decision stages. Since there are no control mechanisms during the execution which can make sure if enough effort is provided to preserve the original structure and material of the building and if the chosen conservation techniques are proper for each specific case or not. For this reason, developing *code of practices for conservation* and establishing new *control mechanisms* in the body of the Municipalities *specialized in the field of conservation*, are necessary measures which should be taken for the control of the execution process.

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A STUDY ON CONSERVATION AND REHABILITATION PROBLEMS OF HISTORIC TIMBER HOUSES IN ANKARA

-VOLUME II-

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
THE MIDDLE EAST TECHNICAL UNIVERSITY

BY

NERİMAN ŞAHİN

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DOCTOR OF PHILOSOPHY
IN
THE DEPARTMENT OF ARCHITECTURE - RESTORATION
MIDDLE EAST TECHNICAL UNIVERSITY

JUNE, 1995

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DATA RELATIVE TO CHAPTERS

T.C.
KÜLTÜR BAKANLIĞI
Kültür ve Tabiat Varlıklarını Koruma Genel Müdürlüğü

SAYI : B.16.0.KTV.0.11.00.01/732/ / / 1995
KONU : Türkiye'de_ki sit alanları

28.03.95* 1406

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İLGİ: 8.3.1995 günlü başvurunuz.

Türkiye'de tespit ve tescili yapılmış olan taşınmaz kültür varlıkları ve sit alanlarının sayısal dökümü ile, Ankara Kültür ve Tabiat Varlıklarını Koruma Kurulu üyelerine ilişkin ilgi başvurunuz ile istenilen bilgiler ekte gönderilmektedir.

Bilgilerinizi rica ederim.

Füsun ERSOY
Bakan a.
Genel Müdür Yardımcısı

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KÜLTÜR BAKANLIĞI
Kültür ve Tabiat Varlıklarını Koruma Genel Müdürlüğü

SAYI :
KONU :

/ / 1995

LİSTE I

ANKARA KÜLTÜR VE TABİAT VARLIKLARINI KORUMA
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APPENDIX B

CODES OF QUARTERS

	A	B	C	P
	Codes of Quarters reproduced by N. Şahin	Codes of Quarters, source: S. Aktüre		1946
1				A. GÖKOĞLU
2				1946
3		S.A.		1946
4	AHİ	S.A.		Iusa (Demirtaş)Avukat Bay Mümtaz evi
5	1	1	HACI M	
6	2	2	DOLUCA	
7	3	3	AHİ YA	
8	4	4	GÜNGİ	
9	5	5	BOSTAN	
10	6	6	DEBBAĞ	
11	7	7	KEPGİR	
12	8	8	HOCA	
13	9	9	AHİ TU	
14	10	10	YAVİ (	
15	11	11	SABUNİ	
16	12	12	HACI N	
17	13	13	MESCİD	
18	14	14	TİFLİS	
19	15	15	MİNARI	yapılan Bay Rüstem mahallesinde (Ulucanlar
20	16	16	RÜSTEN	
21	17	17	EMRE	
22	18	18	YAYAN	
23	19	19	MERVA	
24	20	20	EKİNCİ	
25	21	21	ARAB	
26	22	22	ÇAKIRI	
27	23	23	İMARE	
28	24	24	BURYA	
29	25	25	BADEN	
30	26	26	YUSUF	
31	27	27	KIZIL	
32	28	28	HELV	Murat mah. (Türan) Cevizaltı sokağı, No:12'de
33	29	29	AHİ H	
34	30	30	HALLA	
35	31	31	HOCA	da yapılan, Kattani mahallesinde (Nazım Bey)
36	32	32	CELAL	
37	33	33	ALİ B	
38	34	34	ÜRGÜ	
39	35	35	BALAI	

(Cont'd)

	A	B		P
40	36	36	ERZUF	
41	37	37	YAKU	
42	38	38	BAKL	
43	39	39	HALİF	
44	40	40	BEHLÜ	
45	41	41	MEVD	a yapılan, Kattani mahallesinde (Nazım Bey)
46	42	42	KATTA	
47	43	43	BOYA	
48	44	44	HACI	
49	45	45	TEKE	
50	46	46	GÖKÇ	
51	47	47	DELLA	
52	48	48	YENİŞ	
53	49	49	ALACA	
54	50	50	AVAN	DI GAYR-I MÜSLİM
55	51	51	HÜCEI	
56	52	52	BÖREI	
57	53	53	YAKU	
58	54	54	KOÇHI	yapılan Koyun Pazarında Osman Çavuş evi
59	55	55	KOYUI	
60	56	56	ŞEYH	
61	57	57	MUKA	
62	58	58	MESCİ	
63	59	59	HACI	
64	60	60	KAZUI	
65	61	61	HACI	
66	62	62	KAFİR	
67	63	63	MESCİ	
68	64	64	KONUI	
69	65	65	HACI	
70	66	66	KİRİŞÇ	
71	67	67	YENİC	
72	68	68	ÖKSÜZ	
73	69	69	MÜHÜ	
74	70	70	HENDI	
75	71	71	HOCA	
76	72	72	KİÇİLÜ	
77	73	73	DİBEK	
78	74	74	MAKR	
79	75	75	AKMEI	
80	76	76	KURD	
81	77	77	SEYYİ	
82	78	78	KEYYA	
83	79		AŞNA-	
84	80	80	YAHUI	
85	81	81	KEPGİ	başı'nda (Çeşme mah.) Bay Cemal Ahmet evi,
86	82		X	başı'nda (Çeşme mah.) Bay Cemal Ahmet evi,
87	83		X	de yapılan, Direkli mahallesinde (Başkır) yüzbaşı
88	84		X	
89	85		X	de yapılan, Samanpazarı civarında, Kadınkızzade
90	86		X	
91	87		X	da yapılan Leblebici mahallesinde (Yeğenbey) Or
92	88		X	
93	89		X	
94	90		X	
95	91		X	
96	92		KAL'A	
97	93		X	

(Cont'd)

	A	B	C	P
98	94		X	
99	95		X	
100	96		X	
101	97		X	
102	98		X	
103	99		X	
104	100		X	
105	101		X	
106	102		X	
107	103		X	
108	104		X	
109	105		X	
110	106		X	
111	107		X	
112	108		X	
113	109		X	odalı Bay Kerim evi, Bay İbrahim evi
114	110		X	
115	111		X	
116	112		X	
117	113		X	
118				

APPENDIX C

CATALOGUE OF SURVEYED BUILDINGS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Codes of Quarters reproduced by N. Şahin	Codes of Quarters, source: S. Aktüre	Existing Quarters in1522	Existing Quarters in1601	Codes of Quarters, source: R. Özdemir	Existing Quarters in1785-1830	NUMBER OF AVARIZ HOUSEHOLDS IN 1607	POPULATION IN 1607 (5*5)	NUMBER OF AVARIZ HOUSEHOLDS IN 1785	POPULATION IN 1785 (5*5)	RATIO OF AH/P IN 1785	NUMBER OF AVARIZ HOUSEHOLDS IN 1830	POPULATION IN 1830	RATIO OF AH/P IN 1830	1891	1946
2				Ö. ERGENÇ		R. ÖZDEMİR	1607	1607	1785	1785	1785	1830	1830	1830	A. GALANTİ	A. GÖKOĞLU
3		S.A.	ÇADIRCI	ERGENÇ	R.Ö.	ÖZDEMİR									GALANTI	1946
4	AHİ	S.A.	1522	1601	R.Ö.	1785-1830			AH	ÜFUS	AH/K	AH	ÜFUS	AH/K	1891	1946
5	1	1	HACI MUSA	HACI MUSA	21	HACI MUSA	8		4	320	80	4	376	94	HACI MUSA	Hacı Musa (Demirtaş)Avukat Bay Mümtaz evi
6	2	2	DOLUCA (TULİ)	TÜLİ	58	TÜLİCE	16		2.5	200	80	2.5	90	35	TÜLİCE	
7	3	3	AHİ YAKUB(ULUCAN)	AHİ YAKUB	84	AHİ YAKUB,	13		3	240	80	3	148	49	HIZIR ŞAH	
8	4	4	GÜNGİ (DİLSİZLER)	GENEGİ	6	KENEKİ	5		1.5	120	80	1.5	90	60	KETEKİ	
9	5	5	BOSTANCIYAN	BOSTANİ	63	BOSTANİ			3	240	80	3	182	61	BOSTANİ	
10	6	6	DEBBAĞAN	DEBBAĞİN	47	DEBBAĞİN	12		4	320	80	4	X	X	DEBBAĞLAR	
11	7	7	KEPGİR(KEBKEBİR-İ MÜSLİMİ	KEPGİR,KEBKEBÜR-İ MÜSLİM	73	KEBKEBÜR-İ MÜSLİM	7		3.5	280	80	3.5	340	97	YOK	
12	8	8	HOCA NAFİS (HANKAH)	HANKAH	64	HANKAH	6		3	240	80	3	X	X	YOK	
13	9	9	AHİ TURA	AHİ TURA	56	AHİ TURA	8		1.5	120	80	1.5	120	80	AHİ TUĞRA	
14	10	10	YAVİ (AFİ)	AFİ	50	AHİ (AFİ)	8		4	320	80	4	206	52	AHİ	
15	11	11	SABUNİ	SABUNİ	10	SABUNİ	10		2.5	200	80	2.5	244	98	SABUNİ	
16	12	12	HACI MANSUR	HACI MANSUR	48	HACI MANSUR	7		3	240	80	3	338	113	HACI MANSUR	
17	13	13	MESCİD-İ ŞEMSEDDİN	ŞEMSEDDİN B. RAMAZAN (	78	ŞEMSEDDİN	8		2	160	80	2	204	102	RAMAZAN ŞEMSEDDİN	
18	14	14	TİFLİS	TİFLİSİ	77	TİFLİS	5		2	160	80	2	158	79	YOK	
19	15	15	MİNARE-İ BELKIS	BELKIS	61	BELKIS	8		4	320	80	4	62	16	YOK	
20	16	16	RÜSTEM NA'AL (NALBANT	RÜSTEM NA'AL	12	RÜSTEM NA'AL	3		1.5	120	80	1.5	108	72	RÜSTEM NAAL	1185'de yapılan Bay Rüstem mahallesinde (Ulucanlar
21	17	17	EMRE	EMRE GÖLÜ	68	EMRE GÜLÜ	6		1	80	80	1	52	52	EMRE KÜLİ	
22	18	18	YAYANİ, PAPANİ (YÜRÜYE	PAPANİ	62	PAPANİ	7		3	240	80	3	122	41	PAPANİ	
23	19	19	MERVARİD (İNCİ)	X		X			X	X	X	X	X	X	X	
24	20	20	EKİNCİ (ACICA)	X		X			X	X	X	X	X	X	X	
25	21	21	ARAB HACI (AHİ ELVAN)	HACI ARAB	19	HACI ARAB	12		5	400	80	5	202	40	YOK	
26	22	22	ÇAKIRLAR (YAYANİ)	ÇAKIRLAR	45	ÇAKIRLAR	4		3	240	80	3	336	112	ÇAKIRLAR	
27	23	23	İMARET-İ KARACA BEY	İMARET	22	İMARET	6		4	320	80	4	466	117	İMARET	
28	24	24	BURYACILAR (HASIRCILAR)	BURYACI	36	BURYACI, BUYRA	12		6	480	80	6	350	58		
29	25	25	BADEMLÜ	BADEMLİ	52	BADEMLİ	5		2	160	80	2	96	48	BADEMLİ	
30	26	26	YUSUF HABBAZ (EKMEKÇİ	YUSUF HABBAZ	14	YUSUF HABBAZ	5		2	160	80	2	150	75	YUSUF HABAZ	
31	27	27	KIZIL BEY	KIZILBEY	65	KIZIL BEY	8		2	160	80	2	X	X	YOK	
32	28	28	HELVACILAR, HELVACIYAN	HELVAYİ	76	HELVAYİ	7		3	240	80	3	130	43	HELVAYİ	
33	29	29	AHİ HACI MURAD	AHİ HACI MURAD	11	AHİ HACI MURAD	18		5	400	80	5	482	96	AHİ MURAD	Hacı Murat mah. (Türan) Cevizaltı sokağı, No:12'de
34	30	30	HALLAÇ MAHMUT	HALLAÇ MAHMUT	51	HALLAÇ MAHMUT	5		2.5	200	80	2.5	290	116	HALLAÇ MAHMUT	
35	31	31	HOCA PAŞA	HOCA PAŞA	59	HOCA PAŞA	6		1.5	120	80	1.5	66	44	HOCA PAŞA	
36	32	32	CELAL PANBÜKİ (PAMUKÇU	CELAL KATTANİN	82	CELAL KATTANİ			1	80	80	1	28	28	YOK	1)1206da yapılan, Kattani mahallesinde (Nazım Bey)
37	33	33	ALİ BEY	ALİ BEY	66	ALİ BEY	9		3	240	80	3	106	35	ALİ BEY	
38	34	34	ÜRGÜB (HACI SİNAN)	ÜRGÜB (HACI SİNAN)	9	ÜRGÜB	4		2	160	80	2	98	49	B	
39	35	35	BALABAN	BALABAN	49	BALABAN	8		4	320	80	4	288	72	BALABAN	

(Cont'd)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
40	36	36	ERZURUM	ERZURUM	31	ERZURUM	7		6	480	80	6	400	67	ERZURUM	
41	37	37	YAKUB NA'AL	YAKUB NA'AL	43	YAKUB NA'AL	5		3	240	80	3	264	88	YOK	
42	38	38	BAKLACI	BAKLACI	69	BAKLACI	4		1.5	120	80	1.5	108	72	BAKLACI	
43	39	39	HALİFE BEYAZİD	HALİFE BEYAZİD	17	HALİFE BEYAZİD	7		2	160	80	2	72	36	HALİFE BEYAZİD	
44	40	40	BEHLÜL	BEHLÜL	46	BEHLÜL	8		5	400	80	5	396	79	BEHLÜL	
45	41	41	MEVDUD	MEVDÜD	13	MEVCUD	6		3	240	80	3	234	78	MEVCUD	
46	42	42	KATTANİN (PAMUKÇULAR)	KATTANİN	8	KATTAİN	9		6	480	80	6	510	85	FETTANİ	1)1206da yapılan, Kattani mahallesinde (Nazım Bey)
47	43	43	BOYACI ALİ	BOYACI ALİ	57	BOYACI ALİ	4		2.5	200	80	2.5	184	74	BOYACI ALİ	
48	44	44	HACI İVAZ HADDAD (DEMİ	HACI İVAZ HADDAD	18	HACI İVAZ	6		2	160	80	2	126	63	YOK	
49	45	45	TEKE AHMED	TEKE AHMED	20	TEKE AHMED	12		6	480	80	6	210	35	TEKKE AHMED	
50	46	46	GÖKÇE OĞLU	İBN GÖKÇE	64	İBN-İ GÖKÇE	8		2	160	80	2	118	59	İBN GÖKÇE	
51	47	47	DELLAL KARACA	DELLAL KARACA	81	DELLAL KARACA	3		2	160	80	2	204	102	TELLAL KARACA	
52	48	48	YENİŞEHİR	YENİŞEHİR		YENİŞEHİR	1								X	
53	49	49	ALACA MESCİT	ALACA MESCİT		ALACA MESCİT									X	
54	50	50	AVANCIKLAR	MOLLA BÜYÜK	1	MOLLA BÜYÜK	7		4	320	80	4	244	61	YOK	
55	51	51	HÜCENDİ	HÜCENDİ	85	HACENDİ(HOCA HİNDİ)	8		4	320	80	4	270	68	HOCA HİNDİ MÜSLİM, HOCA HİNDİ GAYR-I MÜSLİM	
56	52	52	BÖREKÇİLER	BÖREKÇİLER	83	BÖREKÇİLER	4		3	240	80	3	102	34	BÖREKÇİLER	
57	53	53	YAKUB HARRAT(YALANCI Y	YAKUB HARRAT	16	YAKUB HARAT	5		1.5	120	80	1.5	86	57	YAKUB HARAT	
58	54	54	KOÇHİSAR	KOÇHİSAR	67	KOÇHİSAR	3		1	80	80	1	72	72	YOK	
59	55	55	KOYUN PAZARI	KOYUN PAZARI	80	BAZAR-I GANEM	9		2.5	200	80	2.5	128	51	BAZAR-I GANEM (KOYUN P	1207de yapılan Koyun Pazarında Osman Çavuş evi
60	56	56	ŞEYH İZZUDDİN	ŞEYH İZZEDDİN	53	ŞEYH İZZEDDİN	4		1	80	80	1	162	162	ŞEYH İZZEDDİN	
61	57	57	MUKADDEM	MUKADDEM	79	MUKADDEM	9		5	400	80	5	442	88	MUKDİM	
62	58	58	MESCİD-İ KUREYŞ	KUREYŞ	44	KUREYŞ	11		2	160	80	2	136	68	KUREYŞ	
63	59	59	HACI DOĞAN	HACI DOĞAN	70	HACI DOĞAN	5		4	320	80	4	934	233	HACI DOĞAN	
64	60	60	KAZURAN (ÇAMAŞIRCI)	KAZUR ALİ	34	KAZUR ALİ	3		1.5	120	80	1.5	404	27	KAZUR ALİ	
65	61	61	HACI HALİL	HACI HALİL	75	HACI HALİL	5		2.5	200	80	2.5	186	74	HACI HALİL	
66	62	62	KAFİR KÖYÜ, KEFERE	KAFİR KÖYÜ	54	KAFİR KÖYÜ	9		3	240	80	3	X	X	YOK	
67	63	63	MESCİD-İ MELEKİ HATUN	HATUNi, HATUN	27	HATUNİ-HATUNİYE	7		4	320	80	4	118	30	HATUNİ-HATUNİYE	
68	64	64	KONURCULAR	KONURCA	71	KONURCA	6		2	160	80	2	116	58	YOK	
69	65	65	HACI ESHAB	HACI ESHAB	86	HACI ESHAB	6		1	80	80	1	380	380	RUM HACI ESHAB	
70	66	66	KİRİŞÇİLER , KİRİŞCİYAN, (İ	İMAM YUSUF	26	İMAM YUSUF	4		3	240	80	3	290	97	RUM İMAM YUSUF	
71	67	67	YENİCE	YENİCE	23	YENİCE	4		4.5	360	80	4.5	212	47	YENİCE	
72	68	68	ÖKSÜZCE	ÖKSÜZCE	35	ÖKSÜZCE	15		4	320	80	4	372	93	ÖKSÜZCE	
73	69	69	MÜHÜRYAR (ERMENİ MAH.)	MİHRİYAR	32	MİHRİYAR	5		3	240	80	3	264	88	MİHRİYAR	
74	70	70	HENDEK	HENDEK	42	HENDEK	4		3	240	80	3	174	58	YOK	
75	71	71	HOCA SİNAN (VALTARİN)	VALTARİN-VATTARİN	37	VOLTARİN-VALTARİNO	9		5	400	80	5	302	60	VOLTARİNO	
76	72	72	KİÇİLÜ (AHİ KİÇİ BEY)	KİÇÜLÜ	7	KİÇİKLİ	3		2	160	80	2	168	84	YOK	
77	73	73	DİBEK	DİBEK	41	DİBEK	9		4	320	80	4	X	X	DİBEK	
78	74	74	MAKRAMACIYAN	MAKRAMACI	30	MAKRAMACI	5		3	240	80	3	194	65	YOK	
79	75	75	AKMEDRESE	X		AKMEDRESE										
80	76	76	KURD	KURD	39	KURD	7		3	240	80	3	302	101	KURD	
81	77	77	SEYYİD (KÖSCÜ İVAZ,HACI	HACI SEYDİ	33	HACI SEYDİ	7		3	240	80	3	160	53	HACI SEYDİ	
82	78	78	KEYYALİN (BUĞDAY ÖLÇEN	KEYYALİN	29	KEYYALİN	7		6	480	80	6	X	X	YOK	
83	79		AŞNA-HAN	EŞENHOR	38	AŞHOR			5	400	80	5	456	91	YOK	
84	80	80	YAHUDİ YAN (YAHUDİ MA	X		YAHUDİYAN										
85	81	81	KEPGİR(KEBKEBİR-İZIMMİ)	KEPGİR,KEBKEBÜR-İ ZIMMİ	74	KEBKEBÜR-İZIMMİ	13		6	480	80	6	708	118		
86	82		X	KAYABAŞI	2	KAYABAŞI	4		3	240	80	3	260	87	YOK	Kayabaşı'nda (Çeşme mah.) Bay Cemal Ahmet evi,
87	83		X	ÇEŞME	3	ÇEŞME	6		1	80	80	1	160	160	YOK	Kayabaşı'nda (Çeşme mah.) Bay Cemal Ahmet evi,
88	84		X	DİREKLİ (MESCİD) 1785-1830	4	DİREKLİ	7		3	240	80	3	X	X	DİREKLİ	1203'de yapılan, Direkli mahallesinde (Başkır) yüzbaşı
89	85		X	SARAÇ SİNAN	5	SARAÇ SİNAN	4		2	160	80	2	216	108	SARACAN	
90	86		X	MÜRÜRİ	15	MÜRÜRİ	5		0.5	40	80	0.5	68	136	MERÜRİ (MESRÜRİ)	1118de yapılan, Samanpazarı civarında, Kadınkızzade
91	87		X	HACI TEPESİ	24	HACET TEPESİ	7		3	240	80	3	242	81	HACET TEPESİ	
92	88		X	LEBLEBİCİ	25	LEBLEBİCİ	12		5	400	80	5	284	57	LEBLEBİCİ	1239da yapılan Leblebici mahallesinde (Yeğenbey) Or
93	89		X	KUL DERVİŞ	28	KUL DERVİŞ	6		3	240	80	3	272	91	KUL DERVİŞ	
94	90		X	SED	40	SED	9		3	240	80	3	240	80	SED	
95	91		X	İĞNECİ	60	İĞNECİ	7		4	320	80	4	114	29	İĞNECİ	
96	92		KAL'A	GÜZELOĞLU, DUDİRAN, AŞA	72	KAL'A	5		15	1200	80	15	X	X		
97	93		X	X	87	HACI İLYAS	10		X	X	X	X	X	X	HACI İLYAS	

(Cont'd)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
98	94		X	X	88	DERUN-I HİSAR			X	X	X	X	1274	X	YOK	
99	95		X	X	89	HACI BAYRAM			X	X	X	X	390	X	HACI BAYRAM	
100	96		X	X	90	DEBBAĞHANE			X	X	X	X	22	X	X	
101	97		X	X	91	MİSAFİR FAKİH			X	X	X	X	174	X	MİSAFİR FAKİH	
102	98		X	X	92	SULTAN ALAEDDİN			X	X	X	X	226	X	SULTAN ALAEDDİN	
103	99		X	X	93	DIŞ HİSAR			X	X	X	X	156	X	X	
104	100		X	X	94	EMİRLER			X	X	X	X	252	X	EMİRLER	
105	101		X	X	95	NERDÜBANLI			X	X	X	X	6	X	X	
106	102		X	X	96	KETHÜDA			X	X	X	X	854	X	KETHÜDA	
107	103		X	X	97	KAZÜR ALİ ve DAMGACI KOLTUĞU			X	X	X	X	X	X	X	
108	104		X	X	98	KEBİR DİBEK			X	X	X	X	444	X	X	
109	105		X	X	99	HATUNİYE ve EZBERCİ KOLTUĞU			X	X	X	X	164	X	X	
110	106		X	X	100	HATUNİYE-İ DİĞER			X	X	X	X	182	X	X	
111	107		X	X	101	BOYACI			X	X	X	X	94	X	BOYACI	
112	108		X	X	102	YEĞENBEY			X	X	X	X	18	X	YEĞENBEY	
113	109		X	X	103	HİSAR			X	X	X	X	X	X	X	Hisar'da otuz odalı Bay Kerim evi, Bay İbrahim evi
114	110		X	X	104	BERTARİ			X	X	X	X	X	X	X	
115	111		X	X	105	MÜDERRİS KOLTUĞU			X	X	X	X	X	X	X	
116	112		X	X	106	BALABAN KOLTUĞU			X	X	X	X	X	X	X	
117	113		X	X	107	AFİF KOLTUĞU			X	X	X	X	X	X	X	
118																

APPENDIX C

CATALOGUE OF SURVEYED BUILDINGS

METHODOLOGY OF THE CATALOGUE

For the preparation of this thesis besides information gathered from earlier sources on Ankara houses and the historic fabric in Ankara, 20 examples are selected and documented. The selection of these houses are done according to criteria defined in the introduction chapter in section 1.4. and by the help of the experience gained by the author by participating as a team member in different research projects done on the historic fabric in Ankara.

The period of the houses is especially considered in this selection and examples are chosen to represent different periodical characteristics. Eventhough the problem of dating these houses is still not exact, the early writers lead us in defining different periodical characteristics and helped in dating these buildings as it was mentioned before in Chapter III. The second basic source in defining periods is the documented buildings themselves. They are put in a chronological order between themselves according to similarities and differentiation's observed in their features. By the help of these sources the selected buildings are put in a chronological order and grouped as Early, Early-Mid, Mid-Late and Late. Eventhough one is hesitant to give dates, considering that some of these oldest houses were before dated to the 17. century by Kömürcüoğlu and Akok, the Early period should be accepted as the 17. century. Late 17. or early 18. centuries are taken as Early-Mid, and second half of the 18. century and early 19. century is accepted as Mid-Late period. The Late period is taken as starting about the second half of the 19. century and lasting until 1940's. The house at Zülüflü St., no: 18 is one of the examples of this last period and is the only one where there is an inscription panel with the date 1927.

A homogeneity is tried to be set in the choice of the examples to present a balanced number of examples from each period. Eventhough the number of houses resembling the earliest features in Ankara are quite limited, six examples having the oldest features could be selected and documented for this study. The first six examples given in the catalogue are these oldest houses (Examples: 1-6). The second four examples dated to Early-Mid or Mid-Late period are the most questionable ones which have features carrying both early and late periodical characteristics. This group is basically formed by the differentiation's between each other because references on 18. century houses are quite limited (Examples: 7-10). The last 10 examples which are more easily identifiable are accepted as belonging to the late period (Examples: 11-20).

In the selection of these houses all reachable documented houses are collected which reached to about 30. Some of them which are still existing and suitable for the purpose of this study are checked again and redocumented and redrawn afterwards. Some others are documented by the author and her colleague Ertuğrul Morçöl specifically for this study. The list of the pre-documented houses are given below with their references.

1. Kalekapısı St., 10; METU, Fac. of Arch., Restoration Archive, Ankara. First documentation date is not known, redocumented and redrawn by the author in September 1994.

2. Gelin St., 8; Akçura. N., et.al., 1993a-b. Redocumented and redrawn by the author in September 1994.

3. Cingöz St., 20; Kömürcüoğlu, E., 1950: 48. In this reference, the address of the house was given as Cingöz St., No: 26, Hamamönü. The door number of the building is changed today. Redocumented and redrawn by the author in September 1994.

4. Erzurum St., 48; Akok, M.; Gökoğlu, A., 1946:11-. Redocumented and redrawn by the author in 1993.

5. Sarıkadın St., 43; documented and drawn by the author and E. Morçöl for the first time in September 1993.

6. Eskici St., 2; Altınsay, B., et.al., 1988:122-125. First documented in 1983 by students of architecture namely: M. Aydın, A. Savaş, T. Tozkoparan, B. Turan. Redocumented and redrawn by the author in September 1994.

7. Gelin St., 12; Akçura. N., et.al., 1993a-b. Redocumented and redrawn by the author in September 1994.

8. Öksüzler St., 17, First documented by N. Akçura, E. Morçöl, N. Şahin, N. Özgönül, F. Gökçe and drawn by N. Özgönül and N. Şahin in 1988 and redocumented and redrawn by the author in September 1993.

9. Cingöz St., 3; Akçura. N., et.al., 1993a-b. Redocumented and redrawn by the author in September 1994.

10. Sarıca St., 7, Eylül St., No: 1; Documented and drawn by the author and E. Morçöl for the first time in 1993 and surveyed lastly in September 1994.

11. Gelin St., 4; Akçura. N., et.al., 1993a-b. Redocumented and redrawn by the author in September 1994.

12. Öksüzler St., 13; Documented and drawn by the author and E. Morçöl for the first time in 1993 and surveyed again in September 1994.

13. Öksüzler St., 36; Akçura. N., et.al., 1993a-b. Redocumented and redrawn by the author in September 1994.

14. İnci St., 14; documented and drawn by the author and E. Morçöl for the first time in 1993 and surveyed again in September 1994.

15. Sarıkadın St., 67; documented and drawn by the author and E. Morçöl for the first time in 1993 and surveyed again in September 1994.

16. Sarıkadın St., 69; documented and drawn by the author and E. Morçöl for the first time in 1993 and surveyed again in September 1994.

17. Zülüflü St., 18; documented and drawn by the author and E. Morçöl for the first time in 1993 and surveyed again in September 1994.

18. Eskicioğlu St., 8; Altınsay, B., et.al., 1988:122-125. First documented in 1983 by students of architecture namely: S. Erbuğ, T. Ertekin, G. Özdağlar, G. Ünlü, İ. Yalçın. Redocumented and redrawn by the author in September 1988 and 1994.

19. Kalas St., 11; Altınsay, B., et.al., 1988:122-125. First documented in 1983 by students of architecture namely: B. Demirbilek, K. Kırımlıoğlu, N. Sular, S. Şenel. Redocumented and redrawn by the author in September 1994.

20. Yağcılar St., 1; documented and drawn by the author and E. Morçöl for the first time in 1988 and surveyed again in September 1994.

In the preparation of the catalogue the information gathered from the buildings and the users are presented on four information sheets. The first information sheet coded as 1a, 2a, etc., under the title *Spatial Organization,* includes the description of building referring to floors, present function and occupation of the dwelling units and the present spatial uses. The second information sheet coded as 1b, 2b, etc., under the title *Structural System and Material,* gives information about the structural system and materials, repairs and alterations, organization and condition of installation systems and service spaces, decay in structure and materials. The third information sheet coded as 1c, 2c, etc., under the title *Floor Plans,* presents the drawings of plans which are originally prepared in 1/100 scale and reduced in size for catalogue format. The fourth information sheet coded as 1d/1d', 2d/2d', etc., under the title *Photographs,* includes the photos which are taken 1994 and illustrating the current condition of the buildings.

The data gathered through this survey are evaluated and classified throughout the 7 (seven) charts which are given in Appendix D. The order of the catalogue is kept in the formation of the charts. In each chart (except the sixth one); the catalogue number of the building is in the first, the period is in the second and the address of the building is given in the third column. The heading of other columns are designed according to the characteristics of the data evaluated.

The first chart, under the title *General Characteristics of Surveyed Buildings,* gives information about the locational characteristics of the parcels with the building units inside them and the mass features of the building units. The second chart includes information about the structural system and the construction materials used in each section of the selected examples. The third chart, under the title *Types of Alterations in the Main Building*, presents the additions in mass, space and element scale besides giving detailed information on the types of alterations and removals. The fourth chart defines the common techniques and materials used in the alterations and repairs referring to the third chart. Four subgroups are formed to define the types of interventions as; additions, alterations, repairs, installations. The abbreviations in the chart show the type of technique and the material used for each intervention which are defined as the title of each column. The fifth chart shows the visual forms of decay observed on the structure and the materials. The decay types are grouped under three main headings according to their scale as; decay in structure, decay in roof and decay in materials. The decay forms in the first two groups are based on a prior evaluation while the third one refers directly to the type of decay observed on material. The abbreviations below of the chart define the forms of decay visually detected. The sixth chart illustrates the results of the social questionnaires which were originally prepared in Turkish and were given to the habitants of the surveyed buildings in September 1994. The seventh chart presents dwelling standards in 34 surveyed dwelling units located within the twenty examples studied. The four assigned sections following the addresses defines each dwelling unit existing in the main building.

INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Kalekapısı St., 10, Kaleiçi, Ankara SURVEY DATE: October, 1994	SHEET **1a** NO

DESCRIPTION OF THE BUILDING: The house has two floors facing to the courtyard and a street facade.
GROUND FLOOR: Consists of 5 closed spaces in the building (G1-5), a semi open space: taşlık (G6), the courtyard (G9), the wc in the court (G8) and the stroge underneath the staircase (G7). The space G1with an elevated floor, opening to the courtyard and corresponding to the main room on the upper floor, is used as storage place which was probably a part of the "taşlık". The open hall of the first floor (F9) is elevated on the main posts placed in the courtyard. The stone base of the main staircase is probably a later addition and the space underneath is used for storage. The spaces in the ground floor are used as two separate units. The space (G2) in the street facade is used as a shop. The spaces reached from the courtyard are heightened from the courtyard level by a few steps (G1,5). The room (G4) facing to the court has some original features. There is traces showing that there were cupboards on the entrance facade of the room. Today only one of those units still exist. The space at the back of this room is two steps higher (G3) which is used as kitchen.
FIRST FLOOR: Consists of 3 rooms (F1,2,3), a main hall (F9), a kitchen (F4) a bathroom (F5-6) and a WC (F7). The hall which is closed today was probably open earlier and the room at the center (F3) was formerly an "eyvan". The fire place seen from the exterior facade of the main room (F1) is closed inside. location and form of the of the timber staircase reaching from the courtyard to the first floor is not original (F8). WC and the bathroom are spaces obtained by the division of the main hall. The bath room and the space next to it is placed on an upper level (F5,6). According to verbal information there was a "köşk" in place of the WC and the bathroom was reached by a staircase from the main hall.

PRESENT FUNCTION: The building is horizontally divided today and used by tenants. There are three separate units in the building. The spaces in ground level facing the street are combined and used as a shop (G2). The single unit in the courtyard (G1) is the storage of the shop. The entrance and the two rooms in the ground floor directed to the courtyard form the second unit. This unit is empty today but formerly it was used by a family. One of the storage's under the stone stairs belong to this unit with the wc in the court. The first floor is used by a family.
Unit 1: Shop
Spaces: G2: shop; G9: courtyard, circulation; G1: room, storage.
Unit 2: empty, dwelling unit
Spaces: G9: courtyard, circulation; G3-4: living-bed rooms and kitchen; G5: enterance; circulation; G7:storage; G8:wc.
Unit 3: 4 people,
Spaces: G9: courtyard, circulation; G7: storage; F8: staircase; F1: bed room; F2: living-bed room; F3:storage; F4: kitchen; F5-6: laundry and bathromm; F9: main hall, enterance; circulation living; F7: wc.

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INFORMATION	STRUCTURAL SYSTEM & MATERIAL	SHEET
I S	ADDRESS: Kalekapısı St., 10, Kaleiçi, Ankara	**1b**
SHEET	SURVEY DATE: October, 1994	NO

STRUCTURAL SYSTEM AND MATERIAL:
Ground floor level: Stone masonry; Ground floor: Mud brick masonry; First floor: timber frame, brick infill; Roof: Timber skeleton, covered with tile
Floor pavements: The courtyard has original stone pavement but taşlık section was lately covered with screed. The rooms in the first floor are paved with screed, the open hall and the kitchen is paved with timber and the service spaces in first floor are also covered with screed.
Ceiling: The ceilings of the upper floor are ornamented, they are all original but divided by partition walls.
Arch. Elements: Windows, door frames and built-in furniture (cupboards etc.) are made of timber.
Finishing: Mud mortar is used in mud brick masonry and timber framed sections. The exterior facades of the house are not painted but mud plastered which is washed by the rain regularly and is in a poor condition. The interior spaces are all plastered and whitewashed and their condition are generally good, however there are many cracks and loss of material on plster. Most of the timber made architectural elements (like door, windows, cupboards) are oil painted. The ceilings of the upper floor are also painted. External facades are originally plastered with earth plaster and partly repaired with cement plaster.

REPAIRS & ALTERATIONS:
Mass additions: The room G1, the wc (G8) and the storage spaces under the staircase might be later additions. Closing of open hall and alliteration of the orginalstaircase case transformation of the former köşk to service spaces are the other interventions affecting the building mass.
Element additions: In the first floor the original open hall and the "eyvan" on one side of it were both closed. A wc is added on upper floor by the alteration of the original "köşk" with its stairs. The fireplace in the main room is closed and the elements in the existing kitchen are altered. In the ground level the spaces located on street facade are transformed to a shop by moving a wall. An elevated room with a seperate enterance is added in to the "taşlık". The spaces in the ground level are transformed to a dwelling unit. The external masonry walls of the building are original. The position of timber stairs of "sofa" is also altered to use underneath for storage. The stone masonry section of the main stairs is a later addition. The major alteration in material scale is the use of cement based plaster. In other section during the alteration traditional materials are used but they differ in size, cut and treatment.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: There is electricity, sewage and water supply systems within the house. "Stove" is used for heating. The electric cables are equipped over the timber ceiling and/or wall plaster.

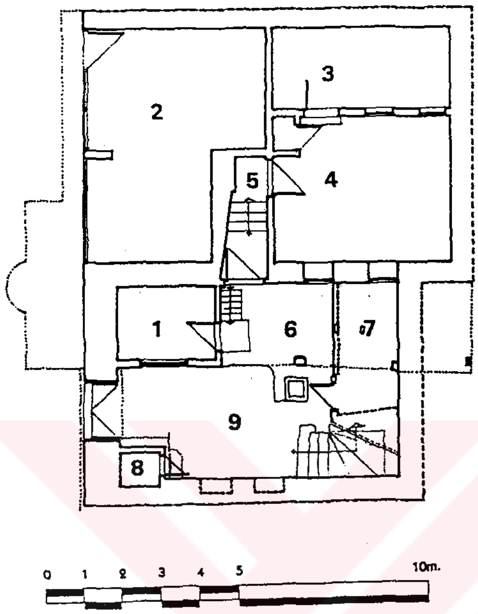
ORGANIZATION & CONDITION OF SERVICE SPACES: There are three units at house, two of them are dwellings and the other is a shop. The unit at the first floor has a separate kitchen, bathroom and a WC. The kitchen is big enough in size but it is not equipped for the purpose. The bathroom is a space paved with screed and has finishing problems. As the user mentions it can not used for bathing especially in winter. The WC has similar hygienic problems. Its volumetric measures are suitable for the function but the finishing is very poor. The second dwelling in the ground floor has only two spaces. A part of the small room is used as kitchen and not equipped. The cupboard in the bigger room can be used as "gusulhane". The unit has a separate WC in the courtyard.

DECAY IN STRUCTURE & MATERIAL:

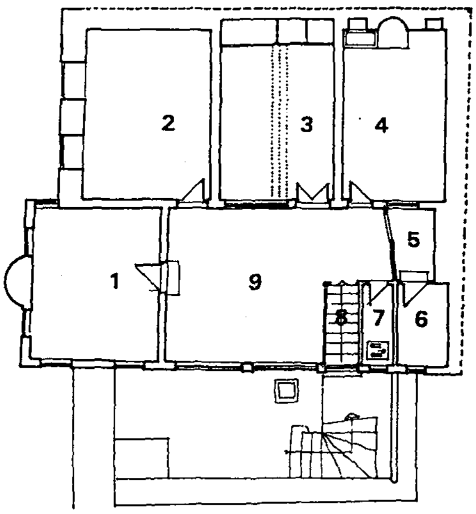
STRUCTURE: The building is structurally in good condition beside the removal of some walls in the ground floor. As the user mentioned the roof of the building was periodically maintained but it has no gutters. The major problem of the facades is missing plaster in some parts. The plaster on the lower sections of the first floor facades (below the window frames) which could not be protected by the eaves are the most deteriorated parts. The structural condition of the timber fabric is good besides some color changes and the fiber formation on the surfaces of the external timber elements. Most of the external timber elements (main posts, beams etc.) are not subjected to any surface treatment. The ones which are painted are window frames, doors and frames, ceilings and cupboards, but they still need paint repair. The major problem related with the timber floors is their covering by screed in service spaces. This causes the main degradation in wood material. The original fire place in the main room is blocked and its surface is plastered.

MATERIAL: There is no urgent problem for the stone material accept the rising damp on the courtyard and street facades. Mud brick is used in the ground floor above 1 meter, that keeps the mud brick from the rising damp. But the lack of plaster above the mud brick walls affects the material, especially on the inner-upper sections of the courtyard wall. The infill material used in the timber skeleton is not clear. On the external surfaces of the main room the use of brick can be identified. But it is not possible to define the infill material in the whole structure. The condition of the brick is relatively better. Timber is the most deteriorated fabric in the building. The timber elements exposed to rain and sun shine are partly degraded. The color is turned to dark brown and gray in different parts. There are also some vertical cracks (parallel to fiber orientation) and fiberisation on the surfaces. In the limited survey any insect attack could not determined in the timber fabric. The mortar of the masonry and infill material could not be observed because thes are under the plaster. The plaster existing on the street facade of the upper floor is an earth based mixture which is partly deteriorated especially below the window sills. The plaster on the courtyard facade is partly original but repaired by cement based plaster. The plaster of the inner spaces are in better condition. The internal timber elements are painted.

INFORMATION	FLOOR PLANS	SHEET
I S	ADDRESS: Kalekapısı St., 10, Kaleiçi, Ankara	**1c**
SHEET	SURVEY DATE: October, 1994	NO

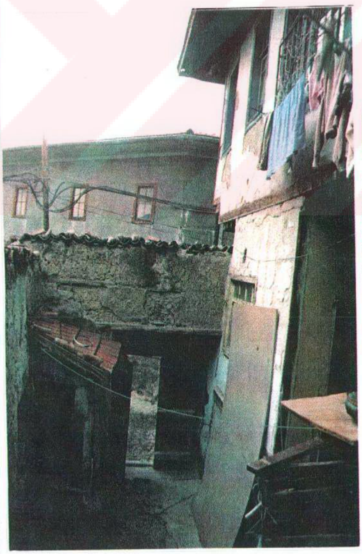


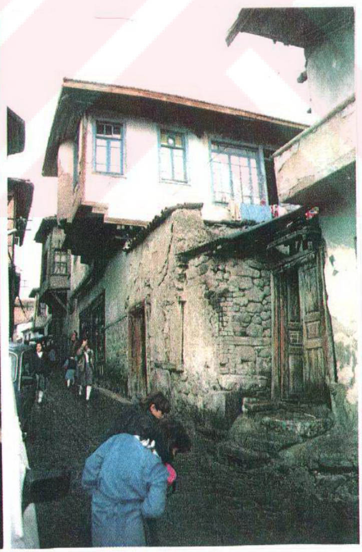
GROUND FLOOR
1. Storage
2. Shop
3. Room & Kitchen (unused)
4. Room (unused)
5. Entry (unused)
6. *Taşlık*
7. Wood & Coal Storage
8. WC
9. Courtyard



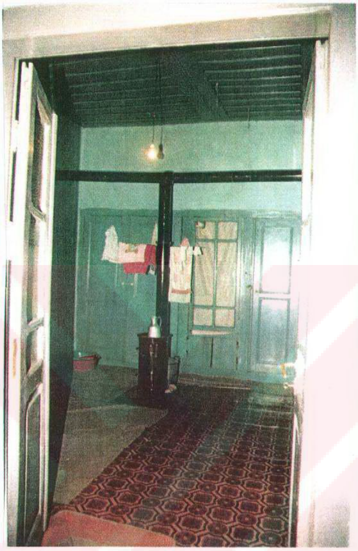
FIRST FLOOR
1. Bed Room
2. Living & Bed Room
3. Room
4. Kitchen
5. Laundry
6. Bathroom
7. WC
8. Staircase
9. *Sofa*

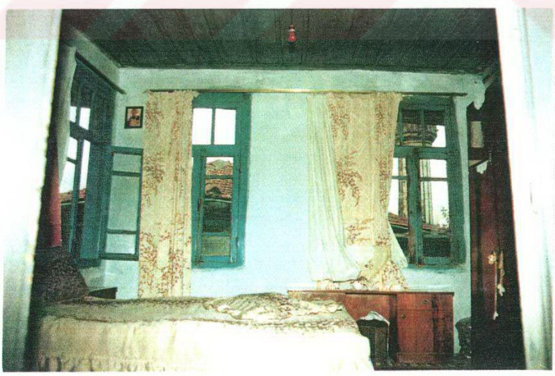
INFORMATION I S SHEET	**PHOTOGRAPHS** ADDRESS: Kalekapısı St., 10, Kaleiçi, Ankara SURVEY DATE: October, 1994	SHEET 1d NO





INFORMATION	PHOTOGRAPHS	SHEET
I S SHEET	ADDRESS: Kalekapısı St., 10, Kaleiçi, Ankara SURVEY DATE: October, 1994	**1d'** NO





INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Gelin St., 8, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **2a** NO

DESCRIPTION OF THE BUILDING: The building is located in a big garden and does not have a street facade. It is a small scaled house which has a plan scheme with an outer hall and consists of ground and first floor.

GROUND FLOOR: There is a big garden (G1) including the main building, an original auxiliary building and a separate WC. There is a taşlık (G2) space corresponding underneath the open hall of the first floor. There are 4 closed spaces and an original timber staircase in the taşlık. The spaces G6 and G7 are inhabitable rooms, the space G5 is an entrance space and the other one G4 which was formerly the kitchen of the house is used as storage today. The room G6 has an ornamented timber ceiling showing old features and cupboards. The floor pavement is also timber. The other inhabitable room (G7) has similar features and traditional finishing materials are used but they have no old features. The storage space (G4) is in a poor condition. The windows of this space are closed. The floor is covered with pressed earth, the timber beams of the upper floor are visible, there is no ceiling pavement.

FIRST FLOOR: The original timber staircase (F3) reaches to the open hall which consists of two sections (F1, F2). Half of the hall (F2) is divided with an ornamented timber partition frame and its floor is elevated in relation the other section. The sofa has a highly ornamented ceiling and its floor is paved with floor tiles which are partly covered with screed today and they are in bad condition.

There are two inhabitable rooms in the first floor (F5, F6), a kitchen (F4) and a WC (F3). The main hall and the room F5 is divided to obtain kitchen and WC. The inhabitable rooms have ornamented ceilings similar to the ceiling of the open hall. The existing kitchen was formerly the entrance space (sekialtı) of room F5. It is paved with floor tiles. In the same room there are traces of a fireplace which was replaced with a door. There are some alterations on the hall facade of room F6. The original windows of this room are replaced with a door and a gusulhane. The top windows of the room (F6) facing the hall indicate the original location of the windows.

There are remains of the stucco framed top windows on the two facades of this room. The original door of room (F4) still exists while the others (F4) are altered.

PRESENT FUNCTION: The house is divided horizontally into 2 dwelling units and both of them are used by the two families. They are both the share-holders of the house.

Unit 1: 2 people;

Spaces: G1: garden; G2: taşlık, circulation; G5: entrance; G6: living room; G7: bed room; G4: storage (will be used as kitchen after some repair) and the WC in the garden.

Unit 2: 2 people;

Spaces: G1: garden; G2: taşlık, circulation; G3-7: staircase; F1-2: open main hall, living, circulation; F3: WC; F4: kitchen; F5: living; F6: bed room.

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INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Gelin St., 8, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **2b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: Stone masonry,

Ground Floor: Mud brick masonry,

First Floor: Timber framed, mud brick infill,

Roof: Timber framed with eaves and covered with tile, has no gutter.

Floor pavements: The courtyard has no special pavement but taşlık was lately covered with screed. The rooms in the first floor are paved with timber, the open hall and the kitchen is paved with floor tiles and the WC is covered with screed. Floor tiles are also repaired by screed.

Ceiling: The ceilings of the upper floor are highly ornamented and painted, they are all original but divided by partition walls. The inhabitable rooms in the ground floor have also decorated timber ceilings except the storage space (G4) and taşlık (G2).

Arch. Elements: Windows, door frames and built-in furniture (cupboards etc.) are made of timber. Stucco is also used in the fireplace (F5) and top windows of the room F6.

Finishing: Mud mortar is used in mud brick masonry and timber framed sections. The exterior facades of the house are not painted but mud plastered which is washed by the rain regularly and is in a poor condition. The interior spaces are all plastered and whitewashed but the condition of the plaster is not good, there are many cracks and loss of material. Floor tiles of the open hall is irregularly covered with screed. Most of the timber made architectural elements (like door, windows, cupboards) are oil painted except the exterior faces of the windows on the garden facade, balustrade, staircase and the original door (F4). The ceilings of the upper floor are painted.

REPAIRS & ALTERATIONS:

Mass additions: The room G7 might be a later addition because of its architectural features are quite simple in comparison to the other original rooms. That the WC in the open hall is also a later addition; can be understood from the divided original ceiling of the space. The gusulhane which is extending with its mass to the open hall is also a later addition, there were probably two windows corresponding to the existing top windows on this wall (F6). The hall facade of this room is altered.

Element additions: partition wall and cupboards (between the spaces F4-F5); closing the space under the staircase: (G3); doors (F5, F6; the door opened to the hall). The timber framed washstand in the open hall is also a late addition.

Alterations: window frame alteration (G6, G7 according to verbal information).

Removal of: Gypsum made curtain? of the fireplace (F5); windows (F6).

Repairs: There is no major repair in the building because there is not much alteration. In the repairs (like plaster and whitewash in inner spaces), alterations and additions in architectural elements usually the original materials are used (like timber in windows and doors, in partition wall dividing the room and the kitchen). The plaster and paint of the courtyard facade and all inhabited rooms are renewed and painted. Condition of the existing timber ceilings is not good because of rain penetrating through the roof.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity supply. The electricity supply is equipped over the walls and timber ceilings. Water is only supplied to the washstand in the open hall, to the unit in the first floor and there is no water in the kitchen, gusulhane and WC. The unit in the ground floor has no kitchen, no bathroom and no toilette inside the building. There is water supply only in the courtyard.

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is quite poor. The unit in the first floor has no bathroom and the space used as kitchen is not equipped. The condition and the location of the WC is poor. The second unit inside the ground floor has no service spaces in the house. The space used as kitchen (G4) in not equipped today. The condition of the WC in the courtyard is very poor even though it has an original WC stone. There is no water supply inside the WC too.

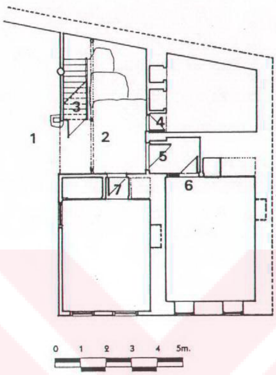
DECAY IN STRUCTURE & MATERIAL:

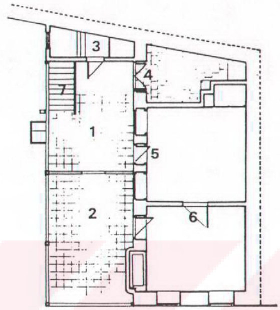
STRUCTURE: There are no major structural problems, deformations and/or cracks in the building. But the condition of the painted timber ceilings of the hall are quite poor resulted because of the rain penetration before the repair of the roof.

The painted ceilings of the house need special care. There is whitening problem in some zones in the ceiling of the hall beside the lack of some elements of the eaves and gutters. There is discoloration (the color turned to dark brown) on timber elements of the roof eaves where there is no gutter. The stone masonry base of the building is quite low and this increases the rising damp. Prefabricated concrete blocs are placed to stop this action through the edges of the house but they are not satisfactory to stop the rising damp. The deteriorated floor tiles are irregularly covered with screed in the hall. This action possibly increased the speed of deterioration of the floor tiles. Most of them have cracks and are in bad condition.

MATERIAL: The condition of the exterior plaster and mud brick masonry is fairly bad as a result of rainwash through the facades, the plaster is almost lost. The exterior facades need complete renewal of plaster and paint. The plaster of interiors are also problematic, there are many cracks and detachment of plaster. The level of stone base is very low that increases rising damp through the foundations on which the masonry walls are in direct contact with the earth. There is color changes in the ceilings of the ground floor, especially below the open hall, kitchen and WC; the beams underneath the pavement have dark brown color (possibly because of the combined action of pollution and dampness). There is no special treatment under the base of the main timber posts carrying the hall, there is no damp proof course.

INFORMATION I S SHEET	FLOOR PLANS ADDRESS: Gelin St., 8, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET 2c NO

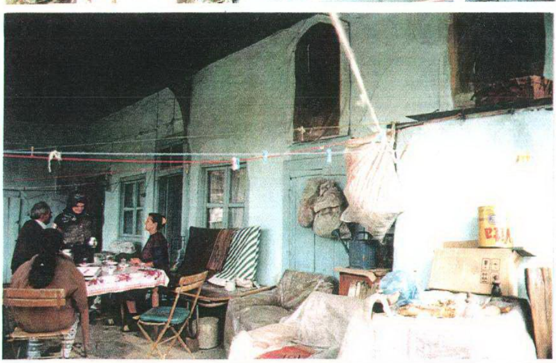




GROUND FLOOR
1. Garden
2. *Taşlık*
3. Staircase
4. Storage-Kitchen
5. Entry
6. Bed Room

FIRST FLOOR
1. Open *Sofa*
2. Open *Sofa*
3. WC
4. Kitchen
5. Living Room
6. Bed Room

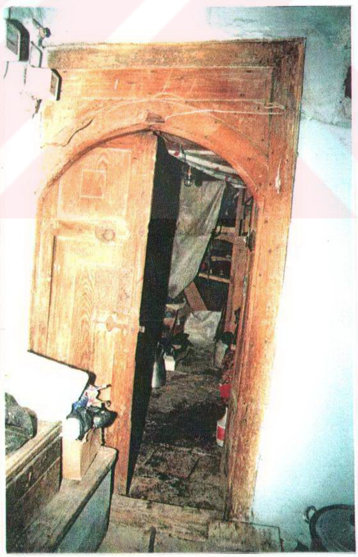
INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Gelin St., 8, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **2d** NO



INFORMATION
I S
SHEET

PHOTOGRAPHS
ADDRESS: Gelin St., 8, Ulucanlar Qu., Ankara.
SURVEY DATE: October, 1994

SHEET
2d'
NO



INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Cingöz St., 20, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **3a** NO

DESCRIPTION OF THE BUILDING: The entrance from Cingöz street is to the courtyard of the building. The building lies to the north of the courtyard. It has L shaped plan scheme, consisting of a ground floor and the first floor.

GROUND FLOOR: There is a stone paved courtyard (G1) including a separate WC in the ground floor and two spaces facing the court (G2, G3; these spaces could not be documented in detail). These spaces are above the ground floor level and reached by a later added staircase.

FIRST FLOOR: In the courtyard, there is an original timber staircase (F5) reaching to the open hall (F1) in the first floor and above that there is a köşk (F6) facing the courtyard. There are three inhabitable rooms in the first floor (F3, F4, F8) and a kitchen (F2) obtained by dividing the open hall. The main room (F8) in the first floor, faces the street and it has features showing quite old characteristics. There are stucco framed top windows on the three facades of this room. And there are also window openings without glass but with shutters and iron balustrades. The original pavement and the ceiling of the main room is missing. There is earth on the ceiling, it shows that formerly the floor was paved with floor tiles. The timber beam seen at the entrance side of the room possibly indicates the seki altı section of this room. The traces of the original gypsum plaster on the walls shows that the wall surfaces were originally highly ornate. The timber framed walls of the main room are not plastered from the exterior and two old types of brick use is visible. Regular coursing is not observed in the brickwork. The main staircase (F5) of the house starts with few stone steps from the courtyard. The open hall is divided by a temporary timber partition to obtain a space for kitchen (F2). The ceiling of the main hall is not covered and the roof structure is visible.

The room F3, keeps it original features except some alterations like; opening a passage from the cupboard to the next room and the alteration of the door panel. The ceiling and the floor is made of timber. The wall on the left side of the entrance is enriched with a combination of cupboards and a niche made with gypsum. The room F3 also preserves its original features but the fire place in this room is removed. The traces of the gypsum curtain (yaşmak: hood) of the fireplace is still identifiable. The original door of the main room (F8) and the room F3 still exist while the other (F4) is altered.

PRESENT FUNCTION: The house is divided horizontally into 2 dwelling units for rent. The unit in the first floor is used by a single women who is a tenant and the other unit is today empty.

Unit 1: 1 person; Spaces: G1: entrance court, G4: WC; F1: main hall, circulation; F2: kitchen; F3: Bed-room; F4: Living-bed room for the guests; F6: köşk; F8: not used.

Unit 2: empty; Spaces: G1: entrance court; G2, G3

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Cingöz St., 20, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **3b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: Stone masonry,

Ground Floor: Mud brick masonry,

First Floor: Timber framed, brick infill, mud brick is also used in small part for repairs.

Roof: Timber framed with eaves and covered with tiles, has no gutter.

Floor pavements: The courtyard is paved with stone, some sections were lately covered with screed. All spaces in the first floor are paved with timber except the main room. At present, it is covered with earth and there is no original pavement.

Ceiling: The ceilings of the main room and open hall is not existing. The roof structure behind the ceiling level is seen. The other rooms in the first floor (F3, F4) have timber ceilings.

Arch. Elements: Windows, door frames and built-in furniture (cupboards etc.) are made of timber. Stucco work is also used in the niche placed between the cupboards (F4), in the fireplace (F3) and top windows of the main room (F8).

Finishing: The mortar of the mud brick masonry walls is made of earth which is different from the mortar used in the brick infill. The plaster of the street facade of the masonry section is deteriorated while the other exterior facades of the ground and first floor are plastered and whitewashed. The brick infill used in the main room is only plastered from the interior but it only exists on the upper sections of the walls. The plaster and the paint of the interior facades of the courtyard and inhabited rooms is renewed and in good condition. All the interior timber made architectural elements door, windows, cupboards are oil painted except the window frames and shutters of the main room.

REPAIRS & ALTERATIONS:

Mass additions: there is no mass addition to the building except the WC in the courtyard (G4: WC),

Element additions: partition wall (between spaces F1-F2); staircase: (G3); door (G3, F2, F3-F4); closing the köşk by a shelter (F6);

Alterations: the size of the window in F8 is reduced; door & door frames altered in G3, F3.

Removal of: ceiling (F8, F1); floor tiles (F8); partition frame of seki (F8); ornamented timber elements on walls (F8); gypsum made curtain of the fireplace (F3); cupboard (F3-F4).

Repairs: There is no major repair in the building because there is not much alteration. In repairs (like plaster and whitewash), alterations and additions to architectural elements, usually the original materials are used (like timber in windows and doors, in partition wall dividing the main hall). The plaster and paint of the courtyard facade and all inhabited rooms are renewed and whitewashed. Condition of the existing timber ceilings and floors is good.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: The unit in the first floor has electricity but no water supply. There is water only in the courtyard. Electricity supply is equipped over the walls and timber ceilings.

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is poor. The unit in the first floor has no bathroom and the space used as a kitchen is not well-equipped. The condition and the location of the WC is poor.

DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is no a major structural problem, no deformation and/or crack in the building. The timber elements of the roof are structurally in good condition, but there is discoloration resulting from dampness. There is a problem of darkening in the roof timbers. The roof eaves need repair and the roof has no gutter.

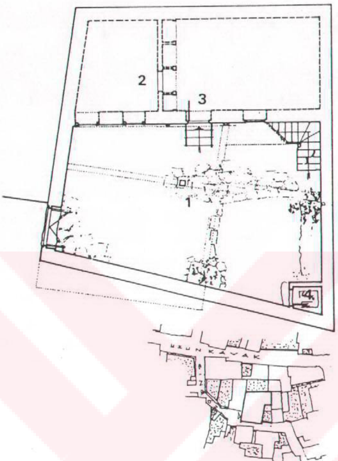
MATERIAL: The condition of the exterior plaster and mud brick masonry is fairly bad as a result of rainwash. The plaster is almost lost on the street facade of the ground floor. The mortar of the non plastered brick infill is lacking and the courses are left empty especially at the edges adjacent to timber elements in the exterior facades of the main room. Big damage was given to the main room by removing all the finishing elements. The exterior facades need complete renewal of plaster and whitewash. The mortar in the joints of the stone masonry base in the ground floor, as a result of rising damp. There is discoloration in floor timbers at the köşk, the color turns to gray because it is washed by the rain. There is less color change on the timber pavement of the main hall but the color of the beams underneath the pavement have turned to dark brown (possibly because of combined action of pollution and dampness) and here localized whitening can also be observed. Because this space is open to weathering conditions. The base of the main timber post carrying the hall is covered with cement, the stone base underneath is not visible today, there are also insect holes on the lower sections of this post. Above these timber fabric used in the building is really in a finely good condition.

INFORMATION
I S
SHEET

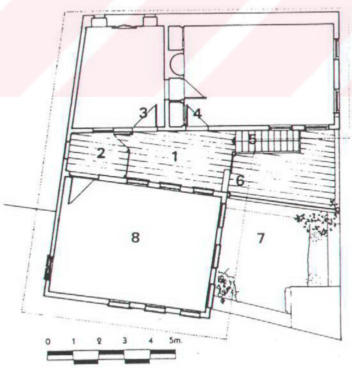
FLOOR PLANS

ADDRESS: Cingöz St., 20, Ulucanlar Qu., Ankara.
SURVEY DATE: October, 1994

SHEET
3c
NO

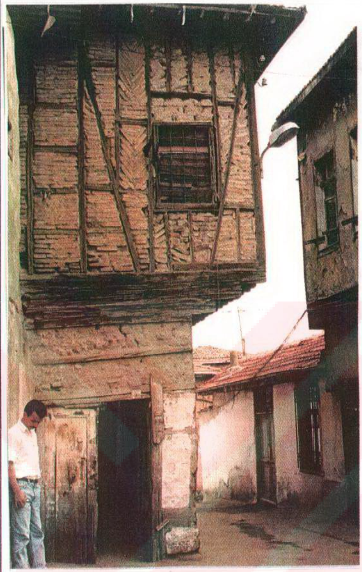


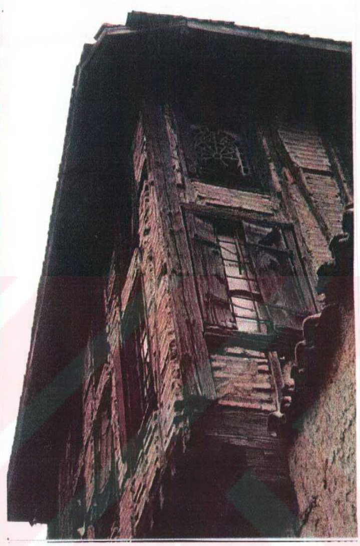
GROUND FLOOR
1. Courtyard
2. Room (unused)
3. Room (unused)
4. WC

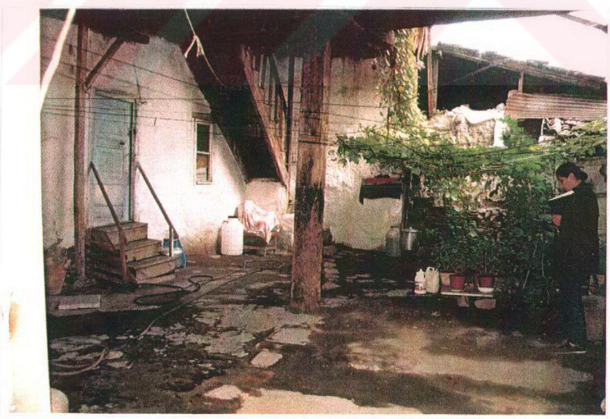


FIRST FLOOR
1. Open *Sofa*
2. Kitchen
3. Bed Room
4. Living Room
5. Staircase
6. *Kőşk*
7. Courtyard
8. Main Room

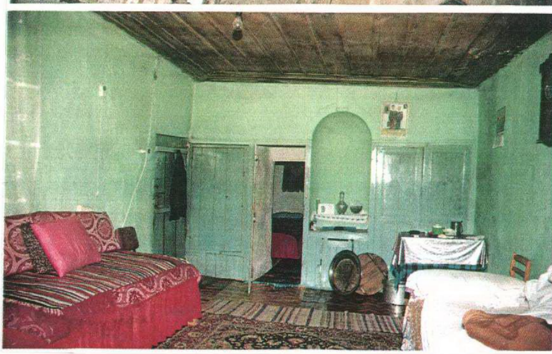
INFORMATION I S SHEET	**PHOTOGRAPHS** ADDRESS: Cingöz St., 20, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET 3d NO







INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Cingöz St., 20, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **3d'** NO



INFORMATION	SPATIAL ORGANIZATION	SHEET
I S	ADDRESS: Erzurum St., 48; Erzurum Qu., Ankara	**4a**
SHEET	SURVEY DATE: October, 1994	NO

DESCRIPTION OF THE BUILDING: The house consists of a ground, a mezzanine and an upper floor. There is an inner hall directed to the court and surrounded by the main room and three other rooms. The inner hall was an open hall formerly, today it is closed with a glazed wooden panel. The original timber staircase reaches the hall and the "köşk". The main room is in bad structural condition today. It has quite unique and original elements like fireplace, top windows, window shutters, iron window balustrades, leveled and a painted ceiling, a "seki" and the "sekiüstü" paved with brick tiles (not completely, only in some parts). At present this room is not used because of its poor structural condition and a WC is added at the corner of "Sekialtı". The second room placed across the main room also had a fireplace (inf. from the documents) but it does not exist today. There is an entrance space between this room and the main hall. the entrance facade of this room is divided by an ornamented wooden panel where on which some cupboards are placed in. There are windows opened to the inner hall in the rooms located on both sides of the hall. The room located at the rear right corner has also a painted ceiling which was enlarged afterwards. Its window was also altered and enlarged in a later period. The room placed on the left corner has more simpler features with some niches and cupboard and an above window.

The mezzanine floor consists of three main spaces. The biggest room directed to the court looks like it had been enlarged on one side. The ceiling of this space is covered with plastic sheets today to stop the fall of the earth from the timber flooring of the main room above. Two spaces open to this room. The one at the back is closed today, but we have noticed the traces of an Ankara type projection on the wall on the left hand side. This feature brings the question in mind whether the upper floor of the building was altered and enlarged afterwards but there were also a floor above the mezzanine floor. The third space in the mezzanine floor was probably a service space formerly, today it is not used. There are traces of brick tile pavements in this space. There is a niche on the right hand side and opening directed to the stable in the ground level. A small WC is also added to this space. The mezzanine floor is reached by a staircase coming from the ground floor but in the drawing of the building dated 1947 there was another staircase reaching to this floor from the edge of the building.

The ground consists of a big space originally designed as a stable and a room placed in beside a storage room and an entrance room. The lately added inhabitable room has cupboards and a "gusulhane" on one facade, it is elevated from the ground and its ceiling is comparatively higher in comparison to other single stroreyed spaces in the ground floor. The storage room has earth paved floor and uncovered ceiling. The stable has the height reaching to the first (main) floor of the building where the main posts (4 main posts) carrying the first floor structure, exist. The entrance space of the ground floor is quite altered. The staircase reaching the mezzanine is added to this space and to enlarge the main space in the mezzanine floor a projection together with a staircase is also added to this space. Two timber posts are used to carry the structure. The door of the stable is ornamented and looks the oldest door in this level. This house has quite unique and old features. Few periods can be identified in this building. Besides alterations the building gives important information about the traditional construction technique. The house next to this building (St. num., 48) was formerly a part of this house according to documents and it had the entrance from the same court. They were both built in the same lot and the staircase reaching to the mezzanine was placed in this adjacent building. But today, it is a separate building with an individual entrance.

PRESENT FUNCTION: The house is divided horizontally and used by two families today and both of them are tenants. The upper floor is used by a family of 4 people. The ground and the mezzanine floors are used as the second dwelling unit at house by a family formed of 5 people.
Unit 1: 5 people. Spaces: G8 courtyard: circulation; G1living-bed room; G3 storage; G4 kitchen, laundry and circulation; M5 bed room; M4 room,empty.
Unit 2: 4people. Spaces: G8 courtyard, service and circulation; F1 köşk, sitting; F2 living-bed room; F3 gusulhane bathing; F4 cupboards,storage; F5 bedroom, F6:room, storage; F7:main room, toilette; F8: formerly added wc.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Erzurum St., 48; Erzurum Qu., Ankara SURVEY DATE: October, 1994	SHEET **4b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry; Ground floor: Rubble stone masonry; Mezzanine: mud brick masonry; First floor: Timber framed, mud brick infill

Roof: Timber framed, covered with tiles, wide eaves, no gutters.

Floor pavements: The courtyard has original stone pavement. The floor of the inhabitable room (G1) in the ground floor are timber All pavements of the spaces in the first floor are timber except a part of the main room which is used as wc. The main staircase is originaland made of timber.

Ceiling: the ceilings of all spaces are timber, however some ceilings are covered with linoleum like in room M7.

Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture (cupboards, shelves etc.) are made of timber and stucco.

Finishing: Mud mortar is used to combine the mud brick masonry and timber framed sections. The exterior facades of the house are mud plastered and white washed. The condition of the plaster on the exterior facades, especially the rear facade is poor. The interior spaces are all plastered and whitewashed and the condition of the plaster is bad it needs extensive need for repair and maintenance. Most of the timber made architectural elements (like door, windows, cupboards) are oil painted, but there is lack of paint on the exterior faces of the windows.

REPAIRS & ALTERATIONS:

Mass alterations: The traces of Ankara type projection located under the main room, brings the thought that the upper floor was enlarged and altered completely in a quite early period. The architectural elements of the upper floor are also very old. The room on the left hand side in the ground floor is also a later addition, possibly belong to the Republican period.

Element addition: The addition of the staircase and the enlargement of the big room in the mezzanine floor are the latest alterations that were done after the division of the parcel into two separate buildings. The enlargement of the room at the right corner in the first floor can be noticed from the ceiling. Altered elements in the first floor of the building are the removal of the pavement tiles in the main hall and the main room, the fire place in the room on the left side and division panel in the main room between the "seki" and "sekialtı". In mezzanine floor the tile pavement of the service space at the back was also removed. In the ground floor after the addition of the room on the left some new openings added to the facade. Besides these alterations the building keeps its original features and material. There are some additions in material scale, e.g., addition of WC by using cement based mixtures or partial plaster repairs.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: There is no water supply system in the house. Tenants are using the tap in the courtyard. There is electricity supply fitted outside the plaster and the timber ceilings. There is no sewage supply in the building. The outlet of the gusulhane and the WC in the first floor carried to the ground floor by free standing pipes through the building.

ORGANIZATION & CONDITION OF SERVICE SPACES: There are no equipped kitchens in both dwelling units. The upper unit uses the main hall as kitchen and the other uses the entrance space as kitchen, both of them are not sufficient for the function. The upper unit has a "gusulhane" in the room on left of the main hall, there is and outlet for water disposal but the space is not well equipped for the function. The WC added to the main room is in bad condition and its location is enormously harmful for the building. The second unit located in the ground floor has no a bathroom and WC inside the house. There is WC in the court in very bad condition.

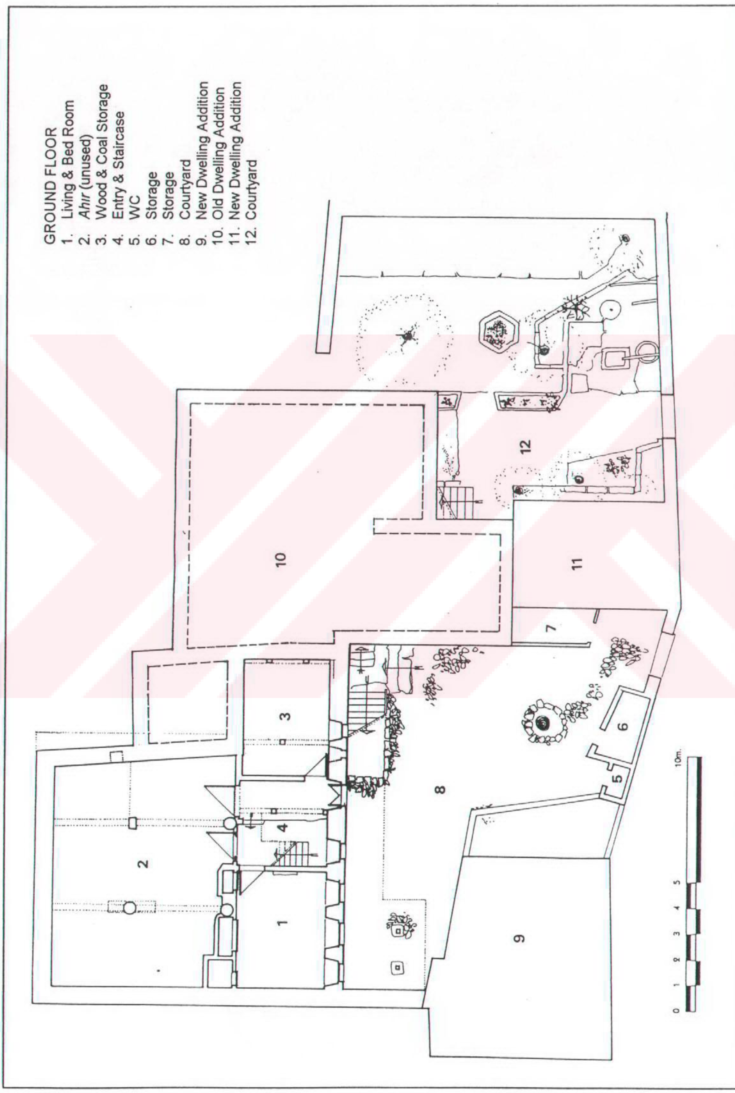
DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is no a general structural problem in the building accept the main room. There had been a fire in this space which has affected the roof and the walls of the building. Falling of the ceiling to the floor affected the stability of the floor structure also. Thefloor has sloped down at the center. The ceiling of the room is highly affected and destructed from the fire and then by the rainfall through the roof. At present the original tile pavement of the floor is almost completely removed and the timber beams underneath and the earth on top is seen. All the painted work through the walls and the ceiling are damaged by the fire and rain. they are in bad condition and have many problems both in structural level and material scale. The roof of the building is also not well preserved, rain can penetrate through some sections where the covering is missing. The eaves are deteriorated and partly defected and there is no gutter. The other parts of the upper floor are relatively in good condition besides some needs on plaster, cleaning and regular maintenance. The mezzanine floor and the ground floor are more problematic. The glass of the windows are broken in the main room besides the deflection in the frames. Most of the timber balustrades of the staircase and some steps are missing.

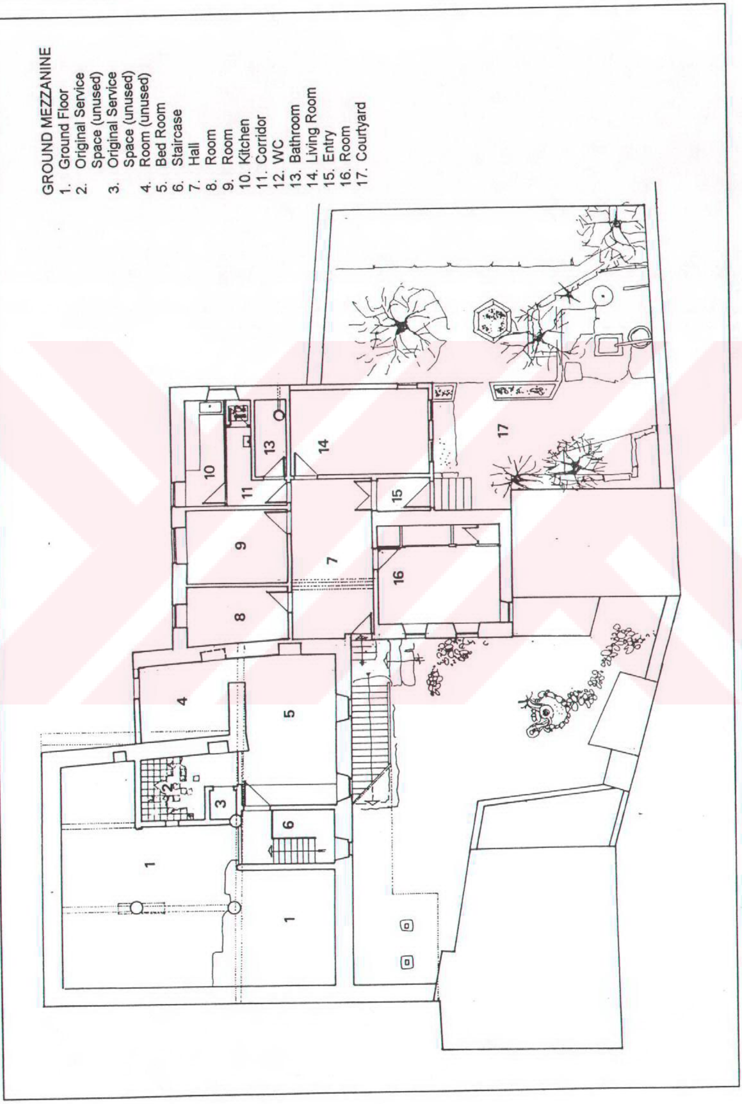
MATERIAL: The original materials are not in bad condition structurally bad they need extensive cleaning and repair. The major problem on the timber elements is discoloration and fiberisation, but most of the timber elements keep their strength. There is no a major problem in stone material accept rising damp up to 40-50 cm. where the plaster is damaged. Mud brick used as infill material in the upper floor and in the division walls there is not a big problem where the plaster of the wall kept in its place regularly. Brick tiles used in the pavements of the main room the service space and the main hall are lost today. The main hall is paved with today but the other two spaces are left in earth after the removal of the tile pavement.
There is a general need plaster and paint repair both inside and outside of the building.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**FLOOR PLANS** ADDRESS: Erzurum St., 48; Erzurum Qu., Ankara SURVEY DATE: October, 1994	SHEET **4c** NO



INFORMATION	FLOOR PLANS	SHEET
I S	ADDRESS: Erzurum St., 48; Erzurum Qu., Ankara	**4c'**
SHEET	SURVEY DATE: October, 1994	NO

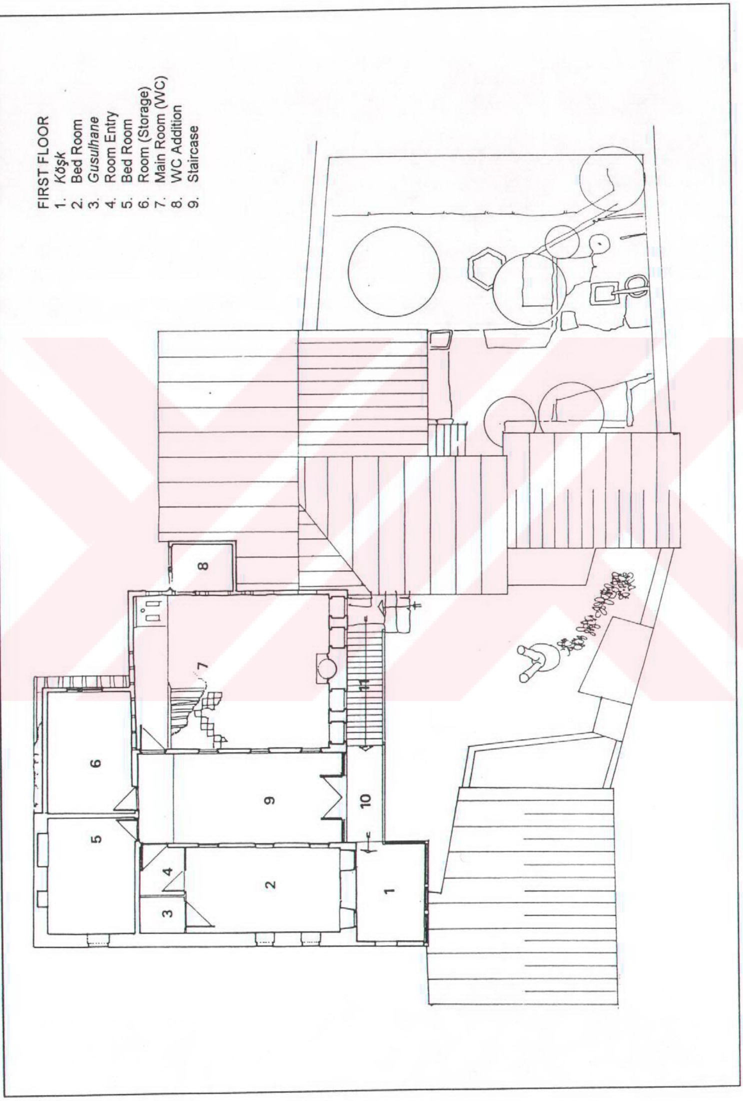


INFORMATION
I S
SHEET

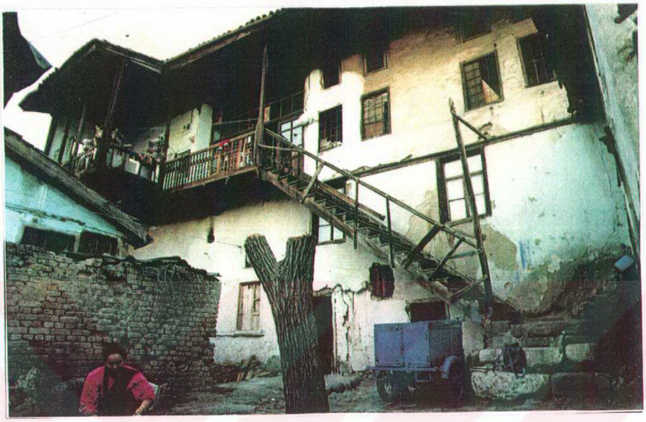
FLOOR PLANS

ADDRESS: Erzurum St., 48; Erzurum Qu., Ankara
SURVEY DATE: October, 1994

SHEET
4c"
NO



INFORMATION I S SHEET	PHOTOGRAPHS ADDRESS: Erzurum St., 48; Erzurum Qu., Ankara SURVEY DATE: October, 1994	SHEET 4d NO



INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Erzurum St., 48; Erzurum Qu., Ankara SURVEY DATE: October, 1994	SHEET **4d'** NO

INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Sarıkadın St., 43, Erzurum Qu., Ankara. DATE: October, 1994	SHEET **5a** NO

DESCRIPTION OF THE BUILDING: The house is located in a rectangular parcel and is directed to Sarıkadın street with its narrow side. The building consists of two floors and there is a small garden at the back.

GROUND FLOOR: The entrance to the building is from the taşlık (G1) located in the ground floor that is surrounded by spaces on the south side. The closed spaces in the ground floor could not be documented but only some verbal information was gathered as to their use by students. These spaces are elevated from the stone paved taşlık. There is a WC (G8) at the entrance of the taşlık that is used by all the dwellers of the house. There are totally eight main posts in the taşlık; five of them are located to the north side of the taşlık parallel to the courtyard wall which carry the upper floor. There is a timber staircase attached to the courtyard facade of the building reaching the first floor. There is a timber made threshold in front of the staircase. At the back side of the house there is a small garden (G9). There are five closed spaces (G2, G3, G4, G6, G7) in the ground floor and all of them are reached from the taşlık separately except space G3.

FIRST FLOOR: The plan scheme of the first floor shows quite old features which consist of an open hall (F1) paved with floor tiles and the rooms located on both sides (F4, F5, F6, F7). The finishing of the roof of the rooms F6, F7 located on street side show that the construction of this building was never completed. The rooms on the street side (F6, F7) are originally not plastered and there are traces of some elements (like fireplace or cupboard in room F6) which are left incomplete. The ceilings are also uncovered. The roof structure, can be seen from these rooms and from the main open hall which is covered with tiles. The rooms (F4, F5) located at the rear side of the hall are completed, they have cupboards (F4) and original windows (F5). But the ceiling is covered with plywood which is a material that has entered to the construction market after the Republican period. The wall between the rooms has also comparatively new features. The main hall opens to taşlık with a gallery (F3) and a timber staircase located on one side of this gallery reaches the hall. The open hall is closed up to a certain height from the south side by a timber framed wall in order that which adjacent garden can not be seen. All the windows located on this facade of the house are at a higher level for the same purpose.

PRESENT FUNCTION: The house is divided horizontally and the upper floor is used by a family while the rooms located on the ground floor are rented separately to students. No questionnaire could be given to the inhabitants of the ground floor this is why these spaces could not be studied in detail. All dwellers are tenants, the owner is not living in the house.

Unit 1: 3 people (located in first floor);

Spaces: G1: taşlık as entrance; G8: WC; G5, F2: staircase; F1: main hall for circulation and living in summer time; F4, living room and all other facilities like cooking, washing, sleeping; F5: living-bedroom; F7: main room, empty; F6: room, empty. Other units could not be documented.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Sarıkadın St., 43, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **5b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry;

Ground Floor: mud brick masonry,

First Floor: timber framed, mud brick infill and brick infill in some repairs.

Roof: Timber framed with eaves, covered with tiles, has no gutter.

Floor pavements: Taşlık has stone pavement and the bases of the timber posts are covered with cement mixture. The floors of the inhabitable rooms in the first floor are also covered with screed (F4, F5). The pavements in the ground floor could not be documented except the screed pavement in the WC. The open hall is paved with floor tiles, all the pavement is still original but some units are broken and the surface layer of the tiles is flaking off.

Ceiling: The roof of the building is not completed so the main hall and the front rooms have no ceilings below the roof structure. The ceilings of the rooms located at the back side of the hall are covered with plywood.

Arch. Elements: Windows, doors and their frames and built-in furniture (cupboards, eaves etc.) are made of timber.

Finishing: Mud mortar is used for mud brick masonry and for the timber framed sections. The back facade of the house, the ground floor facade and inhabited spaces are all mud plastered and some sections are whitewashed. The condition of the plaster on exterior facades, mainly the back facade (southern) is poor, especially on the lower section where there is rising damp. The mortar and the plaster of the stone base under the walls are all emptied by rising damp. The same problem can be seen on the courtyard walls. The condition of the plaster in inhabited sections is relatively better but there are also some cracks and signs of dampness. The timber made architectural elements (like doors, windows, cupboards) are not painted and there is color change.

REPAIRS & ALTERATIONS:

Mass additions: There is no major mass addition to the building or in the parcel except the WC in the taşlık.

Element additions: Since only the upper floor could be studied and since this was not completed, it is very difficult to recognize additions. However, some special cases can identified like: addition of a wall to the rooms between F4, F5.

Repairs: There is no major repair in the building. Only some poor plaster repair is identified.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity but no water supply. All the dwellers are using the tap in the taşlık. The electricity supply is equipped over the walls and ceilings.

ORGANIZATION & CONDITION OF SERVICE SPACES: The unit in the first floor has no separate service spaces like kitchen, bathroom and WC. They are using the common WC in the ground floor. The cupboard located in room F4 is used as a kitchenette and there is no bathroom.

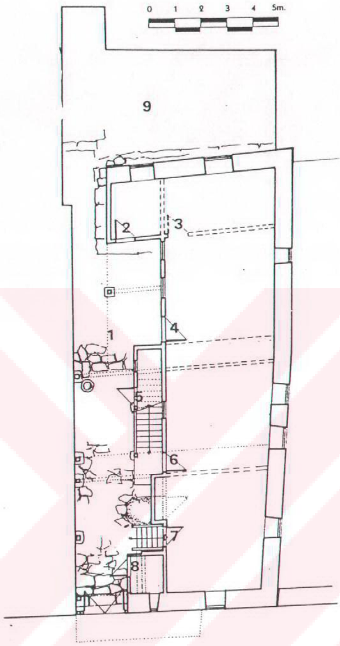
DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is no major structural problem even though the building looks very old. The roof of the building is in good condition but it has no gutters and there is material decay. It only needs some repairs like: replacement of decayed tiles, repair of degraded or missing timber pieces in the roof structure and eaves and repair and installation of gutters. There is clearly visible damage done by rising damp.

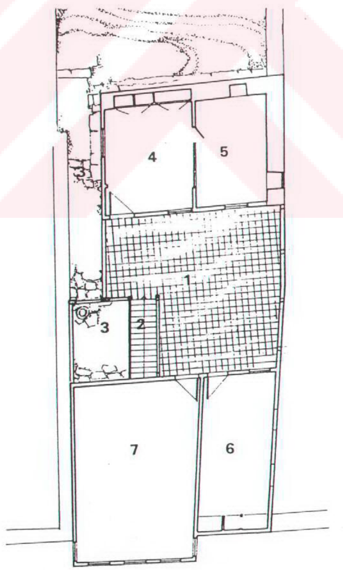
MATERIAL: The condition of the mortar and plaster is fairly bad especially in the lower sections of the walls. The exterior plaster is always washed away by rain. The plaster of the interiors are in better condition because they are periodically renewed by the users. In the timber elements exposed to outdoor conditions or in direct contact with water there is blackening, whitening and graying of color (on the roof covering elements, floor girders of main hall, etc.). Besides these decays, there is no timber element which has lost its structural strength.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**FLOOR PLANS** ADDRESS: Sarıkadın St., 43, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **5c** NO

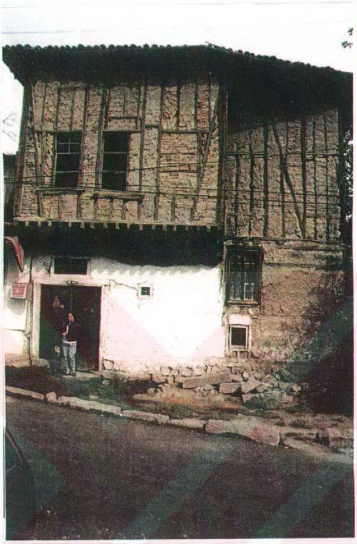


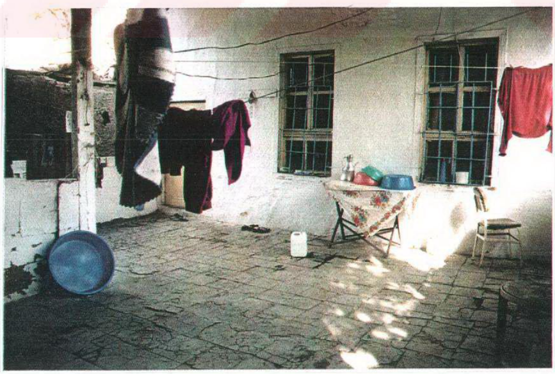
GROUND FLOOR
1. *Taşlık*
2. Room
3. Room
4. Room
5. Room
6. Room
7. Room
8. WC
9. Garden



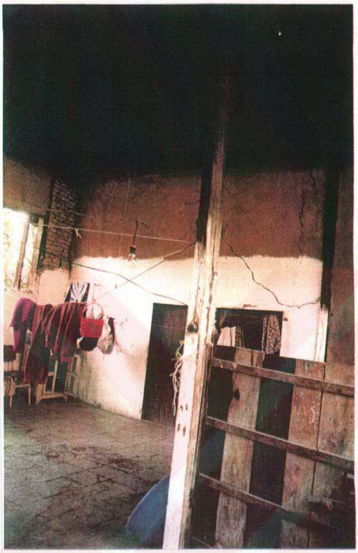
FIRST FLOOR
1. Open *Sofa*
2. Staircase
3. Courtyard
4. Living Room-Kitchen
5. Bed Room
6. Room (unused)
7. Main Room (unused)

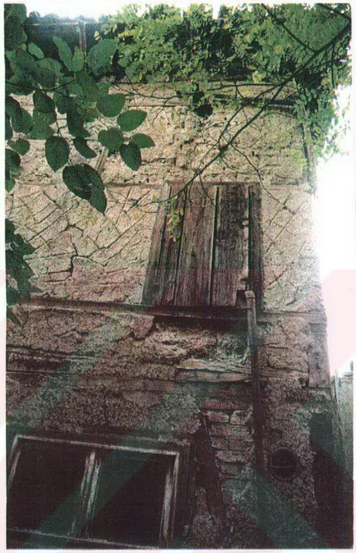
INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Sarıkadın St., 43, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **5d** NO

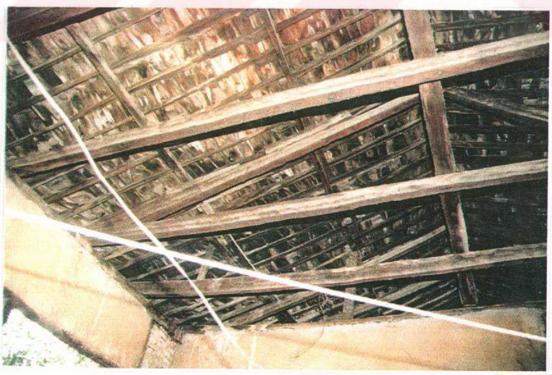




INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Sarıkadın St., 43, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **5d'** NO







INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Eskici St., 2, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **6a** NO

DESCRIPTION OF THE BUILDING: The house has a rectangular parcel on which there is the main building and a small later added mass. The owner of the house has bought two adjacent parcels and combined the house with the buildings next to it and has made some more additions. The house is placed on the street facade of the parcel, It has two L formed floors. There is a courtyard on one side of the house and an earlier mass addition in the court. The house have some traditional features eventhough the plan scheme is altered today. The house had originally an open hall in the first floor to which three rooms were opened. The hall is closed and enlarged today to obtain service spaces in the first floor. The former taşlık in the ground floor was bigger and there were two rooms opened to it. Today, the taşlık space is reduced in size due to the addition of some spaces and elements beside the alteration of the original staircase. The house is used as part of a pension complex. The neighbouring building and the ground floor of the house is divided into many rooms which are used by single workers. The rooms have no service spaces, they are used only for accommodation, but there are some common WC and showers for their use. The house is used as the entrance of this pension complex; so, some alterations are made according to this function.

GROUND FLOOR: In the ground floor there is a taşlık (G1) entered from the street which combines the entrance to the courtyard. There is a later added room (G2) on the left side (1994) where there was a WC and a storage space in 1983 (Altınsay, B., et. al.; 1983: 122). The entrance (G11) to the ground floor is also a later addition which is at the same time used as a kitchen. The location of the entrance of the main room, in the ground floor (G10), is changed and moved to the right side. The masonry wall defining the edge of the house is partly emptied in this room after big alterations done in the adjacent parcel, where a concrete framed building is erected. The original timber staircase is moved towards the entrance and the original slope of the steps is increased to enlarge the space underneath and another staircase is added there which reaches to first floor of the neighboring house. Under this newly added staircases there is an opening reaching to a circulation area (G12) in the ground floor of the neighboring building which opens to the inhabited rooms and services (G13, G14, G15). The staircase in the courtyard (G3) reaches to the service spaces (in G4; WC, shower, washstand) in the basement floor and the to circulation spaces (G5, G6, G7) above ground level where some more rooms are opened. (G9, G8). This section of the house is newly built in the last years and combined to the buildings in the neighboring parcels on the right and the back sides.

FIRST FLOOR: The plan scheme of the first floor is altered but the original scheme can still be read. The original open hall of the building (F2) is still used for circulation, combining the original rooms on each side (F3, F4, F10) and the later built service spaces (F6, F7, F8). The location of the staircase might be original (F1). Today the top of the later built mass in the courtyard is used as a terrace (F9) and it reached from the room at the back. The kitchen (F5) located in the first floor, might originally be a part of the room F4. It was smaller in 1983, today it is enlarged by the addition of a projection towards the courtyard in the first floor. The current bathroom (F6) in the first floor was a WC in 1983. By the enlargement of this section, a new WC (F7) and the circulation hall (F8) is enlarged by combining the services to the hall (F2). There are some original elements in the first floor like the cupboards in the rooms F3, F10 and the ceilings of the spaces F10, F1, F4, F3, F2. There are original cupboard doors in the cupboard located at the top of the wall in space F8 looking to the services.

PRESENT FUNCTION: The house is divided horizontally and vertically into 5 dwelling units, besides there are other units in the adjacent building entered from this house. The owner is living in the first floor and the ground floor is divided to separate units, each of them only consist of a room and is used by single tenants who is a worker (in the field of construction or in marginal works). The newly built neighboring building consists of two floors entered from this old house and there are more than 20 rooms which are not documented in this study. In this information sheet the documentation of the units located in the original house are limited with their parcel boundaries.

Unit 1: could not be documented; number of users is unknown (located in ground floor); Spaces: G1: taşlık as entrance; G2: living, bedroom; G12-G13: circulation; G14: WC; G15: shower.

Unit 2: 3 people; (located in the ground floor); Spaces: G1: taşlık as entrance; G10: living, bedroom; G11: kitchen; G12-G13: circulation; G14: WC; G15: shower.

Unit 3: could not be documented; number of users is unknown (located in ground floor); Spaces: G1: taşlık, G3 courtyard; G5, G6: as entrance; G9: living, bedroom; G7: kitchenette; G12-G13: circulation; G14: WC; G15: shower.

Unit 4: could not be documented; number of users is unknown (located in ground floor); Spaces: G1: taşlık, G3 courtyard, G5, G6 as entrance; G8: living, bedroom; G7: kitchenette; G12-G13: circulation; G14: WC; G15: shower.

Unit 5: 3 people (located in first floor); Spaces: G1: taşlık and staircase for entrance; F1: entry; F2: living, circulation hall; F3: bedroom; F4: living room; F5: kitchen; F6: bathroom; F7: WC; F8: circulation; F9: terrace; F10: living, bedroom.

INFORMATION I S SHEET	STRUCTURAL SYSTEM & MATERIAL ADDRESS: Eskici St., 2, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET 6b NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry;
Ground Floor: mud brick masonry,
First Floor: timber framed, brick infill
Roof: Timber framed with eaves, covered with tiles, has gutters.

Floor pavements: All spaces in the ground floor including the courtyard and the taşlık are covered with screed. The stone pavement of the taşlık can be defined in some sections. Beside that there are some stone steps in the taşlık; i.e., in front of the entrance room to space: G11; under the third step of the original timber staircase (this stone piece defines the original beginning of the former staircase); the first step of the later added staircase (this piece is probably moved from another place). There are also traces of the stone base of the old masonry mud brick walls between spaces G1-G12 where the original wall is moved. All the inhabited rooms and the staircase in the first floor are made of timber while the kitchen (F5), the circulation space (F8), the WC (F7) and the bathroom (F6) are paved with ceramic tiles. The terrace (F9) is covered with screed.

Ceiling: The great part of the ceiling of the taşlık (G1) and room G10 are covered with timber. The ceiling above the newly added staircase and the kitchenette (G11) are covered with plywood. The ceilings of all the inhabited original rooms in the first floor (F1, F2, F3, F4, F10) are made of timber while the ceilings of the service spaces (F5, F6, F7, F8) are made of plywood.

Arch. Elements: Staircases, ceilings and their ornaments, windows, door frames and built-in furniture (cupboards, etc.) are made of timber.
Finishing: The plaster of the house is completely renewed and whitewashed both from the interior and the exterior by a cement based plaster. The condition of the plaster is good. All timber made architectural elements (like doors, windows, cupboards) are oil painted and are in a good condition, especially in the first floor.
timber made elements except the floors are repainted.

REPAIRS & ALTERATIONS:

Mass additions: There are some major mass additions not directly to the house but effecting the plan scheme and the function. The mass added into the courtyard has a basement and a ground floor and its top is used as a terrace from the first floor. This mass is enlarged towards the south by repairs done last year. The basement of this mass is used by the shop located on İnan st, no:10. The new building located on the north of the house (İnan St., no: 10 A) is owned by the same owner and this house is combined with the original house (Eskici St., no: 2) and their entrance are common. Another mass addition is made to the courtyard facade of the house in the first floor by enlarging the service spaces towards the court.

Element additions: There are some wall additions in the taşlık to obtain more rooms for rent. The space G2 is a later addition where there was a WC and a small depot before. The kitchen (G11) with a washstand is also a later added space. The facade elements of this room are reused original pieces which are carried from other parts of the house. For example the double winged original door in this space (G11) was formerly the door of the space G10. There was an entrance and a service space in front of the room G10 in 1983 but this was also an addition. Today the former alteration is also changed but the material and the workmanship of the intervention is quite good which may mislead the experts surveying the house. By the removal of a part of the north wall, the taşlık space is enlarged towards the building on the north (G12) and there a staircase reaching the first floor of the neighboring building is added. During the removal of this wall a concrete frame was built parallel to the former wall. The stairs in the courtyard are also later added elements built together with the construction of the basement floor of the shop located on İnan St., no: 10. There are three small spaces (a WC, a shower, and a space for the lavatory) located in the basement (G4) reached from the courtyard (G3). The location of the original staircase is also altered by moving it towards the taşlık door.

The original elements and balustrades are used in this alteration. There are some element alterations in the first floor beside the mass addition. The window directed to west in the room F10 is moved from the courtyard facade of the room. The owner has found bricks from Eskişehir which are similar to the original ones (in 1993-94). Then he moved the central window of the courtyard facade of the room (F10) to the west facade to obtain more sunlight. Besides, the last window on this facade is replaced with a door opening to the terrace (F9). The original frames of the windows still exist but the lower sill is removed and the wall underneath is moved to replace a door. The removed window is placed to the courtyard facade of the later added space (F8) together with two other small windows. The courtyard facade of the taşlık is also altered by the addition of a space in to the taşlık. It was formerly open to the courtyard. Now it is closed with a wall, where a new window and a double winged door is placed.

REMOVALS: The masonry mud brick wall is removed and its thichness is reduced through the spaces G1 (taşlık) and G10 to create a passage in the ground floor to the next building. A concrete beam is placed below the wall plate and floor girders in place of the former wall. The former entrance and service space located in front of the room G10 are removed and a kitchen (G11) is placed instead.

The WC and the depot formerly located in place of the room G2 are removed together with the main posts carrying the upper floor and later added services. Formerly added room located in the courtyard is removed and a building including a basement floor is placed there with storage and service spaces in the basement floor and inhabitable rooms in the ground and the terrace in the first floor level. The former kitchen and WC are removed from the first floor and new spaces are placed.

REPAIRS: There had been major repairs caused by big alterations in the building aiming to divide the house into separate rooms used by singles. The house is combined with the neighboring building, located on the north, south and west sides which are all owned by the same person. During these alterations the location of some of the original elements were changed or removed in the house. Beside the roof, plaster and all finishes are renewed. In these alterations, original elements or materials are tried to be used except in the floor pavements and wall plaster. All timber made elements except the floors are repainted.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity supply. The electricity supply is equipped over the walls and the timber ceilings. Water is supplied only to the common service spaces (kitchens, WC's and the shower) which are located in the newly added section or in the neighboring building. Only the room which has a kitchenette has water supply inside where there is a washstand also. All the service spaces in the first floor that are used by the owner have water supply.

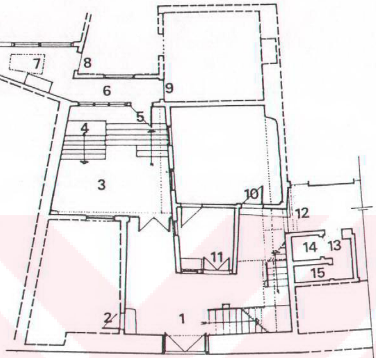
ORGANIZATION & CONDITION OF SERVICE SPACES: The condition and use of the common service spaces in the ground floor is bad. This is partly because of the users and the choice of material. But the condition of the service spaces used by the owner are better. The floor and the walls of these services are covered with floor and wall tiles and they are in good condition today. Their finishing and size is satisfactory, according to contemporary standards but installation of the fittings and choice of new materials might be harmful for the building and especially for the original material in the long run.

DECAY IN STRUCTURE: There are no major structural problems, deformation and/or cracks in the building and the condition of the roof is very good. There is some rising damp problem on the street facade and that section is painted with dark color. There is also dampness problem in the taşlık resulted from both rising damp and the pavement of the floor and the use of the common service spaces.

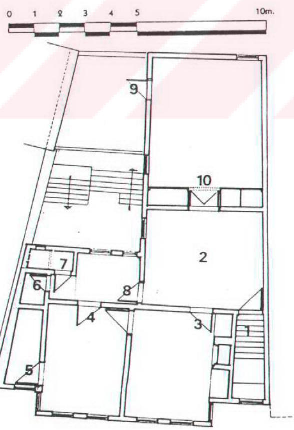
DECAY IN MATERIAL: The condition of the plaster and timber elements are very good because the building is completely repaired. But still there is dampness problem in the taşlık. The common service spaces need maintenance. The repairs were still continuing during the surveys done in October 1994. There is not any big visible problem of decay on the material. But the use of some incompatible materials may create problems in the material in the short run.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION I S SHEET	**FLOOR PLANS** ADDRESS: Eskici St., 2, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **6c** NO

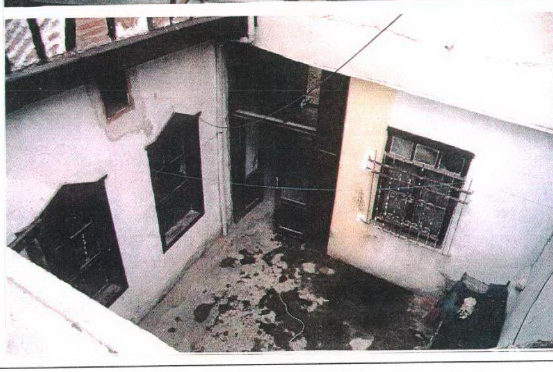


GROUND FLOOR
1. *Taşlık*
2. Room
3. Courtyard
4. Staircase
5. Staircase
6. Corridor
7. Hall
8. Room
9. Room
10. Room
11. Kitchenette
12. Corridor
13. Service Space
14. WC
15. Shower

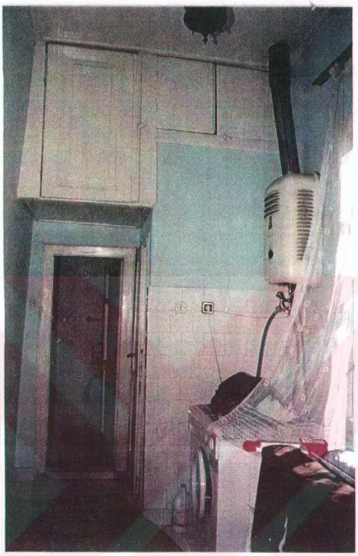


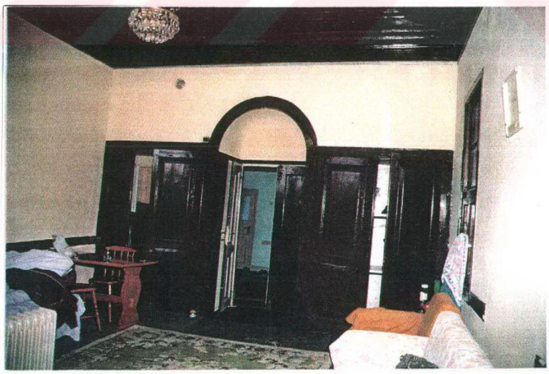
FIRST FLOOR
1. Staircase
2. *Sofa*
3. Bed Room
4. Living Room
5. Kitchen
6. Bathroom
7. WC
8. Corridor
9. Terrace
10. Living Room

INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Eskici St., 2, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **6d** NO



INFORMATION I S SHEET	**PHOTOGRAPHS** ADDRESS: Eskici St., 2, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET 6d' NO





INFORMATION I S SHEET	SPATIAL ORGANIZATION ADDRESS: Gelin St., 12; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET 7a NO

DESCRIPTION OF THE BUILDING: The house which is located inside a big garden, consists of two floors. The form of the parcel of the building has an irregular form and the building is located in the middle of the garden creating two separate gardens one at the back of the house and the other in front. There is an original service space at the back garden consisting of one floor and some recently built service spaces (G10: depot, G11-12: WC) in the front garden. The original plan scheme of the house is altered but from the features of the spaces it can be understood that this house had an outer open hall plan type. Current spaces F4, F2 were the outer open hall of the house and the space F2 was the köşk of this hall.

GROUND FLOOR: The entrance (G9) to the ground floor is from the space that corresponds to the main staircase of the house, attached to the facade. There is a hall (G1: the former taşlık) at the center of the ground floor, surrounded by elevated spaces on both sides. Today the space G6, on the left side of the hall is a living room, which was formed by the combination of two separate spaces. There are cupboards on the north side of the room and a lately added bathroom (G5). One of the spaces located on the right side of the hall is the original kitchen. There is a fireplace inside this kitchen and the level of the space is the same with the hall. Furthermore, there is a passage to the storage space under the room G8 (could not be documented). The room next to the kitchen is originally an inhabitable room and it is a bedroom now. It is also elevated from the level of the hall and has cupboards. The entrance facade of the room is altered. Next to the entrance space leading to the ground floor, a reconstructed concrete staircase reaches to the first floor through the facade. There is a depot on the back side of this staircase where one original window and one door opening still exiSt. Today, the space under the staircase is also closed and used as a depot..

FIRST FLOOR: The plan scheme of the first floor is quite altered. Today, there is semi open entrance (sahanlık, F1) at the end of the staircase in the first floor. The second entrance is a closed hall (F2) to which all the other spaces are open. The room (F4) on the left side of this hall has new cupboards and windows. The balcony, on the northeast wall of this room, is closed with windows from three facades. The plan scheme and alterations observed in these spaces show that the spaces F2 and F4 were created by dividing the open hall. The space F3 was the köşk of the hall. There is a small circulation area (F8) between the spaces located on the right side of the hall. It is possible to reach the main room of the house (F9) from this circulation area. The seki of the main room is removed but its traces can be seen on the partly renewed floor pavement. The section of the ceiling corresponding to sekialtı is original while the rest is altered like all the other ceilings of the first floor. Some parts of the original cupboards of sekialtı is still existing but the original cupboard doors are all altered. The main room of the house is practically unused today. The existing kitchen, located at the back of the main room is also an altered space (F6). On the east wall of the space there is an original fireplace and there are traces of a window on the south wall. The materials used in the partition wall, constructed between the spaces F6 and F5 are the pieces taken from the former timber ceilings and cupboard doors of the building. The use of materials shows that this wall is not original. The WC (F7) is also a later addition to this space and it is in a bad condition. The space F5 is used as a living and bed room today. It is a very sunny room with enlarged windows. The cupboards are also new.

PRESENT FUNCTION: The house is divided horizontally into 2 dwelling units and each of them are used by tenants.

Unit 1: 4 people; (located in ground floor);

Spaces: G1: taşlık as entrance, circulation and living; G2 storage; G4: storage; G5: bathroom; G6 living room; G7: kitchen; G8: bedroom; G9: entrance; G10: wood-coal depot; G11: circulation; G12: WC.

Unit 2: 5 people; (located in the first floor);

Spaces: F1: entrance; F2: hall; F3: storage; F4: bedroom; F5: living-bedroom; F6: kitchen; F7: WC; F8 circulation; F9: storage (main room).

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Gelin St., 12; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET **7b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry; Ground Floor: mud brick masonry; First Floor: Mud brick masonry in exterior walls; timber framed, mud brick infill in some of the partition walls;

Roof: Timber framed with large eaves and covered with tile, has no gutter.

Floor pavements: The courtyard has stone pavement covered with screed in some sections. Taşlık is paved with screed near the entrance and the rest of the space is paved with timber. The floors of the inhabitable rooms in the ground floor are timber (G6, G8) and the service spaces (G5, G7, G9) are covered with screed. All pavements of the spaces in the first floor are timber except the kitchen and WC (F6; G7) which are paved with screed. The staircase is made of concrete and finished with mosaics.

Ceiling: The ceiling of the bathroom in the ground floor and WC in the first floor are cement plaster and the ceilings of other spaces are timber.

Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture (cupboards, shelves etc.) are made of timber.

Finishing: Mud mortar is used to combine the mud brick masonry and timber framed sections. The exterior facades of the house are mud plastered and white washed. The condition of the plaster on the exterior facades, especially the back facade (southern) is poor. The interior spaces are all plastered and whitewashed and the condition of the plaster is good besides some need for repair and maintenance. Most of the timber made architectural elements (like door, windows, cupboards) are oil painted, but there is lack of paint on the exterior faces of the windows.

REPAIRS & ALTERATIONS:

Mass additions: There is no mass addition on the building but new masses as service spaces are added to the garden (G10, G11, G12). The WC's (F7) on the first floor and on the ground floor (G5) can be accepted as mass a addition inside the building.

Element additions: The major addition is the addition of walls to the main hall to close it; these are located between the spaces F1-F2; F3-F4; F2-F4. It is not possible to define the original location but the wall separating the spaces F5-F6 is also a later addition. The storage space (G2) obtained by closing the space underneath are the staircase and the staircase (G3) itself are the other additions. The location of the staircase might be original but its material is completely new. The windows closing the köşk (F3); the washstands placed inside the window alcoves (F6, G7) and the cupboards in the rooms F5 and F4 are the other additions in element scale.

Removal: the wall inside the room G6; windows in the back yard facade of the hall in the ground floor (G1); and kitchens in each floor (G7, F6); removal of all timber ceiling pavements in the first floor.

Repairs: There had been major repairs caused big alterations in the building. The open sofa in the first floor is closed and divided into two spaces, and the köşk of the open hall is also closed. The spaces (probably there were three spaces) located at the back of the open hall were also altered and transformed to two spaces. The main room in the house keeps it original dimensions but the original ceiling, floor pavements, cupboards and the sedir are removed and altered. All the ceilings of the upper floor are replaced with new ones, and so are the floor pavements. These removals can be understand from the workmanship and sizes of the newly altered materials. Beside, some of the original timber elements are used to construct the partition wall between the spaces F5-F6. The ceilings of the ground floor are original but with some alterations. This shows that, there had been a big damage in the roof and to change the ceiling and the roof was inevitable. The original taşlık in the ground floor is also covered with timber in these repairs. Although there had been many alterations and repairs to divide the house into two dwelling units, the plan scheme of the building is still understandable. In these repairs traditional materials are commonly used except the service spaces. The interior and exterior plaster of the building is also renewed during this operation. The structural condition of all timber elements is good except some color changes resulting from dampness or pollution especially in the ground floor where the originals still kept in its place. The condition of the roof is also good but it needs gutters and some repair.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity and water supply. The electricity supply is equipped over the walls and timber ceilings. Water is supplied to all the WC's and the kitchens in the house.

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is poor. The kitchens are comparatively satisfactory in size but the finishing materials used in these spaces are poor, they can be renewed or maintained better. The WC and bathrooms are quite bad and not equipped satisfactorily according to contemporary standards.

DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is no major structural problem, deformation and/or crack in the building and condition of the roof is good. It only needs some repairs like: replacement of decayed tiles, repair of degraded or missing timber pieces in the roof structure, eaves and the repair and installation of gutters. There is no visible damage done by rising damp because the stone masonry ground floor level is in good condition. But there is problem of dampness in service spaces.

MATERIAL: The condition of the exterior plaster at the back facade is poor as a result of rainwash through the facades, but it needs partial repair and paint. The plaster of the interiors are in better condition because they are renewed by the users periodically. There are no color changes especially in the ceilings and the floor pavements of the first floor, but there are some in the original ceilings of the ground floor (possibly because of combined action of pollution and dampness). There is discoloration (the color turned to dark brown) on timber elements of the roof eaves. The stone base of the ground floor is in good condition and it partly stops the rising damp. Condition of timber elements in general is quite good, they need some cleaning and maintenance. There is not any timber element which lost its structural strength and there is no biodeterioration or insect attack.

INFORMATION
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SHEET

FLOOR PLANS

ADDRESS: Gelin St., 12; Ulucanlar, Ankara.
SURVEY DATE: October, 1994

SHEET
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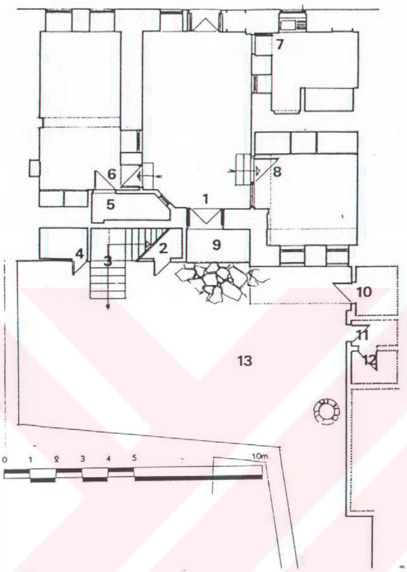
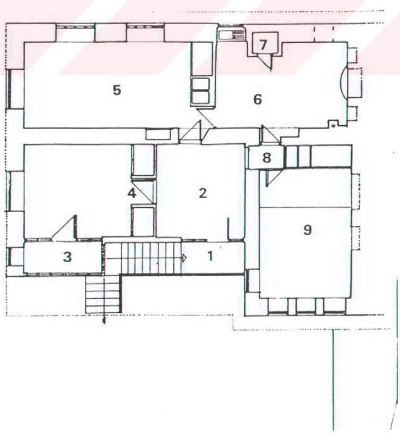
NO

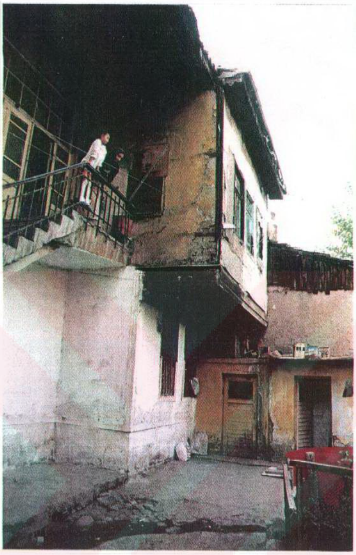


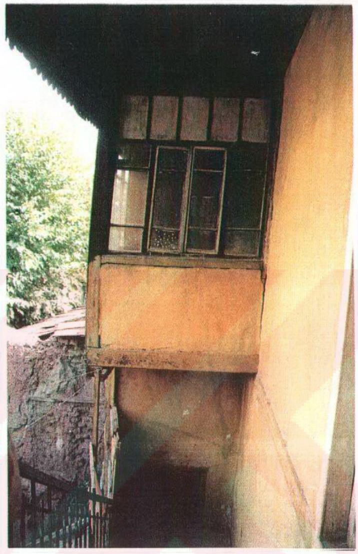
GROUND FLOOR
1. Living Room
2. Storage
3. Staircase
4. Storage
5. Bathroom
6. Living & Bed Room
7. Kitchen
8. Bed Room
9. Entry
10. Storage
11. Entry
12. WC

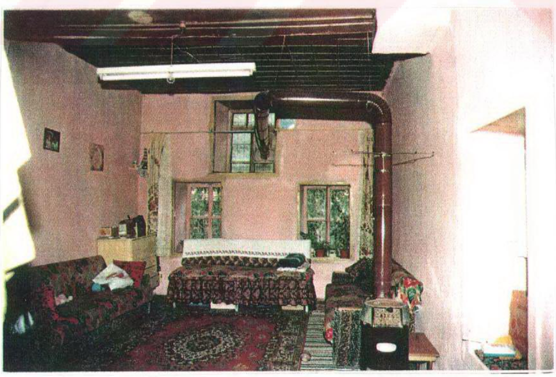


FIRST FLOOR
1. Staircase & Entry
2. Entrance Hall (former *Sofa*)
3. Balcony (former *Köşk*)
4. Bed Room (former *Sofa*)
5. Living & Bed Room
6. Kitchen
7. WC
8. Corridor
9. Room (former Main Room)

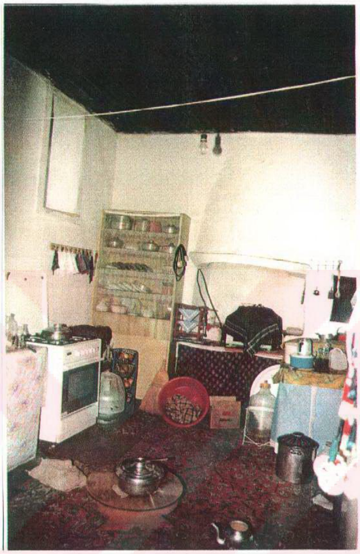
INFORMATION I S SHEET	**PHOTOGRAPHS** ADDRESS: Gelin St., 12; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET 7d NO

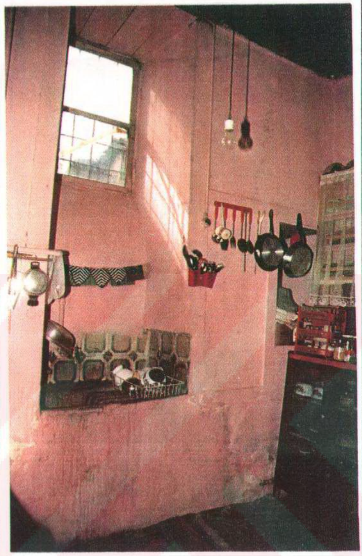


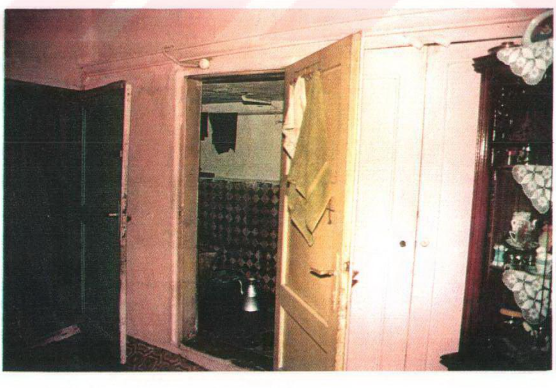




INFORMATION I S SHEET	PHOTOGRAPHS ADDRESS: Gelin St., 12; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET 7d' NO







INFORMATION I S SHEET	SPATIAL ORGANIZATION ADDRESS: Öksüzler St., 17, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET 8a NO

DESCRIPTION OF THE BUILDING: This example was documented and examined in 1989 for the first time by some staff members of the department (N. Akçora N., N. Şahin, N. Özgönül, E. Morçöl, F. Gökçe). The building was bought by the current owners in 1992. The new owners made immense repairs and alterations because the condition of the building was very bad in 1989. The house is located in a big parcel which surrounded by streets on two facades. Besides the main house, there are some auxiliary buildings and a later added dwelling unit in the parcel. The main house is originally located at the east side of the parcel facing Öksüzler street and the courtyard. The main house has a basement, ground, mezzanine and first floors which are divided both horizontally and vertically and used by two share-holders. The original entrance to the building was from the courtyard through the taşlık located in the ground floor and it was formerly open to the courtyard. The plan scheme of the building is altered by dividing it into two units.

BASEMENT FLOOR: There is a basement level under some spaces of the mezzanine floor and entered from taşlık in the ground floor. This space could not be documented.

GROUND & MEZZANINE FLOOR: In the ground floor there is a courtyard (G1) surrounded by buildings on three sides. The units located on the north are service spaces like storage (G2), WC (G3), kitchen (G4), room (G5, this space can be the original kitchen). On the right side of the courtyard there is a brick masonry house. The original staircase (G6) of the house is located on the north edge of the taşlık. The service spaces in the courtyard (G2, G3, G4, G5), the original staircase and some spaces (F1, F2, F3, F5, F6) in the first floor form the first dwelling unit in the house. The second entrance to the building is from Öksüzler street through the original taşlık space (G13). The west side of the taşlık is defined by the later added house consisting of spaces G14, G15, G16, G17, G18. The entrance to this unit is through the taşlık and from space G14. This separate unit added to the courtyard is today empty. The north side of the taşlık is closed with a timber panel. On the left side of this wall there is a WC (G19) built in the new building. Under the mezzanine, there is a basement floor on the east side of the taşlık which is located underneath the spaces M7, M8, M9. The basement floor has an entrance from the taşlık and two small windows on Öksüzler street. On the east wall of the taşlık there are two staircases, one reaches to mezzanine floor and the other reaches to the first floor (G12). On the street facade of the ground level there is a room (G10) in the same level with the taşlık which is used as a garage today and is linked to the taşlık with a small corridor (G11). The mezzanine floor directed to the taşlık consists of two rooms (M7, M9) and a small space used as kitchen (M8).

FIRST FLOOR: The plan scheme of the first floor is altered but the original scheme can still be read. There are two staircases reaching to the first floor, one of them is original (F1), and the other one is a later addition (F8). The original staircase reaches an entrance (F4) in the first floor which is two steps below the floor level of the rooms. There is a circulation hall (F5) next to the entrance (F4) directed to the court and a room is opened to that (F6). The halls F5 and F8 were originally connected to each other but today they are divided by closing the door between them. On the north side of the entrance (F4) there is a small kitchenette (F2) and a room (F3) facing to the courtyard. These were built on the original service space (G5) in the courtyard. This section placed on the north side of the staircase must be a later addition. The narrow central hall (F8) directed to the street is surrounded by rooms (F7, F9) on each side. The central hall and the room on the east project towards the street on the first floor.

PRESENT FUNCTION: The house is divided horizontally and vertically into 2 dwelling units. There is one more dwelling unit located in the later added mass in the courtyard which is not used today.

1 St. Unit: 5 people (located in ground, mezzanine and first floors); Spaces: G13: taşlık as entrance and kitchen; G19: WC; G11: circulation; G10: garage; G12: staircase; M7: bedroom; M9: living and bedroom; M9: kitchenette; F8: circulation, living; F7: living and guest room; F9: bedroom.

Unit 2: 5 people (located in ground and first floors); Spaces: G1: courtyard for entrance and living; G2: wood-coal depot; G3: WC; G4: kitchen; G5: partly as storage; G6: staircase; F4: entry; F2: kitchenette; F3: living, bedroom; F5: living, circulation; F6: bedroom.

3 rd. unit; empty (located in the ground floor); not documented in detail; Spaces: G13: taşlık as entrance; G14, G15, G16, G17, G18.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION I S SHEET	STRUCTURAL SYSTEM & MATERIAL ADDRESS: Öksüzler St., 17, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET 8b NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry;
Ground Floor: mud brick masonry,
Mezzanine Floor: Mud brick masonry in exterior walls, timber framed in partition walls.
First Floor: timber framed, mud brick infill, brick is used in repairs of infill material.
Roof: Timber framed with eaves, covered with tiles, has no gutter.
Floor pavements: All floors in the ground and mezzanine floors, including courtyard and taşlık, are covered with screed except the rooms M7 and M9 in the mezzanine. The spaces in the first floor are covered with timber except the kitchenette F2 which is covered with screed.
Ceiling: The ceiling of all the spaces is timber but the room M7 is plastered and painted on timber.
Arch. Elements: Windows, doors their frames and built-in furniture (cupboards, etc.) are made of timber.
Finishing: The plaster of the house is completely renewed and whitewashed both from the interior and the exterior by a cement based plaster. The timber made architectural elements (like door, windows, cupboards) are oil painted but their condition is not good. The timber ceilings are not painted and there are darkening problems. The floor boards are not painted they have great deformations but their surfaces are in a better condition.

REPAIRS & ALTERATIONS:

Mass additions: There are few mass additions made to the parcel or to the building itself. The spaces located on top of the original auxiliary building (G5) located on the north side of the building is a later addition and contemporary with the closing of the original staircase and circulation space next to it (F5). The other service spaces located in the courtyard are also later additions (G2, G3, G4). The separate building unit added to obtain a dwelling unit in the corner of the parcel is a brick masonry structure. This addition closes the taşlık from the east side which was originally a semi open space directed to the courtyard.
Element additions: There are many element additions which change the original plan scheme of the house. These are: the secondary staircase in the taşlık (G12); addition of the wall between the taşlık and the original staircase (G13, G6); the double winged door in the garage (G10;); addition of a washstand in the taşlık (G13); addition of a wall and window to the hall F5; addition of a door on the street facade of the taşlık (G13) and in front of the original staircase in the first floor (F1).
Removal: The door between the spaces F5-F8; removal of original timber made staircase of the mezzanine floor (G13); removal of all window frames on the Öksüzler street facade and replacing them with new ones G9, F7, F8, F9; the traces of a fireplace on the center of the north facade of the room M7.
Repairs: There are major repairs in the building. The mass additions and alterations mentioned above were done before 1989. After 1992 there have been some more repairs and interventions. During these interventions the building was completely plastered and whitewashed both from the interior and the exterior. Some elements are removed like, washstand in the hall F8; and some others are altered like, alteration of all window frames on Öksüzler street facade, enlargement of the door in the garage (G10), alteration of the former timber staircases with concrete ones in the taşlık (G13). The repair of the roof is not yet completed.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity supply. The electricity supply is equipped over the walls and timber ceilings. Water is supplied only to the service spaces in the ground floor or in the courtyard (G3, G4, G13).

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of the service spaces are very poor. The first unit is using the taşlık as a kitchen because the one in the mezzanine is quite small and it is not equipped. The second unit has a kitchen in the courtyard which is adequate in size but its location and finishing is not satisfactory. The WC's in both units are in a very poor condition and the dwelling units have no bathrooms.

DECAY IN STRUCTURE & MATERIAL:

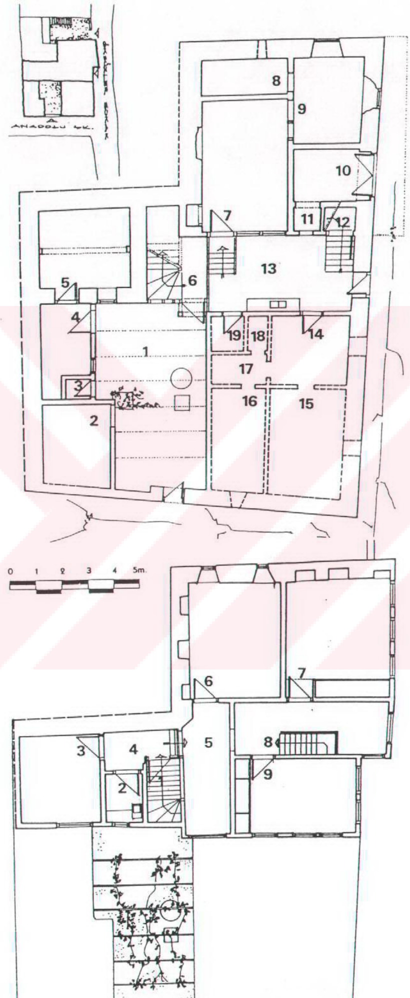
STRUCTURE: There is a serious settlement problem on the floor pavements of the east and south facades. The deformation of the projection on Öksüzler street was done by a truck which hit this facade of the building. The level of the projection on Öksüzler street became very low by the rise of the street level in each asphalt repair and cover. This danger is always valid because the street is not closed to the entrance of high vehicles. There are different settlements on the outer masonry east wall that caused collapse of the floor boards especially in the room F6. This structural deformation creates many problems inside the house.

The condition of the roof is not good but its repair is still continuing like alteration of broken tiles and defected timbers, etc. There is a rising damp problem on the street facade eventhough it can be seen that the plaster is just renewed. But the biggest dampness problem is in the taşlık and the mezzanine floor resulting from both rising damp and poor isolation.

MATERIAL: The condition of the plaster is not good because the workmanship quality of the repairs is very poor. The condition of the building is also very bad which needs special care and solutions for problems. Some of the timber elements (like doors and windows) are oil painted, but they need repair. The other timber elements like ceiling and floor pavements, eave timbers are in bad condition because of combined action of pollution and dampness. The original structural materials are all plastered today and it is not possible to identify if there is any damage. But the cement based mixtures used in repairs (plaster or screed) might be harmful for the original materials.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

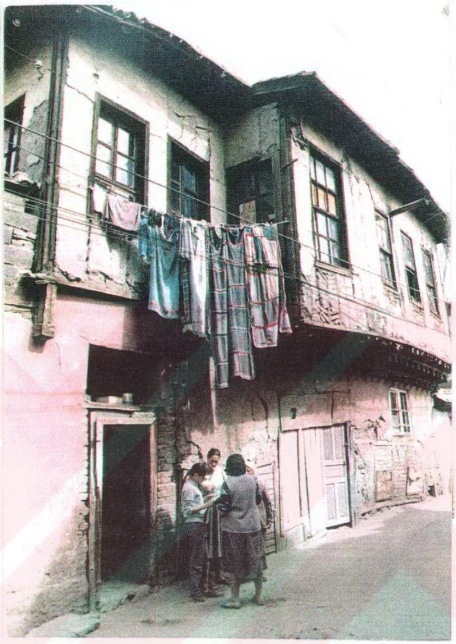
INFORMATION I S SHEET	**FLOOR PLANS** ADDRESS: Öksüzler St., 17, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET 8c NO



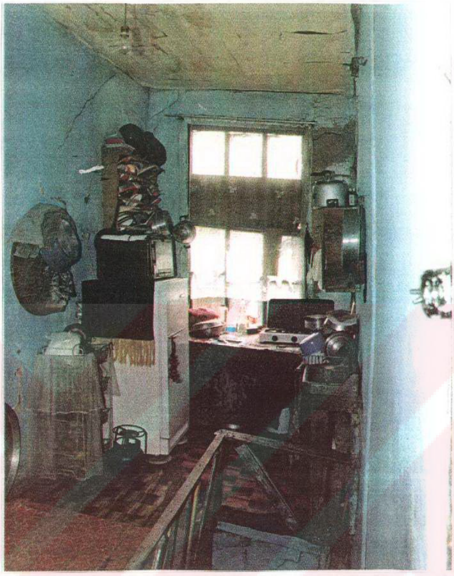
GROUND FLOOR
1. Courtyard
2. Storage
3. WC
4. Kitchen
5. Storage
6. Entry & Staircase
7. Bed Room
8. Kitchen
9. Living Room
10. Storage & Garage
11. Corridor
12. Staircase
13. Kitchen (former *Taşlık*)
14. Entry
15. Living Room
16. Bed Room
17. Kitchenette
18. WC
19. WC

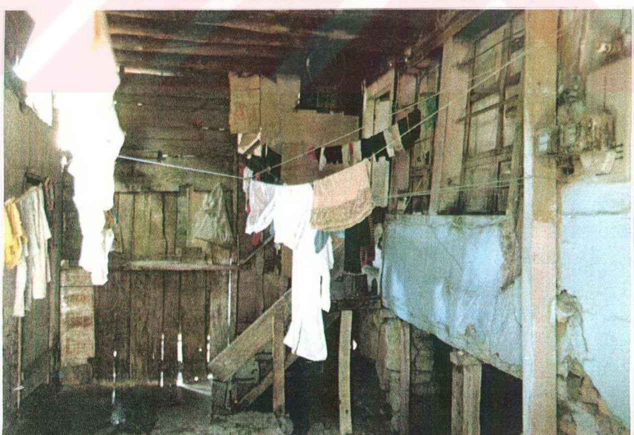
FIRST FLOOR
1. Staircase
2. Kitchenette
3. Room
4. Circulation
5. Circulation
6. Bed Room
7. Living & Bed Room
8. Circulation (original *sofa*)
9. Room

INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Öksüzler St., 17, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **8d** NO



INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Öksüzler St., 17, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **8d'** NO





INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Cingöz St., 3, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **9a** NO

DESCRIPTION OF THE BUILDING: The house is located in a big parcel where the main house, a later built second house and some service spaces are existing. The house is placed inside the courtyard (B11) and has no facade to the street. There is an early addition on the north side of the house used as a separate dwelling. Across to this there is an auxiliary building (possibly a kitchen, B6), an original WC (B8, B9) and two depots (B10) on the south side of the courtyard. The house has a central narrow hall surrounded by spaces on three sides. This plan scheme is repeated in three levels starting from the basement floor.

BASEMENT FLOOR: Entrance to the basement floor is taken from a separate door located on the right corner of the front facade. In the basement floor there is a big entrance space (B1) corresponding to the central hall and service spaces located on the north and two rooms at the back (B2, B3). There is a staircase (B4) reaching to the ground floor in the entrance space (B1). In the courtyard (B11) there are some original elements. The WC in the court has an original WC stone (B8) and a special stone water depot (B9) where water can be stored.

GROUND FLOOR: The plan scheme of the basement floor is repeated in the ground floor too, but the entrance is taken from the center of the facade to the central narrow hall (G1) which is elevated half floor from the ground level of the court. There is a living room (G2) on the left, a kitchen (G5) and staircase (G4) reaching to the basement and the first floor on the right and another inhabitable room (G3) at the back. A mass (B5) is added to the facade of the kitchen in this floor where a WC (G6) is placed. In the kitchen there are some original shelves on the walls and a fireplace. This floor of the building could not be visited in the last surveys done in October 1994.

FIRST FLOOR: The first floor makes a projection towards the courtyard. The location of the central hall (F9, F1) and staircase is the same but the number of spaces increases in this floor. There are two rooms on the left (F2, F3); one room (F8), a bathroom (F7), a WC (F6) and a kitchen (F5) on the right side of the central narrow hall which is divided in two separate sections (F1, F9). There is again a room at the back (F4). The back side of this floor is renewed after the space F1.

PRESENT FUNCTION: In the first surveys of the house done in 1993, the owner was using the whole house. But today (October 1994) the upper floor of the house is used by a tenant and the ground floor is closed by the owner who moved to Keçiören. The tenant is using the entrance in the basement floor to reach the upper floor.
1 St. Unit: 3 people (located in first floor);
Spaces: B11: courtyard; B1: entrance; G4: staircase; F1, F9: circulation; F2: living; F3: bedroom; F4: guest room; F5: kitchen; F6: WC; F7: bathroom; F8:
Unit 2: used as storage today by the owner (located in the ground floor);
Spaces: G1: entrance, G2: room; G3: room; G4: staircase; G5: kitchen; G6: WC.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Cingöz St., 3, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **9b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Basement Floor: stone masonry;
Ground Floor: Both masonry and the infill material could not be documented because of plaster. Timber frame is used only in partition walls.
First Floor: timber framed.
Roof: Timber framed with eaves, covered with tiles, has gutter.
Floor pavements: The courtyard and WC in the ground floor are covered with screed while the entrance space in the basement has an earth covered floor. Floor coverings in the ground floor were all timber in the first survey but this floor could not be surveyed during the last visit (Oct., 1994). The floor pavement of the spaces F4, F1 is screed like the WC and the bathroom (F6, F7) in the first floor. A screed platform is added on the timber floor to place the washing machine in room F8. All the other spaces in the first floor are covered with timber.
Ceiling: The ceilings of all spaces in the basement floor are not covered and the timber floor girders are seen. The ceilings of the spaces in the ground floor are all timber like the spaces F2, F3, F5, a part of F1, F6, F7, F8, F9 in first floor. The ceiling of the room F4 and the rear side of the corridor F1 are plastered.
Arch. Elements: There are original timber cupboards in the ground floor and gypsum made fireplaces for cooking in the kitchens G5 and F5. The other elements like ceiling ornaments, windows, doors and their frames, shelves etc., are made of timber.
Finishing: The plaster of the house is completely renewed with cement based plaster and whitewashed both from the interior in the ground and the first floors and the exterior. The condition of the plaster is good. All timber made architectural elements (like door, windows, cupboards) are oil painted and in a good condition.

REPAIRS & ALTERATIONS:

Mass additions: The second dwelling unit is a mass addition done inside the courtyard. The only mass addition to the house is the WC in the ground floor.
Element additions: Doors of the first floor might be altered. The screed platform located in the room F8 is also a late addition.
Removal: The original ceiling of room F4 and a part of corridor (F1) are removed.
Repairs: There are some repairs in the house like plaster repair and oil painting of all timber elements. There are no major alterations affecting the plan scheme. There is only one WC addition on the courtyard facade of the building which is carried by timber posts. Besides, the roof of the house is completely repaired with its eaves and gutters.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity supply. The electricity supply is equipped over the walls and timber ceilings. Water is supplied to the service spaces (kitchens, WC's and the bathroom) in each floor.

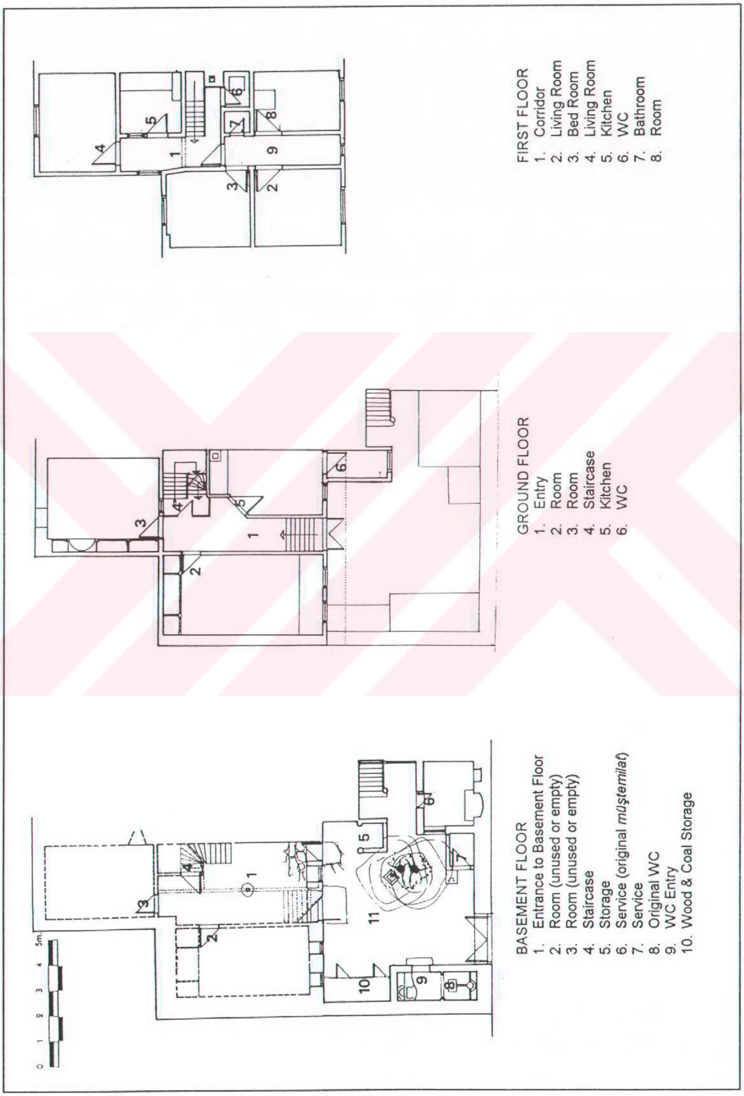
ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of the service spaces is bad. They may be satisfactory in size but installation of the fittings and choice of new materials are poor and might be harmful to the original material of the building in the long run. The condition of the original WC is poor, it needs maintenance.

DECAY IN STRUCTURE & MATERIAL:

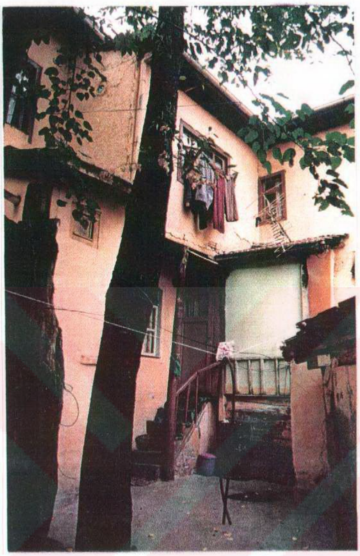
STRUCTURE: There is no major structural problems, deformations and/or cracks in the building and the condition of the roof is good. There is some rising damp problem on the courtyard facade and especially in the basement floor where the floor is covered with earth.
MATERIAL: The condition of the plaster and timber elements was good because the building is repaired by the owner periodically until this year. But there is still a dampness problem in the service spaces and in the basement floor.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

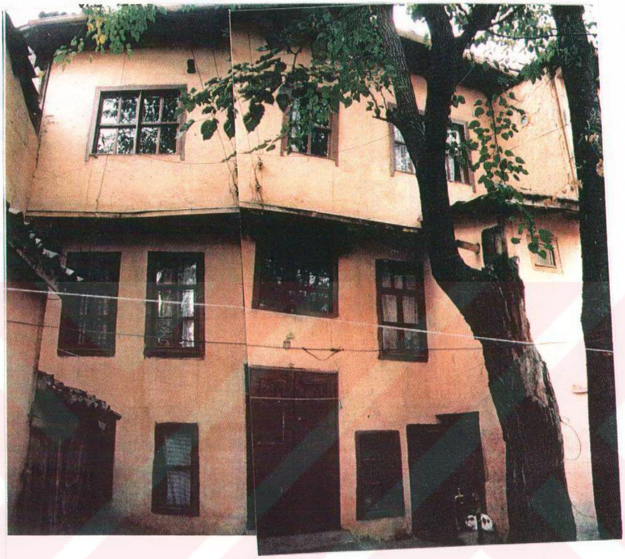
INFORMATION I S SHEET	**FLOOR PLANS** ADDRESS: Cingöz St., 3, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **9c** NO



INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Cingöz St., 3, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **9d** NO



INFORMATION I S SHEET	PHOTOGRAPHS ADDRESS: Cingöz St., 3, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET 9d' NO



INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Eylül St., 1, Sarıca St., 7, Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET **10a** NO

DESCRIPTION OF THE BUILDING: It is surrounded by streets on two sides and has a courtyard at the rear. The main entrance of the building is from Sarıca street. The building has an L shaped plan scheme, consisting of ground floor and first floor.

GROUND FLOOR: There is a taşlık in the ground floor which was probably a semi open space before. Now it is surrounded by spaces on three sides and its left side (G7) faces to the courtyard (G6). The main entrance of the house is taken from Sarıca street and there is a second entrance placed on Eylül street on the east facade. A third entrance was later added facing Sarıca street and serving to a separate unit in the house. In the taşlık, there is an original timber staircase reaching to the upper floor. A section of taşlık is two storey high which was originally a gallery that opened to the hall at the first floor. The spaces in the ground floor (G10, G11, G12) are inhabitable rooms paved with timber floors and ceilings. Space G10, is used both as kitchen and living room today. There are two later added toilettes (G8, G20) in the taşlık, which today are serving to the separate dwelling units of the house. The spaces (G1, G2, G3, G4) on the west side of taşlık meet the service requirements of one of the dwelling unit placed in the first floor. Space G1, is an entrance space in the character of taşlık, paved with screed and opening to the main taşlık and the courtyard at the same time. There is a staircase reaching to the upper floor and spaces G2 and G3 are used as depot for wood and coal. There is a later added WC (G4) in this space which was formerly a part of the main taşlık (G1). The space G14 is placed in a lower level from the main taşlık and it too has a taşlık character and is paved with screed. There is a later added alcove (G16) with a washstand and a WC (G15) beside the staircase (G17) reaching the mezzanine floor (G18) where an inhabitable room (G19) is placed. This mezzanine reaches the upper floor by the timber staircase (G13) which is placed on top of the WC in the main taşlık. In the courtyard (G6) there is an auxiliary building which could not be documented. Two big trees and a part of the stone pavement are the only original features of the court.

FIRST FLOOR: There are five rooms (F3, F4, F7, F8, F11) surrounding the gallery (F1) and the hall around it. At present the hall is divided as F2, F6, F9 and used by separate dwellings. The gallery of the hall at F2 (timber beams and balustrades) is closed by plywood and separated from the taşlık (F1). Each room in the first floor has cupboards created with the combination of cupboards in different size and/or door at least on one facade. The main staircase (F2) of the first floor reaches from taşlık to hall. The hall is divided by walls and the space F6 which is obtained by this division is used as a kitchen today. There is a washstand combined with a bench. The other divided section of the hall F9, is today used as a circulation hall by the other dwelling unit. The division wall placed between the spaces F6 and F9 is made of briquette and is not plastered. The other division wall located between the spaces F2 and F6 is plastered.The later added kitchen (F10) is made with timber framed skeleton and filled with mud brick and mud plastered. The service units underneath this space in the ground floor (G5, G8) are used as depot and WC. There is an original kitchen with a hearth the first floor (F13). Space F11, still carries most of its original features from the point of construction technique and materials.

PRESENT FUNCTION: At present, the house is divided vertically and horizontally into 4 dwelling units and all the dwellings are used by tenants.

Unit 1: 4 people; (located in ground and first floors);

Spaces: G1: entrance hall; G2, G3: storage; G4: WC; F8: living-bed room; F9, F11: circulation; F10, F13: kitchen; F12: bedroom.

Unit 2: 4 people; (located in ground, mezzanine and first floors);

Spaces: G14: entrance hall; G15: WC; G16: alcove with a washstand; G17: staircase to mezzanine; G18: circulation in mezzanine floor; G19: bedroom; F5: staircase to first floor; F6: circulation and kitchen; F7: living-bedroom.

Unit 3: 4 people; (located in ground floor);

Spaces: G7: main taşlık as entrance; G10: daily room-kitchen; G11: bed room; G12: living room; G13: WC.

Unit 4: 3 people; (located in ground and first floors);

Spaces: G7: main taşlık as entrance; F2: staircase, circulation and kitchen; F3: bedroom; F4: living room; G8: WC.

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INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Eylül St., 1, Sarıca St., 7, Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET **10b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: Stone masonry,

Ground Floor: Mud brick masonry,

First Floor: Timber framed, mud brick infill,

Roof: Timber framed with eaves and covered with tile, has no gutter.

Floor pavements: Taşlık is originally paved with stone and later covered with screed in some sections like, the service spaces in the ground floor: G1, G2, G3, G4, G8, G14, G15, G16, and the first floor: F13, F10. All the other inhabitable rooms and /or spaces are paved with timber.

Ceiling: All the ceilings of the spaces are timber covered except the later added or altered service spaces (G1, F10) which are covered with plywood or some other temporary and unqualified materials (lined with linoleum).

Arch. Elements: All window, door frames and built-in furniture (cupboards etc.) are made of timber. Gypsum work is also used combined with the cupboard panels.

Finishing: The mortar of the mud brick masonry walls is made of earth which can be identified from the deteriorated sections of the exterior walls. Exterior facades are mud plastered that are in poor condition and not whitewashed while the interior ones are cement plastered and white-washed. All the interior timber made architectural elements are oil painted except the exterior sections of window frames and the main door.

REPAIRS & ALTERATIONS:

Mass additions: spaces G4, G8, G5, G20, G15, F10 are mass additions.

Element additions: partition walls (between spaces G1-G7; F2-F6; F6-F9); staircase (F5-F13) entrance door (G1); window (F11, F1); closing open hall with plywood (F9, F6, F2); closing hall and taşlık with partition wall and windows (F1, F9, F11, G1, G7).

Alterations: window enlargement (G11); door & frame alteration (G14).

Repairs: For mass additions (G8, F10 and in WC's) new materials are used. In the alterations and additions in architectural elements usually the original materials are used, like timber in windows and doors. In partition walls new materials, like briquette (F9-F6), plywood (in closing hall) and the old ones (closing courtyard facade of taşlık, it is an old intervention) are used. While a part of Sarıca street facade and all interiors are renewed with cement plaster and painted, the rest of the exterior facades are mud plaster and not painted. The ceilings are usually original except the lately added masses and spaces. The floor pavement is timber in inhabitable rooms and paved with screed in the entrance spaces in the ground floor and kitchen first floor (F10).

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit has electricity and water supply system. Only the second. unit has no water in the first floor. The electricity fittings are equipped over the walls and through the ornamented timber ceilings. The water supply system is poor, the freezing of the water in the system is a big problem for the inhabitants.

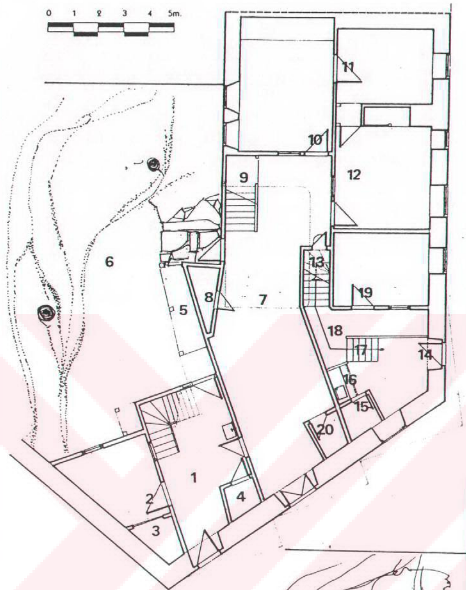
ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is poor. None of the unit has a separate bathroom. Gusulhane's used for this purpose are not well equipped, there is only drainage for gray water but no water supply. In the first unit there are two spaces suitable for kitchen (one of them is original) but they are not equipped for contemporary minimum standards. The toilette of each unit is suitable in dimensions but it is in poor condition and below the hygienic standards.

DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is neither a major structural problem, nor any deformation and/or crack in the building. The roof is not in good condition and has no gutter, it needs extensive repair.

MATERIAL: The condition of the exterior plaster is fairly poor as a result of rainwash through the facades. The plaster is almost lost and the infill material (mud brick) is washing away and falling down from the parts where there is no plaster. The exterior facades need complete renewal and paint. Left part of the Sarıca street facade is recently renewed with cement plaster. There is no a visible decay yet, but compatibility of this material with the infill material is a question. The mortar in the joints of the stone used in the ground floor level is missing as a result of rising damp from the ground. There is discoloration in the timber elements of the facade, some small cracks parallel to fiber orientation and fiberisation ? fibrillation in small scale. A danger resulting from the organisms was not observed on the timber elements of the facades in general. But in only one of the timber beams on the first floor facade in Sarıca street some insect holes were identified, but naturally whether they are active or not could not determined. The insect holes were not observed in one element not in the neighboring timber elements. So, it is strongly possible that this element was decayed before it was placed in the structure. The roof timbers could not be observed, therefore it is not possible to comment if there are timber rots in the roof. But careful observation done only on the visible sections of the timber elements has shown that their condition is quite good. There is a dampness problem in service and entrance spaces in the ground floor, especially in the spaces covered with screed.

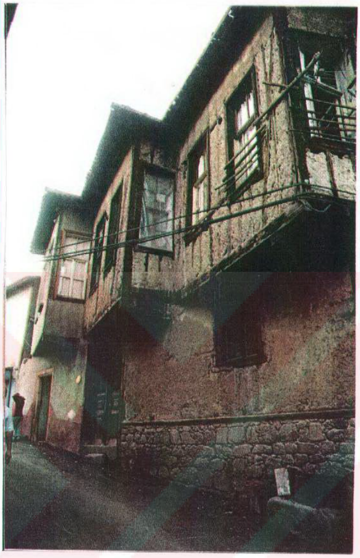
INFORMATION **I S** SHEET	**FLOOR PLANS** ADDRESS: Eylül St., 1, Sarıca St., 7, Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET **10c** NO

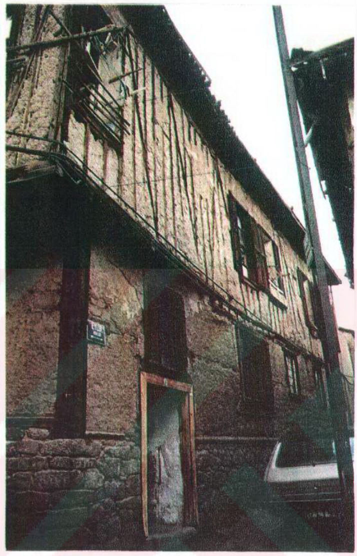


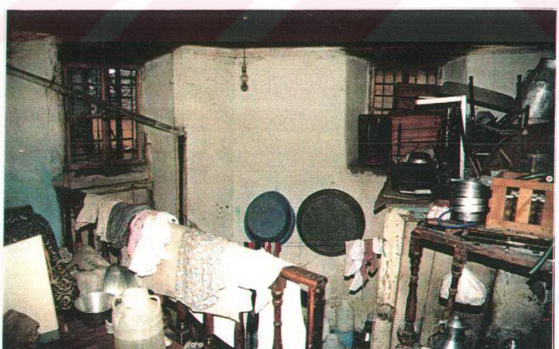
GROUND FLOOR
1. Entry
2. Storage
3. Bathroom
4. WC
5. Storage
6. Garden
7. Entry (former *Taşlık*)
8. WC
9. Staircase
10. Kitchen & Living Room
11. Bed Room
12. Living Room
13. Staircase
14. Entry (former *Taşlık*)
15. WC
16. Kitchenette
17. Staircase
18. Mezzanine; Corridor
19. Mezzanine; Bed Room
20. WC

FIRST FLOOR
1. Gallery Opening (to former *Taşlık*)
2. Kitchenette & Entry (former *Sofa*)
3. Bed Room
4. Living Room
5. Staircase
6. Kitchenette & Entry (former *Sofa*)
7. Living & Bed Room
8. Living Room
9. Corridor (former *Sofa*)
10. Kitchen
11. Corridor
12. Bed Room
13. Kitchen

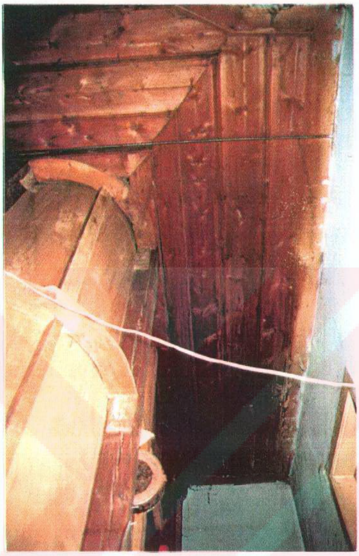
INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Eylül St., 1, Sarıca St., 7, Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET **10d** NO

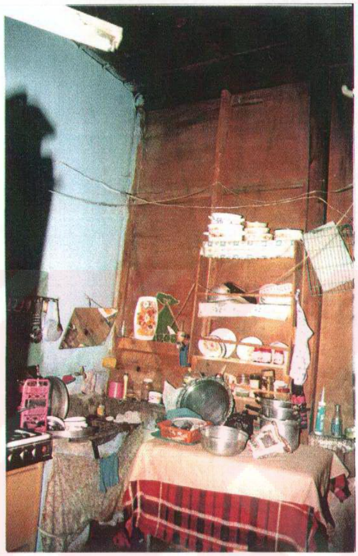






INFORMATION	PHOTOGRAPHS	SHEET
I S	ADDRESS: Eylül St., 1, Sarıca St., 7, Ulucanlar, Ankara.	**10d'**
SHEET	SURVEY DATE: October, 1994	NO





INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Gelin St., 4, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **11a** NO

DESCRIPTION OF THE BUILDING: The house is located on the whole parcel, there is no open place. The house has two floors and each one has a separate entrance from the street. Originally the house had a small garden at the back and on the south side there must have been a long and narrow open area. The area is closed today and some masses are added to the court to obtain service spaces in both floors. The house has a plan scheme with a hall at the center and two rooms located on both sides. There had to be an original staircase in the central hall but we could not find any traces because of the furniture concealing the floor pavements.

GROUND FLOOR: There is a small hall at the center (G2) used as a dining room and two rooms (G10: bed room; G3: guest room) flanking it on the both sides. There is a corridor (G1) on the north facade of the building which opens to the street. It can be a later addition obtained by dividing of the room G3. The central hall opens to a space (G6) used both for circulation and as the bathroom. The WC (G4) is located on one side of these spaces corresponding underneath the staircase. On the other side of the bathroom there is another circulation space (G7) which is also used to store some goods and to pass to the kitchen placed at the back (G8). The kitchen is incomplete, and is practically it is not functioning yet. There is one more space (G9) at the back of the kitchen used as a depot. These spaces connected to each other on the south side of the building (G4, G5, G6, G7, G8, G9) are originally open spaces and the courtyard of the building. They are built in different periods and they all have different ceilings. The ceiling of the space G7 is partly open.

FIRST FLOOR: The entrance to the first floor is from the space (F1) where a staircase and a wood-coal depot (F2) exists. The staircase reaches an entrance (F3) where are two passages to the hall (F10) and to the WC (F4) at the same time. The plan scheme of the first floor is similar to the ground floor. The central hall (F10) is divided to obtain a third room (F9) in this floor and flanked by rooms on both sides. The room facing the street (F11) and the other one at the back (F8) are used for living and bed room at the same time. The latter also has a passage to the kitchen (F6) at the back. There is again a storage space (F7) next to the kitchen. The space F5 is a terrace to which the room at the back (F8) and the services open (F4: WC and bathroom; F6: kitchen).

PRESENT FUNCTION: The house is divided horizontally into 2 dwelling units and both of them are used by the owners (the father and his son and their families).

1 St. Unit: 3 people (located in ground floor);

Spaces: G1: entrance; G2: dining room; G3: living, guest room; G4: WC; G6: bathroom, circulation; G7: storage, circulation; G8: kitchen; G9: storage; G10: bedroom.

Unit 2: 4 people (located in the first floor);

Spaces: G5, F1: entrance and staircase; G2: wood-coal depot; F3: entry and lavatory space; F4: WC, bathroom; F5: terrace, circulation; F6: kitchen; F7: storage; F8: living, bedroom; F9: bedroom; F10: central hall, circulation; F11: living, bedroom.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Gelin St., 4, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **11b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry;
Ground Floor: mud brick masonry,
First Floor: timber framed, infill material is not identifiable,
Roof: Timber framed with narrow eaves, covered with tiles, has no gutter.
Floor pavements: All the spaces in the ground floor are paved with screed and the inhabited rooms (G2, G3, G10) are covered with carpet. The service spaces in the first floor are also covered with screed while the floors of the original rooms (F8, F9, F10, F11) are made of timber and covered with linoleum. The floor structure of the wood-coal depot added on the timber staircase is also made of timber.
Ceiling: The ceiling of all the spaces 3F6, F7, F8, F9, F10, F11 are made of timber while the WC has a plywood ceiling. The top of the staircase is covered with tin sheets. In the ground floor, the ceilings of the rooms (G10, G3) are timber, while the hall (G2), the kitchen (G8, G9) and the bathroom (G6) have plywood covered ceilings. The floor girders of the terrace are seen from the circulation space (G7) in the ground floor. Its ceiling is not covered.
Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture (cupboards,) are made of timber.
Finishing: The plaster of the house is completely renewed by cement based plaster and whitewashed both from the interior and the exterior. The condition of the plaster is good. All timber made architectural elements (like door, windows, cupboards) are oil painted and are in a good condition.

REPAIRS & ALTERATIONS:

Mass additions: The courtyard is filled with masses to divide the house horizontally into two separate units. A mass used as kitchen on both floors and a staircase combined with an entry space are built. The mass at the back can be an earlier addition.
Element additions: In the ground floor the original cupboards are transferred to an entrance space (G1) and a door is opened to the street facade. The wall dividing the main hall in the first floor is also a later addition.
Removal: The cupboards of the rooms G3 and the original staircase is removed. There had to be a staircase in the main hall of the house but, because of the alteration on the ceiling of the space G2 (renewed with plywood) and on the floor of the main hall (F9, is covered with linoleum) it was not possible to see the traces of the original staircase.
Repairs: There have been major repairs caused by big alterations in the building. The mass additions are made with re-used materials. The quality of workmanship and selected materials are quite poor and they are easily identified from the original sections of the house. The plaster and whitewash of the house is renewed and is in good condition especially in the interiors. There are some problems on the facade plaster because the eaves of the house are quite narrow.

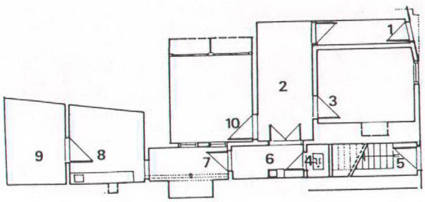
ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity supply. Water is supplied to the service spaces (kitchens, WC's and the bathroom) in both floors.
ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of the service spaces are not good. The location of the WC in the first floor is not in accordance with the function. Besides, it is not satisfactory in size to be used as a bathroom and a WC at the same time. The bathroom in the ground floor has similar problems. The kitchens in each floor are suitable in size but their installation and finishing is not satisfactory.

DECAY IN STRUCTURE & MATERIAL:

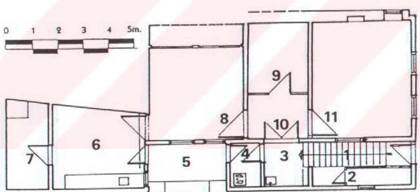
STRUCTURE: There are no major structural problems.The condition of the roof is good but it needs gutters. There is the problem of rising damp problem on the street facade up to 80-100 cm.
MATERIAL: The condition of the plaster and timber elements are good, because the finishing of the building is maintained by the owner. However, there is dampness problem in the ground floor which results from rising damp.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION I S SHEET	**FLOOR PLANS** ADDRESS: Gelin St., 4, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **11c** NO

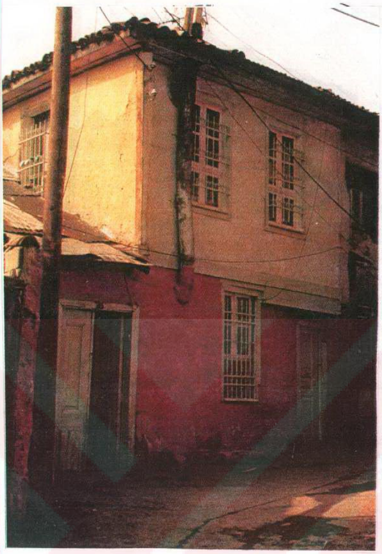


GROUND FLOOR
1. Entry (Original Cupboards)
2. Hall
3. Living Room
4. WC (former Courtyard)
5. Staircase (former Courtyard)
6. Kitchenette (former Courtyard)
7. Storage (former Courtyard)
8. Kitchen (former Courtyard)
9. Storage (former Storage)

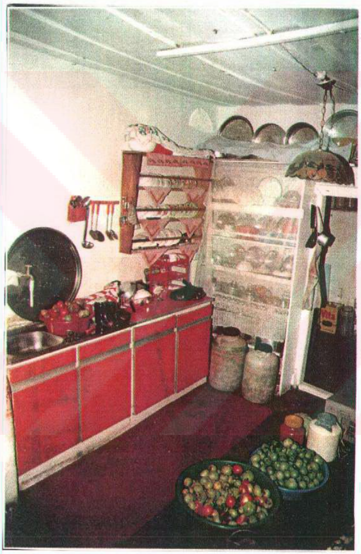


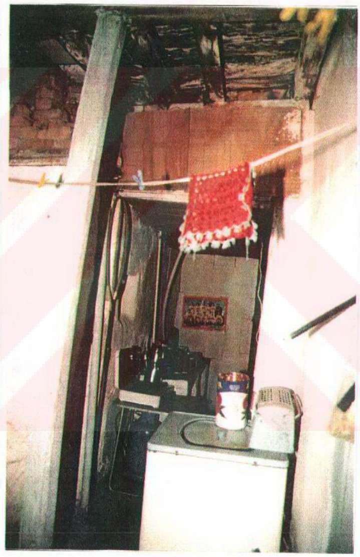
FIRST FLOOR
1. Staircase
2. Wood & Coal Storage
3. Entry & Lavatory
4. WC & Bathroom
5. Terrace
6. Kitchen
7. Storage
8. Bed Room
9. Bed Room (former *Sofa*)
10. Entry (former *Sofa*)
11. Living Room

INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Gelin St., 4, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **11d** NO



INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Gelin St., 4, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **11d'** NO





INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Öksüzler St., 13; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET **12a** NO

DESCRIPTION OF THE BUILDING: The building does not have a courtyard or a garden. The building occupies the whole lot. It has an irregular plan scheme even though it has a traditional facade order.

GROUND FLOOR: The entrance (G1) to the ground floor is from the taşlık paved with stone and has a high ceiling. There is a mezzanine floor and a storage space underneath with a low ceiling. A later added WC (G2) and the room (G7) facing the street are the other spaces reached from the taşlık (the storage and the room G7 could not be documented, because they are closed and not used by tenants. The timber staircase reaches the mezzanine where there are two separate rooms used by single tenants (these spaces could not be documented as well). The corridor in the mezzanine ends with another timber staircase reaching the first floor.

FIRST FLOOR: There is a big hall reached (F4) by the staircase in the first floor that is today used for circulation and to store some goods. The north and west facades of this space are in bad condition. There is a door on the south west corner of the hall which opens to the staircase leading to the cihannüma. The space next to the hall is another circulation space (F1) flanked by two rooms (F2, F5) on each side. At the end of this space there is a small balcony.

PRESENT FUNCTION: The house is divided horizontally into 3 units and each of them is used by single tenants. Actually, the tenants are not using the whole house. The rooms in the mezzanine are used separately, and the first floor is used by one person. He is practically using only room F2, the others are empty.

Unit 1: 1 person (located in mezzanine floor);
Spaces: G1: taşlık as entrance, circulation; G4: living-bed room; G2: WC
Unit 2: 1 person (located in mezzanine floor);
Spaces: G1: taşlık as entrance, circulation; G5: living-bed room; G2: WC
Unit 3: 1 person (located in first floor);
Spaces: G1: taşlık as entrance, circulation; G6, F4, F1: circulation, F2: living-bed room; F5: storage; G2: WC

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INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Öksüzler St., 13; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET **12b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry;
Ground Floor: mud brick and brick masonry (repaired sections),
First Floor: timber framed, mud brick infill,
Roof: Timber framed with eaves and covered with tiles, has gutters only on side facades.
Floor pavements: Taşlık was formerly paved with floor tiles but today it is covered with screed. The floors of the other documented inhabitable rooms in first floor are timber (F1, F2, F4, F5), Some of them are also covered with linoleum (F1, F2). The floor of the corridor in the mezzanine is also timber. The pavement in the WC is screed.
Ceiling: In all the documented spaces, the ceilings are made of timber (F1, F2, F4, F5). Some of them are not covered with timber panels and the timber beams of the floor is seen (G1, G3, G6). The WC has no ceiling.
Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture are made of timber.
Finishing: Mud mortar is used in mud brick and brick masonry and in the timber framed sections. There is no plaster on the exterior facades except the upper section of the front facade where the plaster is preserved by the projection the first floor. The eaves of the building are very narrow especially on the side facades, so they could not preserve the plaster.
The interior spaces are all plastered and whitewashed but the condition of the plaster is fairly bad. There is no plaster in some sections and in some others the plaster falling out as a layer, the result of dampness. No preservatives or paint is detected on timber made elements. Few of them (architectural elements: like door, windows, cupboards) are oil painted but they too are not in good condition.

REPAIRS & ALTERATIONS:

Mass additions: There is no mass addition on the building but a WC is added as a mass to the taşlık (G2).
Element additions: The window of room G7 is different in size and form, it can be a later addition.
Removal: The remains of the niche located on the east wall of the space F4, could be the trace of an original element.
Repairs: There are no big repairs and/or alterations in the house. In general, some poor repairs and additions are done (WC addition, covering the floor tile of taşlık, etc.). But the biggest repair is the alteration on the west facade, a section of the mud brick masonry wall of the taşlık. This is replaced with a brick masonry wall probably because the original one decayed by rain wash.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: There is electricity supply in the house, and all inhabited rooms have electricity which is equipped over the walls and timber ceilings. There is water supply only in the taşlık.

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is very poor. The units have no kitchen, bathroom (the Unit 3 has only a gusulhane, but there is no water supply) and separate WC. The WC in the taşlık is used by all dwellers. The condition of the WC is fairly bad.

DECAY IN STRUCTURE & MATERIAL:

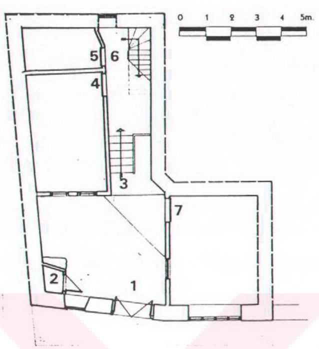
STRUCTURE: The biggest structural problem is the deformation of the floors and the deformation of the rear wall in the first floor. The building is affected from all types of dampness, especially rain penetration, rain wash and rising damp. The condition of the roof could not be observed in detail but dampness problem is visible on the ceilings of the first floor. The eaves of the roof are not adequate to prevent the facades from rain wash. The gutters are not effective also, they need extensive repair.
MATERIAL: The condition of the exterior and interior plaster is extremely bad. There are color changes in all timber elements but especially in the ceilings and floor pavements of the first floor (possibly because of combined action of pollution and dampness). There is discoloration (the color of timber elements is usually dark brown and in the sections where water penetrates, the color turns to gray) on timber elements of the roof eaves. The level of the stone base of the building is very low and does not prevent the increase of rising damp. Condition of mud brick is bad, a certain thickness from the surface is regularly washed by rain.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION I S SHEET	FLOOR PLANS ADDRESS: Öksüzler St., 13; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET 12c NO

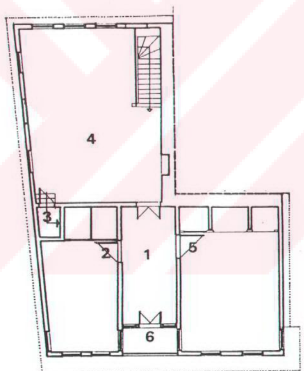
GROUND FLOOR

1. *Taşlık*
2. WC
3. Staircase
4. Mezzanine; Room
5. Mezzanine; Room
6. Staircase
7. Storage



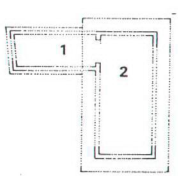
FIRST FLOOR

1. Corridor
2. Bed Room
3. Staircase
4. Hall
5. Room (empty)

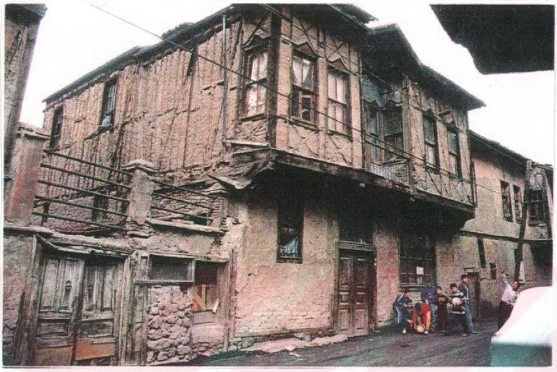


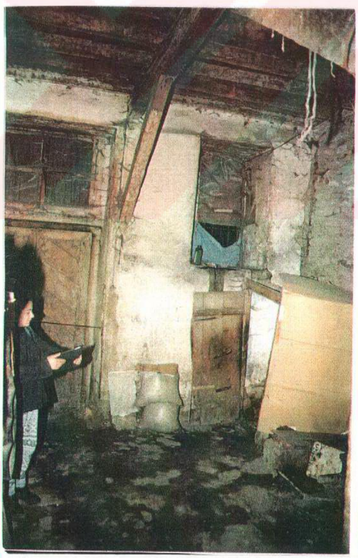
CİHANNUMA FLOOR

1. Staircase
2. Cihannuma (empty)

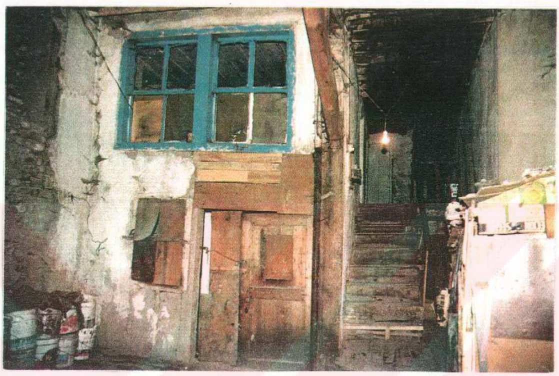


INFORMATION I S SHEET	PHOTOGRAPHS ADDRESS: Öksüzler St., 13; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET 12d NO





INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Öksüzler St., 13; Ulucanlar, Ankara. SURVEY DATE: October, 1994	SHEET **12d'** NO



INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Öksüzler St., 36, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **13a** NO

DESCRIPTION OF THE BUILDING: The house faces Öksüzler street, it is enlarged by a mass addition to the rear side which covers the whole parcel. The plan scheme of the house is partly changed, but it is a house with a central hall surrounded by rooms on both sides and has three floors, these are basement, ground and first floors.

BASEMENT FLOOR: Only the west wing of the house has a basement floor and these are the spaces B2 and B3. The entrance to these spaces is from the taşlık in the ground floor and they correspond under the elevated spaces located in the ground floor, one side of the taşlık. No interior and social questionnaire was given in these spaces.

GROUND FLOOR: The entrance G9 to the ground floor is from the taşlık, located at the center. There are spaces surrounding it on both sides and these spaces are few steps higher than the entrance level. The spaces (G9, G10, G11, G12) located on the west part of the building could be not documented. The unit located on the east side of taşlık consists of 4 spaces, these are: entrance (G3), living and bedroom (G2), kitchen (G4), WC and the bathroom (G5). There is a concrete staircase (G8) on the west end of the taşlık that reaches the first floor and there are coal and wood depots underneath (G6, G7). All these services (G3, G4, G5, G6, G7, G8) located at the back of the house are later additions built with new materials and concrete skeleton system.

FIRST FLOOR: The plan scheme of the first floor is altered by mass additions. There is a semi open entry reached by the staircase and it opens to the central hall (F1, F9) which is divided into two separate parts today. The service spaces (F2: kitchen, F3: bathroom, F4: WC) and a room (F7) are located near to entrance. Three rooms (F8: guest room, F10 bedroom, F11: bedroom) open to the other section of the central hall which is facing the street. The wall between the rooms F10-11 is also a later addition. The level difference observed at the center of the hall F1 indicates the beginning of the addition and where the new structural system was introduced.

PRESENT FUNCTION: The house is divided horizontally into 3 dwelling units. The upper floor is used by the owner while the two small units in the ground floor are used by different families.

Unit 1: 3 people (located in the ground floor); Spaces: G1: taşlık as entrance; G3: circulation; G2: living- bedroom; G5: WC & bathroom; G4: kitchen; G6: wood-coal depot;

Unit 2: 4 people;(located in the first floor); Spaces: G1 taşlık as entrance; G8-F6: staircase; F5: entry; F1: central hall, circulation;

F10, F11, F7: bedrooms; F8: guest room, F9: central hall: living; F2: kitchen; F3: bathroom; F4: WC; G7: storage.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION	STRUCTURAL SYSTEM & MATERIAL	SHEET
I S	ADDRESS: Öksüzler St., 36, Ulucanlar Qu., Ankara.	**13b**
SHEET	SURVEY DATE: October, 1994	NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: unidentified, because of plaster.

Ground Floor: unidentified, because of plaster.

First Floor: unidentified, because of plaster.

Roof: Timber framed with eaves and covered with tile, has gutter.

Floor pavements: Taşlık and the inhabited spaces in the ground floor are paved with screed (G1, G2, G5), and the kitchen and the entry are covered with mosaic (G3, G4). The main hall (F9) and the original rooms (F8, F10, F11) in the first floor are made of timber and today covered with linoleum. The hall (F1), service spaces (F2, F3, F4, F5), staircase (F6) and the room located in the renewed section of the house, the floor pavement is mosaic.

Ceiling: The ceiling of taşlık (G1) and the room (G2) in the ground floor are covered with plywood. The ceiling of the service spaces located in new added sections are cement plastered (G3, G4, G5, G6, G7, F1: only a part, F2, F3, F4, F5, F7). The ceiling of the original hall and the rooms on both sides are made of timber.

Arch. Elements: Original ceiling ornaments, windows, door frames and built-in furniture (cupboards, etc.) are made of timber.

Finishing: The plaster of the building is renewed with cement plaster both in the exterior and the interior. The walls of the service spaces used by the owner on the upper floor are covered with square tiles, (F2: kitchen, F3: bathroom, F4: WC) while the others in the ground floor are only plastered (G4: kitchen, G5: WC and bathroom). All plaster work is whitewashed. The condition of the plaster and paint is good. All timber made architectural elements (like ceiling pavement, door, windows, cupboards) are oil painted, and original timber floors are covered with linoleum.

REPAIRS & ALTERATIONS:

Mass additions: A big mass is added at the rear side of the building including the service spaces of each floor. Concrete skeleton system is used in this mass.

Element additions: There are some additions in the original part of the house beside the mass addition. The major addition is the walls placed between spaces F1-F9 and F10-F11. The staircase (G8) is also a later addition built together with the mass addition.

Removal: The original staircase which was possibly located in the main hall is removed. The window of room (G2) in ground floor is also removed and enlarged.

Repairs: There have been major repairs caused by big alterations in the building. The main hall (F1-F9) and the rooms F10-F11 in the first floor are divided into two spaces. The mass added at the back of the house covers the whole courtyard area and makes it disappeared. The finishing of most of the spaces are changed especially in the ground floor (original pavement of taşlık, ceiling and the floor pavements of the rooms, all original plasters, painting of all timber elements, etc.). Although there had been many alterations and repairs to divide the house into more dwelling units, the building still carry enough features to read the original the plan scheme. In these repairs usually new materials were used especially in the service spaces. The interior and exterior plaster of the building is also renewed during this operation. The structural condition of all timber elements is good, except some color changes caused by dampness and pollution especially in the ground floor where the original timbers still in their location. The condition of the roof is also good. In general the condition of the house is good, especially in first floor which is used by the owner. However, the use of incompatible materials in the repairs might be harmful for the original materials in the long run.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity and water supply. The electricity supply is equipped over the walls and timber ceilings. Water is supplied to all WC's and the kitchens in the house.

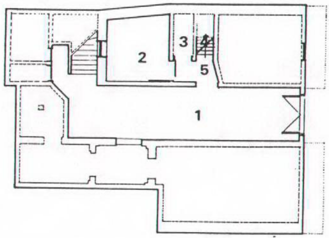
ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is very good in the first floor but not in the ground floor. The kitchen and the WC-bathroom unit in the ground floor might be satisfactory in size but the finishing materials and equipment is poor. They can be renewed or maintained better.

DECAY IN STRUCTURE & MATERIAL:

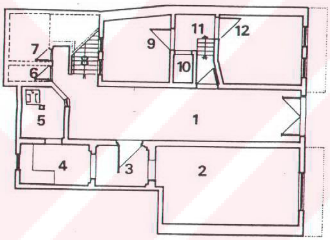
STRUCTURE: There is no major structural problem, deformation and/or cracks in the building and condition of the roof is good. Rising damp has not caused any visible damage because the exterior plaster is in a good condition. But there is a dampness problem in the taşlık in the ground floor and the service spaces.

MATERIAL: The condition of the exterior plaster is good, even though there are some color changes on the facades. The plaster of the interiors are in better condition because they are periodically renewed by the users. There is no color change especially in the ceilings and floor pavements of the first floor, but there are some in the original timber elements in the ground floor (possibly because of combined action of pollution and dampness). Condition of the timber elements in general, are quite good, they need some cleaning and maintenance. There is no timber element which has lost its structural strength and there is no biodeterioration or insect attack.

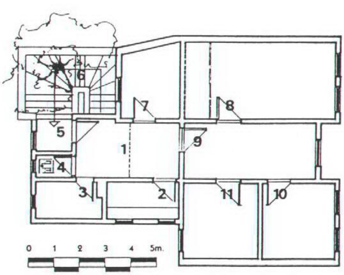
INFORMATION I S SHEET	**FLOOR PLANS** ADDRESS: Öksüzler St., 36, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **13c** NO



BASEMENT FLOOR
1. *Taşlık*
2. Storage
3. WC
4. Staircase
5. Entry

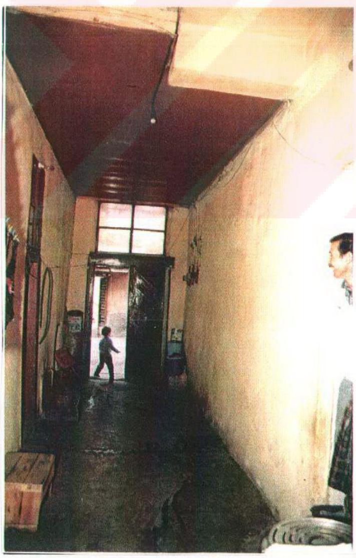


GROUND FLOOR
1. *Taşlık*
2. Living & Bed Room
3. Entry
4. Kitchen
5. WC & Bathroom
6. Wood & Coal Storage
7. Wood & Coal Storage
8. Staircase
9. Room
10. Service
11. Corridor
12. Room



FIRST FLOOR
1. Entry
2. Kitchen
3. Bathroom
4. WC
5. Entry
6. Staircase
7. Bed Room
8. Living Room
9. Living Room
10. Bed Room
11. Bed Room

INFORMATION I S SHEET	**PHOTOGRAPHS** ADDRESS: Öksüzler St., 36, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **13d** NO



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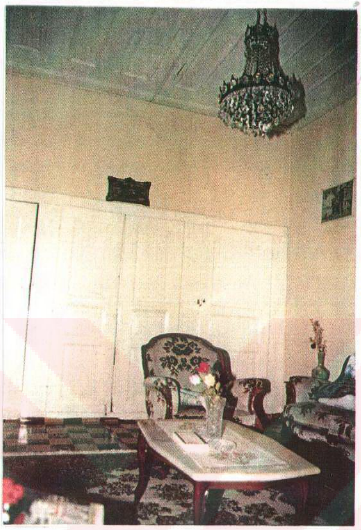
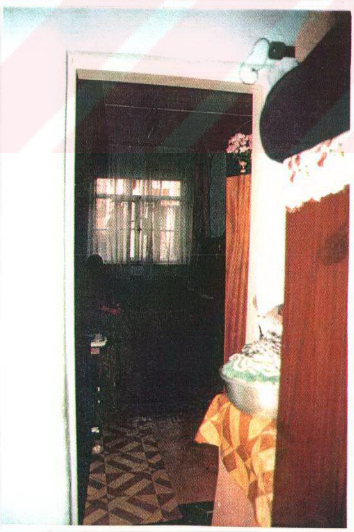
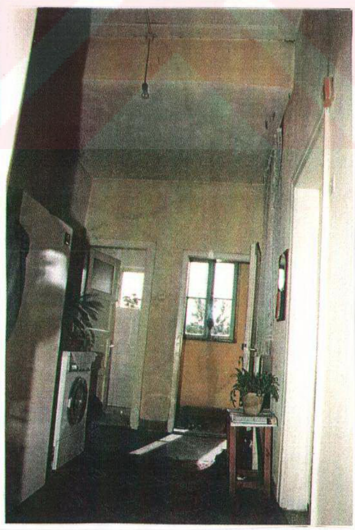


INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: İnci St., 14, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **14a** NO

DESCRIPTION OF THE BUILDING: It is located in the corner of the street with its main facade facing the street. There is a garden surrounding the building from three sides. There is a lately added service space adjacent to the building on the north side and some older service spaces in the garden (storage, service and garage spaces). It is a large scale house which has plan scheme with a central hall and consists of three floors: ground, first and second floors.

GROUND FLOOR: There is a taşlık (G1) space that corresponds underneath the central hall of the upper floors and is surrounded by spaces on three sides. There is one timber staircase in the taşlık reaching the first floor and another staircase which is out of service. The first few steps of this staircase is converted in to a cupboard today (G7). Taşlık still retains its original and well preserved stone pavement. The main entrance to the taşlık is through the double winged stone staircase of the building on the street facade. The spaces placed on the right side of taşlık form a dwelling unit which consist of G24: bed room; G20 living room; G19: circulation; G:21 gusulhane; G22: WC and G:23 kitchen. The space G25 is used as the storage of this unit. Detailed information could not be gathered in the final stages of the study on structural conditions. But during earlier documentary studies in March 1993, it was noticed as a well maintained unit, painted regularly but service spaces were not equipped according to contemporary needs. The second unit consists of spaces located on the left of taşlık which are G3: bed room; G9: living room; G5, G8 circulation, G4: kitchen; G6: bathroom & WC; G7: cupboard. The condition of service spaces are extremely bad and they are not well equipped. The spaces are just painted but the unit needs a general repair. The floor pavement in the inhabitable rooms in the ground floor is timber while all other service and circulation spaces are covered with screed. The ceilings of all the spaces are covered with timber. The later added mass which is elevated from ground floor is placed on the north side of the building. It consists of a kitchen (G11), a circulation space (G10) and a space both used as WC and bathroom. These spaces are possibly placed on an original terrace because the stone steps in front of the entrance to this addition and the double winged door between the spaces G10 and G 12 are original. In this mass addition the walls are made of hollowed brick with a thickness about 20 cm. In the pavement screed is used. The doors and windows are made of timber.

FIRST FLOOR: The original plan scheme of the floor consists of a central hall and the spaces are located symmetrically on three sides. The main entrance to the building is from the street facade within the recession of the mass. It is a semi open space consisting of an entry (F13) and a double winged stone staircase. The central hall and the spaces on its right side are used as one dwelling unit today which are F1: entrance, circulation and living; F7: bedroom; F6: kitchen; F12: living, bedroom; F11-10 former cupboard, today used as bathroom; F8-F9 WC. The floor pavement of the entrance area of the central hall is marble that gives an articulation to this space. Other spaces in the first floor are used by a separate dwelling unit together with the service spaces added to the north, these are F2: living-bed room; F4: bedroom; F3 circulation spaces. The main staircase (F6) serving between the floors and located at the back of the central hall is out of service for the first floor today. It is only used by the dwelling unit in the second floor. The ceiling and floor pavement of the inhabitable rooms are timber. Only the floor pavements of the service spaces are today paved with screed like F8, F9, F10, F11, F6.

SECOND FLOOR: This floor has the same plan scheme with the first floor. It consists of a central hall and spaces located symmetrically on three sides. The entrance to the floor is taken from the timber staircase (G17, F5, FM1, S6) located at the rear side of the hall. The staircase starting from ground floor was formerly serving as the main staircase of the building. Today it is out of service except the unit located in the second floor. This staircase reaches a mezzanine floor between the first and second floors (FM1) on which an elevated room (S5) and a storage room (S7) are placed which are reached from the central hall in the second floor. There is no major alteration in the plan scheme of the second floor. The inhabitable rooms are placed on both sides of the central hall and the service spaces are placed between them, these spaces are S1: central hall used for circulation and living; S2: guest room; S3: kitchen; S4: room used as depot; S5: room not used; S6: staircase; S7: original storage space, today it is empty; S8: bedroom; S9-10: WC; S11: circulation; S12: bathroom; s13: bedroom. The ceiling and floor pavement of the inhabitable rooms and the hall are in timber. Only the floor pavements of the service spaces are paved with screed today like S3, S9, S10, S11, S12.

PRESENT FUNCTION: The house is divided horizontally into 5 dwelling units and each of them are used by tenants.

Unit 1: 2 people; Spaces: G1: taşlık as entrance; G2: wood-coal depot; G3: bed room; G4: kitchen; G5-8: circulation; G6: WC and bathroom; G7: storage; G9: living room;

Unit 2: 4 people; (social questionnaire could not given); Spaces: G1: taşlık as entrance; G25: wood-coal depot; G24: bed room; G23: kitchen; G19: circulation; G22: WC; G:21 bathroom; G20: living-bedroom.

Unit 3: 4 people; Spaces: G16: garden as entrance; G15: wood-coal depot; G10: entry; G11: kitchen; G14: WC and bathroom; F3: circulation; F2: living-bedroom; F4: bedroom.

Unit 4: 4 people; Spaces: F13: entrance; F1: entry, circulation, living; F12: living-bedroom; F8-9: circulation and WC; F10-11: bathroom; F6: kitchen; F7: bedroom.

unit 5: 4 people; Spaces: G1 taşlık as entrance; G17, F5, FM1, S6: staircase; F5, FM1: entrance; S1: circulation, living; S2: guest room; S3: kitchen; S4: storage room; S5: out of use; S7: depot out of use; S8: bedroom; S9-10: circulation and WC; S11-12: circulation and bathroom; S13: bedroom.

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: İnci St., 14, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **14b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor: Cut & rubble stone masonry,

First Floor: Mud brick masonry in exterior walls; timber framed, mud brick infill in partition walls

Second Floor: Timber framed, mud brick infill.

Roof: Timber framed with eaves, covered with tiles, has gutter in some parts of the eaves.

Floor pavements: The courtyard has no special pavement but taşlık has original well preserved stone pavement. The service spaces in each floor are paved screed, these are: G4, G5, G6, G7, G8 in the Unit 1; G19, G21, G22, G23 in the Unit 2; G10, G11, G12, G14 in the Unit 3; F6, F8, F9, F10, F11 in the Unit 4; S3, S9, S10, S11, S13 in the Unit 5; The floors of all the inhabitable rooms in the building are paved with timber, only the entrance section of the central hall in the first floor is paved with marble blocks.

Ceiling: All the ceilings of the inhabitable rooms are in timber and keep their originality except the service spaces. For example the ceiling of the kitchen in the first floor (F6) is covered with plywood and then painted, like the WC, the cupboard and the kitchen in the ground floor (G4, G6, G7). In the service spaces of the first floor the original ceiling of the former space (consisting of F8, F9, F10) is preserved by constructing of partition walls below the ceiling level. While the service spaces in the second floor have similar features with the ones in the first floor, a different application is made there and the partition walls are constructed up to the ceiling, then plastered afterwards.

Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture (cupboards, shelves etc.) are made of timber.

Finishing: Mud based mortar is used in mud brick masonry and timber framed sections. The exterior facades of the house is mud plastered and white washed. The condition of the plaster on north and east facades is relatively better except plaster falling in big pieces. Most of the plaster on these facades are still in-situ. But the condition of the plaster on the street facade and on the south facade is in poor condition because it is washed by the rain water regularly. The interior spaces are all plastered and whitewashed and the condition of the plaster is good except some need for repair and maintenance. Most of the timber made architectural elements (like door, windows, cupboards) are oil painted but there is lack of paint on the exterior faces of the windows.

REPAIRS & ALTERATIONS:

Mass additions: The mass addition on the northern side of the house includes the spaces G11, G10, G14 which are the services of the third dwelling unit. This addition is possibly constructed on the original terrace existing there before. The walls of the addition is made of hollowed bricks and the other elements are in timber. All the floor pavement in this mass is screed.

Element additions: The original opening in the first floor from the circulation cores F3 and F5 were removed from their original places and walls were added in their places. These wall additions affected the perception of plan scheme in the first floor. The WC (G6) and the cupboard (G7,13) existing underneath the original staircase are later additions done by the removal of the original stairs. Originally the ground floor had to be designed for services, so the WC, kitchen and bathrooms located in this floor might also be later additions which were built after the division of the house to new dwelling units. The ceiling of the WC and bathrooms in the first and the second floors indicate that there had been some alterations. These spaces were probably added later. The door in space F5 is also a later addition that was made to control the entrance to the unit in the second floor. The washstands in the kitchens might also be a later added elements.

Removal: doors opened from the spaces F3 and F5 to the central hall, one wing of the staircase reaching from the ground floor to the first floor (G13).

Repairs: There is no major repair aiming to preserve the building except plaster repair inside the house and some alterations done to divide the house to 5 dwelling units.

In repairs (like plaster and whitewash in interior spaces), alterations and additions in architectural elements usually the original materials are used (like timber in windows and doors). The material used to divide the service spaces could not be identified (whether they are hollowed bricks or timber skeleton with brick or mud brick infill). The plaster and paint of the interiors are renewed. The structural condition of all timber elements is good except some color changes caused by dampness or pollution. The condition of the roof is also good but eaves and gutters need some repair.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity and water supply. The electricity supply is equipped over the walls and timber ceilings. Water is supplied to all WC's and to the kitchens.

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is quite good. They are comparatively satisfactory in size, in installation systems but the finishing materials used in these spaces are poor, they can be renewed or maintained better. The spaces used as WC and the bathroom together are not equipped satisfactorily according to contemporary standards.

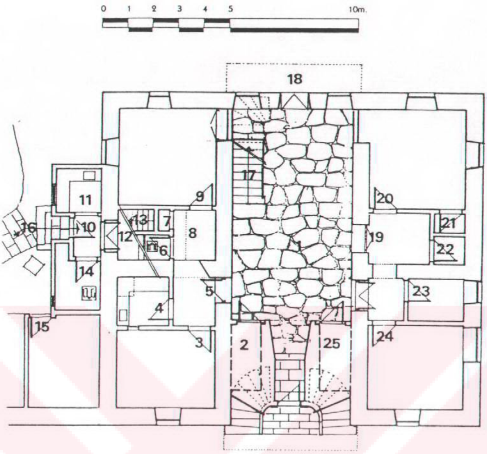
DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is no major structural problem, deformation and/or crack in the building and condition of the roof is good. It only needs some repairs like: replacement of broken tiles, repair of degraded or missing timber pieces in the roof structure and eaves, repair and installation of gutters. There is no visible damage done by rising damp because the stone masonry ground floor is in good condition but there is a bad smell in inhabited sections in the ground floor resulting from dampness. Taşlık space has also similar problems increasing in winter time when there is too much rain or snow.

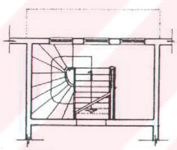
MATERIAL: The condition of the exterior plaster and mud brick masonry is fairly bad as a result of rainwash through the facades, especially on the south and west facades, the plaster is almost loSt. The exterior facades need complete renewal of plaster and paint. The plaster of interiors are in better condition because they are periodically renewed by the users. There is color changes especially in the ceilings of the ground floor, (possibly because of combined action of pollution and water). There is discoloration (the color turned to dark brown) on timber elements of the roof eaves where is no gutter. The stone masonry ground floor of the building is in good condition and it therefore preserves the upper floors from rising damp. Condition of timber elements in general is quite good, they need some cleaning and maintenance. There is no any timber element which lost its structural strength and there is not biodeterioration or insect attack.

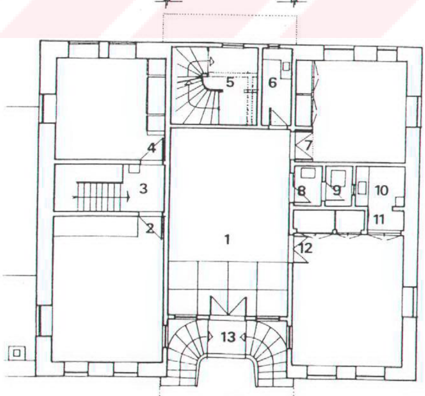
Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**FLOOR PLANS** ADDRESS: İnci St., 14, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET **14c** NO



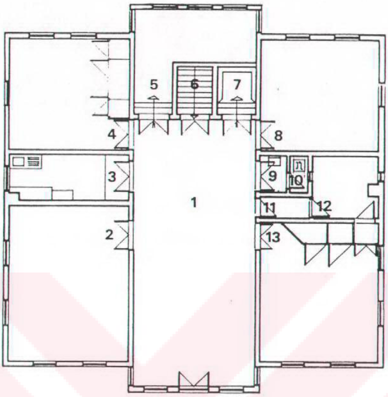
GROUND FLOOR
1. *Taşlık*
2. Storage
3. Bed Room
4. Kitchen
5. WC
6. Storage (former Staircase)
7. Corridor
8. Living Room
9. Entry
10. Kitchen
11. Entry
12. Staircase
13. WC & Bathroom
14. Storage
15. Courtyard
16. Staircase
17. Garden
18. Corridor
19. Living Room
20. Bathroom
21. WC
22. Kitchen
23. Bed Room





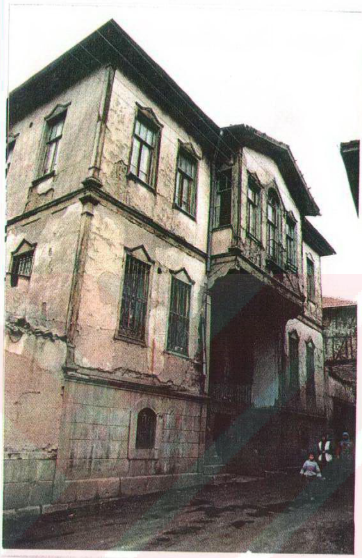
FIRST FLOOR
1. *Sofa*, Living Room
2. Living & Bed Room
3. Corridor
4. Bed Room
5. Circulation Area
6. Kitchen
7. Bed Room
8. Lavatory
9. WC
10. Bathroom
11. Former *Gusulhane*
12. Living & Bed Room

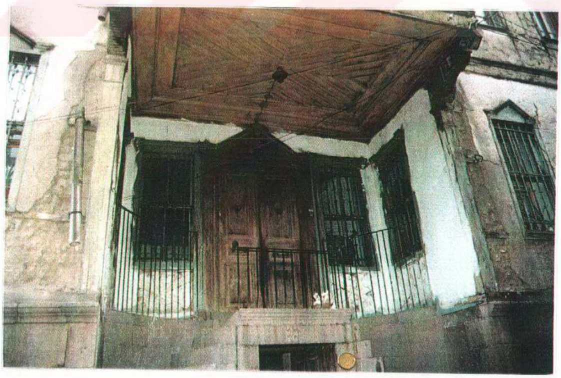
INFORMATION	FLOOR PLANS	SHEET
I S	ADDRESS: İnci St., 14, Ulucanlar Qu., Ankara.	14c'
SHEET	SURVEY DATE: October, 1994	NO



SECOND FLOOR
1. *Sofa*
2. Guest Room
3. Kitchen
4. Room (storage)
5. Room (empty)
6. Staircase
7. Storage (empty)
8. Bed Room
9. Lavatory
10. WC
11. Circulation
12. Bathroom
13. Bed Room

INFORMATION IS SHEET	PHOTOGRAPHS ADDRESS: İnci St., 14, Ulucanlar Qu., Ankara. SURVEY DATE: October, 1994	SHEET 14d NO





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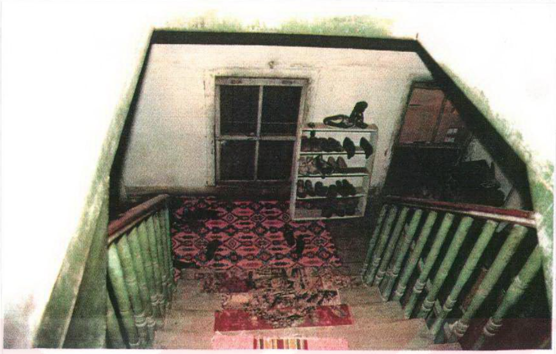
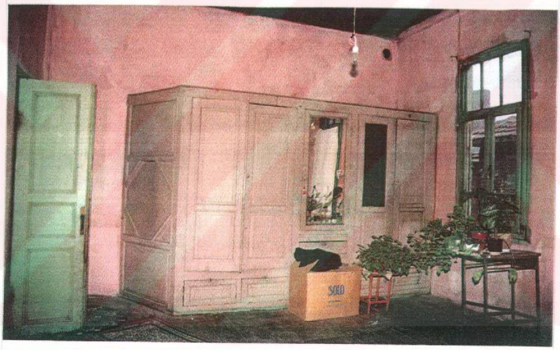




INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Sarıkadın St., 67, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **15a** NO

DESCRIPTION OF THE BUILDING: It is a building with a ground and first floor located in a parcel with two facades facing streets. In the main floor, the house has a plan scheme with a central hall F4, flanked by a room on each side (F3, F5). The plan scheme of the house is partly altered by the addition of a mass to the court (spaces F2, F8).

GROUND FLOOR: There are three shops (G3, G4, G5) facing Sarıkadın street in the ground floor and the entrance to the house is through the courtyard (G1) from Yan street. The ground floor of the house is divided into two sections. There spaces confronting to Sarıkadın street are used as shops and they have no connection with the courtyard. The other spaces facing the courtyard are entered through the court. There are two rooms (G2, G7) in the ground floor, a WC (G6), a small depot under the staircase (G8) and the circulation area (G9). The walls facing courtyard in the room G7 are made of briquette while the outer wall facing street is made of mud brick.

FIRST FLOOR: In the first floor there is a centralized but narrow hall (F4) and two rooms flanking its sides (F3, F4). The entrance is taken from the court with a timber staircase, reaching to a circulation area (F1). On both sides of this space a room (F2), a kitchen (F7) and a WC (F6) are located. The main hall and rooms around it retain their original features. In the other spaces, even though traditional materials are used, they are comparatively simple in workmanship.

PRESENT FUNCTION: The house is divided horizontally and vertically into separate units. The first floor and the spaces facing the court in the ground floor are used as one dwelling unit while the spaces in the ground floor facing the street are used as 3 separate shops.

Unit 1: 5 people (located in the first floor and a part of the ground floor); Spaces: G1: courtyard, G9: circulation; G2, G7: rooms, empty; G6: WC, not used; G8: depot, not used; F1: entry; F2: bedroom; F3: bedroom; F4: main hall, living; F5: bedroom; F7: kitchen; F6: WC.

Unit 2, 3, 4: Shops, located in the ground floor facing the street and social questionnaire was not given. Spaces: G3, G4, G5.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Sarıkadın St., 67, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **15b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry; Ground Floor: mud brick masonry, First Floor: timber framed, mud brick infill, Roof: Timber framed with eaves and covered with tile, has no gutter.

Floor pavements: The courtyard and other spaces in the ground floor are covered with screed except the room G7 that is covered with timber floor panels. All pavements of the spaces in the first floor are timber except the kitchen and WC (F7, F6) which are paved with screed. The timber floor pavement of the kitchen was later covered with screed. As a result, in this house it is possible to see the decay caused by this intervention on the ceiling of the space underneath the kitchen (G7). Where there is salt accumulation, decay and discoloration in timber elements. The staircase of the building is also made of timber.

Ceiling: The ceilings of the kitchen and the room F7, F2 are plywood while all others are timber. The ceilings of the spaces F3, F4, F5 are ornamented and in good condition. Their workmanship is also good but the ceilings of the other spaces have none of these characteristics. They are quite simple and poorly made, furthermore they have also deteriorated a lot.

Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture (cupboards, shelves etc.) are made of timber. The ceilings of the spaces F3, F4, F5 have a well ornamented central boss. One unit of the cupboards in the rooms G3 and G5 are gusulhane. The doors of these cupboards are renewed.

Finishing: Mud mortar is used in mud brick masonry and between the infill material of the timber frame. The exterior facades of the house was originally mud plastered and white washed but later the deteriorated sections are repaired with cement plaster. The Yan street facade is an example of this repair. The masonry wall affected from rising damp on this street is poorly repaired. But the renewed parts have also deteriorated later with the effect of rising damp. The plaster on the facade, especially on the section below the window sill, is lacking, because these sections can not be preserved by the eaves as the upper parts of the walls. There are same problems on the courtyard facade and also the sections where there is rain penetration through leakage's in the roof structure. So, in general it can be said that, the condition of the plaster on the exterior facades is quite poor. The interior spaces are all plastered and whitewashed and the condition of the plaster is relatively better than the exterior, but it needs repair and maintenance. Most of the architectural elements made of timber (like door, windows, cupboards) are oil painted but there is lack of paint on the exterior faces of the elements.

REPAIRS & ALTERATIONS:

Mass additions: Some parts of the spaces facing the courtyard are later added sections but are not easily recognized. The walls of the room G7 are briquette; and the window of the kitchen is different than the others both in size and in form so, they too had to be added later. The quality of the spaces facing the courtyard are poor, in comparison to the spaces located on Sarıkadın street. All these observations creates a question about the originality of the masses directed to the court. The shops located in the ground floor might also be altered

Element additions: The cupboard doors in spaces F3 and F5 are renewed. The floor of the kitchen (F7) is covered with screed on which the original timber pavement can be seen from the space underneath. In the ground floor, the street facade of the building is also altered and the shop windows are completely renewed. The window and washstand placed in the kitchen are also lately added elements.

Removal: The wall in street facade in the ground floor are removed and the shop windows are placed instead.

Repairs: There have been major repairs caused by big alterations in the building. A mass addition including the kitchen and WC was done. By the alteration of the function in the ground floor the plan scheme and the spatial organization of the building has changed. Beside these major alterations and repairs, some partial interventions were done like partial repair of plaster, whitewash of the interiors, covering the deteriorated ceilings with plywood (F2, F7), covering the timber pavement with screed (F7), etc.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: The dwelling unit in the house has electricity and water supply. The electricity supply is equipped over the walls and timber ceilings. Water is supplied to both WC's (G6, F6) and the kitchen (F7) but not to the gusulhane spaces located in F3 and F5.

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is quite poor. The kitchen is comparatively satisfactory in size but the finishing materials and fittings are poor, they should be renewed. The WC and gusulhane's are quite bad and not equipped satisfactorily according to contemporary standards.

DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There are no major structural problems in the original section of the house. But there is deformation on the floor of the spaces directed to the courtyard. There is different settlement in the foundations of the spaces G2, F2 and G9, F1. As a result of this the staircase is also moved. There is a big problem also on the roof especially at the section closing the entrance space. The eaves need repair and renewal in some sections and gutters should be installed to the eaves. There is a great damage done by rising damp especially on Yan Street and the courtyard facade and the spaces facing the court in ground level. Today, the level of stone masonry is below street level. So, mud brick masonry walls are in direct contact with the street are damp.

MATERIAL: The condition of the exterior plaster at the back facade is very poor, as a result of rainwash through the facades and leakage from the roof. The use of cement plaster could not solve the problem on Yan street facade. The plaster of the interiors are in better condition because they are renewed periodically but there are many cracks on the walls of the lately added spaces. There is darkening problem almost in all timber elements be it the ornamented ceilings or exterior timber works. There is salt accumulation in the timber pavement below the screed in the kitchen. The color turns to gray. We could observe directly in the ground floor which are dark, cold, humid and empty spaces are suitable for fungal growth. The eaves of the roof are also deteriorated a lot and there is whitening and graying on the timber elements possibly because of combined action of pollution and rain water. Condition of timber elements in general is not good, there is a serious problem in the building resulting from rain penetration and rising damp.

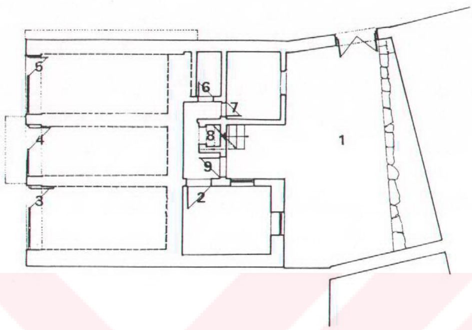
INFORMATION **I S** SHEET

FLOOR PLANS

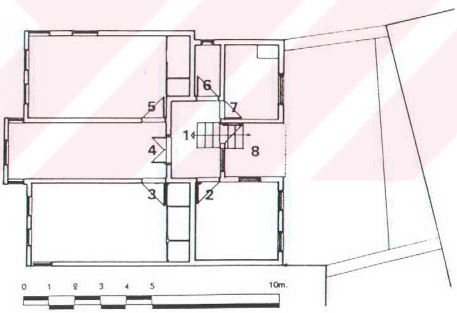
ADDRESS: Sarıkadın St., 67, Erzurum Qu., Ankara.

SURVEY DATE: October, 1994

SHEET **15c** NO



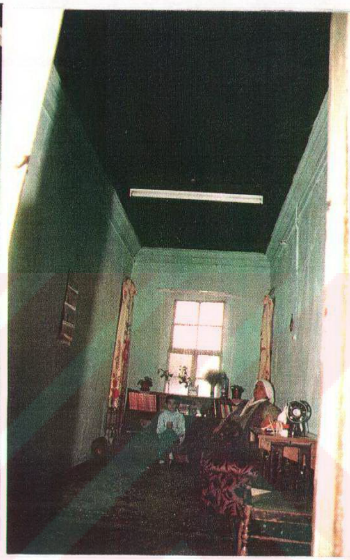
GROUND FLOOR
1. Courtyard
2. Room (empty)
3. Shop
4. Shop
5. Shop
6. WC
7. Room (empty)
8. Storage
9. Entry

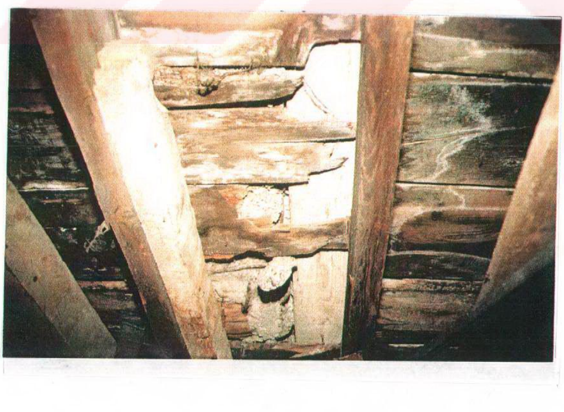


FIRST FLOOR
1. Entry
2. Bed Room
3. Bed Room
4. Living Room
5. Bed Room
6. WC
7. Kitchen
8. Courtyard

INFORMATION	PHOTOGRAPHS	SHEET
I S	ADDRESS: Sarıkadın St., 67, Erzurum Qu., Ankara.	**15d**
SHEET	SURVEY DATE: October, 1994	NO

INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Sarıkadın St., 67, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **15d'** NO





INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Sarıkadın St., 69, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **16a** NO

DESCRIPTION OF THE BUILDING: The house is located on the street facade of a big parcel and it has a ground and a first floor with a mezzanine between them. There is a large mass addition including many spaces attached to the rear facade of the building. The condition of this addition is fairly bad because of the different settlements and a former fire. Traditional materials and techniques were used in the construction of this addition. The building is divided horizontally into two separate dwelling units and a shop. Some alterations are done for this purpose but the original plan scheme can still be read.

GROUND FLOOR: The main entrance to the ground floor is from the taşlık (G10) which is located at the center corresponding to the gallery in the mezzanine and the central hall in the first floor. There is an original timber staircase on the right side of the taşlık, where only the first step is in stone. The original stone pavement of the taşlık is covered with screed but it is still partly identifiable. The space (G7) at the back, combines the taşlık to the garden at the back but this space could not be documented. On the right side there is a bathroom (G11) underneath the staircase. On the left side there is a small passage (G9) and a WC (G8). The second entrance to the building is located on the left and opened to a space (G1) next to the taşlık. There is a secondary staircase (G3)in this space connecting all the floors of the building. On the right side of the entrance there is a later added WC (G2). At the back side of the staircase there is a small niche used as storage (G4) and two more spaces next to that. (G5, G6). The mass addition located at the back facade of the building settled down and deteriorated a lot on this floor. Because of that, the spaces located at the back are either closed or have become inaccessible in the ground floor. That is why the spaces at the back could not be documented and examined in detail. The third entrance to the building is located on the right side of the facade where there is a shop (G12).

MEZZANINE FLOOR: The gallery (M12) of the mezzanine floor is enlarged above the taşlık with timber flooring and is today used as kitchen (M2). The staircase starting from the taşlık reaches the small hall (M12) in the mezzanine floor. This hall is surrounded by rooms (M3, M11) on both side and the staircase (M4) connects all the floors in the building. There is another room (M6) located on the back side of the staircase and a WC (M5) in a ruined condition. Next to the staircase core (M4) there is a corridor (M10) linking the spaces (M7, M8, M9) added to the building at a later period.

FIRST FLOOR: The plan scheme of the first floor is quite similar to the plan of the mezzanine floor. Same space relations are repeated but the central hall gets larger and makes a projection towards the street facade. The central hall (F1) is surrounded by rooms (F2, F10) and the staircase core (F3) which connects the later added corridor (F9) to the house. The spaces located at the back facade are WC (F4), bathroom (F6), kitchen (F7) and two other rooms (F5, F8).

PRESENT FUNCTION: The house is divided horizontally into 2 dwelling units and a shop in the ground floor. Each of them are used by tenants.

1 St. Unit: 4 people (located in ground and mezzanine floors); Spaces: G10: taşlık as entrance, G8: WC; G9: wood-coal depot; G7: not used, closed; M12: circulation, living; M3: bedroom; M11: living, bedroom; M2: kitchen.

Unit 2: 3 people;(located in the ground and first floors); Spaces: G1: entrance; G2: WC; G3: staircase; G4: wood-coal depot; G5, G6: not used; M4, F3: staircase; F1: central hall; living; F2: living; F10: bedroom; F4: WC not used, in bad condition; F5: room; not used, in bad condition; F6: bathroom, not used, in bad condition; F7: kitchen; F8: room used as depot.

Unit 3: Shop (located in the ground floor)

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Sarıkadın St., 69, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **16b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor: Stone masonry;

Mezzanine Floor: mud brick masonry,

First Floor: timber framed, mud brick infill inside and the inner walls, brick infill in the addition adjacent to back facade,

Roof: Timber framed with eaves, covered with tiles, has no gutter.

Floor pavements: all spaces in the ground floor are covered with screed. In the mezzanine floor all the pavements of the original spaces (M3, M4, M12, M11, M2) and the floor of the later added kitchen is made of timber. The pavements of the later added sections could not be documented (M5, M6, M7, M8, M9, M10). The floor pavements of the spaces F1, F2, F3, F8, F10 are timber in the first floor while the other spaces F4, F5, F6, F7, F9 are covered with screed.

Ceiling: The ceiling of all the spaces are made of timber. Some of them especially the original rooms have ornamented ceilings.

Arch. Elements: Ceiling ornaments, windows, doors their frames and built-in furniture (like: cupboards, etc.) are made of timber.

Finishing: The building was originally plastered and whitewashed both from on the interior and the exterior. The original plaster is washed away by rain and the condition is poor. The exterior faces of the timber made architectural elements are not painted but most of the timber elements used inside the building (like doors, windows, cupboards) are oil painted except the ceiling and floors.

REPAIRS & ALTERATIONS:

Mass additions: A big mass is added to the back facade of the building consisting of three floors. Traditional construction technique is used in this addition. It is a timber framed building with timber infill in the mezzanine and with brick infill in the first floor.

Element additions: The biggest addition affecting the spatial character is to close the gallery in the mezzanine with a timber floor. There are WC (G2, G8) and bathroom (G11) additions in the ground floor besides the addition of washstands and service benches to the kitchens (M2, F7).

Removal: The wall on the facade of the shop is removed and a window is placed instead. Some of the windows in the later added sections are removed and or altered with bigger windows. The sitting platforms are removed from the rooms M3, M11.

Repairs: The house is not subjected to periodical repair and maintenance. Condition of the roof and the exterior plaster is bad. Some small interventions are done especially on the floor pavements of the service spaces.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity supply. The electricity supply is equipped over the walls and timber ceilings. Water is supplied to the all service spaces (kitchens, C's) in each dwelling unit.

ORGANIZATION & CONDITION OF SERVICE SPACES: The service spaces are satisfactory in size but not equipped according to present needs. The quality of the finishing material and compatibility with the original materials should be considered. The structural condition of the kitchen in the first floor is fairly bad.

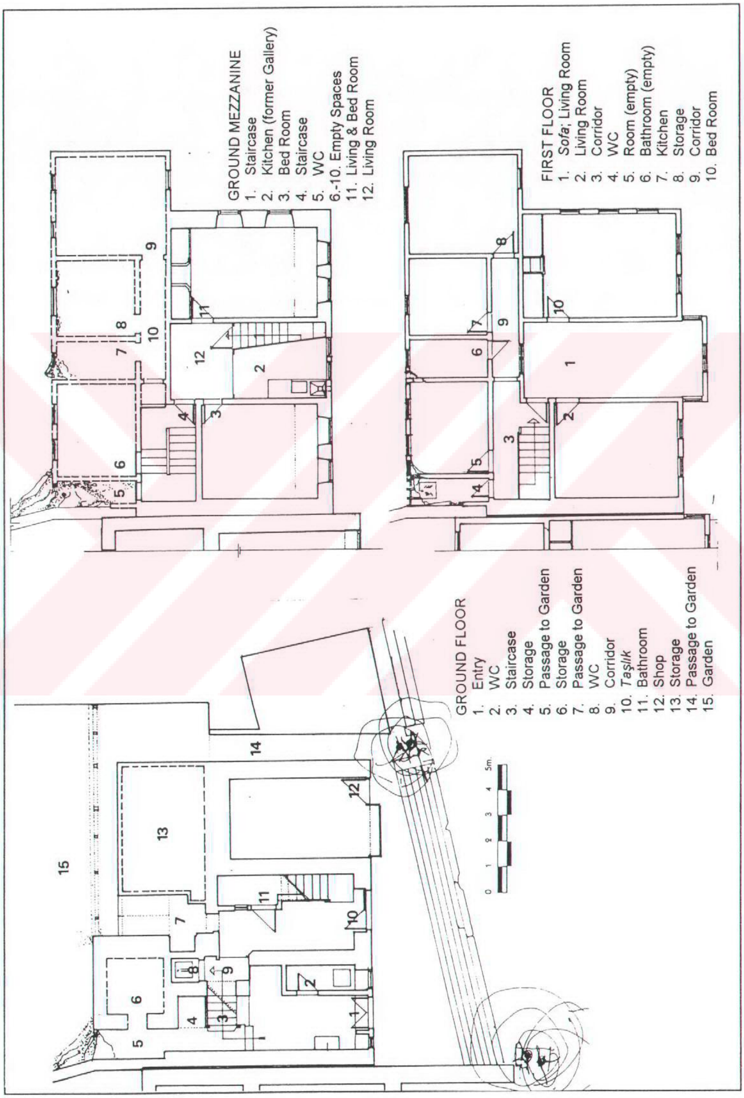
DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is a great structural problem in the later added section. The building is sliding towards the garden caused by different settlements of the foundations. The fire that took place in the first floor affected the structural capacity of the materials. So, the addition is separated from the house. Despite that there are no structural problems in the original sections except the WC and the rooms F4, F5; M5, M6, G5, G6. There is also the problem of rising damp on the street facade and entrance spaces of the ground floor.

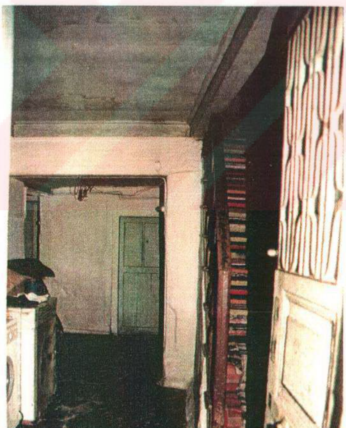
MATERIAL: The condition of the plaster and timber elements in the original sections are comparatively better than the added section. The exterior plaster needs some repair and there is darkening on the timber elements of the facade.

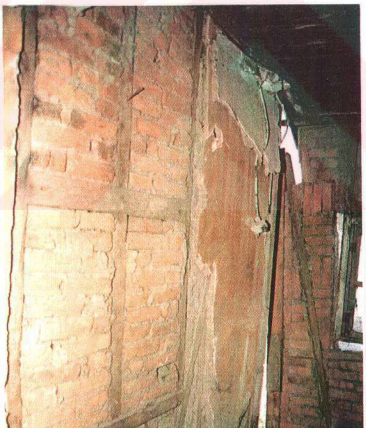
Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**FLOOR PLANS** ADDRESS: Sarıkadın St., 69, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **16c** NO

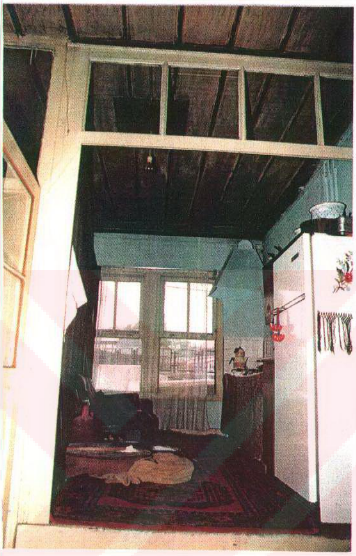


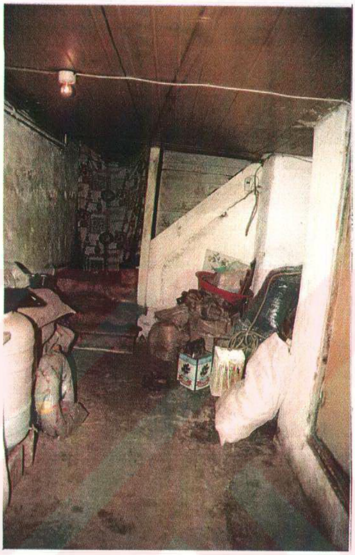
INFORMATION I S SHEET	**PHOTOGRAPHS** ADDRESS: Sarıkadın St., 69, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **16d** NO





INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Sarıkadın St., 69, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **16d'** NO





INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Zülüflü St., 18, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **17a** NO

DESCRIPTION OF THE BUILDING: The house is located on the street facade of the parcel and it has a ground and first floor and a mezzanine floor between the two. The building is divided horizontally into two separate units and some alterations are done for this purpose but the original plan scheme can be read easily. There is an inscription panel on the main entrance which gives the date of the building as H _____/ 1927?AD in Arabic numerals.

GROUND FLOOR: The main entrance to the ground floor is from taşlık (G1) which is located at the center corresponding to the gallery in the mezzanine and the central hall in the first floor. There is a timber staircase on the right side of the taşlık where the first few steps are in stone. The original stone pavement of the taşlık is well preserved. There is a space (G4) at the back which combines the taşlık to the garden at the back but this space could not be documented. On the right side there is a WC (G6) and a storage space (G5) next to it. The second entrance to the building is located on the left and opens to a space (G2) next to the taşlık. There is a secondary staircase (G3) connecting all the floors of the building.

MEZZANINE FLOOR: The mezzanine floor makes a gallery around the taşlık and is placed in two different levels. The staircase starting from the taşlık reaches the first level (M6) of the mezzanine where there is a room (M7) directed to the back garden and a kitchen (M8) on the right. The staircase continues around the taşlık and reaches the second level of the mezzanine (M5) where there is a room (M2), an entry (M3) and a passage (M4) reaching to the second staircase. The gallery continues through the front facade, reaches the sitting platform placed in the window opening.

FIRST FLOOR: The plan scheme of the first floor is a continuation of the other floors but there is a projection on this floor through the whole facade towards the street. The main hall (F1) is located at the center facing to the street and surrounded by a staircase (F5), service spaces (F3, F4) and the rooms on three facades (F2, F8, F6-F7). Today, the room placed at the back side of the hall is divided into two rooms (F6, F7) by the addition of a wall. In the room F7, there are traces of a sitting platform (sedir) on the facade directed to the rear garden and a series of cupboards on the right wall.

PRESENT FUNCTION: The house is divided horizontally into 2 dwelling units and each of them is used by tenants.

1 St. Unit: 2 people (located in ground and mezzanine floors); Spaces: G1: taşlık as entrance, G6: WC; G5: wood-coal depot; G4: not used, closed; M3, M5, M6: circulation; M7: living; M8: kitchen; M2: bedroom.

Unit 2: 4 people;(located in the ground and first floors); Spaces: G2: entrance; G3: wood-coal depot, M4, F5: staircase; F3: circulation; F4: WC; F6: kitchen (the cupboard in the room is used as bathroom); F7: living; F8: bedroom; F2: living, bedroom; F1: central hall, living.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Zülüflü St., 18, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **17b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor: Cut stone masonry;

Mezzanine Floor: mud brick masonry,

First Floor: timber framed, mud brick infill in the side and interior walls, brick infill in the front facade,

Roof: Timber framed with eaves, covered with tiles, has gutter.

Floor pavements: The original stone pavement of the taşlık is well preserved. The other spaces in the ground floor are covered with screed (G2, G5, G6). In the mezzanine floor, all the pavements including the gallery are made of timber except the kitchen (M8). The timber pavement is left in the entrance (which makes it possible to use the original door) of the kitchen while the other sections are covered with screed.

Ceiling: The ceilings of all the spaces are timber, some of them especially the big rooms with cupboards have ornaments.

Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture like: cupboards, shelves, sitting platforms and the bench in the kitchen etc., are made of timber.

Finishing: The cut stone ground floor facade and the first floor facades with brick infill were not originally plastered. But the section below the window sills in the first floor are later plastered with a cement based mixture. All other facades are plastered and whitewashed. In the first floor, the condition of the original plaster is poor especially on the side facades it is washed away by rain. The exterior faces of the timber made architectural elements are not painted but most of the timber elements used inside the building (like doors, windows, cupboards) are oil painted except the ceiling and floors.

REPAIRS & ALTERATIONS:

Mass additions: There are no any mass additions.

Element additions: There are not many element additions in the house. A wall is added between the spaces F6-F7. There are some additions in the kitchen (F6) like addition of a bench, a washstand and a screed platform. When the house was divided into separate units, the secondary staircase was closed to the mezzanine floor and a partition wall was placed to define the entrance (M3) which connects the gallery (M5) to the bedroom (M2).

Removal: The door located between the taşlık (G1) and the second entrance (G2) is removed and the door opening is filled in.

Repairs: The house is subjected to periodical repair and maintenance, like repair of the roof, plaster and paint. Beside that some small interventions are done especially on the floor pavements of the service spaces.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity supply. The electricity supply is equipped over the walls and timber ceilings. Water is supplied to the all service spaces (kitchens, WC's) in each dwelling unit.

ORGANIZATION & CONDITION OF SERVICE SPACES: The service spaces are adequate in size but not equipped according to needs. The quality of the finishing material and compatibility with the original materials should be considered.

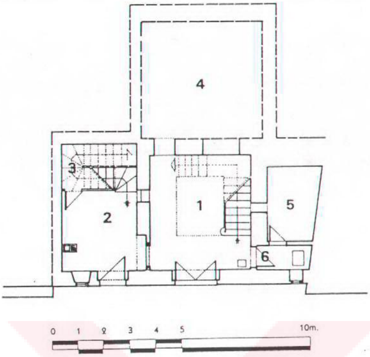
DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There are no major structural problems, deformations and/or cracks in the building and the condition of the roof is good. There is some rising damp problem on the street facade and entrance spaces in the ground floor.

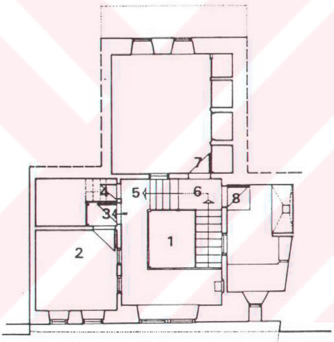
MATERIAL: The condition of the plaster and timber elements is very good because the building is periodically repaired. The plaster needs some repair and there is darkening on the timber elements of facade.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

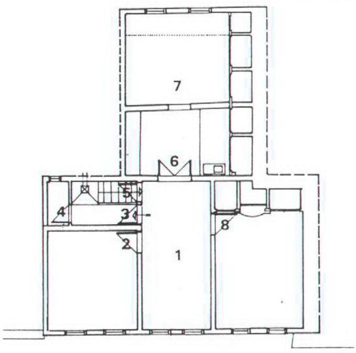
INFORMATION **I S** SHEET	**FLOOR PLANS** ADDRESS: Zülüflü St., 18, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **17c** NO



GROUND FLOOR
1. *Taşlık*
2. Staircase
3. Storage
4. Bathroom
5. WC

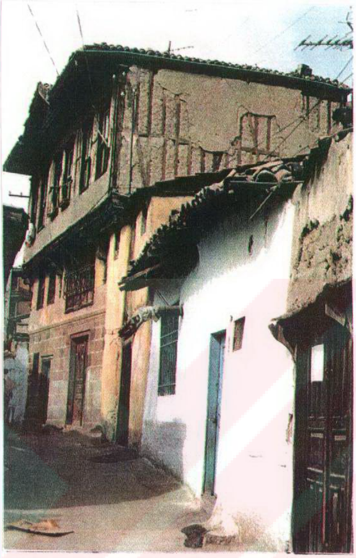


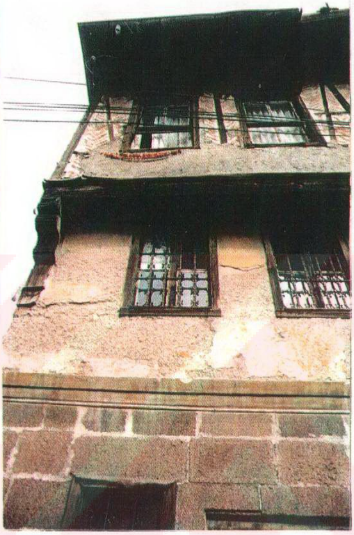
MEZZANİNE FLOOR
1. Gallery
2. Bed Room
3. Corridor (former Staircase)
4. Staircase
5.-6. Gallery Staircase
7. Living Room
8. Kitchen

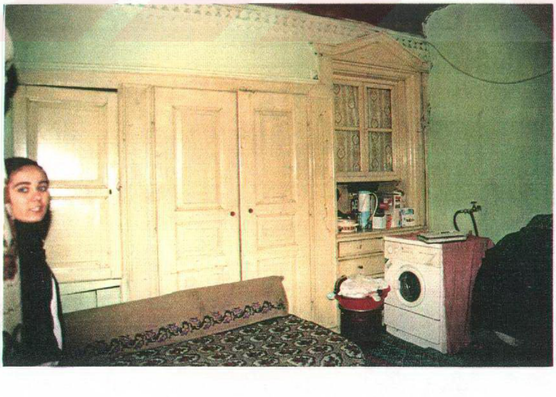


FIRST FLOOR
1. *Sofa*; Living Room
2. Bed Room
3. Corridor; Service
4. WC
5. Staircase
6. Kitchen (former Main Room)
7. Room (? former Main Room)
8. Bed Room

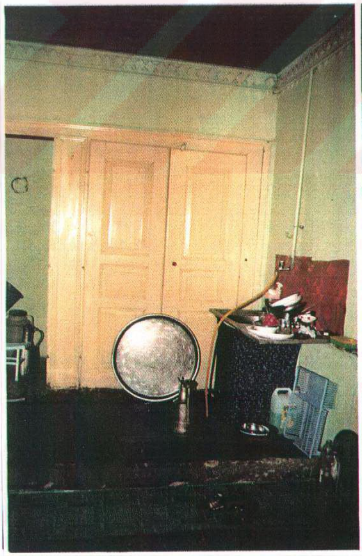
INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Zülüflü St., 18, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **17d** NO

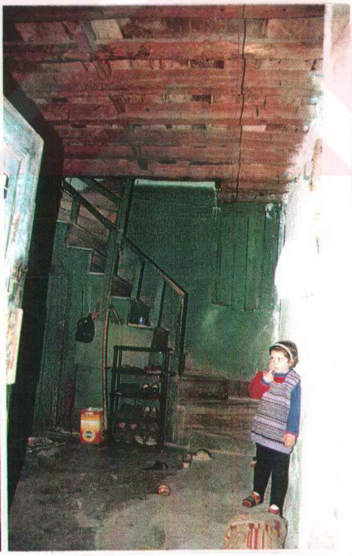






INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Zülüflü St., 18, Erzurum Qu., Ankara. SURVEY DATE: October, 1994	SHEET **17d'** NO





INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Eskicioğlu St., 8, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **18a** NO

DESCRIPTION OF THE BUILDING: The house has a big parcel and is placed on the street facade. There is the main house in two floors, an enlarged auxiliary building and a courtyard (G7) between them. There is an earlier two storey high addition at the right corner which includes a staircase (G8, G9), a WC (G10) and a big room in each floor (G10, F12). The house has a plan scheme repeated in each floor which consists of a hall or taşlık (F1, F16) at the center surrounded by spaces on both sides.

GROUND FLOOR: In the ground floor there is the taşlık (G1) at the center, corresponding to the central hall above and combining the entrance to the courtyard. There are two rooms on each side of the taşlık, a common WC (G11) and a staircase (G12) elevated from the ground level. The rooms located on the left side (G3, G4) and the one on the right (G13) have direct entrances from the taşlık while room (G10) at the right hand side has a separate entrance (G9). At the courtyard facade of taşlık there are two other staircases, one is an earlier addition like the room G10 and serving to the upper floor of the house and the other (F11) is serving to the newly added sections. In the courtyard (G7) of the house there was an original auxiliary building which had two floors. Today this building is enlarged by some alterations and divided into a few dwelling units (These are not documented). There are three more spaces added in the taşlık which are used as depots (G2, G5, G6).

FIRST FLOOR: The plan scheme of the first floor is altered but the original scheme can still be read. Today the main central hall of the building (consisting of spaces F1, F7 is divided into two separate spaces today. A part of the original hall (F1) is used for circulation, while the other part (F7) is a bedroom. The function of the spaces in the first floor are: F5, F7, F16: bed room; F15, F13: kitchen; F2, F12 living-bedroom; F1, F3, F8: circulation; F9, F14: staircase and entry; F4: bathroom; F10: WC. There is another WC in the mezzanine floor entered from space F14. The later added mass in the courtyard touches the back facade of the house, forming a terrace in the first floor. There is an opening to this terrace from the room F5.

PRESENT FUNCTION: The house is divided horizontally and vertically into 6 dwelling units, there are a few other dwellings in the later added mass in the court these are not documented. Social questionnaire is given only to the Unit 5 and information about the users of the other units is gathered from the inhabitants of the Unit 5. This house is documented and surveyed since 1988. The spaces are also documented in different visits. These documentation sheets include the information collected in different visits about the condition of the building. The tenants are changed but the use of the spaces have not changed since 1988.

Unit 1: 2 people (located in ground floor); Spaces: G1: taşlık as entrance, G13: living, bedroom, the cupboard in the room is used as kitchenette; G11: WC;

Unit 2: 2 people; (located in the ground floor); Spaces: G1: taşlık as entrance, G3: living, bedroom, the cupboard in the room is used as kitchenette; G11: WC; G6: wood-coal depot.

Unit 3: 3 people; (located in the ground floor); Spaces: G1: taşlık as entrance, G4: living, bedroom, the cupboard in the room is used as kitchenette; G11: WC; G5: wood-coal depot.

Unit 4: 1 person; (located in the ground floor); Spaces: G1: taşlık as entrance, G13: living, bedroom; G9: entry, kitchenette; G11: WC.

Unit 5: 4 people (located in the first floor); Spaces: G1: taşlık as entrance, G6: wood-coal depot; G8: staircase; F9: entry, lavatory; F10: WC; F8: circulation; F12: living, bedroom; F13: kitchen; F7: bedroom.

Unit 6: 3 people (located in the first floor); Spaces: G1: taşlık as entrance, G6: wood-coal depot; G12: staircase; F14: entry, there is also WC in mezzanine in this space; F1, F3: circulation; F2: living, bedroom; F15: kitchen; F16, F5: bedroom; F4: bathroom.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION **I S** SHEET	**STRUCTURAL SYSTEM & MATERIAL** ADDRESS: Eskicioğlu St., 8, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **18b** NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry;

Ground Floor: mud brick masonry,

First Floor: timber framed, mud brick infill

Roof: Timber framed with large eaves, covered with tiles, has gutter.

Floor pavements: The courtyard and WC in the ground floor are covered with screed while the taşlık has its original stone pavement. The floors of the inhabited rooms in the ground floor are timber covered and elevated from the taşlık level. All the inhabited rooms in the first floor are timber covered while only a part of the kitchen F15, the whole pavement of the kitchen F13; the bathroom (F4), the entrance (F9) and the WC (F10) are covered with screed. Both staircases (F9, F14) reaching to the first floor of the house are of timber, while the one attached to the facade is of concrete (F11).

Ceiling: The ceilings of all spaces is timber.

Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture (cupboards, shelves etc.) are of timber.

Finishing: The plaster of the house is completely renewed and whitewashed both from the interior and the exterior by a cement based plaster. The condition of the plaster is good. All timber made architectural elements (like door, windows, cupboards) are oil painted and are in a good condition.

REPAIRS & ALTERATIONS:

Mass additions: There are two major mass additions to the house. The smaller mass including a staircase and rooms in each floor is an earlier addition. The second big intervention in this scale is the enlargement of the auxiliary building in the courtyard up to the facade of the house. This second addition was built within the last two years. Three small masses which are used as wood-coal depots by the dwellers and the owner were also added during the last two years inside the taşlık.

Element additions: Beside the mass addition to the house there are some element additions like the walls placed between spaces F1-F7 and F8-F13; and the doors opened from room F5 to the terrace (F6); and from room F8 to F9.

Removal: The cupboards of the rooms F2 and F5 are removed and this space is altered to a bathroom.

Repairs: There had been major repairs caused by big alterations in the building. To divide the first floor of the house into two units a separate staircase was added to the courtyard facade of the building together with a mass addition, then the hall in the first floor was divided by a timber framed, plywood covered partition. Besides, the wall between the spaces F8-F13 was added to obtain a kitchen and a circulation area. During these earlier interventions to the house traditional materials were used widely, with a qualified workmanship but in the service spaces and especially for the floor pavements, new meterials (such as screed and cement plaster) were introduced. During these interventions the spatial quality of the spaces were widely preserved. But these characteristics can not be observed in the later interventions (i.e., in the addition of storage spaces to the taşlık). Beside these, the roof of the house is completely repaired together with its eaves and gutters and all the plaster is renewed.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: Each unit in the house has electricity supply. The electricity supply is equipped over the walls and timber ceilings. But water is supplied only to the service spaces (kitchens, WC's and the bathroom), dwelling units located in the first floor and to the fourth dwelling unit (only this unit has a washstand).

The dwellers in the ground floor are using the tap in the court for all purposes.

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of the service spaces of the Unit 6 (owner of the house) is good. Their finishing and size is satisfactory according to contemporary standards but installation of the fittings and choice of new materials might be harmful for the original material of the building in the long run. The condition of the WC and kitchen in Unit 5 is poor, maybe not in size but in finishing.

The common WC in the taşlık is in extremely bad condition. The units in the ground floor have no separate WC, which is the biggest problem, besides they have no kitchen and bathroom. The Unit 4 has a kitchenette satisfactory in size for a single person but it is also in a bad condition.

DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is no major structural problem, deformation and/or crack in the building and condition of the roof is very good. There are some problems of rising damp on the street facade especially in the stone sections but the biggest dampness problem is in the taşlık, resulting from both rising damp and poor isolation of the WC.

MATERIAL: The condition of the plaster and timber elements is good because the building is completely repaired. But still there is a dampness problem in the taşlık. The paint of common the WC needs renewal. There is some problem on the ceiling of the taşlık and WC in the ground floor possibly because of combined action of pollution and dampness.

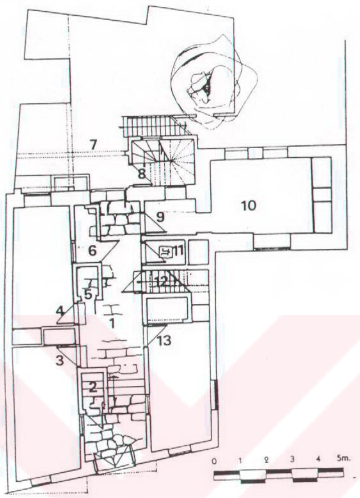
INFORMATION **I S** SHEET

FLOOR PLANS

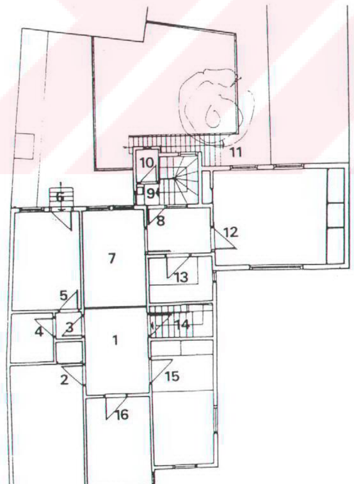
ADDRESS: Eskicioğlu St., 8, İstiklal Qu., Ankara.

SURVEY DATE: October, 1994

SHEET **18c** NO

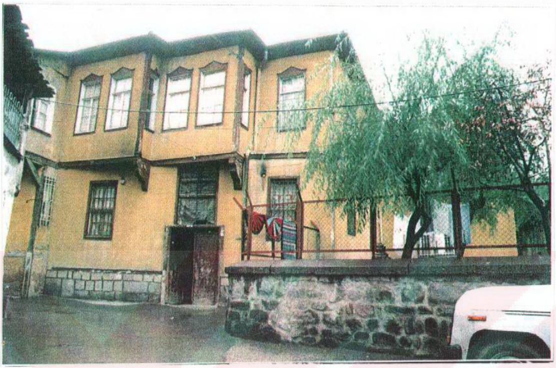


GROUND FLOOR
1. *Taşlık*
2. Storage
3. Room
4. Room
5. Storage
6. Storage
7. Courtyard
8. Staircase
9. Kitchenette
10. Room
11. WC
12. Staircase
13. Room

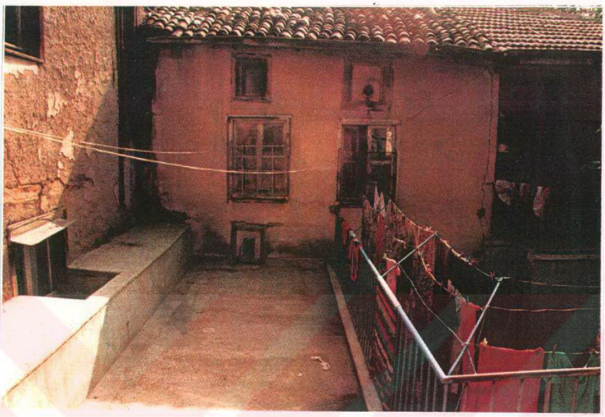


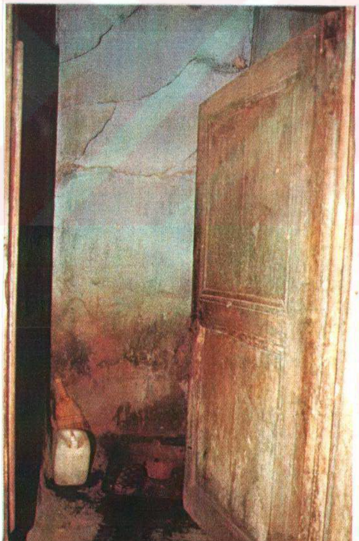
FIRST FLOOR
1. Circulation Hall (former *Sofa*)
2. Bed Room
3. Corridor
4. Bathroom
5. Bed Room
6. Terrace
7. Bed Room
8. Circulation Hall
9. Staircase
10. WC
11. Passage to *müştemilat*
12. Living & Bed Room
13. Kitchen
14. Staircase
15. Kitchen
16. Living Room

INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Eskicioğlu St., 8, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **18d** NO



INFORMATION	PHOTOGRAPHS	SHEET
I S	ADDRESS: Eskicioğlu St., 8, İstiklal Qu., Ankara.	**18d'**
SHEET	SURVEY DATE: October, 1994	NO





INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Kalas St., 11, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **19a** NO

DESCRIPTION OF THE BUILDING: The house is located on a corner parcel facing the streets with two facades and the building covers the whole parcel without an open space. Plan scheme of the main floor of the house has a central hall surrounded by spaces on both sides. The building consists of a basement, ground, first floors and a cihannüma. It has a timber roof structure with narrow eaves and has no gutter.

BASEMENT FLOOR: The basement floor consists of a single space used as coal-wood depot.

GROUND FLOOR: The ground floor of the building is elevated from the street level by a few stone steps (G7) and the entrance to the building is taken from the street to the taşlık (G1). On the left side of the entrance door there is a later added WC (G2) and timber staircase (G4) is placed at the end of taşlık leading to the upper floors. The space on the left of the taşlık is the kitchen (G3). The room on the right side of the taşlık is used as living and bedroom (G6). The space underneath the staircase is a cupboard (G5) opening to room G6.

FIRST FLOOR: The plan scheme of the first floor is similar to the ground floor. Above the taşlık, there is a central hall (F1) with a staircase (F4) at its back and flanked by spaces on both sides. Today the hall is divided by a simple separator and a bed room is obtained (F6). The room on the right side is a guest room and the spaces on the left are used as kitchen (F2) and WC-bathroom (F3). The central hall and the guest room make a projection through the street facade in this floor.

CİHANNÜMA: The roof floor, cihannüma, consists of the space including the staircase (C1) and a single room (C2) today used as a depot. The space above the staircase is closed and a part of it is a cupboard serving to the room while the other part is a storage space (C3) reached from the staircase.

PRESENT FUNCTION: The house is physically not divided into dwelling units but practically the ground floor is used by an old women while the first floor is used by the her son and his wife. They are all tenants.

Unit 1: 3 people (located in the whole building);

Spaces: B1: storage; G1: entrance and circulation; G2: WC; G3: kitchen; G4: staircase; G5: storage; G6: living-bed room; F1: circulation; F2: kitchen; F3: WC and bathroom; F4: staircase; F5: guest room; F6: bedroom; C1: staircase; C2: room for storage; C3: depot not used.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION I S SHEET	STRUCTURAL SYSTEM & MATERIAL ADDRESS: Kalas St., 11, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET 19b NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry;

Ground Floor: timber framed, mud brick infill,

First Floor: timber framed, mud brick infill,

Roof: Timber framed with narrow eaves, covered with tiles, has no gutter.

Floor pavements: The floor of the storage space in the basement the floor is packed earth, without a special pavement. Taşlık, kitchen and WC in the ground floor are all covered with screed while the room G6 in this floor is paved with timber and then covered with linoleum. All the floor coverings in the first floor are made of timber except the elevated floor of the WC (F3) which is covered with screed. The flooring in the cihannüma is also timber.

Ceiling: The original ceilings of the spaces are timber but some of them were later covered with plywood (like the room C2) or cardboard (G3).

Arch. Elements: The house has quite simple features and it is not rich in architectural elements. Beside that the ceiling ornaments, windows, door frames and built-in furniture (the cupboard in the space G6 cupboards) are made of timber.

Finishing: Mud mortar is used for mud brick masonry and in timber framed sections. The exterior facades of the house is mud plastered and whitewashed. The condition of the plaster on exterior facades, especially in the first floor is quite poor. The ground floor facade of Kalas street is renewed with cement plaster. Interior spaces are also plastered and whitewashed but the condition of the plaster especially on the exterior walls is bad. The walls of the WC in the first floor is covered with cardboard (F3). Most of the timber made architectural elements (like door, windows, cupboards) are oil painted from the interior but there is lack of paint on the exterior faces.

REPAIRS & ALTERATIONS:

Mass additions: There is no mass addition.

Element additions: There are wall additions in the first floor to obtain a bedroom (between the spaces F1-F6) and a WC (F2-F3). It is not possible to define the original location of the WC but the wall separating the spaces G1-G2 is also a later addition. There are other additions as elements but these are in material scale.

Removal: The door of the cupboard in the cihannüma, the door of the room C2 are removed.

Repairs: There had been some repairs to create service spaces in the building. New materials are commonly used in these interventions like renewal of floor pavements with screed, addition of walls using collected materials, addition of washstands etc.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: There is electricity and water supply in the house. The electricity supply is equipped over the walls and timber ceilings while the water supply fittings are placed by passing through the original floors and walls. Water is supplied to all WC's and the kitchens in the house.

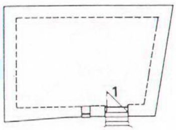
ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is quite poor. Their dimensions might be satisfactory in size but the finishing materials and their workmanship is poor and harmful for the original material. These new materials are not compatible with the originals and create a source of dampness in the building.

DECAY IN STRUCTURE & MATERIAL:

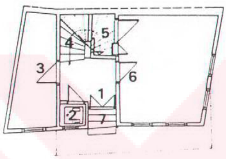
STRUCTURE: There is a deformation in the Cihannüma floor. This space is sloping down towards east and the rear wall is detached from the roof structure where rain penetrates. There are small deformations in the floor pavements of the building. The ground floor and the upper floors are all made with timber. The level of stone masonry base is about 50-70 cm. on Esen street and 40-50 cm. on Kalas street. The plaster and even the mortar of the stone masonry is lacking in some parts. The plaster is washed by the rain and fallen down. The infill material is exposed to weathering conditions, as a result of this the infill material is emptied in some section by falling down from its original place.

MATERIAL: The condition of the exterior plaster is fairly bad, it needs complete repair and whitewash. The plaster of the interiors is relatively in better condition because they are renewed by the users. The color of the exterior timber elements have turned to dark brown but the condition of timber used in interiors is better which are oil painted. It is observed that in general, the condition of timber elements are good, they need some cleaning and maintenance. Timber elements did not loose their structural strength and there is no major problem of biodeterioration or insect attract.

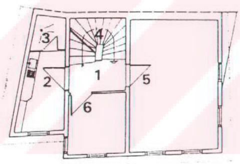
INFORMATION **I S** SHEET	**FLOOR PLANS** ADDRESS: Kalas St., 11, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **19c** NO



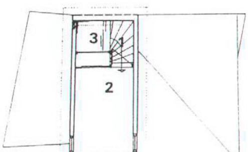
BASEMENT FLOOR
1. Storage



GROUND FLOOR
1. Circulation Hall
2. WC
3. Kitchen
4. Staircase
5. Cupboard
6. Living & Bed Room
7. Staircase & Entry

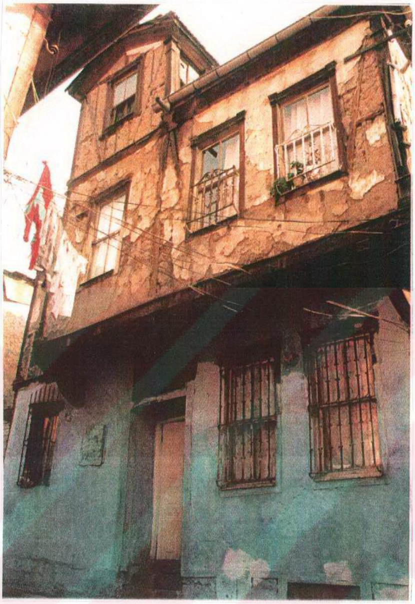


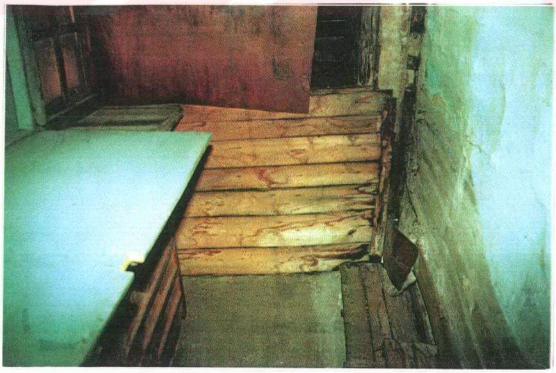
FIRST FLOOR
1. Circulation Hall (former *Sofa*)
2. Kitchen
3. WC
4. Staircase
5. Living Room
6. Bed Room (former *Sofa*)



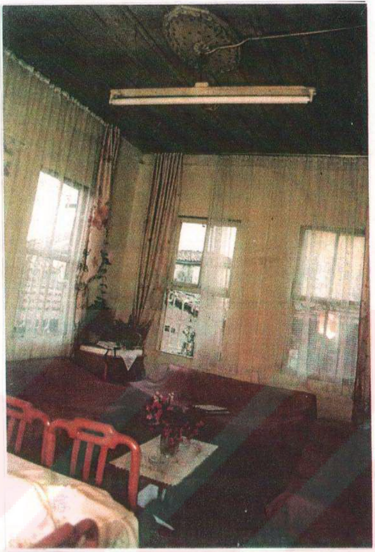
CİHANNUMA FLOOR
1. Staircase
2. *Cihannuma* (Storage)
3. Storage

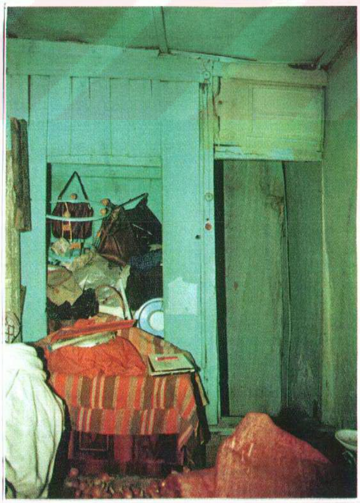
INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Kalas St., 11, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **19d** NO

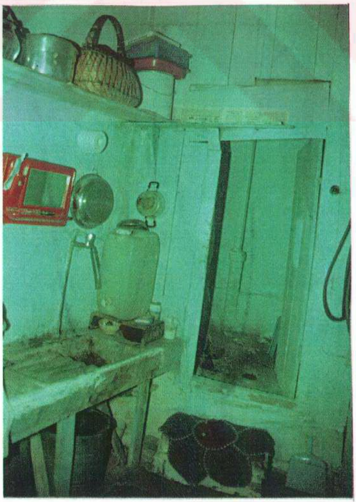




INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Kalas St., 11, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **19d'** NO







INFORMATION **I S** SHEET	**SPATIAL ORGANIZATION** ADDRESS: Yağcılar St., 1, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **20a** NO

DESCRIPTION OF THE BUILDING: The house is placed in a square parcel. The L shaped mass of the house creates a big courtyard on the street facade and the right corner is filled by a small one. The house has two floors and a cihannüma space in the roof. The house has a different plan scheme from the traditional plans or it is altered a lot. Each wing of the L shaped plan consists of spaces which are reached through the entrance from the front court. There is no a passage to the back garden in the existing plan scheme.

GROUND FLOOR: The entrance to the wing at the back is from a small entry space G4, to which the rooms G1 and G2 are opened. On the entrance wall of the room G1 there are traces of the two altered cupboards. The room next to it is also an altered space G2, where a supporting timber post is added and the windows of the room are opened to the small court (G3) at the back. The windows of both rooms are in square format and show new features from the other windows of the house. Today, none of these spaces are inhabited, they are used depot. The back walls of both rooms and their ceilings are altered. A new concrete shear wall is constructed parallel to the stone masonry rear wall of the house, which is adjacent to the newly built apartment on Anafartalar street. There is a WC (G5) on this section of the house which was formerly entered from space G4, but today it is reached only from the courtyard. The other wing of the house has an entrance (G7), reached from the courtyard and surrounded by two rooms and a bathroom (G8) on three sides. This spaces is also used as the kitchen. The room G6 is a bedroom where there is a later added post carrying the ceiling. The room (G9) located on the other side of the entrance faces the street with its narrow facade, it is both a living and a bedroom. The room has windows on three sides but the two windows opened to the neighboring parcel are later additions. There is a timber staircase at the center of the L shaped mass reaching to first floor.

FIRST FLOOR: The timber staircase (F10) of the house reaches an entrance which consists of two spaces and has different floor levels (F7, F6). There is a later added small space (F8) in this entrance (F7). On the right side of the entrance there is the main room directed to the street (F9). While on the other end there is another circulation space which opens to a WC (F5), the staircase (F3) to the cihannüma floor and to another room (F2) directed to the court. The entrance to the last room located in this floor (F1) could not be documented.

CİHANNÜMA FLOOR: consists of a staircase (C1) and a room (C3) which has a good view.

PRESENT FUNCTION: The house is divided horizontally for the use of at least two dwellers. But today, its is used only by a single family. The owner is not living in the house.

Unit 1: 3 people (located in ground floor and a part of the first floor);

Spaces: G10: courtyard as entrance, circulation and living; G1, G2 storage; G3: courtyard not used; G4: circulation; G5: WC; G6: bedroom; G7: entrance, circulation and kitchen; G8: bathroom; G9: living-bedroom; F10: staircase; F6, F7: circulation; F: 9 living- bedroom for the guests. Other spaces are not used and left empty.

Prepared by: Neriman ŞAHİN, METU, Faculty of Architecture, Graduate Program in Restoration, ANKARA

INFORMATION	STRUCTURAL SYSTEM & MATERIAL	SHEET
I S	ADDRESS: Yağcılar St., 1, İstiklal Qu., Ankara.	**20b**
SHEET	SURVEY DATE: October, 1994	NO

STRUCTURAL SYSTEM AND MATERIAL:

Ground Floor Level: stone masonry;
Ground Floor: timber framed, mud brick infill,
First Floor: timber framed, mud brick infill,
Cihannüma Floor: Timber framed, timber infill (bağdadi technique),
Roof: Timber framed with eaves and covered with tile, has no gutter.
Floor pavements: All the spaces including the courtyard, the inhabited rooms and all service spaces in the ground floor are covered with screed. The small court at the back is not paved, it is in its natural form. All the floor pavements in the first floor and in the cihannüma are timber except the screed covered WC (F5).
Ceiling: The ceilings of the spaces G5 (WC), G6 (bedroom), G9 (living-bedroom) are made of timber and all others are renewed with plywood. Today, the ceilings of the spaces G2 and G6 are supported by timber posts eventhough there is no any visible deformation. The ceilings of all other spaces in the first floor are timber except the room in the cihannüma floor where the timber paved ceiling is plastered.

Arch. Elements: Ceiling ornaments, windows, door frames and built-in furniture (cupboards, shelves etc.) are made of timber and gypsum.
Finishing: Mud mortar is used in mud brick masonry and in the timber framed sections. The exterior facades of the house are plastered and white washed only in the ground floor. The plaster of the first floor is washed away by rain and is in a poor condition and there is lack of plaster especially on the facades facing the neighboring parcels. The condition of the plaster in the interiors is also poor in uninhabited spaces. The plaster of the rooms which are used by tenants is renewed. The timber made architectural elements (like door, windows, cupboards) in inhabited spaces are oil painted but there is lack of paint on the exterior faces of the windows. There is darkening problem on all timbers on the facade.

REPAIRS & ALTERATIONS:

Mass additions: There is some mass additions in the building but it was not possible to identify them in this limited survey. The spaces F4, F6 and F7 might be later additions. The most original spaces are the rooms G9, F9 and G1 which carries some alterations.

Element additions: There might be some wall additions in the house besides some removals. Because of the alteration of the ceilings located at the back side of the court, it is not possible to define them clearly. The location, quality and workmanship of the staircase is also questionable, it might be a later addition too. The walls surrounding the room F8 are later additions, identifiable from the ceiling of the spaces. The windows looking to neighboring garden in the room G9 and room G2 are later added elements.

Removal: The questionable points mentioned above are also valid for the removals, but the information gathered in this survey is not enough to identify the removed elements in the house.

Repairs: There are some minor identifiable repairs. The ones effecting the building in element scale are mentioned above. The major alterations in material scale can be listed here like the renewal of the plaster on the exterior facades of the ground floor and inhabited rooms, and the cement plaster and oil paint of the timber made elements in the inhabited rooms. The floor pavements of the service spaces and all pavements in the ground floor is renewed with screed. The roof of the building is also renewed regularly by the tenant when there is a leakage.

ORGANIZATION & CONDITION OF INSTALLATION SYSTEMS: The house has electricity and water supply. The electricity supply is equipped over the walls and timber ceilings. Water is carried to all WC's and the kitchens in the house.

ORGANIZATION & CONDITION OF SERVICE SPACES: The condition of service spaces is poor. The kitchens are comparatively satisfactory in size but the finishing materials used in these spaces are poor, they can be renewed or maintained better. The WC and bathrooms are quite bad and not equipped satisfactorily according to contemporary standards.

DECAY IN STRUCTURE & MATERIAL:

STRUCTURE: There is no major structural problem, deformation and/or cracks in the building and the condition of the roof is good. It only needs some repairs like: replacement of decayed tiles, repair of degraded or missing timber pieces in the roof structure and eaves and repair and installation of the gutters. There is no visible damage done by rising damp because the stone masonry ground floor level is in good condition. But there is dampness problem in the service spaces.

MATERIAL: The condition of the exterior plaster at the back facade is poor as a result of rainwash through the facades, but it needs partial repair and paint. The plaster of the interiors are in better condition because they are renewed by the users periodically. There are no color changes especially in the ceilings and the floor pavements of the first floor, but there are some in the original ceilings of the ground floor (possibly because of combined action of pollution and dampness). There is discoloration (the color turned to dark brown) on the timber elements of the roof eaves. The stone base of the ground floor is in good condition and it partly stops rising damp. Condition of the timber elements in general, is quite good, they need some cleaning and maintenance. There is no timber element which has lost its structural strength and there is no biodeterioration or insect attack.

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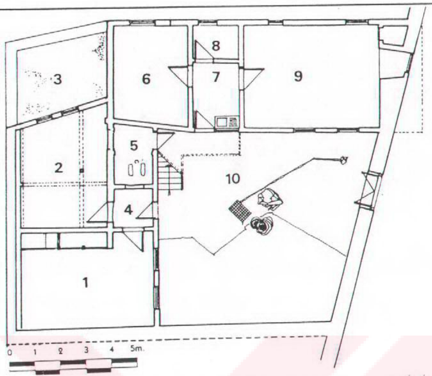
INFORMATION
I S
SHEET

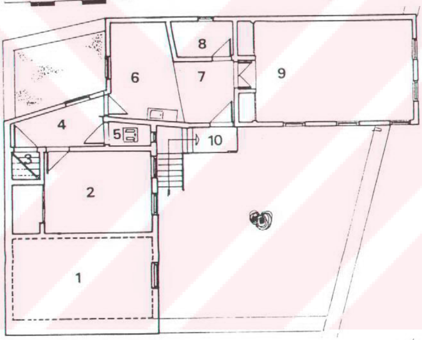
FLOOR PLANS

ADDRESS: Yağcılar St., 1, İstiklal Qu., Ankara.
SURVEY DATE: October, 1994

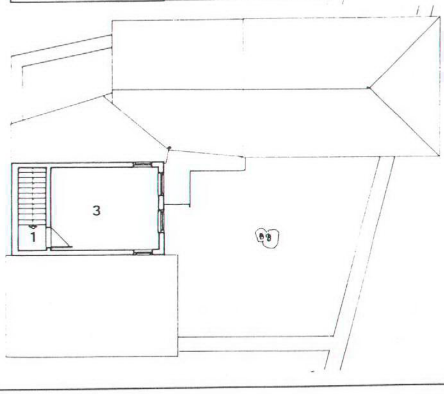
SHEET
20c
NO



GROUND FLOOR
1. Room (empty)
2. Room (empty)
3. Garden
4. Entry
5. WC
6. Bed Room
7. Entry & Kitchenette
8. Bathroom
9. Living & Bed Room
10. Courtyard

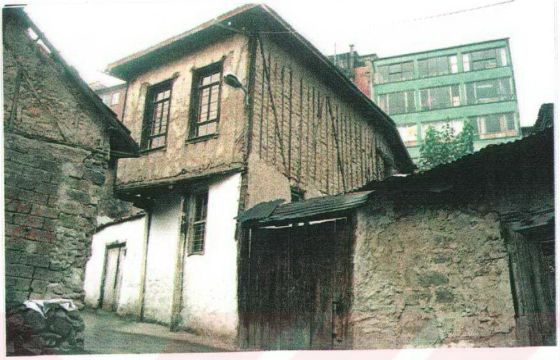


FIRST FLOOR
1. Room (empty)
2. Room (empty)
3. Staircase
4. Circulation
5. WC
6. Circulation & Kitchenette
7. Entry
8. Service
9. Living & Bed Room

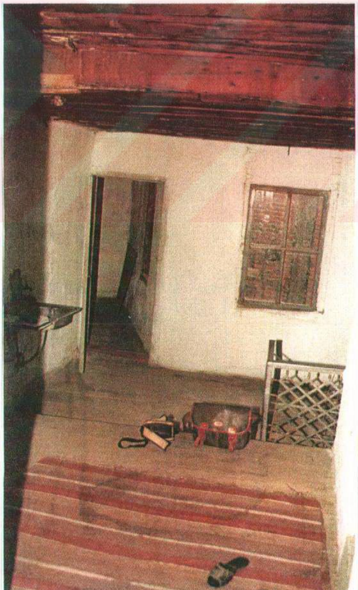


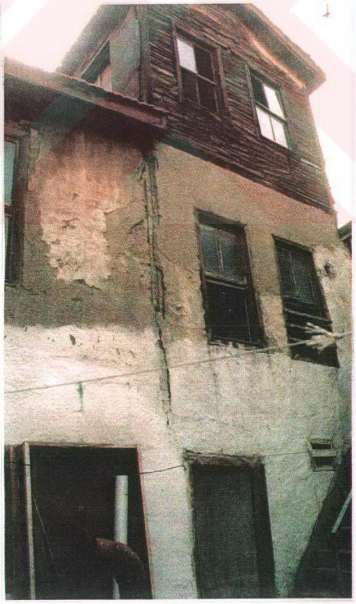
CİHANNUMA FLOOR
1. Staircase
2. *Cihannuma* (empty)

INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Yağcılar St., 1, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **20d** NO



INFORMATION **I S** SHEET	**PHOTOGRAPHS** ADDRESS: Yağcılar St., 1, İstiklal Qu., Ankara. SURVEY DATE: October, 1994	SHEET **20d'** NO





APPENDIX D

EVALUATION CHARTS RELATIVE TO CHAPTER IV

CHART 5: DECAY IN STRUCTURE AND MATERIAL

NO:	PERIOD:	ADRESS:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	23	24	25	26	27	28
			STRUCTURE						ROOF					MATERIAL															
			Major Structural Deformation	Partial Structural Deformation	Foundation Settlement	Deformation or Detachment of Vertical El.	Deformation or Slope in Horizontal El.	Condition of Structure	Major Structural Deformation in Roof	Missing or Broken Tiles	Broken or Missing Gutters or has No Gutters	Leacgae from the Roof	Condition of Roof	Timber decay	Stone decay	Mudbrick decay	Brick dacey	Mortar decay	Decay in External Plaster	Decay in Internal Plaster	Decay in External Whitewash	Decay in Internal Whitewash	Decay in Oil paint	Decay in Glass	Decay in Stucco work	Decay in Floor Tiles	Decay in Screed pavement	Decay in Iron Elements	Condition of Material
1	E	Kale kapısı st., No: 10, Kaleiçi		X				F			N		F	D,F,Sa	Ej	E	De	E	E,M,De,Cr	Cr	F,De	Cr	F,M	P,D			Da		F
2	E	Gelin st., No: 8, Ulucanlar						F			N	X	P	D,F,Sa	Un	E		E,M	Np,M,Cr	Cr,De	Nw	Cr,De	N	B,D,	Di,B	B,F,Sc			P
3	E	Cingöz st., No: 20, Ulucanlar						G			N	X	F	D,F,Sa,Ih	Ej	E	De	E	N	Cr	Cr,De,M	Cr	F	M,B,P	Di,B	Mo		O	F
4	E	Erzurum st., No: 48, Erzurum		X		X		F			N	X	P	D,F,Sa,Ih	Ej	E	De,Di	E,M	M,E,Li	Cr,De	Cr,De	Cr	F	M,B,P,D	B	M,B	Cr	O	P
5	E	Sarıkadın St., No: 43, Erzurum						G	X	X	N	X	F	D,F,Sa,Ih	Ej	E	Ej	E,M	M,E	Cr	M	Cr	Cr	M,B,P		M,B	Da		F
6	E	Eskici st., no:2, İstiklal						G					G		Sa		Ej		N		N		Np	N			Da		G
7	EO	Gelin st., No: 12, Ulucanlar						G			N	X	F	D,F,Sa	Ej, Sa	E		E,M	M,E,De,Cr	Cr	F,Cr	Cr	Np	B,P,D,Bj					F
8	OG	Öksüzler st., No: 17, Ulucanlar	X	X	X	X	X	B			N		F	D,Sa,Po	Un				Cr	Cr,De	Cr	Cr	Cr	Bj,D			Cr,M		P
9	OG	Cingöz st., No: 3, Ulucanlar						G			B,M		F	D	Un	Un			Cr		Cr		Np	N					F
10	OG	Sarıca st., No: 7, Eylül st., No:1, Ulucanlar						G			N	X	F	D,F,Ih,Sa	Ej	E,M		E,M	Np,M,E	Cr	Np	Cr	Cr	B,P,D,Bj			Cr,M		F
11	G	Gelin st., No: 4, Ulucanlar						G			N		F	D,Sa,R	Un	Un	Un	Un	E, Sa	Cr,De	Cr,E	Cr	Cr	Bj			Cr,M		F
12	G	Öksüzler st., No: 13, Ulucanlar		X	X	X		P	X	X	B,M	X	B	D,F	Ej	E,M,Ej	De	E,M	E	E,De,Cr	E	Cr,De,F	E	B,P,D			Cr,M	O	P
13	G	Öksüzler st., No: 36, Ulucanlar						G					G	F	Un	Un	Un	Un	N		Co		Np	D			Da		G
14	G	İnci st., No: 14, Ulucanlar						G		X	B	X	F	D,Sa		E,D			E,F,De	Cr,De	E,F,De	Cr,De	Cr,F	B,P			Da	O	F
15	G	Sarıkadın St., No: 67, Erzurum		X	X	X	X	F		X	N	X	P	D,Sa,F	E,Ej	E,M		E,M	De,M,Cr	Cr,De	F,Cr	Cr	N	B,P,D,Bj			Da		F
16	G	Sarıkadın St., No: 69, Erzurum		X	X	X	X	P	X	X	B	X	P	D,Sa,F	E,Ej	E,M	De,Ej	E,M	E,De,F,Cr	Cr,De	F,Cr	Cr	Cr	B,P,D,Bj,M			Da		P
17	G	Zülüflü St., No: 18, Erzurum						G			B		F	D,Sa		E,Di	Di,Ej	E,M	De,M	Cr	Cr	Cr	N	P,D			Da	O	F
18	G	Eskicioğlu st., no:8, İstiklal						G					G	D,Sa,F	Sa	Un	Un		N		N		Np	N					F
19	G	Kalas st., no:11, İstiklal		X	X	X		P	X	X	B	X	P	D,F	Ej	E,Ej,Di		Un	F,M,De	Cr,De	M,F	Cr,De	Cr,F	B,D,P			Da		P
20	G	Yağcılar st., no:1, İstiklal						F			N		F			E,Ej		E,M	M,E,Cr	Cr,De		Cr	Cr	B,D,Bj,M			Da		F

LEGANDE:

Condition of Structure, Roof, Material: G: Good; F: Fair; P: Poor; B: Bad, Un: damage is not identified, N: No problem
Timber Decay: D: Discoloration ; In: Insect holes; F: Fiber formation; R: Rotting by fungi; Sa: Salt deposition, Po: Pollution
Stone Decay: E: surface Erosion; Ej: Empitied joints; Sa: Salt deposition
Mudbrick Decay: E: surface Erosion; M: Missing; Ej: Empitied joints; De: detachment from timber structure; Di: Disintegration;
Brick Decay: De: detachment from timber structure; Di: Disintegration; Ej: Empitied joints;
Mortar Decay: E: Erosion; M: Missing
Decay in Ex. Plaster: Np: No plaster; F: Flaking; M: Missing; De: Detachment from the wall; E: surface Erosion; Cr: Cracks; Sa: Salt deposition
Decay in In. Plaster: De: Detachment from wall; E: surface Erosion; Cr: Cracks
Decay in Ex. Whitewash: Nw: No whitewash; F: Flaking; De: Detachment from plaster; Cr: Cracks; E: Erosion; Co: Color change;
Decay in In. Whitewash: De: Detachment from plaster; Cr: Cracks; E: Erosion;
Decay in Glass: M: Missing; B: Broken; Bj: Bad joints; P: Missing of Putty; D:Disintegration from frame
Decay in Oil paint: F: Flaking; De: Detachment; M: Missing
Decay in Stucco work: B: Broken; Di: Disintegration from original place;
Decay in Floor Tiles: F: Flaking; B: Broken; Sc: covered with Screed; Mo: Moved from its place
Decay in Screed Pavement: Da: visible Dampness; Cr: Cracks; M: missing, partial loss
Decay in Iron Elements: Oxidation

CHART 4: COMMON TECHNIQUES & MATERIALS USED IN ALTERATIONS AND REPAIRS IN THE MAIN BUILDING

			ADDITIONS:							ALTERATIONS:									REPAIRS:								INSTALLATIONS:			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
NO:	PERIOD:	ADRESS:	Mass addition with	Wall addition with	Staircase addition with	Window addition with	Door addition with	Cupboard addition with	Shelter addition with	Timber staircase covered or altered with	Timber floor boards of ground floor covered with	Timber floor boards of upper floors covered with	Timber floor boards of kitchen covered with	Timber floor boards of bathroom or guslhane covered with	Floor pavement of wc covered with	Stone paved taşlık space covered with	Stone paved courtyard covered with	Ceiling timber boards covered or alterd with:	Partial or total roof repair	Decayed parts of the walls renewed with	Timber post addition to reinforce the structure	Exterior plaster renewed with	Interior plaster renewed with	Exterior whitewash renewed with	Interior whitewash renewed with	Oil paint of timber elements renewed in	Installations of electricity supply	Installations of water supply in to the building	Washstands &benches placed in to the kitchens made with	Allaturca type toilettes placed in to the WS's made with
1	E	Kale kapısı st., No: 10, Kaleiçi	Cs	Tf		T	T			Cs	Sc			Sc	Sc	Sc	Sc		P				Cp		Lw	I,E	X	X		Mo
2	E	Gelin st., No: 8, Ulucanlar		Tf		T	T	T			Sc			Sc	Sc	Sc			P				Cp		Lw	I	X		T	Mo
3	E	Cingöz st., No: 20, Ulucanlar		Tf	T		T		Ts						Sc				P				Mp		Lw	I	X			
4	E	Erzurum st., No: 46, Erzurum	Tf	Tf	T	T	T	T			Sc			Sc	Sc	Sc		Oc	P		X			Lw	Lw	I	X			Mo
5	E	Sarıkadın St., No: 43, Erzurum	Br	Tf		T	T	T						Ct	Sc										Lw	I	X			Mo
6	E	Eskici st., no:2, İstiklal	Cs	Br	T,Cs	T	T	T		T	Sc		Ct		Ct	Sc	Sc		T	Cs		Cp	Cp	Ww	Ww	I,E	X	X	Cw	Ct
7	EO	Gelin st., No: 12, Ulucanlar		Tf		T	T	Pl,T		Cs	Sc		Sc		Sc	Sc,T	Sc	T	P		X		Cp	Lw	Lw	I,E	X	X	Mo	Mo
8	OG	Öksüzler st., No: 17, Ulucanlar	Cs	Tf	T	T	I			Sc	Sc		Sc	Sc	Sc	Sc	Sc	Pla	P	Br		Cp	Cp	Lw	Lw	I,E	X	X	Mo	Mo
9	OG	Cingöz st., No: 3, Ulucanlar	Tf	Tf		T	T					Sc	Sc	Sc	Sc		Sc	Pla	T	Cs		Cp	Cp	Lw	Lw	I,E	X	X	Mo	Mo
10	OG	Sarıca st., No: 7, Eylül st., No:1, Ulucanlar	Tf	Tf,Bq	T	T	T				Sc		Sc	Sc	Sc	Sc		Pl	P		X	P-Cp	Cp	P-Lw	Lw	I,E	X	X	Mo	Mo
11	G	Gelin st., No: 4, Ulucanlar	Br	Tf,Br	T	T	T		Ts		Sc			Sc	Sc	Sc	Sc	Cb	T		X	Cp	Cp	Lw	Lw	I,E	X	X	Sw	Mo
12	G	Öksüzler st., No: 13, Ulucanlar		Br			T				Sc				Sc	Sc				Br							X			Mo
13	G	Öksüzler st., No: 36, Ulucanlar	Cs	Cs,Br	Cs	T	T				Sc	Mo	Mo	Mo	Mo	Sc		Pla	T			Cp	Cp	Ww	Ww	I,E	X	X	Cw	Ct
14	G	İnci st., No: 14, Ulucanlar	Tf	Tf		T	T				Sc		Sc	Sc	Mo								Cp		Lw	I	X	X	Mo	Mo
15	G	Sarıkadın St., No: 67, Erzurum	Tf	Tf,Bq	T	T	T	T			Sc		Sc	Sc	Sc		Sc	Cb,Oc				P-Cp			Ww	I	X	X	Mo	Mo
16	G	Sarıkadın St., No: 69, Erzurum	Tf	Tf		T	T				Sc		Sc	Sc	Sc				P						Lw	I	X	X	Sw	Mo
17	G	Zülüflü St., No: 18, Erzurum		Tf			T				Sc		Sc	Sc	Sc				P			P-Cp			Lw	I	X	X	Mo	Mo
18	G	Eskicioğlu st., no:8, İstiklal	Tf,Cs	Tf	T	T	T				Sc		Sc	Mo	Mo		Sc	Pl	T			Cp	Cp	Ww	Ww	I,E	X	X	Cw	Ct
19	G	Kalas st., no:11, İstiklal		Tf			T				Sc		Sc	Sc	Sc	Sc		Cb							Lw		X	X	Mo	Sc
20	G	Yağcılar st., no:1, İstiklal	U	Tf	T	T	T				Sc		Sc	Sc	Sc		Sc		P	Cs,Br	X	P-Cp	Cp	P-Ww	Ww	P-I	X	X	Sw	Mo

Cs:Conc. skeleton; Tf:Timber frame; Br: Brick masonry; Bq: Briquette masonry; T:Timber; I:Iron; Pl:Plywood; Ts:Tim. skel. with tin sheet

Cs:Conc. skeleton; T:Timber; Sc:Screed; Ct:Ceramic tiles; Mo.Mosaics; Oc:Oil cloth; Pla:Plaster; Pl:Plywood; Cb:Cardboard

P:Partial; T:Total; Cs:Conc. skeleton; Br:Brick; Cp:Cement Plaster; P-Cp: Partially renewed with cement plaster; Mp:Mud plaster; Lw:Limewash; Ww:Whitewash; I:only in Interior; E:only in exterior; P-I: partally in Interior

X: Exists; T:Timber washstand; Cw:Ceramic washstand or WC; Mo:Mosaic washstand or WC; Sw:Steel washstand; Sc: Screed WC

CHART 3: TYPES OF ALTERATIONS IN THE MAIN BUILDING

NO:	PERIOD:	ADRESS:	Div.of the main bldg.: V, H, B	Mass & space add.						Element additions								Alteration							Removal										
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
				Mass add. to the court	Mass add. to the bldg.	Sp. add. inside bldg.: as Room	Sp. add. inside bldg.: as Kitchen	Sp. add. inside bldg.: as Bath	Sp. add. inside bldg.: as WC	Closing the taşlık	Closing the main hall	Wall add.	Staircase add.	Window add.	Door add.	Cupboard	Shelter	Floor Pavement	Ceiling	Staircase	Window alteration	Door & win. fr. enlarg. & reduc.	Win. sash & door panel alt.	Cupboard alteration	Rem. of wall	Rem. of staircase	Rem. of Cupboard	Rem. of Window	Rem. of Door	Rem. of Fireplace	Rem. of floor pav. (tiles)	Rem. of ceiling	Rem. of partition frame	Rem. of sedir
1	E	Kale kapısı st., 10, Kaleiçi	B,H		X	X		X	X		X	X		X	X			X		X	X	X	X	X		X				X				
2	E	Gelin st., 8, Ulucanlar	H				X	X	X			X		X	X	X		X			X	X	X	X			?	X	X	X				
3	E	Cingöz st., 20, Ulucanlar	H	X			X					X	X		X		X				X	X	X	X		X	X	X		X	X	X	X	X
4	E	Erzurum st., 48, Erzurum	H	X	X	X		X	X		X	X	X	X	X	X		X	X									X		X	X		X	X
5	E	Sarıkadın St., 43, Erzurum	B,H		X				X			X		X	X	X					X	X	X											
6	E	Eskici st., 2, İstiklal	B,H	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X			X	X	X			X						
7	EO	Gelin st., 12, Ulucanlar	H	X		X	X	X	X		X	X		X	X	X		X	X	X	X	X	X						X					X
8	OG	Öksüzler st., 17, Ulucanlar	B	X	X	X	X		X	X	X	X	X	X	X			X	X	X	X	X	X											
9	OG	Cingöz st., 3, Ulucanlar	H	X	X							X		X	X			X	X		X		X											
10	OG	Sarıca st., 7, Eylül st., 1, Ul.	B		X	X	X	X	X	X	X	X	X	X	X			X	X															
11	G	Gelin st., 4, Ulucanlar	H	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X							X	X							
12	G	Öksüzler st., 13, Ulucanlar	B,H						X			X			X			X									X							
13	G	Öksüzler st., 36, Ulucanlar	B,H	X	X		X	X	X			X	X	X	X			X	X		X					X								
14	G	İnci st., 14, Ulucanlar	B,H	X	X		X	X	X			X		X	X			X						X		X								
15	G	Sarıkadın St., 67, Erzurum	B,H		X	X	X		X			X	X	X	X			X						X									X	X
16	G	Sarıkadın St., 69, Erzurum	B,H		X	X	X	X	X			X		X	X			X			X		X										X	X
17	G	Zülüflü St., 18, Erzurum	H				X	X	X			X			X			X						X									X	X
18	G	Eskicioğlu st., 8, İstiklal	B	X	X	X	X	X	X			X	X	X	X	X		X	X		X		X		X		X							
19	G	Kalas st., 11, İstiklal	N			X	X	X	X			X			X			X	X															
20	G	Yağcılar st., 1, İstiklal	H		U	U	X	X	X		X	X	X	X	X			X								X								

V: vertical; H: Horizontal; B: Both; B,H: Ground floor divided vertically, upper floors divided horizontally; N: None of them

CHART 2: STRUCTURAL SYSTEM & CONSTRUCTION MATERIAL

			Floors							Roof			Ceiling Covering and Floor Pavement:													Architectural Elements:												Finishing:			
NO:	PERIOD:	ADRESS:	1 Basement and GFL	2 Ground Floor:	3 Ground Mezzanine	4 First Floor	5 First Mezzanine	6 Second Floor:	7 Cihamuma	8 Roof	9 Eaves:	10 Gutters:	11 Ceiling:	12 Taşlık:	13 Courtyard:	14 Main Hall:	15 Main Room:	16 Rooms:	17 Köşk:	18 Balcony:	19 Terrace:	20 Kitchen:	21 Bathroom:	22 WC	23 Gusulhane:	24 Main Staircase	25 Windows:	26 Top Windows:	27 Window Ballustrades:	28 Shutters	29 Courtyard Doors:	30 Exterior Doors:	31 Interior Doors:	32 Cupboards:	33 Niches in Cupboards:	34 Fire Place:	35 Hearth:	36 Exterior Plaster:	37 Interior Plaster:	38 Exterior Whitewash:	39 Interior Whitewash:
1	E	Kale kapısı st., 10, Kaleiçi	Rsm	Mm		Tf+B				Tf	T		T, Pl	Sc	Sc	L	T	T,L				T	Sc	Sc		T	T		I		T	T	T	T				Mp	Mp,Cp	Ww	Lw
2	E	Gelin st., 8, Ulucanlar	Rsm	Mm		Tf+M				Tf	T		T	Sc	E	Ft	T,Ft	T				Ft		Sc	Sc	T	T	St			T	T	T	T		Gy		Mp	Mp		Lw
3	E	Cingöz st., 20, Ulucanlar	Rsm	Mm		Tf+B,M				Tf	T		T	S	S	T	E	T				T		Sc	Sc	T	T	St	I	T	T	T	T	T	T,Gy	Gy		Mp	Mp	Ww	Lw
4	E	Erzurum st., 46, Erzurum	Rsm	Rsm	Mm	Tf+M				Tf	T		T	S	S	T	E,Ft	T,E,Sc,Ft	T					Sc	Sc	T	T	St	I		T	T	T	T		Gy		Mp	Mp,Cp	Ww	Lw
5	E	Sarıkadın St., 43, Erzurum	Rsm	Mm		Tf+B,M				Tf	T		T,Pl	S	S,E	Ft	Un	T,Sc						Sc		T	T				T	T	T	T				Mp	Mp,Cp	Ww	Lw
6	E	Eskici st., 2, İstiklal	Rsm	Mm		Tf+B				Tf	T	Z	T,Pl	Sc	Sc	T	T	T			Sc	Ct	Ct	Ct		T	T					T	T	T				Cp	Cp	Ww	Lw
7	EM	Gelin st., 12, Ulucanlar	Rsm	Mm		Mm,Tf+M				Tf	T		T,Cp	T,Sc	Sc	T	T,Mo	T	Sc			Sc	Sc	Sc	Sc	Cs,Mo	T				T	T	T	T			Gy	Mp	Mp,Cp	Ww	Lw
8	ML	Öksüzler st., 17, Ulucanlar	Rsm	Mm	Mm	Tf+B,M				Tf	T		T,Cp	Sc	Sc	T	T	T				Sc				T,Cs	T				Me	I	T	T				Cp	Cp	Ww	Lw
9	ML	Cingöz st., 3, Ulucanlar	Rsm	Un		Tf+Un				Tf	T		T		Sc	T	T	T,Sc				Sc	Sc	Sc		T	T				T	T	T	T	T,Gy		Gy	Cp	Cp	Ww	Lw
10	ML	Sarıca st., 7, Eylül st., 1, Ul.	Rsm	Mm		Tf+M				Tf	T		T,Pl	Sc	S,E	T	T	T				Sc			Sc	T	T					T	T	T	T,Gy			Mp	Cp		Lw
11	L	Gelin st., 4, Ulucanlar	Rsm	Mm		Tf+Un				Tf	T		T,Pl			T	T	T,Sc,L			Sc	Sc	Sc	Sc		T	T					T	T	T				Cp	Cp	Ww	Lw
12	L	Öksüzler st., 13, Ulucanlar	Rsm	Mm, Bm	Mm	Tf+M			Un	Tf	T		T	S		T	T	T		Sc					Sc	T	T					T	T	T				Mp	Mp,Cp	Ww	Lw
13	L	Öksüzler st., 36, Ulucanlar	Un	Un		Tf+Un				Tf	T	Z	T,Cp,Pl	Sc			T	T				Mo,Sc	Mo	Mo,Sc		Cs,Sc	T		I			T	T	T	T			Cp	Cp	Ww	Lw
14	L	İnci st., 14, Ulucanlar	Csm,Rsm	Csm,Rsm		Mm	Tf+M	Tf+M		Tf	T	Z	T,Cp,Pl	S	S,E	T,Ma	T	T				Sc	Sc	Sc	Sc	T	T				T	T	T	T	T,Gy			Mp	Mp,Cp	Ww	Lw
15	L	Sarıkadın St., 67, Erzurum	Rsm	Mm		Tf+M				Tf	T		T,Pl		Sc	T	T	T,Sc				Sc		Sc	Sc	T	T,I				T	T	T	T				Mp	Mp,Cp	Ww	Lw
16	L	Sarıkadın St., 69, Erzurum	Rsm	Rsm	Mm	Tf+M				Tf	T		T	Sc	E	T	T	T				T	Sc	Sc	Sc	T	T,I					T	T	T	T			Mp	Mp,Cp	Ww	Lw
17	L	Zülüflü St., 18, Erzurum	Csm,Rsm	Csm,Rsm	Mm	Tf+B,M				Tf	T	Z	T	S		T	T	T				Sc		Sc	Sc	T	T					T	T	T	T			Mp,Cp	Mp,Cp	Ww	Lw
18	L	Eskicioğlu st., 8, İstiklal	Rsm	Mm		Tf+M				Tf	T	Z	T	S	Sc	T	T	T			Mo	Sc	Mo	Sc,Mo	Sc	Cs,T	T					T	T	T				Cp	Cp	Ww	Lw
19	L	Kalas st., 11, İstiklal	Rsm,Tf+M	Tf+M		Tf+M			Tf+M	Tf	T		T,Pl,Cb	Sc		T	T	T				Sc		Sc	Sc	T	T					T	T	T				Mp	Mp,Cp	Ww	Lw
20	L	Yağcılar st., 1, İstiklal	Rsm, Tf	Tf+M		Tf+M			Tf+T	Tf	T		T,Pl		Sc		T	T,Sc				Sc	Sc	Sc	Sc	T	T				T	T	T	T				Mp	Mp,Cp	Ww	Lw

Rsm: Rubble stone Masonry;
Csm: Cut stone masonry; Tf: Timber frame; M: Mud brick; Mm: mud brick masonry; B: Brick; Bm: Brick masonry

Tf: Timber frame;
T:Timber;
Z: Zinc

T:Timber; Pl: Plywood; Cp:Cement plaster;
Ct: Ceramic tile; Cb: Cardboard; S: Stone;
Sc: Screed; E: Erath; L: Linoleum; Ft: Floor tiles; Ma: Marble; Mo: Mozaic

T:Timber; Cs:Concrete Skeleton; Me:Metal;
Mo:Mosaics; Sc:Screed;
St:Stucco; I:Iron; Gy:Gypsum;

Cp:Cement plaster; Mp:Mud plaster;
Ww:White wash;
Lw:Limewash

CHART 1: GENERAL CHARACTERISTICS OF SURVEYED BUILDINGS

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
NO:	PERIOD:	ADRESS:	Has a garden or courtyard	Located on street Facade	Located in the court or garden	Number of street facade	Number of Building units in parcel	Number of additional dwelling units	Number of service units	Number of original service units	Number of Dwelling units in parcel	Number of Dwelling units in main building	Number of uninhabited dwelling units	Number of units used as shop	Basement Floor: N, P, T	Ground Floor	Ground Mezzanine	First Floor	First Mezzanine	Second Floor	Cihannüma or only roof
1	E	Kale kapısı st.,10, Kaleiçi	X	X		1	2		1		3	3	1	1	N	E	N	E	N	N	R
2	E	Gelin st., 8, Ulucanlar	X		X		3		2	2	2	2			N	E	N	E	N	N	R
3	E	Cingöz st., 20, Ulucanlar	X	X		2	2		1		2	2	1		N	E	N	E	N	N	R
4	E	Erzurum st., 46, Erzurum	X		X		7	3	3	1	4	2			N	E	T	E	N	N	R
5	E	Sarıkadın St., 43, Erzurum	X	X		1	1				4	4			N	E	N	E	N	N	R
6	E	Eskici st., 2, İstiklal	X	X		1	2	1			5	4			N	E	N	E	N	N	R
7	EM	Gelin st., 12, Ulucanlar	X		X		3		1	1	2	2			P	E	N	E	N	N	R
8	ML	Öksüzler st., 17, Ulucanlar	X	X		1	4	1	2		3	2	1		P	E	T	E	N	N	R
9	ML	Cingöz st., 3, Ulucanlar	X		X		6	1	4	2	3	2	1		T	E	N	E	N	N	R
10	ML	Sarıca st., 7, Eylül st., 1, Ul.	X	X		2	2			1	4	4			N	E	P	E	N	N	R
11	L	Gelin st., 4, Ulucanlar		X		1	4		3		2	2			N	E	N	E	N	N	R
12	L	Öksüzler st., 13, Ulucanlar		X		1	1				5	5	2		P	E	P	E	N	N	C
13	L	Öksüzler st., 36, Ulucanlar		X		1	1				3	3			P	E	N	E	N	N	R
14	L	İnci st., 14, Ulucanlar	X	X		1	5		4	3	5	5			N	E	N	E	P	E	R
15	L	Sarıkadın St., 67, Erzurum	X	X		2	1				4	4		3	N	E	N	E	N	N	R
16	L	Sarıkadın St., 69, Erzurum	X	X		1	2		1		3	3		1	N	E	T	E	N	N	R
17	L	Zülüflü St., 18, Erzurum		X		1	1				2	2			N	E	T	E	N	N	R
18	L	Eskicioğlu st., 8, İstiklal	X	X		1	3	1		1	?	6			N	E	P	E	N	N	R
19	L	Kalas st., 11, İstiklal		X		2	1				1	1			T	E	N	E	N	N	C
20	L	Yağcılar st., 1, İstiklal	X	X		1	1				?	1	1		N	E	N	E	N	N	C
		TOTAL	15	16	4																
		%																			
		Evaluation code:																			

LEGAND:
N: Non exist
P: Partially
T: Totally
E: Exist
C: Cihannüma
R: Roof

CHART 6
SOCIAL PROFILE AND DEMAND OF THE USERS

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
		Kalekapısı 10	Gelin 8		Cingöz 20	Erzurum 48		Sarıkadın 43	Eskici 2		Gelin 12		Öksüzler 17		Cingöz 3	Sarıca 7				Gelin 4		Öksüzler 13	Öksüzler 36		İnci 14				Sarıkadın 67	Sarıkadın 69		Zülüflü 18	Eskicioğlu 8	Kalas 11	Yağcılar 1
1	# of dwellings in the parcel	3	2		2	4		4	5		2		3		3	4				2		5	3		5				4	3		2	-	1	-
2	# of dwelling units in the mainbuilding	3	2		2	2		4	4		2		2		2	4				2		5	3		5				4	3		2	6	1	1
3	# of uninhabited dwelling units	1			1								1		1							2													
4	# of units used as shop	1																											3	1					
5	# of dwellings surveyed	1#1	1#2	2#2	1#1	1#2	2#2	1#1	1#2	2#2	1#2	2#2	1#2	2#2	1#1	1#4	2#4	3#4	4#4	1#2	2#2	1#1	1#2	2#2	1#4	2#4	3#4	4#4	1#1	1#2	2#2	1#1	1#1	1#1	1#1
6	Type of ownership (L, T)	T	L	L	T	T	T	T	L	T	T	T	L	L	T	T	T	T	T	L	L	T	L	T	T	T	T	T	T	T	T	T	L	T	T
7	Ownership pattern (I, P, O)		I	I					P				P	P						P	O		P										P		
8	Rent price (price in million TL, U=Unknown)	1			U	0.3	0.2	0.4		1	0.25	0.4			1.5	0.7	1.5	0.4	0.8			1		0.7	1.5	1	2.5	0.8	0.55	0.5	0.5	1		0.75	1
9	# of people in the dwelling unit	4	2	2	1	5	4	3	3	3	4	3	5	5	3	4	4	4	3	4	3	1	4	3	3	4	4	2	5	3	4	4	4	3	3
10	Sex distribution (M)	2	1	1		4	2		2	3	3	2	1	3	2	1	1	2	1	1	2	1	2	2	1	2	1	1	2	1	2	2	1	1	1
11	Sex distribution (F)	2	1	1	1	1	2	3	1		1	1	4	2	1	3	3	2	2	3	1		2	1	2	2	3	1	3	2	2	2	3	2	2
12	Age distribution: 0-6	2									1		2		1			2	1		1			1	1	2	1					1			
13	Age distribution: 7-11										1	1		1		1	1															1	1		
14	Age distribution: 12-17					2	1						1	2		1	1										1		1	1			1		1
15	Age distribution: 18-21					1	1			3											1		2		1						2			1	
16	Age distribution: 22-60	2		2		2	2	3	2		2	2	2	2	2	2	2	2	2	4	1	1	2	2	1	2	2	2	4	2	2	2	2	2	2
17	Age distribution: 61-		2		1				1																										
18	Proffession of the house hold-head	C	R	B	W	W	M	W	B	W	O	W	W	M	O	O	M	W	W	C	C	M	O	W	W	M	O	C	W	W	W	M	C	B	R
19	Education level of the house hold-head	S	N	S	N	P	P	S	P	S	S	P	P	S	J	S	P	P	S	P	P	P	S	P	P	S	S	P	P	S	P	S	N	P	N
20	Education level of the spause of the house hold-head	P	N	S		P	N		P		P	P	P	N	S	P	P	P	P	P			P	P	P	P	P	P	P	S	P	P	P	P	N
21	Education level of other family members:																				P														
22	Before preliminary (B)	2						1			1		1		1			2	1		1				1	2	1					1			
23	Preliminary school (P)					3	2					1	1	1		1	1							1								1	1	1	
24	Secondary-High school (S)									1						1	1			1			1				1		3	1	1				
25	College (J)																														1				
26	University (U)								1											1			1												
27	Uneducated (N)							1					1	2	1																		1		1
28	Is there another proffesional who has income?	N	N	N	N	Y	Y	N	Y	Y,2	N	N	N	N		N	N	N	N	N	N	N	N	Y	N	N	Y	Y	Y	N		N	N	N	N
29	If yes, what ıs his/her relation with the family?					Son	Son		Son	Brot.														Wife			Daug.	Wife	Son						
30	Where do you come from?	Sa.	K.H.	Po	Ço.	Ko.	Ko.	Yo	Ür	Si.	Ço.	Ço.	Ko.	Ko.	Elm.	Ko.	Is	Ko.	Is	Kay.	Kay.	Ko.	Sa.	Ço.	Güdül	Kır.	Kay.	Si.	Ko.	Kars	Ko.	Ko.	Si.	Ank.	Kas.
31	Period of living in this house (Y, M)	6 Y	7 Y	1 Y	8 Y	19 Y	19 Y	16 Y	5 Y	2 Y	9 Y	10 Y	1 Y	2 Y	3 M	12 Y	1 M	1 Y	10 Y	20 Y	3 Y	8 M	25 Y	2 Y	3 Y	4 Y	3 M	3 M	5 Y	14 Y	16 Y	7 Y	11 Y	40 Y	35 Y
32	Where were you living before?	Cit	S.Q.	Keçi.	S.Q.	Dik.	H.Tepe	Kayaş	Ekim.	Dört.	S.Q.	S.Q.	S.Q.	S.Q.	S.Q.	S.Q.	Er.q.	S.Q.	Türk.	Kay.	Kay.	S.Q.	S.Q.	S.Q.	Güdül	S.Q.	Ul.q.	İzmir	Er.q.	Er.q.	Emek	Dik.	S.Q.	S.Q.	S.Q.
33	Are you satisfied or not to live in this enviroment?	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
34	Why?	A	B	C	D	E			F	A,G	C	C,H	C		C		C	C	Ç	C,I		C	C,D	D,E		C,D	D	C	C	D,K,L,M	C,D	C,D	D	C	
35	Are you satisfied or not to live in this house?	Y	Y	Y	Y	N	N	YN	N	Y	YN	Y	Y	Y	Y	N	N	N	N	Y	N	Y	N	N	Y	N	Y	N	Y	N	N	N	Y	Y	Y
36	Why?	A		B		B, C, D	B, E, F	B	F, G		H		B		I	D, G	B, D	B, F	B		G	I	G	D	J, K	B	H, J	G	A, J	E, L	D	H			
37	Have you made any repairs in this house?	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
38	If yes, what type of repairs?	H	H,B,C	D,E,F	D	D,E	B,D,E		A		D,E	D	D,E	D,E,F,H		D,E	D	D,E	D,E,F	A	A	I	A	D	D,E	C,H	F	D,E,J	D,E,H	D,E,H	D,E	D	A	D	D,E,H,K
39	Are you willing to move to another place?	N	N	N	N	Y	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	Y	Y	N	Y	Y	Y	N	N	N
40	If yes, where?					Kon.	Cit.		Batı.	Er.					Er.										Sin.		Sq.	Dik.		Sin.	Sq.	Sin.			
41	Is there TV ?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
42	Is there refrigerator ?	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
43	Is there washing machine ?	N	Y	N	Y	N	Y	N	Y	N	Y	Y	N	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y
44	Is there dish washer ?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
45	Is there video-player ?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	Y	N
46	Is there telephone ?	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	N	Y	N	N	Y	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y
47	Is there a seperate kitchen ? (Y, N, C,T)	Y	Y	N	Y	N	N	N	Y	Y	Y	Y	T	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
48	Is there a seperate bathroom ? (Y, N, C, Co)	Y	N	N	N	N	N	N	Y	Co	N	N	N	N	Y	N	N	N	N	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	N	Y
49	Is there a seperate gusulhane ? (Y, N, C)	N	Y	N	Y	Y	Y	N	N	N	Y	N	N	N	N	Y	Y	N	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	Y	N	N	N
50	Is there a seperate WC ? (Y, N, C, CY,T)	Y	Y	CY	CY	CY	Y	CY	Y	C	CY	Y	CY	Y	Y	Y	Y	T	T	Y	Y	T	Y	Y	Y	Y	Y	Y	Y	T	T	Y	Y	Y	CY
51	Is there water supply in the kitchen ?	Y	N	N	N	N	N	N	Y	Y	Y	Y	N	N	Y	Y	N	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
52	Is there water supply in the bathroom ?	N	N	N	N	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	Y	N	N	Y	Y	Y	N	Y	N	N	Y	Y	N	Y	N	Y
53	Is there water supply in the gusulhane ?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
54	Is there water supply in the WC ?	Y	N	N	N	N	N	N	Y	Y	Y	N	N	Y	Y	N	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
55	Is there water supply in the courtyard or taşlık ?	N	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	N	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	Y
56	Is there electricity supply in the house ?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
57	Type of heating system	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
58	Is there hot water system ?	N	N	N	N	N	N	N	B	N	N	N	N	N	N	N	N	N	N	N	B	N	B	N	N	B	N	N	N	N	N	N	N	N	N

CHART 7: DWELLING STANDARTS IN 34 SURVEYED DWELLING UNITS

			Dwelling Unit No: 1							Dwelling Unit No: 2							Dwelling Unit No: 3							Dwelling Unit No: 4						
NO:	PERIOD:	ADRESS:	Number of Room per Person	Number of People	Number of İnhabitable room	Kitchen	Bathroom	Gusulhane	WC	Number of Room per Person	Number of People	Number of İnhabitable room	Kitchen	Bathroom	Gusulhane	WC	Number of Room per Person	Number of People	Number of İnhabitable room	Kitchen	Bathroom	Gusulhane	WC	Number of Room per Person	Number of People	Number of İnhabitable room	Kitchen	Bathroom	Gusulhane	WC
1	E	Kale kapısı st., 10, Kaleiçi	1	4	4	X	X		X																					
2	E	Gelin st., 8, Ulucanlar	1	2	2	X		X	X	1	2	2				CY														
3	E	Cingöz st., 20, Ulucanlar	2	1	2	X		X	CY																					
4	E	Erzurum st., 46, Erzurum	1	4	4			X	X	0.4	5	2			X	CY														
5	E	Sarıkadın St., 43, Erzurum	0.6	3	2				CY																					
6	E	Eskici st., 2, İstiklal	1.3	3	4	X	X		X	0.3	3	1	X			CO														
7	EO	Gelin st., 12, Ulucanlar	1.6	3	5	X			X	0.75	4	3	X		X	CY														
8	OG	Öksüzler st., 17, Ulucanlar	1	5	5	X			X	0.8	5	4	C			CY														
9	OG	Cingöz st., 3, Ulucanlar	1.3	3	4	X	X		X																					
10	OG	Sarıca st., 7, Eylül st., 1, Ul.	0.5	4	2	X	X	X	X	0.5	4	2	X		X	X	0.5	4	2	X.			T	0.6	3	2	Kt.		X	T
11	G	Gelin st., 4, Ulucanlar	0.75	4	3	X	X		X	1	3	3	X	X		X														
12	G	Öksüzler st., 13, Ulucanlar	3	1	3			X	T																					
13	G	Öksüzler st., 36, Ulucanlar	1.25	4	5	X	X		X	0.3	3	1	X	X		X														
14	G	İnci st., 14, Ulucanlar	1	2	2	X			X	1.5	4	2	X	X		X	1	3	3	X	X		X	1.25	4	5	X	X		X
15	G	Sarıkadın St., 67, Erzurum	1.2	5	6	X		X	X																					
16	G	Sarıkadın St., 69, Erzurum	1.2	3	4	X	X		T	0.75	4	3	X	X		T														
17	G	Zülüflü St., 18, Erzurum	1	4	4	X		X	X																					
18	G	Eskicioğlu st., 8, İstiklal	0.75	4	3	X	X		X																					
19	G	Kalas st., 11, İstiklal	1.3	3	4	X			X																					
20	G	Yağcılar st., 1, İstiklal	1	3	3	Kt	X		C																					

TOTAL number of users: 116
TOTAL number of rooms: 106
TOTAL number of surveyed dwelling: 34

X: Space exist; C: In the court; T: In the Taşlık; Kt.: Not a seperate space, a kitchenette

GLOSSARY

A

Ahi:	a member of *Ahi* organization.
Ahi örgütü:	build.
ahır sekisi:	elevated platform in front of the walls or mezzanine on stable.
ahır:	stable
akçe:	Ottoman currency unit
ana:	big mud brick units
arabacı:	cart-wright, coachman porters carrying the construction materials to the site
arşın-zira or zira-i parmak:	an Ottoman measurement unit which was about 757, 738 mm (see foot note 60 in Chapter II).
Asar-ı Atika Nizamnamesi:	stable
avarız:	special tax, see: *avarızhane*
avarızhane (avarız house holds):	*Avarız* household, *AH* (*Avarız Hanesi*), does not represent a dwelling unit (*menzil, ev, hane*) but it represents a tax unit defined according to a variable ratio taken from the taxpayers. It characterizes a fictive group formed by single or married male tax payers whose number may vary. The number of tax payers included in a *AH* unit, is defined according to the local conditions, economic situation of the tax payers and it is changeable in time. The number of *AH* may change between the quarters of a settlement even in the same period (Barkan, Ö.L., İA, V.II:15)
ayan:	notables

B

badanacı :	painter
bağdadi:	wall technique made of lath and plaster or lathing of a wall
bahçe-hadika:	garden

başoda:	the main room
benna-duvarcı:	builder, wall builder
berat:	...of the Sultan: Approval of Sultan
beygir hamalı:	formerly porters using horse, hack
bezirci:	linseed seller
bulgurlama:	double layered floor type
burgucu:	driller
bıçakcı:	cutter
bamcı:	glazier
bamger:	glazier
bardak:	trellis

C, Ç

cihannuma:	single space usually located on the roof or on the top floor of the house
çavuş:	the assistants of Mimarbaşı
çilingir:	locksmith
çilingiran:	people belonging to the locksmith's guild
çukurcu:	carpenter
çıkrıkcıyan:	people belonging to the guild where spinning wheeler made or sold

D

dahiliye:	Internal sections of the houses
değirmenci:	miller
demirci:	blacksmith
demirciyan:	people belonging to the blacksmith's guild
derebeyi:	local princes
Dersaadet ve Vilayet Belediye Kanunu:	the Municipality Act for Istanbul and the Provinces which was introduced in 1877, considering the scale and particularity of the problems of Istanbul that differ from the Provinces.
destereci:	a type of carpenter skilled in cutting timber with saw

dirhem:	*Dirhem* was the weight unit and the name of the silver coin in Ottoman Period. It was the 1/400 of the "*Kıyye*" and equals to 3.2gr. *Vakiyye* is the weight unit equals to 400 *Dirhem*, *taht* is about 780 gr. The silver coins were also called *dirhem*. *Dirhem-i Halis*: Pure silver coin. *Dirhem-i mağşuş*: Silver coin mixtured with some other metals. *Dirhem-i Örfi*: Silver coin in 16 krat (Pakalın, M.Z., Osmanlı Tarih Deyimleri Sözlüğü, v:3, İstanbul, 1971)
divanhane:	guest room
dülger:	carpenter
duvarcı:	builder

E

Ebniye Kanunu:	Building Act
Ebniye Nizamnamesi:	Building Regulations
Ebniye-i Hassa Müdürlüğü:	formerly Imperial Buildings Directory
Ebniye-i Hassa İdaresi:	formerly Chief Directorate of Buildings
Efkaf Nezareti:	Ministry of Foundations in Ottoman period
errekeş:	(*bıçkıcı*), buck sawyer
esnaf-ı dülgeran:	Carpenter
eyalet:	province
Eyalet Merkezi or Paşa Sancağı:	Provincial Capital or Regional Center
eyalet mimarı:	the Provincial Architects who were appointed by Hassa Architects Organization; known also as Şehir Mimarı, Mimarbaşı, Başmimar

F

fevkani:	upper, up, upper floor
fevkanilik:	Principle of upper floor in Anatolian house tradition
firman or ferman:	order issued by the *Sultan*
fırın evi:	bake-house
furuncu-fırıncı:	baker

G

gedik:	As a continuation of the guild (*Lonca*) system in the Ottoman Empire, the number of masters and workers was constant in order to preserve the, balance between supply and demand and was named as *gedik*
gusulhane:	the small niche recession in the rooms used for bathing facilities

H

haddad:	blacksmith
hakçı-hakkçı:	(*oymacı*), wood and stone carver or metal engraver
harem or haremlik:	Woman's section of the house
hariciye:	External sections of the house
hassa:	belonging to Serailk (the palace)
Hassa Mimarlar Ocağı:	Hassa Architects Organization, HAO.
hayat-sergah:	entrance hall, court or window
hirfet:	names to given each artisan group
hımış:	timber framed construction system infield with timber, mud brick, brick or stone.
horasan:	*horasan* is a mixture that was produced by the mixture of rough and fine brickbats with lime and water and it has high resistance against compression stresses and water, it is also used to define the water proof lime plaster
horasancı:	plasterer, master skilled in making horasan mixture
hurdacı:	seller of scrap metals

İ, I

ihtisab amiri:	mayor before the *Tanzimat* period
ilmiye sınıfı:	religious class
iltizam uslubu:	the tax collected by private people on behalf of the state
Islahat-ı Turuk Komisyonu:	The Commission for the Improvements of Roads

K

kadı:	judge and administrator
kafesçi:	master skilled in latticework
kahvehane:	coffee house
kaldırımcı:	paviour, swindler.

kalfa:	there were two groups of masters in *Hassa* Architects Organization, the higher rank was called as *Kalfa (Halife)* and the lower rank was *Üstad.*
karhane:	shop
kenif:	toilette
kerbiçci:	moulder, master skilled in mud-brick making
keresteci:	lumber merchant
keserci:	a type of carpenter skilled in cutting timber with adze
keseriye:	illegally collecting money of the *Eyalet Mimarı* from the building masters.
kethüda:	assistant of *Mimarbaşı* in *Hassa* Architects' Organization or chief of the each artisan group named as H*irfet*
kile:	kilogram
kiler:	cellar, store-room;
kireççi:	limeburner
kireççiyan:	people belonging to limeburners' guild
kirişciyan:	people belonging to the guild where timber joist were made or sold
konak:	kiosk
köşk:	kiosk or rised section in the semi open main hall
kurşun örtücü:	master covering the sheet-lead
kurşuncu:	sorcerer
kutucu:	carpenter
kuzu:	Small mud brick unit

L

lağımger:	nightman, sapper; builder and cleaner of drains and sewer
lambalık:	*Lambalık* in Ankara houses, is a recessed apse on the wall or between the cupboards, it is about 80 cm. above the floor level and is topped with a half-dome. It is raised from the nearby cupboards about 20-40 cm., has a timber framed structure covered with gypsum plaster. It was usually placed at the center of the wall together with a number of cupboards to put lamps or other valuable household utensils.
lokma:	the timber ball joining the timber grillwork

M

mabeyn:	name given to the closed entrance spaces in Konya houses

mahruta-i dahiliye or haremlik:	section for women or internal section
mahruta-i hariciye or selamlık:	the external section;
mahzen:	magazine;
malikane system:	the ownership system which prevented the selling of the mukataa's after 1689 (Orhonlu, C., 1981:24).
marangoz:	carpenter
mermerci:	marble seller
Mimar-ı Sani:	who has the highest seniority and also who could act on behalf of the Mimarbaşı'
mimarbaşı:	the chief architect in Hassa Architects' Organization
miri:	belonging to the state, state owned
mismarcı:	nail, stud maker
müfti or müftü:	lieutenant governor
mukataa:	cultivated land tax
mültezim:	person who pays a certain amount of tax to the state in return to collect tax from *reaya* and artisans
musluk:	tap
mutasarrıf:	the administrator of Sancak
mutbak:	kitchen
mütesellim:	lieutenant governor and collecter of taxes
müştemilat:	extension or out buildings

N

naib:	the representative of the *Kadı*
nakkaş:	painter, decorator
narh:	officially fixed prices to protect the consumers
neccar:	carpenter

O, Ö

oda altı:	lowered section in the room
oba düzeni:	order of tents in a defined space
odunluk:	wood house
örtme:	shadowed, semi open circulation and entrance spaces

P, R

pabuçluk:	the lowered initial entrance of a living room
parmak:	an Ottoman measurement unit which is about 31,572 mm (for more inf. see footnote 60,,n Chapter II)
reaya:	farmer class

S

saçakcıyan:	eave maker
safnail-sekialtı:	the entry area of the main room that is lower than the main floor is locally called *safnail* Ankara. It is separated from the main floor by balustrades and arches. In this differentiation the upper part called *seki* or *seki üstü* forms the main floor. This lower platform, paved with tiles, is used as a preparatory space in the main room.
samanlık:	straw house
Sancak:	subdivision of a province
Sancak Merkezi:	regional center
Sancakbeyi:	governor of *Sancak*
sandelye çakması:	the horizontal timber strip running through the walls of living rooms at a height about 80-100 cm., to preserve the plaster from scratches of movable furniture
sandıkçı:	maker of coffers, chest etc.,
sayeban:	a shadowed and timber covered open *sofa*
sayegah:	a shadowed and timber covered open *sofa*
sayegan	the main hall in traditional Anatolian house
sedir:	a built-in sitting platform placed on the edges of the room. In the earlier houses it surrounds the room from three edges except the entrance side.
seki:	the upper part of main room which is separated from the lower level (*sekialtı* or *safnail*) by balustrades and arches
sekialtı:	the entry area of the main room that is lower than the main floor is locally called *sekialtı or safnail* in Ankara. It is separated from the main floor by balustrades and arches. In this differentiation the upper part called *seki* or *seki üstü* forms the main floor. This lower platform, usually paved with tiles, is used as a preparatory space in the main room.
selamlık:	the section of the house used by men
sengtıraş:	stone-mason
sergah-hayat:	entrance hall, court or window
seyregan:	the place for watching the view

sipahilik:	rural settlements like village, *mezra*.
sırık hamalı:	formerly porters using poles and slings
sıvacı:	plasterer
sıvacıyan:	people belonging to the plasterer guild
sof karhanesi:	mohair workshop
sofa-soffa:	the main hall in traditional Anatolian house
soffa:	the main hall in traditional Anatolian house
su kuyusu:	well
subaşılık:	small bazaar city, small city or village.
sürbger:	sorcerer

Ş

şahnişin-şahniş:	Timber framed projection; kiosk or rised section in the semi open main hall
Şehremini:	mayor during Tanzimat period
Şehreminliği-Şehremaneti:	a local organization set in Istanbul and responsible from the works of the Palace.
Şeriye Sicili:	Ottoman juridical records

T

tabhane:	winter room
tahrir:	writing
taht seki-köşk:	is the raised section placed in the main hall
taht:	timber balcony or pergola on the first floor of houses
tahta kurşuncu:	master covering the timber finishes by sheet-lead
tahtaboş:	name given to the half open, timber made entrance spaces in Konya houses
tahtani:	low, lower, lower floor
tahtapuş:	synonym of *örtme* that is a shadowed semi open circulation and entrance space, or synonym of *soffa* (main hall)
Tanzimat:	reformations
tapu tahrir (records):	real estate records or registration documents of the Ottoman era
Tarik ve Ebniye Nizamnamesi:	Fire and Building Regulations
taş kireçci:	limeburners making coarse lime
taşçı:	stone-mason

taşçıyan:	people belonging to the stone-masons guild
taşlık:	the outer sofa at the ground
taşra (Room):	outer room
temur-demir:	iron
tımar:	the income land given to Sipahi

U, Ü

üstad:	there were two groups of masters in Hassa Architects Organization, the lower rank was *Üstad* and the higher rank was called as *Kalfa (Halife)*
uykuluk:	elevated space on one corner of outer *sofa* (main hall)

V

Vilayet Belediye Kanunu:	Provincial Municipality Act
Vilayet Nizamnamesi:	Provincial Regulation

Y, Z

yağlı kireççi:	limeburners making fine lime
yazlık ev:	summer section or house;
Yeniçeri Ocağı:	military school and army of Ottoman period
Yiğitbaşı:	chief of the each artisan group named as *Hirfet*
yüklük:	closet, cupboard where the beds and cushions are kept
zira-zira-i parmak or arşın:	an Ottoman measurement unit which was about 757, 738 mm (see foot note 60 in Chapter II).

VITA

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Books and Thesis:

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