RESIDENTIAL SATISFACTION IN HIGH-RISE BUILDINGS

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ABSTRACT

The purpose of this thesis was to investigate the residential satisfaction in high-rise buildings. It presents the study of factors influencing residential satisfaction in high-rise buildings of a sample of subjects in a chosen residential area in Mavişehir, Izmir. The context is provided by focusing on the determinants which affect residential satisfaction such as housing system, safety and security, privacy, social interaction and relationships (neighborhood), and physical qualities of building material. The methodological argument of the thesis is that, contrary to conventional conceptions, resident satisfaction cannot be measured on the basis of subjects' response to their flat, but must take into consideration the apartment building and environment. The research methodology centers around the administering of a survey questionnaire to 262 subjects randomly selected from 58 high-rise apartment buildings in Mavişehir. The number included 98 males and 164 females. The age range of the sample group was between 16 and 85. Questions included items concerning the flat, the building, and the environment. The findings indicated general satisfaction. Scientific research, however, ought not remain at this level of conclusion and concentrate more on the negative data, which indicate the design problems architects and planners ought to focus on for production of spaces and built environment for human satisfaction.

Keywords: Residential Satisfaction, High-rise, Design, Skyscraper, Mavişehir

ÖZ

Bu tezin amacı çok katlı yüksek konut binalarında kullanıcı memnuniyetini araştırmaktır. İzmir, Mavişehir konutları model kullanım alanı olarak ele alınmış, bu yerleşimin yüksek katlı birimlerinden seçilen deneklerin memnuniyetini belirleyen etmenler saptanmıştır. Araştırılan etmenler konut sistemi, emniyet ve güvenlik, mahremiyet, sosyal etkileşim ve komşuluk ilişkileri ve yapı malzemesi gibi fiziksel özelliklerden oluşmaktadır. Araştırmanın yöntemsel savı, geleneksel anlayışın aksine, konutlarda kullanıcı memnuniyetinin yalnızca konut çerçevesinde araştırılamayacağı, konutun yer aldığı binanın tamamı ile bina dışındaki çevrenin de araştırmada ele alınması gerektiğidir. Araştırma yöntemi, Mavişehir'de yer alan 58 çok katlı yüksek konut binalarında mukim kişiler arasından rasgele seçilmiş 262 deneğe uygulanan anket üzerine kurulmuştur. 262 deneğin 98'i erkek, 164'ü kadındır. Denekler, 16 ila 85 yaşındadır. Ankette yer alan sorular, konutu, binayı ve çevreyi hedeflemektedir. Bulgular genel olarak memnuniyet ifade etmiştir. Ancak, bilimsel araştırmanın bu sonuç ile yetinmeyip, memnuniyetsizliğin ifade edildiği konulara odaklanması gerekmektedir. Böyle odaklanıldığında ancak, mimar ve plancıların beşeri memnuniyeti sağlayacak mekan ve yapılı çevrenin üretiminde göz önüne almaları gereken tasarım sorun ve faktörleri belirginlik kazanacaktır.

Anahtar sözcükler: Kullanıcı Memnuniyeti, Yüksek Katlı, Tasarım, Gökdelen, Mavişehir

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CHAPTER 1

INTRODUCTION

1.1. Prelude

"High-rise building is thought of by some as the show of technological power, or the transition to another century, or the contemporary solution to the inescapable urban population increase; by others, a source of disaster because of the disastrous problems it creates […]" (Tekeli, 2004). Tekeli's interpretation swiftly summarizes the different kinds of focus on high-rise building present today. The significant question this thesis seeks to answer is how high-rise residents feel about living in a high-rise; whether they are satisfied or not? Primarily scrutinizing the residential satisfaction in high-rise buildings from the specific perspective of residents' experience of living in Mavişehir, not only is this study the first investigation made in Mavişehir, and in Izmir, but also in Turkey in so far as it is concerned with the whole of a resident's experience comprising components as different as social relations, building materials, and aesthetics. Equally significant is the fact that the topic is taken up in the triple framework of the residence itself—in this case a flat—the apartment building, and the environment. The ultimate argument of this thesis is that the measure of residential satisfaction cannot be conducted outside of this triple framework and without consideration of all components that go into design decisions.

1.2. Overall Review of Research

Prior to the presentation of the terms, conditions, method, procedure, results, and discussion of the empirical research, the chapters below present some historical and theoretical material. The chapter, "Historical Overview and Definitions," traces the technological developments and transformations in the nineteenth century in Europe with special view to those aspects of the Industrial Revolution that made it technologically possible to build high-rises, and socially made them necessary. The same chapter continues to trace the same phenomena in technological development and social change in the aftermath of the Industrial Revolution through the present. In chronological order, it narrates the history of the proliferation of high-rise building in nineteenth-century United States, in the world in the twentieth century, and in Turkey. Against the background of these series of historical overviews, the chapter presents definitions of the high-rise. It seemed better order to present the history before the definitions because, as the reader of the second chapter below will readily see, problems in the naming and defining of the high-rise were determined by that history.

The chapter entitled, "Residential Satisfaction in High-Rise Buildings," follows upon the historical overview and definitions of high-rise and presents a review of the literature about residential satisfaction in high-rise buildings. The literature reviewed has not been limited to studies conducted in a specific part of the world. The chapter takes up investigations of researchers in all parts of the world. Residential satisfaction is a complex phenomenon to measure and has numerous determinants to be researched. Studies in residential satisfaction must include both space and the users of the space called 'residents'. In the most general sense, 'residential satisfaction' aims at determining a number of aspects in the process of making a physical product. Its primary goal is the suitableness of that product to human life. The Mavişehir Project in Izmir, Turkey, was the area chosen for empirical examination in this thesis. Thus the location, the physical architectural properties of the project in the three distinct stages and styles of Mavişehir I, Mavişehir II, and Mavişehir III had to be described in detail. Since the object of this thesis was to identify levels of residential satisfaction in high-rise buildings, the villas that comprise parts of the Mavişehir Project were not taken up. Chapter IV, "Overview of the Mavişehir Project," which presents the detailed physical description, concludes with the review of the literature about Mavişehir.

The methodology of the case study undertaken in this thesis centers around the administering of a survey questionnaire. This empirical aspect of the study included roughly the stages of preliminary research toward the preparation of the questionnaire, implementation of the questionnaire, and the drawing of conclusions. Chapter 5 and 6, respectively entitled, "Research Methodology" and "Overview of SPSS Statistical Analyses and Data Management System," describe in detail all methodological aspects of the different stages of research and conclusion. They explain and justify decisions taken and procedures implemented. Chapter 5 specifically describes the preparation, and consolidation of the questionnaire. Any questions concerning economic situation, income level, and the nature of the fundamental economic activity for livehood of the residents were avoided in the questionnaire, since it is exceedingly well established that the Mavişehir Project houses high-income residents. Appendix a, attached to Chapter 5, includes the original questionnaire in Turkish. Aside from the description of methodology per se, the reader will find in Chapter 6 a discussion of why and how the software SPSS, which provides a statistical analysis and data management system in graphical environment, was used in the representation and evaluation of research findings.

Chapter 7, “Data Analyses and Results” presents detailed results and analyzes the data in respect to different criteria of residential satisfaction. This chapter offers in graphic format and in detailed discussion those items on the questionnaire that predominantly elicited negative response from residents. Appendix B, entitled “Responses to Non-Open Ended Questions,” presents residents’ response to all questions by percentage. Appendix C, entitled “Response to Non-Open Ended Questions by Residents of Flamingo-Albatros-Kuğu-Pamukkale and Selçuk, kırlangıç-Turna shows comparison of overall responses by residents of the two clusters indicated in the Appendix title. Chapter 7 is followed by Chapter 8, “Conclusion,” which draws conclusions and offers guidelines for achievement of residential satisfaction in high-rises on the basis of findings in Mavişehir.

1.3. Statement of the Problem

The majority of researchers who have investigated high-rises fall into one of the two following groups:

1. those who have focused on the design and construction phases as concerning architects and/or engineers;
2. those who have concentrated on the psychological and social well-being of men-women, or children-elderly who reside in high-rises.

Most research on high-rises has focused on low-income and middle-income residences which predominantly raise social, psychological, economic, and administrative issues including police-cooperation and control of crime. Design certainly becomes an issue in such framework. One example familiar to any urban dweller of the early twenty-first century would be the high rate of crime commited in the shared public areas of high-rises such as elevator lobbies and stairwells. This researcher will certainly not be so naïve as to claim that it is possible to imagine an architectural design process that is isolated from and devoid of any social, psychological, economic factor. That would be an abstract project, indeed. By focusing the study on an unquestionably high-income high-rise residential complex, however, one may arrive at a *relatively* purer ground open which to identify design issues relevant to high-rise residences. Most Mavişehir residents are people who can afford most amenities available for purchase. Thus there would be fewer factors interfering in a direct perception of design issues. One immediate example would be that lack of satisfaction with the ground plan was likely to result in alterations, on lack of satisfaction with internal building materials would result in replacements of these. Hence one needed to inquire into the choices of persons who could afford alterations and replacements: this was the hypothesis that determined choice of Mavişehir as opposed to, for example, the Narlıdere Public Housing Projects also located in the city of Izmir. Research proved this hypothesis correct, as discussion of results indicates.

One other aspect of this study that places it in an innovative international context of group and renders it original in the studies conducted in Turkey, is that its sphere of investigation is not limited to the private space of the flat. The present study identifies the factors affect residential satisfaction in the three-fold context of flat, apartment building, and environment. The questionnaire therefore included questions concerning all three spheres.

1.4. Research Objective

In 1976, Altman and Wohlwill had found that environmental control over the human individual had been over-studied whereas personal control over the environment had been relatively neglected. Indeed, studies conducted in the 1970s were dominated by the view that the aesthetic and stylistic characteristics of one's environment made for happiness as well as determining different aspects of personality and mood. Altman and Wohlwill were pioneers in their criticism of this dominant view. Joining with Altman and Wohlwill in 1999, Davidson underlined that the topic of human interaction with architecture was much more urgent an issue than that of aesthetics and style. This thesis joins with Davidson in arguing that aesthetics and style certainly contribute to residential satisfaction, but as the research results presented below will demonstrate, they must be taken in relation to other factors. Moreover, along with all other factors, they must be submitted to the goal of better—more satisfactory—design. Else, we shall be conducting sociological or social-psychological or psychological study as opposed to an architectural one. Therefore, the specific study of this thesis investigating residential satisfaction in high-rise buildings, underscores the design goal in the make-up of the questionnaire as well as data analysis and conclusions drawn.

1.5. Methodology and Approach

This study is based on residents' responses to their flat, their building, and their environment and centers around the administering of a survey questionnaire. The questionnaire is comprised of 74 questions nine of which are open-ended. The questionnaire is long because architectural study has by now learnt that residential satisfaction is combined of not only the residence itself, but also at the apartment building and the environment. The terminology of statistical science I have used terms which specialist from a variety of a discipline we find accessable. The tasks that were proposed to be carried out in the cause of this research were the following:

TASK 1: Definition and analysis of the high-rise buildings

TASK 2: Historical Overview of High-rise Buildings throughout 19th and 20th Centuries

TASK 3: Review of the Literature and Focus on Previous Studies

TASK 4: Investigation of the Mavişehir Project and Its Architectural Properties

TASK 5: Preparation of the Surveys

TASK 6: Utilization of surveys to analyze the factors

TASK 7: Analysis and interpretation of the findings

1.6. Scope of the Study

The objective of this study is to add to architectural knowledge and to provide architects further proof in the notion that architecture not only creates groups of similar things in everyday life, but also defines and determines the content of that life. There is no choice the architect-designer makes that does not play determinant role in this context. Thus architectural design is directly relevant to residential satisfaction. The significant contribution of this thesis is the vision, however, that does not limit 'residential satisfaction' within the boundaries of the flat, but defines it in the larger context including the building within which the flat is situated and the environment exterior to the building. These three components together make up the scope of this thesis. These three together also comprise what must be taken as an inseparable unit demanding collaboration of designers, policy makers, planners, and managers. Perhaps the most fundamental value determining the scope of this thesis is the value it attaches to the personal control over space. Thus this thesis privileges user needs and its primary focus is on their detailed investigation. The result is that this conception places larger responsibility upon the design process.

The scope of this study does not include psychological, social, or social-psychological analysis and conclusions. The reader will find that in some instances of analyzing the results of the data, it was necessary to reflect about the truthfulness of subjects' response to the questionnaire. Yet this reflection was taken up in so far as the epistemological validity of the data and the truth of the conclusions were concerned. In adherence to its intent of comprising a thesis geared toward design problems, this thesis does not psychologize data and conclusions. In relation to those areas in Mavişehir where resident satisfaction is found to be lacking, it does not provide alternate design solutions, either. The latter too, is in keeping with the fundamental goal of the thesis study: since the argument of this thesis is that residential satisfaction and architectural design are to be approached holistically, design solutions to the issues observed as problems in Mavişehir would entail an interdisciplinary project of revision bringing together planners, materials engineers, construction engineers, management specialists, and architects. Thus the ultimate scope of this study is to identify factors of residential satisfaction which ought to be taken into consideration in the design process and approach.

CHAPTER 2

HISTORICAL OVERVIEW AND DEFINITONS

2.1. Introduction

In 1986, in his book entitled *High–Rise Building Structures*, Schueller underlined that from the technological point of view, the design of tall buildings was relatively well understood whereas consideration of such buildings as behavioral and social space had been neglected. Thus the first studies engaging tall residential buildings in social and behavioral terms were directed at the relationship between the resident's psychology and the tallness of the building.[1] They did not engage the relationship between the resident and the design. In these studies, the tall building was held to bring an isolation and lack of contact among people inside, and lack of contact with street life on the outside. In 1974, for example, Ineichen and Hooper found that women and children especially exhibited psychological symptoms that derived from the built environment. In 1977, in an article entitled "High-Rise Housing and Psychological Strain," Gillis went so far as establishing direct identification between the built environment and degree (or lack) of communication among residents. Today, these issues are still considered valid for research. They are still among the problems designers are trying to overcome and researchers trying to understand. The progress that has been made is to combine what were initially separate issues of social psychology on the one hand and design on the other.

Thus in 1999, Talen aimed at investigating "the empirical and theoretical basis that is behind the attempt to promote social interaction and sense of community through the physical design of communities" (p. 1362). Indeed, it is at this point of convergence that such studies become relevant to this thesis, which concentrates on those points of convergence of design with resident experience which have been neglected and aims to

[1] The literature of such studies engaging the tall building as psycho–social space is vast. The following is a selection of the more significant studies in chronological order: Sullivan (1896); Ineichen and Hooper (1974); Altman (1975); Altman and Wohlwill (1976); Gillis (1977); Rapoport (1982); Goleman (1987); Uğur and Özçelik (1990); Eyüce (1991); Göregenli (1991); Parsons (1996); Gifford (1997); Kim (1997); Özçelik (1998); Liu (1999); Talen (1999); Wang and Chien (1999); Health, Smith and Lim (2000); Cozens, Hillier and Prescott (2001); Barbour (2002); Cho (2002); DeLone (2002); Jacinto and Mendieta (2002); Yezdani (2003).

find the factors of residential satisfaction at work in users of high-rise buildings. For, the studies cited above engage mainly socio–psychological issues even though they claim to engage such issues in relation to architectural design directly. There are very few studies that take up the link in strictly design terms (Gür 1996; Altaş and Özsoy 1998; Kim 1997; Seik 2001). A few others take up specific design elements such as light (Kotani et al., 2003) and material quality (Gültekin 1996) in relation to residential experience. Researchers' and intellectuals' fascination with *and* sometimes biased critique of tall buildings (Sullivan 1896; Uğur and Özçelik 1990; Yezdani 2003) may in fact owe to their newness. Tall buildings, and the very perception of them as a building type with a name of their own –'skyscraper', 'high-rise'–, date only to the Industrial Revolution.

As the western world began to witness the consequences of the Industrial Revolution in the realm of architecture in the second half of the nineteenth century, the tallest structure was the 436-foot (133 m) high tower of Saint Martin Church in Landshut, Germany. The brick tower had been built in 1432. Today, the tallest church tower remains the 528-foot (161 m) tower of the Cathedral of Ulm in Germany, which was built in 1890. The Middle Ages had reached for the sky through architecture. Comparing today's fast and carefully designed cars to Gothic cathedrals, "I think cars today are almost the exact equivalent of the great Gothic cathedrals," wrote Roland Barthes in 1957, "I mean the supreme creation of an era, conceived with passion by unknown artists, and consumed in image if not in usage by a whole population which appropriates them as a purely magical object" (Dupre, 1996, p. 19). Yet, church towers are no longer the tallest architectural structures in the world today, and even Robert Browning's 1855 exclamation, "Ah, but a man's reach should exceed his grasp. Or what's a heaven for?" (Dupre, 1996, p. 18) did not quite address church towers, but more worldly buildings that had begun to rise along with the Industrial Revolution. As is known, since 2004, the tallest building in the world has been the 1671-foot (508 m), 101 storeys high Taipei in Taipei, Taiwan. The heights and geography of the tall building may have changed, but the association of tallness with sublimity remains, even as the kind of resentment of the tall building cited above is still very much present:

> According to Lao Tse, the reality of a hollow object is in the void and not in the walls that define it. He was speaking, of course, of spiritual realities. There are the realities also of the twin Petronas Towers. The power of the void is increased and made more explicit by the pedestrian bridge that […] with its

> supporting structure creates a portal to the sky […], a door to the infinite (Cesar Pelli, 1995, in Skyscrapers, 1996, p. 114).

The tallest building aside, since 1975, the 1816-foot (553.33 m) CN Tower in Toronto is the tallest tower in the world. Still, the dream of building the highest tower remains (Taranath, 1988; Heinle and Leonhard 1989). In 1956, Frank Lloyd Wright had the dream to design the One–Mile–High Tower (1.6 kilometers high) with 528 storeys and 130,000 work places. A team of architects designed a 500-storey tower to be located on nine city blocks in Houston, Texas, in the United States. Paulo Soleri, on the other hand, wanted to build a structure two to four miles high, but he only sketched a three-kilometer high building (Heinle and Leonhard 1989, p. 297).

Ego and competition played and are still playing an important role in the construction of such towers in the United States, Europe, and Asia. However, high structures are not limited to the towers and buildings and their later offspring which the eighteenth and the nineteenth century saw built in a boom of verticalization. Indeed, it was in the nineteenth century that hotel towers were followed by tall office buildings and tall residential complexes. This chapter will offer an overview of the 'New Technology and the New Society' that saw technological developments and transformations in human society from the nineteenth century to the twentieth century in a way that resulted in the building of ever taller buildings. This discussion of the Industrial Revolution and its aftermath in technological development, as well as the social change that led to the building of even higher structures, is preliminary to the third section of the chapter, the 'Historical Overview of High-Rise Building in the United States in the Nineteenth Century'. Although the Industrial Revolution triggered building taller structures, the first high-rise buildings were not constructed in England, the homeland of the Revolution, or in Europe, but in the United States. Therefore, this section of the chapter will give in chronological order the proliferation of high-rise buildings in the United States through the nineteenth century, and will be followed by the section entitled, 'Historical Overview of High-Rise Building in the World in the Twentieth Century'. After these historical overviews, the different definitions of the high-rise, which vary on the basis of height, plan, ground area, forces, design and use, and a conclusion to the topic will bring the chapter to a close.

2.2 New Technology and New Society: The Industrial Revolution

Before going into the depths of the development of the high-rise and the attendant technology, there is an important preliminary topic which must be covered: the Industrial Revolution. The latter is relevant to this thesis because it is the starting point of technology with new materials—steel and iron—which were used in the high-rise buildings. The *Oxford English Dictionary* defines the Industrial Revolution as, "a rapid development in industry; specifically the development which took place in England in the late eighteenth and early nineteenth centuries, chiefly owing to the introduction of new or improved machinery and large-scale production methods." As the definition indicates, the Industrial Revolution was initially limited to England but soon spread to other countries like Belgium, France, Germany, Japan, and through the impact of colonial powers, to China and India (Briggs, 1979; Dixon and Muthesius, 1993). The Industrial Revolution had technological, sociological, and cultural dimensions. It brought two factors that changed social life and order: steam-powered machinery and its consequences in the new technology, particularly for architecture.

The main materials of the new technology were, as mentioned above, iron, steel, and as far as the field of architecture was concerned, glass. The production of iron influenced the development of the high-rise in two ways. Firstly, iron led to the development of railway systems. Railway systems contributed to the creation of the crowded industrial city (Hobsbawm, 1999, p. 89). As the railways carried more and more passengers to the cities, this resulted in a demand for places to stay, especially for visitors. The demand was supplied by building hotels near important stations, at first with the support of the railway companies. By the same token, as the cities got crowded, the number of people to accommodate increased and thus the value of the land increased. The solution soon would be to build higher buildings. Railways were first used in England in the nineteenth century in order to carry coal (Hobsbawm, 1999). The first modern railway was designed by R. Trevithick in 1804, at Guller's coal spheres. The only problem was the lack of quality iron rails. Rails were crushed under the locomotive weights. Not too long after, George Stephenson found the way to make better quality iron rails. The first railway by single steam-engine machinery was built in 1825 by George Stephenson between Stockton and Darlington in England. The Stockton and Darlington Railway Company thus started the first commercial railway for people and various load. Then, in 1830, the Liverpool and Manchester Railway was established. The development of railways in the nineteenth century became an influential power in terms of both social and economic life and gave way to technical progress. In time, trains got faster; in the beginning of the twentieth century, electric motors began to be used, which were faster than the previous ones. Then, during the middle of the century, rather than using power locomotives, motors that work with diesel or trains that work with locomotives took their place. This would also be of importance in relation to this thesis since faster trains with locomotives meant more visitors and passengers. However, even before all these developments in train systems, railway companies began to establish buildings for passengers to stay and named these places 'hotels'. When one looks back to the nineteenth century, he or she could easily argue that these hotels were built near the stations. For example, in 1871, Sir George Gilbert Scott built St Pancras Hotel near St Pancras Station in London, which was in Gothic style with tall towers (Dixon and Muthesius, 1993, p. 103).

The second influence of iron in relation to the development of high-rise was that the employment of iron in construction resulted in a change in the traditional rules of masonry and thus, along with steel, gave way to the proliferation of high-rise buildings (Dixon and Muthesius, 1993, p. 94). Curtis (1996) enumerates the revolutionary alterations which the use of iron enabled and states that iron,

> allowed wide spans and large areas of glass; it dissolved away mass and opened up space; it reduced support from columns or piers to slender stanchions; it allowed girders to be made from standard flats and small fillets welded or riveted together; it encourages the invention of new structural systems in bridges and towers and recast the roles of architect and engineer; it permitted tensile curves of unusual profile and prompted analogies not only with the skeletons of Gothic architecture, but also with those of nature (p. 36).

It can hence be stated that use of iron in architecture was the first step in constructing spacious yet higher buildings. Thus in the 1800s, heavy load-bearing walls, cast iron beams for covering even wider spaces and brick and stone masonry were used. With the invention of Portland cement by J. Aspdin in 1824 pre-stressed concrete was also added among these new materials.

The demand for high-rise buildings increased and the necessity to design light buildings gave way to steel-framed skeleton buildings. Steel was used alongside iron as a structural material of the building. At the end of the eighteenth century, the invention of cast iron was followed by the developments in steel production and steel frame systems in the 1850s. As is clear, only with the Industrial Revolution would steel frame systems be used in architecture. In 1885, architect William Le Baron Jenney used the steel framed system for the first time in the construction of the Home Insurance Building, and he became the creator of the modern skyscraper (Girouard, 1985, p. 320). A metal skeleton supported both the inner weight and the outer walls of this ten–storey building. In the year 1856, everything had changed with the quick steel production. About 1890, reinforced concrete began to be used as a construction system material together with steel. The first reinforced concrete skeleton system was used in the Rue Franklin Apartment by Aguste Perret in Paris, France. However, in 1891, the Monadnock Building showed the limitations of masonry construction. In this building wall thickness was about 1.83 m at the ground floor due to static reasons, and that was too thick. It showed that increase in the floor numbers meant decrease in the ground floor area within that construction system. The need for such buildings, as Wigginton states, which had not existed as architectural forms until that time, emerged with the commercial and technical products of the Industrial Revolution (1996, p. 46). Wigginton further states that the standard technique for the quick prefabrication enabled market buildings, railway stations, and large warehouses to be built in the middle of the nineteenth century, all of which were made of cast-iron columns and wrought-iron rails, used in conjunction with modular glazing.

People had two needs that must be satisfied since ancient times: to create shelter for protection and privacy, and to transmit light in order to gain view. In history the use of glass developed with the glazed halls such as the Palm House, the Royal Botanic Gardens in London which were built by Richard Turner and Decimus Burton in 1845-1848; the Crystal Palace, the Great Exhibition Building located in Hyde Park in London which was designed by Joseph Paxton with Fox and Henderson in 1851; and St Pancras Station in London which was built by W. H. Berlow and R. W. Ordish in 1865-1867. Only after the construction of such transparent roofs and walls of glazed halls, did the uses of iron and glass develop. With the developments that had taken place during the Industrial Revolution, first iron was used in construction, and then the steel structural frame, and the glass walls that came with it. Glass soon became a part of the architectural scene as a result of the utilization of these new products. In the eighteenth century, glass had been available in three basic forms in architecture: blown sheet or plate, spun crown, and polished cast plate. The new century led to the improvement of the broad cylinder glass. The development of large-scale all-glass envelopes were included among the elements of architecture in the second half of the nineteenth century. Furthermore, there was a demand for better and larger glass panels in the market during the same century.

As a result of these developments in glass production and its application in architecture, a striking example of glass design was to be found in the first half of the twentieth century: Mies van der Rohe's Glass Skyscraper which was completed in 1922. Mies van der Rohe offered the following explanation about the building:

> I tried to work with small areas of glass, and adjusted my strips of glass to the light, and then pushed them into the plasticine planes of the floor. That gave me the curve […] I had no expression on intention. I wanted to show the skeleton, and I thought that the best way would be simply to put the glass skin on (Wigginton, 1996, p. 53).

In terms of building high, the limit was the sky. However, the only problem was that people had to climb the stairs all the way up due to the lack of secure elevators. It was impossible for people to go up thirty, forty or a hundred storeys on foot. The important issues related to elevators included security, height of the building, increasing the comfort and decreasing the cost. The speed of the elevator was also an important issue:

> Although the skyscraper had become a general phenomenon in America by the end of the nineteenth century, the first major proliferation of the type was in the Chicago of the 1880s and 1890s. Chicago was the main depot, nerve centre and clearing house for the great railroad expansion to the west which occurred from mid–century onwards. It was the diagram of capitalism in its crude form and, after the fire of 1871, the flat size by Lake Michigan offered a *tabula rasa* for a boom in rapid construction. The skyscraper was, essentially a white–collar building type, a direct expression of the division of labour between management and manufacturing. It was part of the same world as the typewriter, the telegraph, the electric light and the mechanical heating system–all of which contributed to its own commercial viability. The pressure to build upwards came from the desirability of concentrating everybody in the downtown 'loop', an area only nine blocks long and wide, delineated by the Chicago river and the railroad yards, but it also arose from the desire to extract maximum profit from single, rectangular lots of land in the urban grid. The steel wire and the Otis elevator permitted the tall office building to happen (Curtis, 1996, p. 40).

Against this background, in 1853, Elisha Graves Otis developed a secure elevator by adding brakes to the machine in order to prevent the elevator from hitting the floor. He first displayed his elevator at the Crystal Palace in 1853-1854. However, the first passenger elevator was used in the Haughwout Large Store in 1857 in New York. This was followed by the invention of the electric elevator by Siemens in 1880. In 1932, the first attempt to decrease the sound caused by the elevator was realized. The solution was to make two-storey elevators and then to fix one on top of the other. Nowadays another technique is used which is to divide the building into different layers and disperse the elevators (Barney, 1986). After these improvements in the elevator industry, since confident travel was guaranteed, high quality rooms started to be located at the highest floors. These rooms also provided people a panorama of the part of the city in which they worked or lived. After all, the demand for high-rise buildings introduced the elevator and the improvements in elevators encouraged people and made it possible to live or work in even higher structures (Barney, 1986).

The quick development of the high-rise in the nineteenth century depended on three factors: the first factor was that people were migrating from rural to urban areas in every part of the world. This was the case everywhere, from England to North America and Japan (Bilgilik, 1993). Thereby, they were forcing an increase in the density of cities. Schueller (1986) states that high-rise buildings were, and are, related to the city as the urban response to population increase, lack of land, and high land costs. Furthermore, Cho (2002) underlines that tall buildings, because of their proportional mass and height, which were a response to the scarcity and high cost of land resulting from a concentrated population growth, have impacted the scale and context of the urban environment. As the price of urban land increased in the cities all over the world, buildings became taller and more densely located (Wang and Chien, 1997). Cho (2002) also reminds us that tall buildings are built in an ordered space on a small site, yet with usable floor area. Therefore, to make more profit from the land, owners placed more goods, more people on the land, and asked for more rent.

The dialectic of population increase–scarcity of urban land–desire for increased profit rose steadily from the nineteenth century onward until after the Second World War. After the Second World War, the economy changed yet again and created a renewed demand for even larger and taller office buildings. Land costs had risen high and this fact forced architects to design higher (Öngören, 2000). The idea was very simple: the owner sold his land in expensive areas with low buildings on it for such prices that forced the new owner to build a higher structure, if he or she wanted an economic return on his or her investment (Girouard, 1985). Joining Girouard, Schueller (1986) underlines that tall building was and still is the only answer to the continuous growth of population for many metropolitan areas. For Sullivan, at the end of the nineteenth century the skyscraper was the inevitable product of social and technological forces, truly a new type in search of morphology (Curtis, 1996, p. 47). As a result, migration from rural to urban areas necessitated a different type of architectural structure and that was the high-rise. However, it must also be underlined that, despite the fact that the construction of tall buildings began with hotels, the first high-rise buildings were not residential but consisted predominantly of office buildings. Moreover, despite the fact that the Industrial Revolution began in England, and despite the fact that the development of railway systems, and thus the crowded cities demanding higher structures to be built, and even the hotel buildings constructed by using the new technology were all realized by and in England, there still was a kind of conservativeness regarding height both on the island and on the old continent so that the Industrial Revolution and its consequences had to be carried to the United States for us to see high-rise office, and eventually other, buildings.

Technological development is another factor that underlined the emergence of the high-rise in the nineteenth century and its continued development in the twentieth. Iron and steel frame techniques, innovations in fire protection systems and pressure of the water pumps, development of design methods, the invention of the elevator, the development of the ventilation systems, and the quality of concrete are the results to the high density vertical city (Schueller, 1986; Karakaya, 1997; Sarıkaya, 2000). These developments and innovations removed the basic limitations regarding the height of buildings, and so “the race for tallness was on” (Taranath 1988, p. 2).

The third factor is ego and competition which still play a role in architectural activity all over the world. As Ford sates, “competition for height, once limited to cathedrals and town halls, now has become a game many would play” (1994). Initially, the competition developed between Chicago and New York, as we shall see in the section below. But today, other cities in the United States as well as other countries in the world are included in this competition. At first, tall buildings consisted of church spires and domes, as we have seen above. After these religious symbols, one saw town halls as high-rise, and then it became a commercial concept, and eventually a residential one. The transformation of tall buildings, above all, includes a change in terms of its function. It has aesthetically become acceptable with the changing of modern society and culture driven by technological evolution (Cho, 2002).

2.3 Historical Overview of High-Rise Building in the United States in the Nineteenth Century

In 1896, Louis Sullivan wrote in his article which was entitled "Tall Building Artistically Considered" and which was first published in *Lippincott's Magazine*, that,

> The architects of this land and generation are now brought face to face with something new under the sun—namely that evolution and integration of social conditions, that special grouping of them, [has resulted] in a demand for tall office buildings [...]. Problem: How shall we impart to this sterile pile, this stark, staring exclamation of eternal strife, the graciousness of those higher forms of sensibility and culture that rest on the lower and fiercer passions? How shall we proclaim from the dizzy height of this strange, weird modern housetop, the peaceful evangel of sentiment, of beauty, the cult of a higher life? (p. 403)

Sullivan's statement, written somewhat over a century ago, indicated that the tall building had by then become a recognized phenomenon in America. In the same breath, Sullivan implied where to look for the prototype of the tall building and endowed it with a rich, complex, symbolic history: the phrase "the peaceful evangel" shows Sullivan's awareness that the pre–history of the turn–of– the–century tall building lay in religious structures, presumably in the church tower. In fact, we cannot but agree with Sullivan that the ancient tall structures, which may be considered prototypes of present-day high-rise buildings, were protective or religious–symbolic in nature. As is known, tall buildings such as the Egyptian Pyramids and the Mayan Temples served as religious monuments. The Pyramid of Cheops, for example, was built by piling huge masonry blocks one on top of the other to reach 481 ft (146.7 m), which is equal to a 40-storey modern office building (Taranath, 1988, p. 2).

Sullivan's phrase deepenes the religious–historical allusion of the tall building by invoking the Tower of Babel in Genesis 11: 1-4: "stark, staring exclamation of eternal strife." In fact, architectural scholars agree that the Tower of Babel, built to reach the heavens, was both the symbol of "strife" (humans reaching for what was God's, thereafter being condemned by God to strife with one another) and the expression of desire for "higher forms of sensibility and culture," "the cult of higher life" (Taranath, 1988; Sarıkaya, 1997; Öngören and Karakaya, 2000). However, Sullivan also described the tall building as "strange" and "weird." Sullivan was following William Le Baron Jenny who had written in 1883: "We are building to a height to rival the Tower of Babel." In 1953, Ferris described the turn–of–the–century race for tallness in the following fashion: "There were banks pretending to be temples, skyscrapers pretending to be cathedrals, and Madison Square office buildings pretending to be Venetian campaniles—and all were getting gold medals for the pretense" (p. 93).

Louis Sullivan recognized the interactive power of the high-rise building and steel frame. When Sullivan wrote the passage quoted above, there had been built 10, 11, 13, 16, 20-storey high buildings in the United States, one of them by Sullivan himself. To begin with, in 1868-1870, George B. Post designed the Equitable Life Assurance Building in New York, which was eight storeys high. It was the first office building to use elevators, and provided a model for future skyscrapers. In 1873-1875, George B. Post built the Western Union Telegraph Building in New York, which was 230 ft (70 m), 10 storeys high. Again in 1873-1875, Richard Morris Hunt planned the New York Tribune Building in Chicago, which was 11 storeys high. In 1882, Burnham and Root built the 10-storey Montauk Building in Chicago. In 1885, William Le Baron designed the Home Insurance Building in Chicago, which was 180 ft (55 m), 10 storeys high. This building was accepted by the Council on Tall Buildings and Urban Habitat as the first high-rise building and it was also the first to use a steel skeleton (Sarıkaya, 1997). It is no coincidence that the first building officially recognized as a high-rise was also the first steel structure:

> The [steel] frame has been the catalyst of an architecture, but one might notice that it has also 'become' architecture, that contemporary architecture is almost inconceivable in its absence […] It would be fair to say that the frame has come to possess a value equivalent to that of the column for classical antiquity and the Renaissance (Colin Rowe, 1956; from the book of Skyscrapers, 1996, p. 15).

In 1887-1889, Holabird and Roche built the Tacoma Building in Chicago, which was 165 ft (50 m), 13 storeys high. In 1889-1890, George B. Post had built the 16-storey World Building in New York, which was 309 ft (94 m). It was made of mixed load-bearing masonry and steel frame construction. Between 1890 and 1894, Charles Atwood had designed, and Burnham and Root completed, the Reliance Building in Chicago, which was 229 ft (70 m), again 16 storeys high. In 1891, Adler and Sullivan built the Wainwright Building, which was 135 ft (41 m), 10 storeys. Sullivan described his work in the following terms:

> What is the chief characteristic of the tall office building? It is lofty. It must be tall. The force and power of altitude must be in it, the glory and pride of

> exaltation must be in it. It must be every inch a proud and soaring thing, rising in sheer exaltation that from bottom to top it is a unit without a single dissenting line (Louis Sullivan, 1896, p. 405).

Again in 1891, Burnham and Root designed another tall building in Chicago: the 16-storey Monadnock Building, which was 197 ft (60 m). Both of the Burnham and Root buildings had outer walls constructed by conventional masonry. In 1893-1894, Kimball & Thomson designed the Manhattan Life Insurance Building in New York, with twenty storeys including its tower. From the late 1880s up until 1894, buildings ranging from twelve to sixteen storeys went up all over central Chicago in considerable numbers. In 1894, Burnham and Company built the Reliance Building in Chicago, which was 200 ft (61m). Jordy describes this building as follows:

> It is as a densely faceted tower of glass that the Reliance comes by its visual force. Viewed in an environment of electric lights, shadow, and bustle, the Reliance characterizes better than any other structure of its period the raw exuberance of the Chicago commercial development (1976, p. 258).

Again in 1894-1895, Louis Sullivan and Dankmar Adler built the Guaranty Building in Buffalo, which was 13 storeys high. This was, in fact, the building which led Sullivan to the observation quoted above. Below are a series of photographs providing visual comparison of the tall buildings we have cited.

Figure 2.1 Equitable Life Assurance Building, 1868-1870

Figure 2.2 The Western Union Telegraph Building, 1873-1875

Figure 2.3 The New York Tribune Building, 1873-1875

Figure 2.4 Montauk Building, 1882

Figure 2.5 Home Insurance Building,

Figure 2.6 Tacoma Building, 1887-1889

Figure 2.7 World Building, 1889-1890

Figure 2.8 Reliance Building, 1890-1894

Figure 2.9 Wainwright Building, 1981

Figure 2.10 Monadnock Building 1981

Figure 2.11 The Manhattan Life Insurance Building, 1893-1894

Figure 2.12 Guaranty Building, 1894-1895

2.4 Historical Overview of High-Rise Building in the World in the Twentieth Century

The new century saw even taller buildings: in 1902, Daniel H. Burnham built the Flatiron (Fuller) Building in New York, which was 285 ft (87 m), and which H. G. Wells, Burnham's contemporary, described in 1906 as, "I found myself agape, admiring a skyscraper—the prow of the Flatiron Building, to be particular, ploughing up through the traffic of Broadway and Fifth Avenue in late-afternoon light" (Dupre, 1996, p. 24). In 1908, Ernest Flagg designed the Singer Building in New York, which was 656 ft (200 m) and 34 storeys high. In 1913, Cass Gilbert planned the Woolworth Building in Lower Manhattan, which was the first to reach 60 storeys, with 792 ft (241 m). "Woolworth is the Mozart of skyscrapers," writes Paul Goldberger (1979, p. 127). In

1930, William Van Alen designed the Chrysler Building in New York, which was 1046 ft (319 m), 77 storeys high. The original owner of the building described his motivation for purchasing the project as follows:

> I came to the conclusion that what my boys ought to have was something to be responsible for. They had grown up in New York and probably would want to live there. They wanted to work, and so the idea of putting up a building was born. Something that I had seen in Paris recurred to me. I said to the architects: 'Make this building higher than the Eiffel Tower' (Walter P. Chrysler; in Skyscrapers, 1996, p. 36).

Goldberg's commentary on the building is apt:

> The quality of Chrysler comes from its ability to be romantic and irrational and yet not quite so foolish as to be laughable; it stops just short, and therefore retains a shred of credibility amidst the fantasy—rather like New York itself (Goldberger, 1979, p. 179).

The aspiration to create increasingly taller structures and the race for height stopped in North America around the 1930s, with the construction of the Empire State Building by architects Richmond Shreve, William Lamp, and Arthur Harmon. Without the 222 ft (67.7 m) television antenna added later, the Empire State Building was 1250 ft (381 m) high. Contemporary comments on this building rang mostly a positive tone:

> Let cynics and supersensitive souls say what they will about American materialism and machine civilization. Beneath the surface are poetry, mysticism and inspiration that the Empire Building somehow symbolizes. In that giant shaft I see a groping toward beauty and spiritual vision. I am one of those who see and yet believe (Helen Keller, 1933; in Skyscrapers, 1996, p. 38).

> "The Empire State's ambitious mass is, take it from the critics, class." (Price Day, 1932; in Skyscrapers, 1996, p.39)

It was taller than the 984 ft (300 m) Eiffel Tower in Paris, which had been the highest structure of the nineteenth century:

> As minutes pass, myriad pinpoints of light emerge, a patch of starlit earth under a starlit sky—the lamps of Paris—straight lines of lights, curving lines of lights, squares of lights, black spaces in between. Gradually avenues, parks and buildings take outline form; and there, far below little of set from the center, is a column of lights pointing upwards, changing angles as I fly—the Eiffel Tower (Charles Lindbergh, 1927; in Skyscrapers, 1996, p. 16).

Hemingway's observation complements Chrysler's cited above:

> If you are lucky enough to have lived in Paris as a young man, then wherever you go for the rest of your life, it stays with you, for Paris is a moveable feast (Ernest Hemingway, 1964; in Skyscrapers, 1996, p.17).

Thus America had surpassed Europe in building tall, and the twentieth century had surpassed the nineteenth. In 1932 Cinton & Russel planned the American International in New York, which was 952 ft (290 m), 66 storeys high. In 1933, Corbett and Harrison & MacMurry, Hoot and Godley & Fouilhoux, Reinhard & Hofmeister designed the General Electric Building in New York, which was 850 ft (259 m), 69 storeys high. In 1940, Reinhard and Hofmeister; Corbett, Harrison and MacMurray; Hood and Fouilhoux built the Rockefeller Center in New York, which was 850 ft (259 m). Poet Walt Whitman was clearly underscoring the superiority of America to Europe, and of New York to London, in a statement alluding to William Blake's poem "London": "Manhattan's streets I saunter'd, pondering On Time, Space, Reality—on such as these, and abreast with them Prudence" (Walt Whitman, 1855-1892; in Skyscrapers, 1996, p. 42).

In 1949-1951, Mies Van der Rohe designed the Lake Shore Drive Apartments in Chicago, which were 270 ft (82 m), 26 storeys high. In 1952, Skidmore, Owings & Merrill built the Lever House in New York, which was 302 ft (92 m). Contemporary comments in the 1950s, on architectural verticality, were still affirmative:

> As the old buildings disappear radical new ones rise immediately in their place, and the pattern of progress becomes clear: business palaces replace private palaces; soap aristocracy replaces social aristocracy; sleek towers of steel—framed blue, green or gray—tinted glass give the avenue a glamorous and glittering new look […] The staples of our civilization—soap, whiskey, and chemicals have identified themselves with advanced architectural design and their monuments march up the avenue in a proud parade (Ada Louise Huxtable, 1957, p. 69).

> To a much greater degree than any other country, the United States is a steel and production-line economy. It follows logically that its architecture has become industrialized: the basic materials in which it works—steel, aluminum, glass, plastics—all come from the production line […] It is to SOM's credit that we have taken prefabrication and made a design asset of it (Gordon Bunshaft, 1957; in Skyscrapers, 1996, p. 45).

Below is a photographic catalogue of these high-rise buildings that were constructed in the United States of America during the first half of the twentieth century:

Figure 2.13 Flatiron (Fuller) Building, 1902

Figure 2.14 Singer Building, 1908

Figure 2.15 Woolworth Building, 1913

Figure 2.16 Chrysler Building, 1930

Figure 2.17 Empire State Building, 1930

Figure 2.18 GE (General Electric), Building, 1933

Figure 2.19 Rockefeller Centre, 1940

Figure 2.20 Lake Shore Drive Apartments, 1949-1951

Figure 2.21 Lever House, 1952

In 1955, Frank Lloyd Wright had designed the Price Tower in Bartlesville, Oklahama, whose original plan included 24 storeys but the number of storeys was reduced by five during the construction. “The skyscraper is no longer sane unless in free green space,” wrote Wright in 1953, “In the country it may stand beautiful for its own sake” (Dupre, 1996, p.48). Wright had not only moved tallness out of the urban density, but had also innovated in its design:

> The first major change brought on by a new material and structural system was in the Price Tower by Frank Lloyd Wright, where re-inforced concrete and a core system of cantilevering made possible a more flexible ordering of the floor spaces and an exterior that broke away from the square or rectangular box (Winston Weisman, 1970, p. 117).

In 1956, Ludwig Mies Van Der Rohe and Philip Johnson built the Seagram Building in New York City, which was 515 ft (157 m), 38 storeys high:

> The Seagram shows the grander side of Mies’s vision. Its austerity of form coupled with its luxuriousness of effect proclaims not only Mies’s feeling

> for the potential of structure to create noble order […] but also his convinction that modern architecture of consequence in a period dominated by technology will occur only by factoring this truth of its time (Jordy, 1972, p. 183).

In 1961, Skidmore, Owings & Merrill designed the One Chase Manhattan Plaza in New York, which was 813 ft (248 m), 60 storeys high. In 1964-1967, Bertrand Goldberg completed the Marina City Towers in Chicago, which was 588 ft (179 m), 60 storeys high. In 1985 Bernard Goldberg, in a comment on this building, was going to point at the connection between the abstraction the high-rise poses and other abstractions of the times:

> The administrative abstraction of business and government corresponds to abstraction in art and literature. The perfect design of the box goes hand in hand with the mechanization of all production: ready-made clothing, mass produced automobiles, tin cans, electrical appliances, and so on. We live in a mass society which is controlled, governed, measured and stored in boxes (Dupre, 1996, p. 58).

In 1967, John Portmen designed the Peachtree Center Plaza in Atlanta, which was 754 ft (230 m), 73 storeys high. In 1968, Schipporeit and Heinrich built the Lake Point Tower in Chicago, which was 643 ft (196 m), 70 storeys high. This building, as is known, constitutes an impressive turning point in the use of glass, and reminds us of what Adolf Behne wrote in 1919, 68 years after the Crystal Palace, about the use of glass:

> Glass is a completely new, pure material […] It works in the most elementary way. It reflects the sky and the sun; it is like clear water; and it has a wealth of color, form, and character which is indeed inexhaustible and which can be a matter of indifference to no person (Dupre, 1996, p. 60).

In 1969, Skidmore, Owings & Merrill built the John Hancock Center in Chicago, which was 1127 ft (344 m), 100 storeys high. Again in 1969, Murphy/Jahn Inc. Architects designed the Bank One Plaza in Chicago, which was 850 ft (259 m), 60 storeys high.

In 1972, Minoru Yamasaki planned the World Trade Center in New York, which was 1377 ft (419 m), 110 storeys high. There is, of course, a point that begs to be made about Minoru Yamasaki who was the architect of two buildings: World Trade Center and Pruitt Igoe Housing. As is known, both of these buildings were demolished at the end. The Pruitt-Igoe housing, completed in 1955 in St. Louis, Missouri, was dynamited on 15 July 1972 due to the high crime rate in these residential blocks, but also because the dissatisfaction of residents had caused them to vandalize the housing complex to an irreparable extent. On the other hand, the World Trade Centre, which was built in 1972, the year the St. Louis complex was dynamited, was destroyed by a terrorist attack on 11 September 2001.

As the 2001 event is a recent one, the details regarding the destruction of the World Trade Centre are quite known. Therefore, we may go into further detail regarding the Pruitt Igoe Housing. It was located on a 57-acre site, consisting of 33 eleven-storey flat-topped apartment blocks. These buildings were found successful by most in the years they were built and they even received an award from the AIA (American Institute of Architects). Nevertheless, there were those who, like Huxtable, would comment in 1973: "These are big buildings, but they are not great architecture" (Dupre, 1996, p. 67). However, almost immediately after they opened for accommodation, they were not only heavily vandalized by residents, but also sustained an alarmingly high crime rate. The elevators, windows and frames of the buildings were broken (Kortan, 2001). Crime rate was higher compared to other sites because of the long corridors, anonymity, and uncontrolled semi-private spaces (Jenks, 1987). Eventually these buildings became an icon of failure, and it was found that they were not suitable especially for families with children (Hoffman, 2000):

> About the fortieth floor, my knees started to give in. I didn't think I was going to make it. My co-workers kept egging me on. Let's keep going. We only have forty floors to go. We only have thirty. We only have twenty. So I kept going, and I'm not sure my knees will ever forgive me (Raquel Vidal, 1993; in Skyscrapers, 1996, p. 66).

Charles Jenks dates the death of modernism to that moment in July 1972, when the first three blocks of St Louis' infamous Pruitt-Igoe Housing complex were dynamited:

> Modern architecture died in St Louis, Missouri on July15, 1972 at 3.32 p.m. (or thereabouts) when the infamous Pruitt-Igoe scheme, or rather several of its slab blocks, were given the final *coup de grace* by dynamite. Previously it had been vandalized, mutilated and defaced by its black inhabitants, and although millions of dollars were pumped back, trying to keep it alive (fixing the broken elevators, repairing smashed windows, repainting), it was finally put out its misery. Boom, boom, boom (1987, p. 9).

The failure of these residential high-rise buildings was a turning point in the history of the high-rise, at least as far as the United States is concerned. Therefore, we will first look at the photographic representations of the buildings built so far in United States and then continue the account of the high-rise in the second half of the twentieth century:

Figure 2.22 Price Tower, 1955

Figure 2.23 Seagram Building, 1956

Figure 2.24 One Chase Manhattan Plaza, 1961

Figure 2.25 Marina City Towers 1964-1967

Figure 2.26 Peachtree Center Plaza, 1967

Figure 2.27 Lake Point Tower, 1968

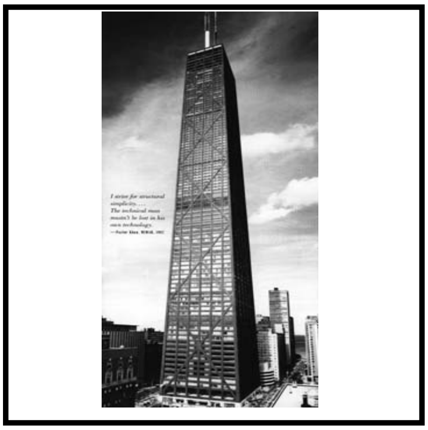


Figure 2.28 John Hancock Center, 1969

Figure 2.29 Bank One Plaza, 1969

Figure 2.30 World Trade Center, 1972

Figure 2.31 Pruitt-Igoe, 1955; demolished in 1972

In 1973, Jacobs/Ryan Associates designed the Standart Oil Building (Aon Center) in Chicago, which was 1136 ft (346 m), 80 storeys high. In 1974, Skidmore, Owings & Merrill built the Sears Tower in Chicago, which was 1450 ft (443 m), 110 storeys high. About the latter, Paul Gapp wrote in 1980 that, “The Sears Tower clearly and exultantly asserts itself as a giant whose elements assume a lighter character as they rise, in a manner somewhat akin to that of skyscrapers built in the 1920s” (Dupre, 1996, p. 68). It is the third highest high-rise building in the world following the Petronas Towers and Taipei 101. Petronas Towers designed by Cesar Pelli & Associates in Kuala Lumpur, Malaysia, which, as we saw above, is 1483 ft (452 m), 88 storeys high. Taipei 101 is the highest building in the world built by Brian Micklethwait in Taipei, Taiwan, which is 1671 ft (508 m), 101 storeys high on the ground and 5 storeys high under the ground. In 1976, Loebl, Schlossman, Part & Hackl designed Water Tower Place in Chicago, which was 859 ft (262 m), 74 storeys high. In 1977, The Stubbins Associates with Emery Roth & Sons planned the Citicorp Center in New York, which was 914 ft (279 m), 59 storeys high. Hugh Stubbins commended on this exquisite building in the following terms: “What monuments we leave behind in the form of buildings reveal more clearly than anything else the value we place on the quality of life” (1976, p. 56). In 1982, Swanke, Havden and Connell designed the Trump Tower on New York’s Fifth Avenue, which was 688 ft (210 m), 80 storeys high. In 1989, Skidmore, Owings & Merrill built the AT&T Corporate Centre in Chicago, which was 1007 ft (307 m), 60 storeys high. In the same year, Kohn Pedersen Fox Associates designed the 900 North Michigan in Chicago, which was 871 ft (265 m), 66 storeys high. Again, Murphy/Jahn Inc. Architects designed Cityspire in New York, which was 814 ft (248 m), 75 storeys high. In 1990, Loebl, Schlossman & Hackl designed the Two Prudential Plaza in Chicago, which was 995 ft (303 m), 64 storeys high. In 1999, Fox & Fowle Architects built the Conde Nast Building in New York, which was 809 ft (247 m), 48 storeys high. When we come to the year 2000, Lucies Lagrange & Associates designed the Park Tower in Chicago, which was 844 ft (257 m), 67 storeys high. In 2001, Costas Kondylis & Partners designed the residential Trump World Tower in New York, which was 861 ft (262 m), 72 storeys high. Below are photographs of these buildings:

Figure 2.32 Standard Oil Building, (Aon Center) 1973

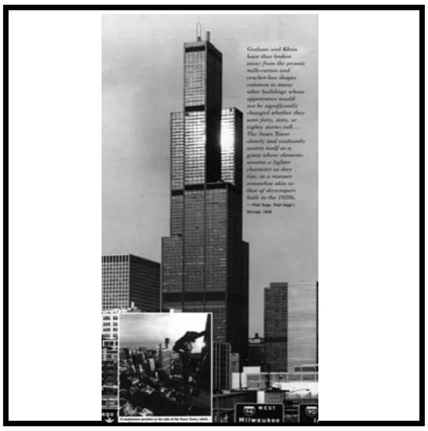


Figure 2.33 Sears Tower, 1974

Figure 2.34 Petronas Towers, 1998

Figure 2.35 Taipei 101, 2004

Figure 2.36 Water Tower Place, 1976

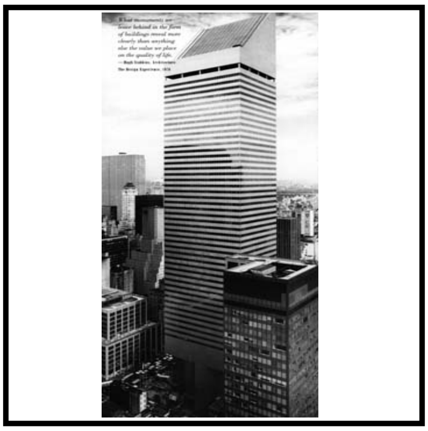


Figure 2.37 Citicorp Center, 1977

Figure 2.38 Trump Tower, 1982

Figure 2.39 AT&T Corporate Center, 1989

Figure 2.40 900 North Michigan,
1989

Figure 2.41 Cityspire, 1989

Figure 2.42 Two Prudential Plaza
1990

Figure 4.43 Conde Nast Building,
1999

Figure 4.44 Park Tower, 2000

Figure 2.45 Trump World Tower,
2001

As a result of the technological development in the construction systems of tall buildings, other countries joined the flow. The United Kingdom, with a population of 58,789,194, possesses the largest number of tall and the highest buildings among the European countries: 2,323. Spain follows with a population of 40,847,371, and 1,959 tall buildings; Germany with a population of 82,079,454, and 1,608 tall buildings; Netherlands with a population of 16,032,240, and 966 tall buildings; Italy with a population of 56,782,748, and 808 tall buildings; France with a population of 58,804,944, and 453 tall buildings. The account is followed by a decreasing number of buildings in Russia, Norway, Sweden, Poland, Denmark, Finland, Austria, Switzerland, Portugal, Belgium, Croatia, Estonia, Latvia, and Monaco (Skyscrapers, 2003).

Huxtable (1984), Karakaya (1997), and Sarıkaya (2000) underline that the construction of high-rise buildings started in Europe after the 1950s. The tall buildings in Europe are located in various countries. In 1949-1953, Lev Vladimirovitch Rudnev planned the Moscow State University building in Moscow, Russia, which is 787 ft (240 m), 36 storeys high. In 1952-1955, Lev Vladimirovitch Rudnev built the Palace of Culture & Science in Warsaw, Poland, which is 757 ft (231 m), 33 storeys high. In 1959, Gio Ponti with Pior Luigi Nervi designed the Pirelli Tower in Milan, which is 417 ft (127 m):

> The impeccable structural logic of that phase of Nervi's career came into conjunction with certain formal preoccupations of Ponti's and the world now has a building that is not formalist in spite of the care given to the study of its form, a tough-minded-business building that is not just a rent box, an advertising symbol that is not just a gimmick—and all this realized in a building that is manifestly a unified, integrated conception, in spite of the hours of sweat and horse-trading around the conference table that must have gone into its design (Reyner Banham, 1975, p. 53).

In 1967, Michel Jaspers & Partners designed the Tour du Midi in Brussels, Belgium, which is 492 ft (150 m), 38 storeys high. In 1969-1973, Beaudoin, Cessan and De Marien Saubot designed the Tour Montparnasse in Paris, France, which is 689 ft (210 m), 59 storeys high. In 1986-1991, Bonnema Architecten built the Delftse Poort in Rotterdam, The Netherlands, which is 497 ft (151 m), 41 storeys high. In 1987-2002, Antonio Escario built the Gran Hotel Bali in Benidorm, Spain, which is 610 ft (180 m), 52 storeys high. In 1989-91, Cesar Pelli & Associates designed the One Canada Square in London, United Kingdom, which is 771 ft (235 m), 50 storeys high. In 1990, White Arkitekter AB built the Radisson SAS Plaza Hotel in Oslo, Norway, which is 384 ft

(117 m), 37 storeys high. In 1993-2000, Doğan Tekeli and Sami Sisa Hepgüler planned the İş Bank Building in Istanbul, Turkey, which is 594 ft (181 m), 52 storeys high. In 1997, Foster and Partners designed the Commerzbank in Frankfurt, Germany, which is 850 ft (259 m), 56 storeys high. There is a signal light on top of the mast, however, which makes the building officially 300.10 m tall. In 1997-1999, Architectengemeinschaft Peichl–Podrecca–Weber planned the Millenium Tower in Vienna, Austria, which is 633 ft (202 m), 51 storeys high.

As is seen, Turkey takes part in this race as well. Turkey's participation and concern have been further pointed out with the conference organized in London in 1999, on the topic of "The Council on Tall Buildings and Urban Habitat Welcomes Working Group of Turkey." What Sullivan wrote in the text quoted previously also applies to Turkey: "The architects of this land and generation are now brought face to face with something new under the sun."

Figure 2.46 Moscow State University, 1949-1953

Figure 2.47 Palace of Culture & Science, 1952-1955

Figure 2.48 Pirelli Tower, 1959

Figure 2.49 Tour du Midi, 1967

Figure 2.50 Tour Montparnasse,
1969-1973

Figure 2.51 Delftse Poort,
1986-1991

Figure 2.52 Gran Hotel Bali,

Figure 2.53 One Canada Square,
1989-1991

Figure 2.54 Radisson SAS Plaza
Hotel, 1990

Figure 2.55 Commerzbank, 1997.

Figure 2.56 Millenium Tower,
1997-1999

2.5. Historical Overview of High-Rise Building in Turkey

The development of tall buildings in Turkey may be divided into three periods: 1950-1975, 1975-1985, and 1985 and after (Sarıkaya, 1997 and Karakaya, 2000). In the 1950s the first tall buildings began to appear and various projects began to be planned. During the period of 1950-1975, many high-rise buildings were constructed especially in Ankara and Istanbul. In 1953, Skidmore, Owings & Merrill and Sedat Hakkı Eldem designed the Istanbul Hilton Hotel in Istanbul, which is 12 storeys high. In 1954, Orhan Bozkurt, Orhan Bolak, and Gazanfer Beken planned the Ankara Ulus Office Building in Ankara, which is 13 storeys high. In 1959, Tokay & Tayman designed the Ankara Kızılay Office Building in Ankara, which is 249 ft (76 m), 24 storeys high. In 1959-1973, the K. Ahmet Arü, Tekin Aydın, Hande Süher, Yalçın Emiroğlu, Altay Erol and M. Ali Handan built the Istanbul Sheraton Hotel, which is 21 storeys high. In 1959-1968, Rolf Gutbrod built the Ceylan Inter-Continental Hotel in Istanbul, which is 285 ft (87 m), 24 storeys high. In 1960, Marc Saugey and Yüksel Okan built the Ankara Hotel in Ankara, which is 18 storeys high. In 1962, Doğan Tekeli, Sami Sisa and Metin Hepgüler designed the Ankara Stad Hotel in Ankara, which is 233 ft (71 m), 20 storeys high and in 1968, the Harbiye Officers' Club in Istanbul, which is 295 ft (90 m), 28 storeys high. In 1969, the Marmara Hotel was built in Istanbul, which is 314 ft (96 m), 26 storeys high. In 1970-75, Kaya Tecimen and Ali Kemal Taner designed the Odakule Office Building in Istanbul, which is 262 ft (80 m), 22 storeys high. There were other buildings built during the years 1950-1975, namely the Etap Hotel Mola in Ankara whose name was later changed to Mola, and the 17 Regional Division Directorate of

Highways Building was built in 1974 by Mehmet Konuralp in Istanbul, which was 13 storeys high.

During the period between the years 1975 and 1985, there was an increase in the number of regulations in the building codes. However, because of diminishing political and economic conditions, there were not many buildings constructed during this period. In 1975, Sabancı Holding built the Hacı Ömer Sabancı Student Residence Hall in Ankara, which is 323 ft (98 m), 28 storeys high. Designed in 1977 was the Türkiye İş Bank Building with 29 storeys, by Böke and Sargın. Beginning with the year 1985, however, there has been a remarkable increase in terms of the height of buildings. The main reason for the increase in height is the development of tubular systems which have many advantages, such as being cost efficient. In 1986, Cengiz Bektaş designed the Mertim Tower in Mersin, which is 580 ft (177m), 52 storeys high. It is the highest building in Turkey and the highest reinforced concrete building in Europe. In 1987, the Barbaros Office Building was built in Istanbul, which is 295 ft (90 m), 24 storeys high. In 1988-1993, Sabancı Holding built the Sabancı Office Building in Istanbul, which is 518 ft (158 m), 39 storeys high. In 1988-2000, Doğan Tekeli-Sami Sisa; Swanke & Hayden built the İş Bank Towers in Istanbul, which is 41 storeys high. In 1990, Istanbul Princess Hotel was built in Istanbul at 325 ft (99 m), 27 storeys. In 1991, Von Gerkan, Marg and Partners designed the Ankara Sheraton Hotel in Ankara, which is 459 ft (143 m), 29 storeys high. In 1992, Yüksel Construction Company built the Ak Merkez Shopping and Office Complex in Istanbul, which is combined of 14 and 17 storeys of office blocks and a 24-storey residential apartment block, with a height of 328 ft (100 m), 28 storeys. Again in 1992, the Koray Construction Group built the Yapı Kredi Plaza in Istanbul, which is 270 ft (82 m), 20 storeys high. In 1992-1994 Giz Development & Construction planned the Spring Giz Plaza in Istanbul, which is 295 ft (90 m), 27 storeys high. Photographs of these high-rise buildings in Turkey are provided below:

Figure 2.57 Istanbul Hilton Hotel, 1952

Figure 2.58 Ankara Ulus Office Building, 1954

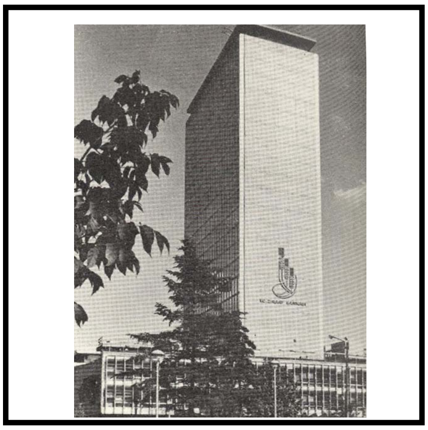


Figure 2.59 Ankara Kızılay Office Building, 1959

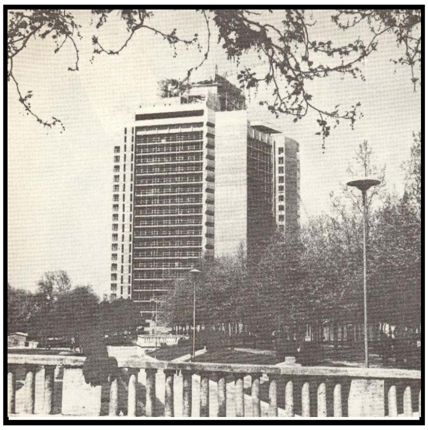


Figure 2.60 Istanbul Sheraton Hotel, 1959

Figure 2.61 Ceylan Inter-Continental 1959-1968

Figure 2.62 Ankara Hotel, 1960

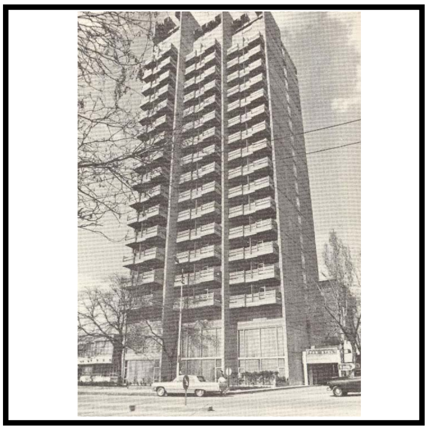


Figure 2.63 Ankara Stad Hotel,
1962

Figure 2.64 Harbiye Officers' Club,
1968

Figure 2.65 The Marmara Hotel, 1969

Figure 2.66 Odakule Office Building,
1970-1971

Figure 2.67 Etap Hotel Building,
1950-1975

Figure 2.68 17 the Regional Division
Directorate of Highways

Figure 2.69 Hacı Ömer Sabancı
Student Residence Hall, 1975

Figure 2.70 İş Bank, 1977

Figure 2.71 Mertim Tower, 1986

Figure 2.72 Barbaros Office
Building, 1987

Figure 2.73 Sabancı Office Building,
1988-1993

Figure 2.74 Iş Bank, 1988-2000

Figure 2.75 Istanbul Princess Hotel,

Figure 2.76 Ankara Sheraton Hotel, 1991

Figure 2.77 AkMerkez, 1992

Figure 2.78 Yapı Kredi Plaza, 1992

Figure 2.79 Spring Giz Plaza, 1992-1994

High-rise buildings first rose in Ankara and Istanbul but eventually began to appear in Izmir, Adana, Mersin, and other cities in Turkey. Housing Estate Bank's[2] housing complexes over 10 storeys high, purchasable through mortgage loans issued by this bank, constitute residential blocks in various large cities. In Izmir, the storeys of the Housing Estate Bank's Buildings vary between 7 and 25. Apart from the Housing Estate Bank's Buildings, the Hilton Hotel and Ege Palas Hotel are the highest buildings rising on the Izmir skyline. William B. Tabler Architects built the Izmir Hilton Hotel between 1987 and 1991, which is 466 ft (142 m), 35 storeys high, and Zorlu Holding planned the Ege Palas Hotel in 1988-1993, which is 246 ft (75 m), 21 storeys high.

Figure 2.80 Izmir Hilton Hotel, 1987-1991

Figure 2.81 Ege Palas Hotel, 1988-1993

It is seen that most of the high-rise buildings in Turkey are utilized as office buildings and hotels. Despite the fact that the number of high-rise residences has increased in recent years in Turkey, the reactions against tall buildings, regardless of whether they are office buildings or residences, are quite similar to the reactions against the high-rise buildings when they first appeared in North America and the United Kingdom in the nineteenth century. This hypothesis regarding Turkey's response to high-rise buildings may be best found in some of the daily newspaper headlines. For example, one headline in *Cumhuriyet* on (20, 07, 2003) 2003 was the following: "the dagger in Istanbul's breast." This phrase was describing a high-rise in Beşiktaş. When we go back to the 1990s, we find similar headlines again: "the knife in Istanbul's breast," was appeared in the daily newspaper *Güneş* (04, 05, 1990) and "15 high-rises,

[2] 'Housing Estate Bank' is used to render the Turkish 'Emlak Kredi Bank'. I borrow the term from Altaş, 1998. The 'Emlak Kredi Bank' in fact corresponds to the 'home loan bank' or the 'housing mortgage bank.'

on a 15-km road." "Barbaros Boulevard–Büyükdere Street are paralyzing," again was a headline in the daily *Cumhuriyet* (15, 06, 1990).

2.6 Definitions of High-rise

Given the multifarious history of the high-rise and given the fact that it is an architectural phenomenon determined equally by technological development, design-conceptual change, and social transformation and psychological structure, defining the high-rise is a complex task. Extant definitions equally engage the facets enumerated above so that to extricate from this complex body a definition concerning the relationship between the architectural design and the consumer once again requires looking at multi- and inter-disciplinary definitions. As a result, the 'high-rise' is a phenomenon that has as many definitions as there are researchers devoting attention to it. The difficulty is perhaps best described by the relativeness of the adjective 'high'. Thus Taranath had implied in 1988 that tallness was a relative matter (p. 8). In some parts of the world, a five–storey building will appear tall, while in other parts a 25-storey building will be the tallest. In Chicago and New York this number will jump to somewhere between 70 and 100 storeys.

At the end of the nineteenth century, tall buildings were called 'skyscrapers', which we may describe as a name that primarily took into consideration their non–conformity and particular relation to their surroundings and the environment. The word 'skyscraper', as an adjective describing the tall building, first appeared in the United States in 1884, and was used as a noun around the year 1889. Girouard (1985), however, argues that "the first known dictionary to include the word 'skyscraper' was *Maitland's American Standard Dictionary* in 1891." When we turn to *Maitland's,* we find that it defines the 'skyscraper' as "a very tall building such as now are being built in Chicago." "A few years later," writes Girouard, " 'and New York' could have been added to the definition" (p. 319). As late as 1933, the *Oxford English Dictionary* included six different definitions of the word 'skyscraper', including, among instances of usage cited, a high-standing horse and a very tall man. Generally speaking, by the advent of World War I almost everyone had learned what a 'real' skyscraper was: a building having many storeys (Ford, 1994). Today the *Oxford English Dictionary* devotes seven columns to the term 'skyscraper' and renders illustrations as various as

“A high building of many storeys, especially one of those characteristic of American cities.” Two titles including the word ‘skyscraper’ appeared in the newspapers, the first one in 1891 and the other, two years later, in 1893: “How the skyscrapers are built?” was published in November 1891 in the Boston (Mass.) Journal while, “It doesn’t look like a typical skyscraper, though I suppose a thirteen-storey house is one” was published on 15 May 1893 in the *Daily News* (5/5). Nowadays people use the word ‘high-rise’ more than the word ‘skyscraper’ but we know that the first word that appeared in the dictionaries and newspapers was the ‘skyscraper’ in 1891, in *Maitland’s American Standart Dictionary* and the lines appeared in *Boston (Mass.) Journal.* Afterwards, besides the words ‘skyscraper’ and ‘high-rise’, two more terms were included in the nomenclature: ‘multi-storey’ and ‘tall building’. Today, all of these four terms are used in the same sense.

In architectural discourse there are presently very numerous definitions of the high-rise. These definitions are as vague as they are numerous. Burcher in fact points out that the term is “inexact” (1996, p. 56). The definitions can be divided into three groups. The first group of definitions are made by storeys; the second one according to the plan, ground area, forces, design and the use of the buildings; and the third one is made by comparing the words with each other. Definitions that may be listed of the first group by storey are the following:

> Generally starts with 10 storeys, and can be more than 100 storeys today (Anonymous, 1972, p. 11).
>
> A multi-storey steel-framed building, typical of New York where the Bedrock is only 15 m (50 ft) below ground and makes an excellent foundation for a 50-storey building (Scott, 1974, p. 116).
>
> 10 or more storey buildings due to their obligation to take special precautions according to the fire regulations in big cities (Beedle, 1984, p. 6).
>
> According to the construction regulations in the United States, the buildings which exceed the top height limit of the surrounding structures by 12 storeys (Çılı and Karataş, 1989, p. 279).
>
> German standards define high-rise as ‘buildings above 22 m’. This limitation is accepted to be 12 storeys in the United States (Aytis, 1991, p. 48).
>
> Buildings that surpass other structures in the same part of the city in terms of height (Acerknacht, 1984, p. 9).

A building which has many storeys (*The New Shorter Oxford English Dictionary*, 1993, p. 2985).

It is the name given to those buildings with many storeys which first appeared in the United States (Bayır, 1991, p. 4).

High-rise is the kind of building that exceeds 25 storeys, and it is generally planned for office use, necessitates the implementation of high technology due to its vertical development, and creates a prestigious image with its visual impact (Yeşil, 1993, p. 7).

A building which at least contains 25 storeys and/or is 30 ft tall (often including a non-functional decorative tower) (Ford, 1994, p. 11).

An inexact term for a relatively tall building, as opposed to a low-rise building; often defined in building codes as more than 75 ft tall (Burcher, 1996, p. 74).

According to public works regulations in Turkey, a building having 10 storeys or more is accepted to be a high-rise (Eren, 1996, p. 5).

High-rise building is a type of building that generally affects its near and distant environment from the aspects of physical environment, urban layout, and every kind of urban infra-structure. If the ceiling of the final storey is above 30.80 m or if the total number of storeys is more than 13, including the basement and excluding the thirteenth storey, the building is accepted as high-rise (Metropolitan Municipality of Izmir, High-Rise Building Regulation, 1996).

A building that has twenty, thirty or more floors (Bayır, 1991, p. 4).

A building of thirty-five meters or higher, which is divided at regular times into levels (*Skyscrapers*, 2002).

High-rise is a building which has a comparatively large number of storeys, usually above 10-12, which is equipped with elevators (Burden, 2002, p. 216).

High-rise is defined as a building with six or more storeys or 75 feet above the lowest fire department access to the highest floor, intended for occupant use (Muthalbox, 2003).

The definitions in the second group according to plan, ground area, forces, design, and use may be enumerated as follows:

A building in which 'tallness' strongly influences planning, design, and use, or a building whose height creates different conditions in the design and construction (Moore et. al, 1980, p. vi).

Generally slender buildings like towers having a small ground area with a height more than the dimensions of the ground (*Büyük Larousse*, 1986, p. 503).

High-rise buildings are tall buildings which must cope with the vertical forces of gravity and the horizontal forces of wind above ground and the seismic forces below ground (Schueller, 1986, p. 3).

From the point of view of structural design, it is simpler to consider a building tall when its structural analyses and design are in some way affected by the lateral loads, particularly sway. Sway or drift is the magnitude of the lateral displacement of the top of the building relative to its base (Taranath, 1988, p. 8).

Skyscrapers are lean towers on rectangular or round ground plan, with a height which reaches many times the length of the sides or the diameter. The skyscraper was intended to achieve a maximally large, usable floor space on a relatively small building plot, but at the same time was to serve as a symbol of prestige (Heinle and Leonard, 1989, p. 296).

Multi-storey building tall enough to require the use of a system of mechanical vertical transportation such as elevators. The skyscraper is a very tall high-rise building (*Britannica*, 2003).

High-rise building is one in which its height (H) is more than three times its cross-wind width (W) H= <3x, W=x (*ASHRAE Handbook of Fundamentals*, 1989).

The definitions in the third group are made by comparing either the height or the name of the building. For example,

High-rise building and skyscraper can be classified in two, under two subheadings:

a) High-rise: Up to 25 storeys.
b) Skyscraper: More than 25 storeys (Özek and Erdoğan, 1992, p. 51).

Öke (1991) agrees with Özek and Erdoğan in terms of the definitions of the words 'high-rise' and 'skyscraper'. Moreover, Öke separates the buildings into five categories according to their height as in the following:

1st Category: Buildings which are not high, with 8-12 storeys. In Turkey these types of buildings are most frequently seen.
2nd Category: Buildings with 12-25 storeys.
3rd Category: Buildings with 25-50-55 storeys. In these types of buildings special precautions are taken.
4th Category: Buildings with 55-75 storeys.
5th Category: Buildings above 75 storeys which are called 'super skyscrapers'.

Öke uses the word ‘skyscraper’ for those buildings having more than 25 storeys, i.e. for the third, fourth and fifth categories. He mentions that, otherwise, it is more correct to call them ‘high-rise buildings’ (p. 138).

As is obvious from the examples of the definitions provided above, the exact definition of the high-rise has yet to be made. It is not possible to define the high-rise in specific terms related to height or the number of storeys. For the purposes of this thesis, if a limitation by the number of storeys is necessary, a building having more than 13 storeys is defined as a high-rise building. It can be further defined as a building in which ‘tallness’ strongly influences planning, design, and use as in the case of the Petronas Towers. This type of building must also cope with the vertical forces of gravity, the horizontal forces of wind above the ground, and the seismic forces below the ground.

CHAPTER 3

RESIDENTIAL SATISFACTION IN HIGH-RISE BUILDINGS: REVIEW OF THE LITERATURE

3.1 Introduction

As the development of cities accelerated and they became increasingly more crowded, numerous experts like scientists, medical doctors, planners, biologists, and architects began to investigate relationships between aspects of the physical environment and human experience. Thus topics such as overcrowding, residential satisfaction, lack of sunlight, shared sanitary facilities, and others emerged as objects of scientific inquiry. The architectural focus of this thesis identifies the particular link to be investigated as residential satisfaction. Thus this chapter offers a review of the literature concerning residential satisfaction. It classifies the literature thematically according to whether a source is concerned with high–rise housing, crowding, planning, crime, social characteristics, and physical characteristics. Before going into the details of the subject, however, some definitions should be offered. The terms to be defined are: *resident*, *satisfaction*, and *behavior*.

3.2 Definitions of Primary Terms

The Oxford English Dictionary defines the terms *resident*, *satisfaction* and *behavior* as follows: A *resident* is, “A person who lives or has a home in a place, as opposed to a visitor,” and *satisfaction* is given as, “The feeling of contentment felt when one has or achieves.” *Behavior* is defined in the same dictionary as, “The way of acting or functioning.” But these are the fundamental linguistic meaning of the terms. In the framework of scientific study, the definitions of these terms naturally demand further elaboration. In 1999, Lu identified residential satisfaction as follows: “Satisfaction with one’s residential situation indicates the absence of complaints and a high degree of congruence between actual and desired situations” (p. 265). In 2001, Perez et al. had refined the definition of residential satisfaction in the following terms: “The term residential satisfaction, used in studies of homes and their sphere of location, refers to individuals' appraisal of the conditions of their residential environment, in relation to their needs, expectations and achievements" (p. 175). Perez et al.'s comprehensive and apt definition thus also implies that 'residential satisfaction' constitutes an interdisciplinary area of research that combines architecture and behavioral science, the study of space and of the people who use that space. The term 'residential satisfaction' is used in studies of houses and the environments of the houses as well as the people who use them (Perez et al., 2001).

Finally, we may readily surmise that the lack of such satisfaction in a person can give way to public problems whose significant consequences may not always become apparent in the short term. In order to forestall large problems, environments require care. Given the nature of the formation of the environment, writes Özen Eyüce,

> which affects human feeling and thought and gradually, human character, external environment should be designed with the human scale in mind. In the juxtaposition of the built with the free, however, in new residential environments, the human scale is obviously forgotten and nearly monumental dimensions erected like the *Unité d'Habitation*, Ronan Point, and Pruitt Igoe. 'Tall enough to leave open earth space', the earth space released as a result of these solutions, however, remains undefined and unbordered because walls have been eradicated, weakening the human individual's sense of belonging (Eyüce, 1991, p. 88).

Residential satisfaction has long been an important research topic in such disciplines as sociology, psychology, planning, and geography. There have been two fundamental reasons for the popularity of the topic. Firstly, residential satisfaction has been recognized as an important component of individuals' general quality of life. Secondly, it has been found that individuals' evaluation of their housing and neighborhood determines the way they respond to the residential environment (Lu, 1999, p. 264). Attendant upon these reasons for studying the topic, there have emerged two different approaches to residential satisfaction in empirical studies, both of which treat such satisfaction or lack thereof as product or creation of behavior. On the one hand, there are those studies in which residential satisfaction is considered a creation of residential quality. Hence the objective of these studies is to establish the factors that determine occupants' satisfaction with the residential environment (which may be satisfaction about the neighborhood, housing form, and social influences). Other researchers like Liu (1999), consider residential satisfaction not as a creation but as a predictor of behavior.

3.3 Focus in Previous Studies

Architecture not only creates the groups of similar things in everyday life, it also defines contents with all possible means and disciplines such as literature and psychology (Hays, 1998). Ford (1994) has added that, obviously, the best approach to understanding the city lies somewhere between a concern for the architecture of the built environment and the focus on the characteristics of the population. The size, density, and distribution of the population, the wealth and historical development of the country, the administrative structure and cultural attitudes to resources—all these, together, help to supply opportunities and the unique national personality (Altman and Wohlwill, 1976).

Urban buildings have become increasingly more significant symbols of the rapid economic development of a city and country, albeit with attendant harsh impact on inhabitants.[3] The impact, it may be argued, of the high-rise building may be nevertheless softened by careful design that is generated from a human and environmental behavioral viewpoint (Wang and Chien, 1997, p. 86). Parsons (1996) agrees with Wang and Chien: he is not primarily interested in the physical nature of the individual, but rather in that side of him or her which is called 'mental' or 'moral', and maintains that design sensitive to human psychology will mitigate an otherwise rough impact. According to Gardner et al. (1996), knowledge from psychology constitutes a framework for finding out key questions about human behavior. The terms 'human behavior', 'psychology', and 'environmental sociology' are three related terms which are indeed necessary to residential satisfaction and in particular to the concern of this thesis. Nevertheless, a deep investigation of them will not be the immediate concern of this thesis and the further investigation of these terms ought to be left to psychologists and sociologists. It should be pointed out, however, that researchers from the areas of architecture, planning, as well as psychology proper have extensively criticized the

[3] The bibliography for the critical evaluation of the high–rise as making a hard and harsh impact morally and aesthetically is very extensive. See, for example: Uğur and Özçelik (1990); Wang and Chien (1997); Liu, (1999); Yezdani, (2003).

premises and findings of environmental psychology. Therefore it may be claimed that, as architectural researcher into human behavioral tenets, one ought to look to psychology in general instead of environmental psychology to find solutions to problems in the relationship between architectural design and human behavior.

More specifically, environmental sociologists are finding that certain characteristics of the urban environment do influence our behavior (Wang and Chien 1997, Fowler 1987). Mysterud (1996, p. 860) even argues that environmental problems are the *result* of human behavior. Regarding the genetic factor in human behavior, Barbour (2002), on the other hand, has identified four areas in which this factor is effective: intelligence, personality, antisocial behavior, and sexual orientation. Such factors about environmental psychology, psychology in general and the four areas in the genetic approach to human behavior are not discussed in much detail in this thesis, since they will not ultimately bear relationship to or influence the direction of architectural design. They are, however, herewith observed as productive for further research topics in the field of residential satisfaction.

According to Altman and Wohlwill (1976), the research conducted until now has investigated environmental control over people, whereas personal control over people has been relatively neglected. Joining with Altman and Wohlwill, Davidson (1999) has underscored that the outcome of human interaction with architecture is much more effective than that of aesthetics and style. It is from this point that this thesis starts building its area of attention as well as a more detailed review of literature. The parts which were neglected by designers, policy makers, planners and managers about personal control and user needs will be investigated in detail.

Research into the relationship between the tendency today to build increasingly larger numbers of residential high–rises and the level of satisfaction achieved by high–rise residents, has obtained positive data regarding the interior environment. Negative data arises in relation to the exterior environment, however (Wang and Chien, Taiwan, 1997). The distinction between the interior and exterior of the building implies respectively the inside of the building and the flat and the outside of the flat and the building. Hays (1998) indicates that the external is only concerned with the appearance of the building as more or less sculptural object, while the interior is in a constant state of flux—of themes and programs. Such themes of form and space tend to play on our psyche in ways that are ultimately associated with diverse psychological notions such as pride, humility, heroism, apprehension, hostility, dominance, and solitude (Davidson, 1999).

Already in 1979, Howell had claimed that if people responded seriously to the questionnaire's "satisfaction" questions, one might indeed gather information about a range of residential choices in terms of unit size, neighborhood amenities, and urban level, and utilize them in urban planning and policy making. Perez et al. (2001) have added to Howell's observations that the conception of a residential area could not be limited by the house or flat where people lived, but must be expanded to include the environment in which the house or flat is located, along with the other people who live in that environment. Every resident wants to live in ever better quality housing. The goal of a resident is simple: to be satisfied. In other words, the resident's goal is to be understood in hedonistic terms. From this point, it may be argued that residential satisfaction and quality are related concepts. The Oxford English Dictionary defines the term 'quality' as, "Degree of goodness or worth." Furthermore Perez et al. (2001) have implied in their research that 'quality of life' is an exceedingly important term which cannot be directly measured as well as being understood in different ways. They explained that the objective of quality of life is to meet the demands of the balance between peoples' needs and the personal valuations that define satisfaction. Thus researchers offer a home as the example of the quality of life at all ages. The quality is measured by the satisfaction with the house. If the needs and demands were met, then the satisfaction would increase and as a result quality would come into being. It did not matter what age the person was; function was basic and had to cover our needs and answer our demands. Another definition of the quality of life in their investigation involved the "specific areas that a person perceives as vital in the ability to enjoy and take part in life, and feels that the commitment to participate has a meaning" (pp. 175).

People change the physical characteristics of their dwellings according to their needs and demand to be satisfied. The fundamental satisfaction factor in a dwelling is the plan organization. All the changes people make in a dwelling may be summarily represented in the term 'personification' in the sense that after the alterations, so dwellers believe, the dwelling better personifies them, the dwellers. In 1998, Ballesteros et al. indicated in research conducted in Spain that personal and social differences formed the architectural and physical characteristics of dwellings (p. 186). Göregenli's research (1991) showed that in Izmir, people living in flats changed the flat so as to reflect their identity and personality and if they could not change the flats as they wanted, satisfaction decreased. Further, Eyüce (1991) proved in research again conducted in Izmir that people changed their dwelling in line with what they could afford, but they changed it regardless of how little they could afford, so as to personalize it. Changes included covering balconies so as to annex them to rooms; placing flowers in the windows; replacing apartment entrance doors. Likewise, Altaş and Özsoy (1998) demonstrated in research conducted in Ataköy, Istanbul, that to render space more flexible and adaptable, people changed the physical characteristics of their dwelling. Ataköy is a housing settlement in Istanbul which was developed 16-20 years ago. It was developed by the Housing Estate Bank[3] and the apartment blocks consist of single-bedroom (studio type), and two- and three-bedroom apartments. The changes in physical characteristics residents wrought, which Altaş and Özsoy discovered in their 1998 study, are worth taking a close look at.

Altaş and Özsoy's study deserves detailed attention in the context of this thesis: 398 samples were chosen from 4 different types of two-bedroom dwellings. Altaş and Özsoy enumerated the changes dwellers made as follows: 1. cladding the balconies; 2. dividing the rooms to obtain another room for different activities; 3. removing walls to create larger rooms. Below are shown Ataköy plan types and changes dwellers made to render the flats more flexible and adaptable. There are four plans. The first one shows the original plan, the others are the changes made by different dwellers.

Plan Type 1:

Original Plan | Changed Plan | Changed Plan | Changed Plan

Figure 3.1. The changes in spatial organization in Ataköy plan types

In this plan the changes in spatial organization may be enumerated as:

1. Annexing the balcony to the living room
2. Dividing the living room to obtain another room
3. Removing the wall between the living room and the main hall to obtain a larger living room.

[3] For an explanation of the nature and function of this bank, see p. 40 n. 1above and p. 61 n. 2 below.

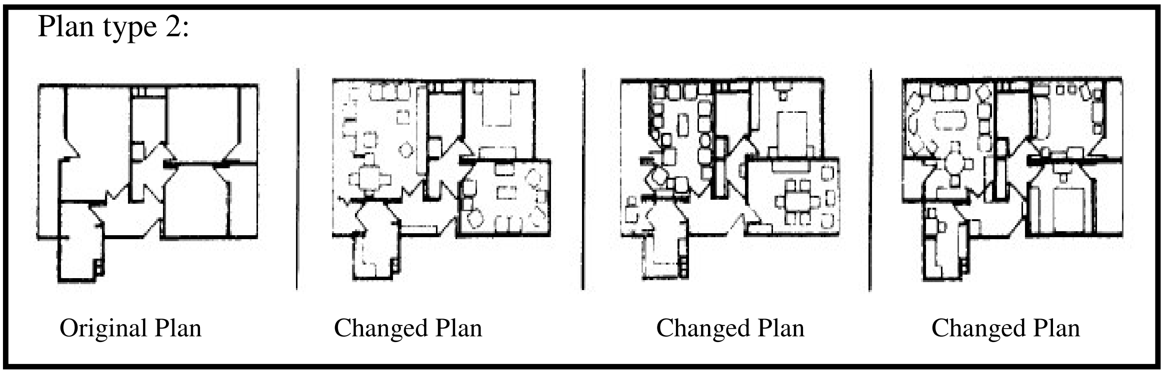


Figure 3.2. The changes in spatial organization in Ataköy plan types

The differences may be enumerated as:

1. Annexing the balcony to the kitchen
2. Annexing the balcony to bedroom 1
3. Annexing the balcony to bedroom 2
4. Annexing the balcony to the living room (p. 320).

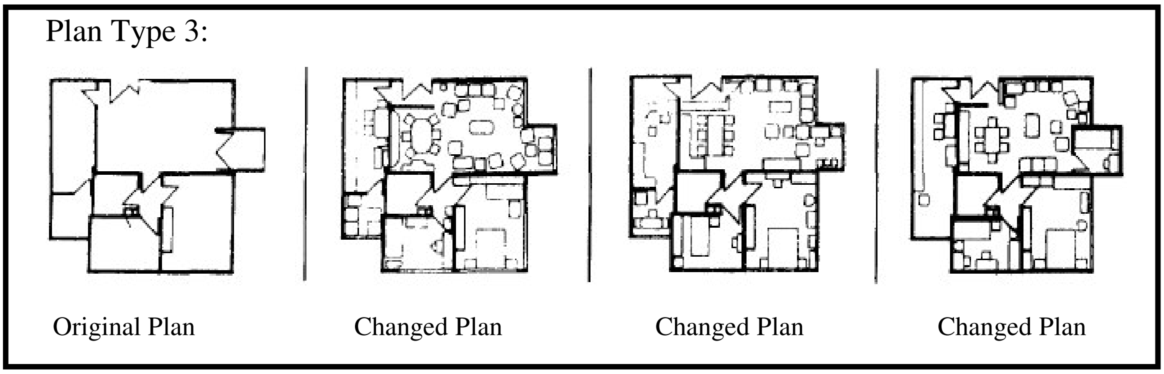
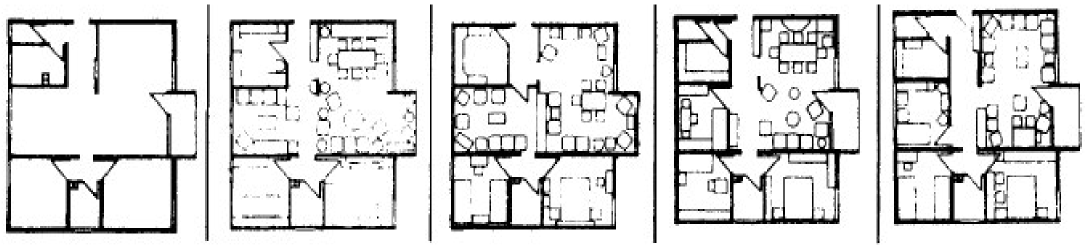


Figure 3.3. The changes in spatial organization in Ataköy plan types

The differences may be enumerated as:

1. Annexing the balcony to living room
2. Annexing the balcony to the kitchen
3. Closing the living room balcony to obtain a third room
4. Dividing the long kitchen unit into two spaces
5. Putting a wall in the living room to create space the main hall (p. 320).

Plan Type 4:



Original Plan | Changed Plan | Changed Plan | Changed Plan | Changed Plan

Figure 3.4. The changes in spatial organization in Ataköy plan types

The differences may be enumerated as:

1. Obtaining a third room by dividing the living room
2. Annexing the toilet to the kitchen
3. Adding a wall to the living room to separate the main entrance hall from the living room (p. 321)

As may be gathered from the plan representations above, the authors have found that these alterations in the four different types of apartment unit have not brought about a significant change in the plan organizations. As a result, the applied plan organizations have been changed by the needs of the residents. We may therefore conclude, with Altaş and Özsoy, that the dwelling may rank of high quality in details and materials, but is to be considered to be lesser in quality with reference to the plan organizations. The criterion by which this difference in evaluation of the quality is brought out is ‘resident satisfaction’. The satisfaction, in turn (or rather, the lack of it which has led residents to make alterations), is discerned by changes introduced to the plan organization.

Houses like high-rises, low-rises, walk-up flats, terraced housing as well as semi-detached housing (but not detached houses) share at least one component (floor, ceiling, wall, etc.) with other houses. In high–rise blocks, which are our concern here, flats are designed together both horizontally and vertically. The floor of one unit will make up the ceiling of another, the wall of one unit will comprise, again, the wall of another, and so on. The house that shares least amount of wall space is a single-family detached house. This can be a single-storey house or at most will have three storeys, and shares neither ceiling nor walls with other residents. Research conducted by Gillis in the United Kingdom in 1977 confirmed that residents of households that were separated from each other by walls, floors, and ceilings which comprised once again the walls, floors and ceilings of another household tended to become dissatisfied with their dwellings (p. 418).

There are different investigations conducted concerning residential satisfaction by sociologists, psychologists, planners, and architects in different parts of the world. These studies develop different frameworks for residential satisfaction. The two frameworks of residential satisfaction developed by Phillips in 1990 and by Liu in Hong Kong in 1999, may be particularly useful in this thesis.

According to Liu's 1999 framework study, there are four dimensions to resident satisfaction (p. 513):

Physiological	Physical Comfort
	Health
	Safety
	Functional appropriateness
Psychological	
	Psychological comfort
	Psychological safety
	Aesthetics
Sociological	
	Privacy
	Security
	Image/status
	Community
Economic	
	Space conservation

According to Phillips (1990), there are four dimensions to residential satisfaction. These consist of satisfaction with the,

1. living environment
2. community
3. housing system
4. social relationships

We have already explained, when discussing research by Perez et al., the term 'living environment' as the area including the environment in which the house or flat is located along with the people in the environment. 'Community' and social relationships are interrelated terms that represent the neighborhood, which is one of the primary frameworks of satisfaction (p. 175). The 'housing system', on the other hand, indicates the planning, number of the rooms, areas of the rooms, walls, ceilings, floors, and all the other architectural components about the house as the area of the windows through which the sunlight can pass; and the floor covering and furniture. Phillips (1990) measured the formal dimensions of satisfaction by sub–classifying the above enumerated dimensions according to type of building in the investigation she conducted in Indiana State in the US. The building typology she used was dual: high–rise and low–rise. Philips defined the difference between high–rise and low–rise at thirteen floors, higher than which was taken as high–rise and those lower as low–rise. Thus the author found that residents in high-rise buildings were significantly more satisfied with the community and social relations. Residents in low–rise buildings, however, were more satisfied with the living environment and with the housing system. Phillips furthermore argues that measures of satisfaction by floor location resulted in finding that residents on high floors in high–rise buildings were significantly more satisfied with the housing system than those living on low floors in high–rise buildings. Residents on low floors in low–rise buildings, on the other hand, were significantly more satisfied with the living environment, with the community, and social relationships.

Aside from building-typological frameworks for research that identify satisfaction with reference to high–rise or low–rise, the floor number of the dwelling too figures among the criteria by which satisfaction is seen to vary. Moreover, satisfaction has been found to vary with respect to different dimensions depending on floor number or height. Like Phillips (1990), Wang and Chien, for example, indicate that the residents who live in higher storeys tend to feel more satisfaction with respect to the factors of privacy, noise, and air pollution in the living environment (1997, p. 90). Further research made about residential satisfaction in New York concerning the comparison between high–rise and low–rise residential buildings, has discovered negative effects of high–rise buildings such as feeling less safe, less privacy, less satisfaction, and difficulty in having relationship with neighbors (Gifford, 1997). In like manner with reference to dissatisfaction, Göregenli underlines that especially persons who are living in high–rise and high–density apartment buildings are not satisfied with the areas of the houses where they are living and with the neighborhood (1991, p. 59). In every apartment we confront lack of areas which fail to satisfy our needs. The most prominent example of this concerns the size and number of rooms, or the number of bathrooms. Therefore, residents were found to assimilate balconies into rooms or to convert balconies into rooms, and to remove separating walls in order to have bigger spaces.

In architectural studios, there is a concept which becomes particularly prominent in the critique of the function of space: privacy. Privacy is generally defined as, “selective control of access to the self or to one’s group” (Altman, 1975, p. 18). Two other definitions which many find valid are, “being apart from other people” and “being sure that other individuals or organizations do not have access to one’s personal information” (Gifford, 1997, p. 172). There are four sub–groups to privacy according to which space is classified: 1. private 2. semi–private 3. semi–public, and finally as, 4. public places (Gür, 1996, p. 97). Gür has furthermore indicated that the cause of lack of success in planning mass houses resides in unconscious planning or simply in the lack of planning in the distribution of the semi–private and semi–public places in the environment of dwellings. About the privacy inside the home, Gifford (1997) first of all emphasizes that a house is private space and the doors and walls are the components that provide privacy from different exterior factors such as neighbors and environment, and even more from other individuals sharing one’s house.

The size of the house is important for people not to become or feel isolated. Gifford also found that residents living in open-plan houses, which means the rooms were visually open to each other, did not feel isolated because of the open spaces shared with family members or friends. Other factors that were found to increase privacy were distance from neighbors and not seeing other houses from the windows. Gür (1996) found that there was lack of control over noise and odor, as well as lack of gardens, which would create semi–private places in the environment of high-rise buildings. Further research conducted in New York about the privacy in elevators, lobbies, and other public areas showed that semi–public areas in low–rise buildings were found more private than the high–rise buildings and indicated that privacy did not mean being isolated but it did not mean too many strangers in the public areas of the building, either. For, with reference to the hallways, it was shown that short hallways indicated to residents more privacy than long ones (Gifford, 1997, p. 190).

The neighborhood plays an important role in residential satisfaction (Lu, in Kentucky, 1999 and Perez et al., in Madrid, 2001). Especially research undertaken in Spain showed that the neighborhood was the most important factor in residential satisfaction, more important than even housing factors (Gifford, 1997). Fowler (in Toronto, 1987, p. 368) underlines that variety makes our ability and willingness to relate to our social and physical environment, especially in our own residential neighborhood. As buildings grow higher, it becomes more difficult for residents to perceive and know of what goes on in their neighborhood, and makes it difficult for informal social control to be exercised over the behavior of people in their immediate physical surroundings. Too many strangers and guests of neighbors come without checks and questions, increasingly more residents are shown to feel (Cozens et al., in the United Kingdom, 2001). Researchers have also found that the presence of semi–public places in neighborhoods mitigates the sense of loss of control over one's environment and makes for higher satisfaction with social relations and for sense of community. Examples to semi–public places would be elevators and entrances of the buildings. Göregenli (1991), for example, points out that lack of semi-public places prevents neighborhood dwellers from appropriating their environment and from trusting their neighborhood because they have not met or do not know them. To be sure, very many residents do not know even the people who live next door to them.

Cozens et al. (2001) imply that in the research they did in the United Kingdom with the cooperation of police officers, burglars, and residents, the high-rise image has been found negative ("not satisfactory") by all the groups because of the lack of security in the entrances of the buildings. Therefore fear and crime would increase and satisfaction would decrease. One noteworthy indication in Cozens et al.'s investigation included a burglar's statement, made in the interview with the researchers. This statement was: "I would feel happy to commit crime here" (p. 224). The burglar expressed his feeling with that sentence about high-rise blocks because he knew there was lack of security and there were problems in the neighborhood. This expression of the burglar's is sufficient for people to fear to live in a high-rise. As a result of lack of security in the neighborhood, the crime rate increased. Göregenli (1991) and Eyüce (1991) further argue that crime occurs in buildings on account of too many floors with wide corridors, security problems at the entrances, and insufficient private places to meet with other residents who are living in the same building. In this point architects and planners must work together to solve the problems and thereby possibly reduce both crime as well as the fear of crime.

The main items of the physical environment include sunlight, wind, natural light, air, noise, building use, open space, skyline, landscape, traffic, and public circumstances (Wang and Chien, 1997, p. 85). All of these items affect human behavior and satisfaction. It has been found that a person's behavior is influenced by satisfaction (Altaş and Özsoy, 1999). But it has also been found, as we saw, that satisfaction is influenced by behavior. For many planners and community activists these claims are accepted as true without demand for further proof: improved design is assumed to create improved behavior (Talen, in Texas, 1998). Influence of the urban environment on human behavior, moreover, has been clearly observed. Studies tracing this phenomenon made distinctions along three vectors, viz. between public and private interaction, among different types of crime, and between adults and children (Fowler, 1987). For locating the precise ground of residential satisfaction researchers also investigate separately demographic sub–groups, like the elderly, women, and children. These are constructed as sub–groups who require special attention and particular research.

In high-rise living, the level of the floor of residency has been shown to bear effect on dwellers. According to Gillis (1977), loneliness and isolation are the results of living in upper storeys. The reasoning behind Gillis' finding is as follows: persons who live on higher floors depend on their dwelling units more than persons who live on lower floors, who have more ready access to the outside. Satisfaction in this regard changes from person to person as well as between the sexes. As an illustration of the latter kind of variation, because of the nature of women, it is known that they are more bounded to their homes than men and as a result their satisfaction increases by choosing the correct floor level to live. Thus one may conclude that women are more affected by building height and density than men (Gillis, 1977, p. 420).

Besides sex, the term 'high density' has been found to constitute another factor affecting residential satisfaction and different results have been obtained for men and women. Arguing against Gillis, Gifford (1997) indicates that men were more influenced by density, as a result of which their mood and social behavior became hostile. Women were not affected as much as men because they were more resilient in handling stress. As regards crowding, Jacinto and Mendieta (1999) show, in the investigation they did in Malaga, Spain, that there is a potential effect of crowding in terms of psychological distress. Adding to Jacinto and Mendieta's findings, Gifford (1997) indicated that people living in high–rise buildings found themselves feeling the crowdedness and experiencing a lack of privacy, safety, building satisfaction, control and less relationship with neighbors. Similarly Eyüce (1991) has found that the basic problem about the high-rise buildings was the density. On the other hand, Gifford confirmed in his book in 1997 that there were different findings concerning people who were living on higher floors. The reasons were as follows: first of all the higher floors had more visual expanse and visual escape than the lower ones. Secondly, residents on higher floors felt less crowded in comparison to those living on lower floors because not as many strangers were likely to pass through the higher floors as did on lower floors. As an illustration of Gifford's demonstration, we may take two residents living respectively on the tenth and second floors. An outsider coming into the building is compelled to pass through the second floor to go to the tenth floor or the floors below or above the tenth.

The areas implied by 'crowding' might be city or town, neighborhood, an apartment, or the smallest scale of one's residence, even the room of a residence. In this thesis the 'crowding area' includes not a city indeed, but an apartment, the neighborhood and is defined especially as one's residence. In this context, architectural plan differences become very important in those buildings which constitute their 'residence' for people. Conscious planning and design decrease crowding and increase satisfaction. The number of people living in the flat, the number of rooms (shared or separate), the number of bathrooms, in short, the type of housing and residents have an important effect on residential crowding (Nagar and Paulus, 1997, p. 306). About architecture Gifford (1997) added that hallways constitute another factor to affect crowding. Moreover, he argued, long hallways increase the sense of crowding and give rise to stress. He found other factors that influenced residential satisfaction such as sunlight (brightening room with light colors decreases the sense crowding), ceiling height (as the height of the ceiling increases the sense of crowding decreases), walls of the room (straight walls decrease and curved walls increase the sense of crowding), floor covering, furniture arrangement (lots of furniture increase the sense of crowding), and temperature (high temperature increases the sense of crowding).

After looking at the effects of the sense of crowding on men and women, children emerged as a different group to be influenced by crowding. About children it has been found that if the density of the household was high, then there emerged problems such as expressions of discontent and restlessness and inability to focus (Gifford, 1997). Children thus comprise yet another dweller sub–group whose satisfaction requires special attention and specific research. The physical environment of the dwelling where children live had, Gifford found, an important effect on them. For mitigation, there must be public and communal outdoor spaces for children to play and those places must be designed sensitively, through an overall site plan. It should not be forgotten that the most frequent users of public and communal outdoor space in the family are the children (Davis, 1977). Thus, as regards children's satisfaction, an early report from Denmark, dated 1969, indicated that children residing in high buildings were scared of playing outside on their own. In the same opinion, parents were also reluctant to allow their children to go outside to play (Gifford, 1997). Recent research has moreover indicated that children living in high-rises are less mobile and more affected by their physical surroundings (Fowler, 1987). Goleman (1987) has underlined that children on the lowest floors in all apartment buildings fared better in relation to their friends and family than the children who are living in higher storeys. Life in a high-rise apartment can present hurdles to a child's psychological growth, particularly to the young child's need to develop a sense of autonomy.

Yet another subgroup whose satisfaction requires special attention and specific research are elderly people. Thus, elderly people are prone to feeling lonely and find themselves in need of people with whom to talk and experience communication. It may be safely assumed that elderly people cannot change their homes easily because they have been occupying their residence for long years, and have memories and friends attached to that residence. Exceptions are offered by situations such as danger of collapsing or damage in an earthquake. The friends in the buildings are neighbors who are as important to them as their home (Perez et al., 2001). At this point, the question to be raised is: 'Do elderly people who are living in high-rises have enough neighbors to have friendship with?' Ballesteros at al. (1998) have found that both personal and environmental factors influence elderly living and satisfaction.

3.4 Summary

Residential satisfaction is complex to measure and has many determinants to be researched. There is much research conducted about residential satisfaction and the factors and effects have been shown in this chapter. This chapter has discussed factors in and their impact on residents' design initiative and tasks to be undertaken to dissolve dissatisfaction. These have been shown to be comprised of social relationships, the environment, the building, and eventually, the housing system including such details as color, wall shape, area size, floor covering, and furnishings of the interior.

In conclusion, studies in residential satisfaction must include both space and the users of the space. The planning must be creative and design elements lead to greater satisfaction. The aim should not be simply to make a physical product; the aim should be the suitableness of the product to human life.

Chapter 4 below will examine the physical, material, and architectural traits of Mavişehir. The literature pertaining strictly to this large-scale residential project in Izmir, Turkey, will be reviewed at the end of that chapter.

CHAPTER 4

OVERVIEW OF THE MAVİŞEHİR PROJECT

4.1. Introduction

Similarly to the world, Turkey came face to face with population growth that bore significant results in terms of the direction building activity would take.
Toward the end of the nineteenth century, with the onslaught of migration into Anatolia from the lands the Ottoman Empire was surrendering through wars, but later again periodically in the twentieth century, influx of population to the cities caused new issues in building of residences.[5] Especially Istanbul, but eventually Ankara and Izmir, along with cities like Adana, Bursa and Mersin, came to experience major population growth through migration starting in the 1950s, but more prominently in the 1970s and then, 1980s. Because of the population growth in certain areas, there naturally resulted, as it still continues to do, housing shortage. Government found different ways to solve the housing shortage problem and one of the answers was the Housing Estate Bank.[6] This institution provided housing credits and low–interest rates for middle to higher income persons. Other projects developed by the Housing Estate Bank in the province of Izmir include Gaziemir, Bostanlı, and Atakent. Mavişehir is among the latest projects funded by the Bank and will be examined in the present chapter. Besides the Housing Estate Bank's projects, there have been other public housing projects developed in Izmir, such as Egekent–1 (8,548 residences), EVKA–2 (3,120 residences), Izkent–2 (960 residences), Osman Kibar EVKA–5 (3,378 residences), Çiğli Koop. (5,000 residences), Buca EVKA–1 (4,492 residences), Bornova EVKA–3 (1,408 residences), Egekent–2 (1,500 residences), Bor–Koop. (9,600 residences), Yeşiltepe EVKA–4 (5,529 residences), EVKA–5 (3,377 residences), EVKA–6 (999 residences), EVKA–7 (999 residences), Egekent–3 (770 residences), İzkent–1 (3,010 residences), Kon–Kent (2,070 residences), Buca Koop. Bağ–Kent (2,313 residences), Harmandalı Association for

5 On migration to Anatolia and cities, see Tekeli (1998, 1999) and Karpat (2002, 2003).

6 'Housing Estate Bank' is used to render the Turkish 'Emlak Kredi Bank'. I borrow the term from Altaş, 1998. The 'Emlak Kredi Bank' in fact corresponds to the 'home loan bank' or the 'housing mortgage bank.'

Home Construction Co–operative (20,000 residences), Narlıdere Municipality Nar–Kent (2,000 residences) (Çağlayan, 1997, p. 4).

According to the Metropolitan Master Plan of Izmir, one of the areas which are chosen for building high–rise blocks is Mavişehir. In her 1997 thesis, "Location of High–Rise Buildings in Izmir," Sarıkaya has demonstrated the presence of other areas suitable for building high–rises like the Salhane, Mansuroğlu, and Manavkuyu. From Sarıkaya's point of view the sites chosen for high–rise construction should be at a distance from the historical regions of Izmir (p. 89). She has moreover underlined that choice of location for high–rise buildings must be determined by studies devoted to the following: the Metropolitan Master Plan, city silhouette studies and estimations, geological studies, city population densities and construction densities, historical districts, architectural structures, and layout of the city (p. 88). One ought to add to Sarıkaya's list, vulnerable natural environments, Ramsar sites, and other ecologically significant areas such as 'important bird sites'.

In this chapter the Mavişehir Project is examined, analyzing some of the relevant facets enumerated above, starting with the choice of location. It deals strictly with the physical architectural properties of the project. It proceeds, however, to review the research devoted to the Mavişehir Project.

4.2. Location of the Mavişehir Project

The Mavişehir Project is located in the township of Karşıyaka in the Greater Municipality of Izmir. It is 6 km to Karşıyaka Center, and 15 km to the Izmir city and business center Konak. The project borders on one other Housing Estate Bank residence projects: Thus Mavişehir is flanked by Atakent on the east, the Gediz Plain on the west, a squatter neighborhood on the north–east, the Izmir–Manisa–Ankara railway triage area on the north and north–west, and the Izmir Gulf on the south.

The Gediz Delta, which Mavişehir borders on the west, is a wetland designated as international IBA (Important Bird Area). "The delta houses more than 25 bird species including several globally threatened species such as the Dalmatian Pelican *(Pelecanus crispus),* Lesser Kestrel *(Falco naumanni)*, Pygmy Cormorant (Phalacrocorax pygmeus), and the Red-breasted Goose (*Branta ruficollis)*" (Arsan, 2003, p. 254).

Moreover, 14,900 ha of the total area has been declared a Ramsar site.[3]

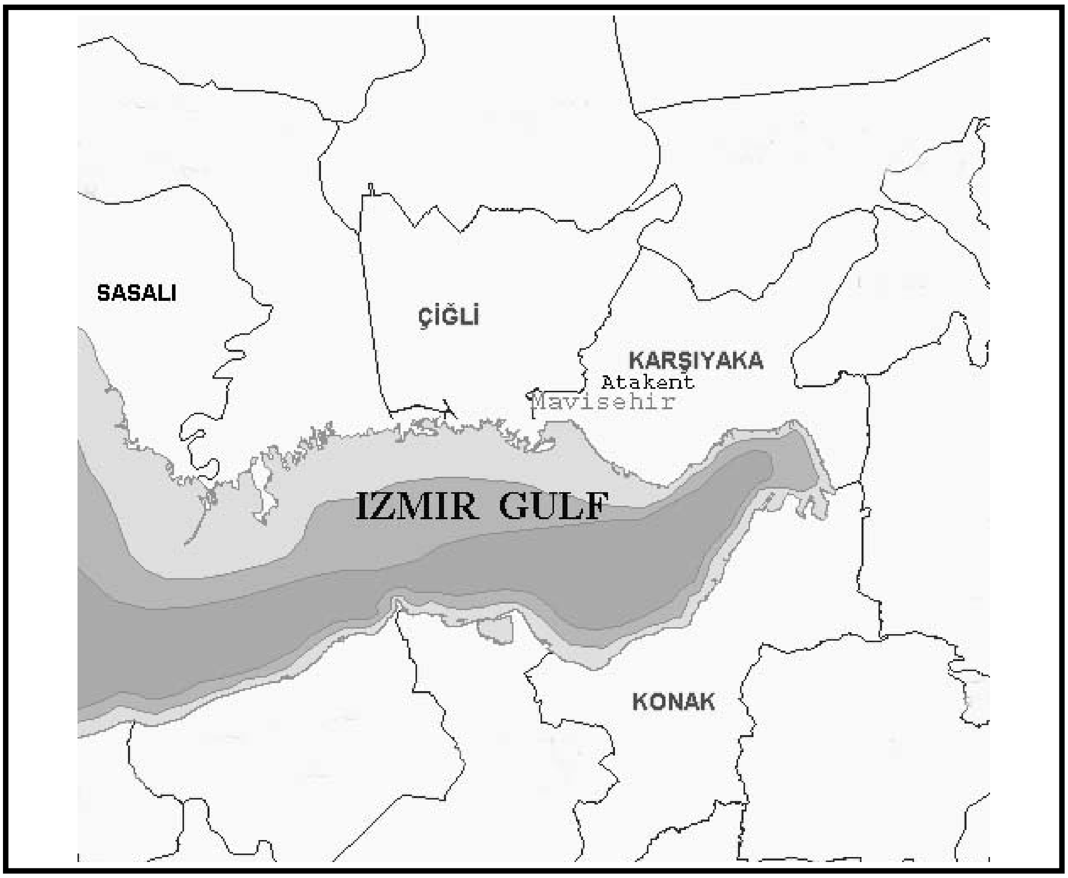


Figure 4.1 Location of Mavişehir Project

The project area is separated into the two zones of north and south by a ring road of 35–meter length. The Housing Estate Bank started building the project from the south of the Master Plan, then continued to build the new buildings to the north starting in 1997.

Mavişehir Project's building areas are shown in the Metropolitan Master Plan in Figure 4.2 below. The boundaries, relative area sizes, and building blocks of the projects may be clearly discerned on the Master Plan.

[3] "The convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources" ("The Ramsar," 2004). The seashore between the Greater Izmir Municipality Treatment Plant in the southern Gediz and the visitor center of the Ministry of Forestry on the western part of the delta including the Çamaltı Salinas was included in the list of Ramsar sites of the world, No. Turkey 7TR009, in April 1998 (Arsan, 2003, p. 254).

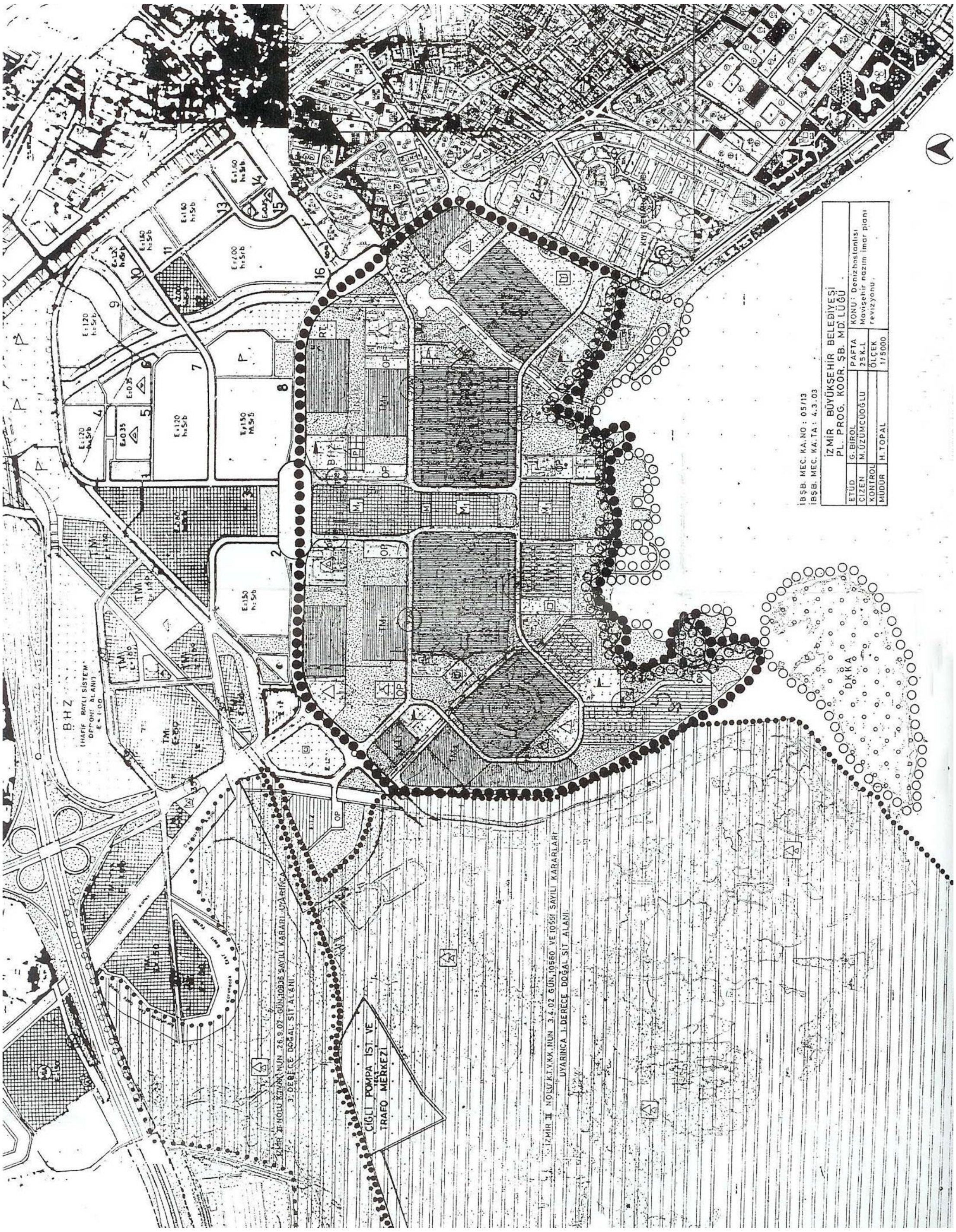


Figure 4.2 Metropolitan Master Plan of Mavişehir Project

4.3. Investigation of the Mavişehir Project and Its Architectural Properties

Mavişehir is a project which is located in 17,000 urban blocks with social and leisure facilities such as sports areas, shopping mall, green areas, car park, and education centers.

The original aim of the Mavişehir Project was to create an area for people that would contain areas for all fundamental requirements of contemporary life including zones of residence, commerce, cultural activity, recreation, green sports areas, and service regions.

The project was planned for building in four steps, as Mavişehir I, Mavişehir II, Mavişehir III, and Mavişehir IV. I, II, and III have been built so far, in January 2005. Construction of Mavişehir IV is going to be launched in the coming weeks. Mavişehir I consists of conglomerations of high-rises and villas, whereas Mavişehir II consists of high-rises alone and Mavişehir III of villas alone. High-rise typology is designated by bird names, as if recalling the Important Bird Area just to the north-west, in Mavişehir I; and archaeological protection areas in Mavişehir II.

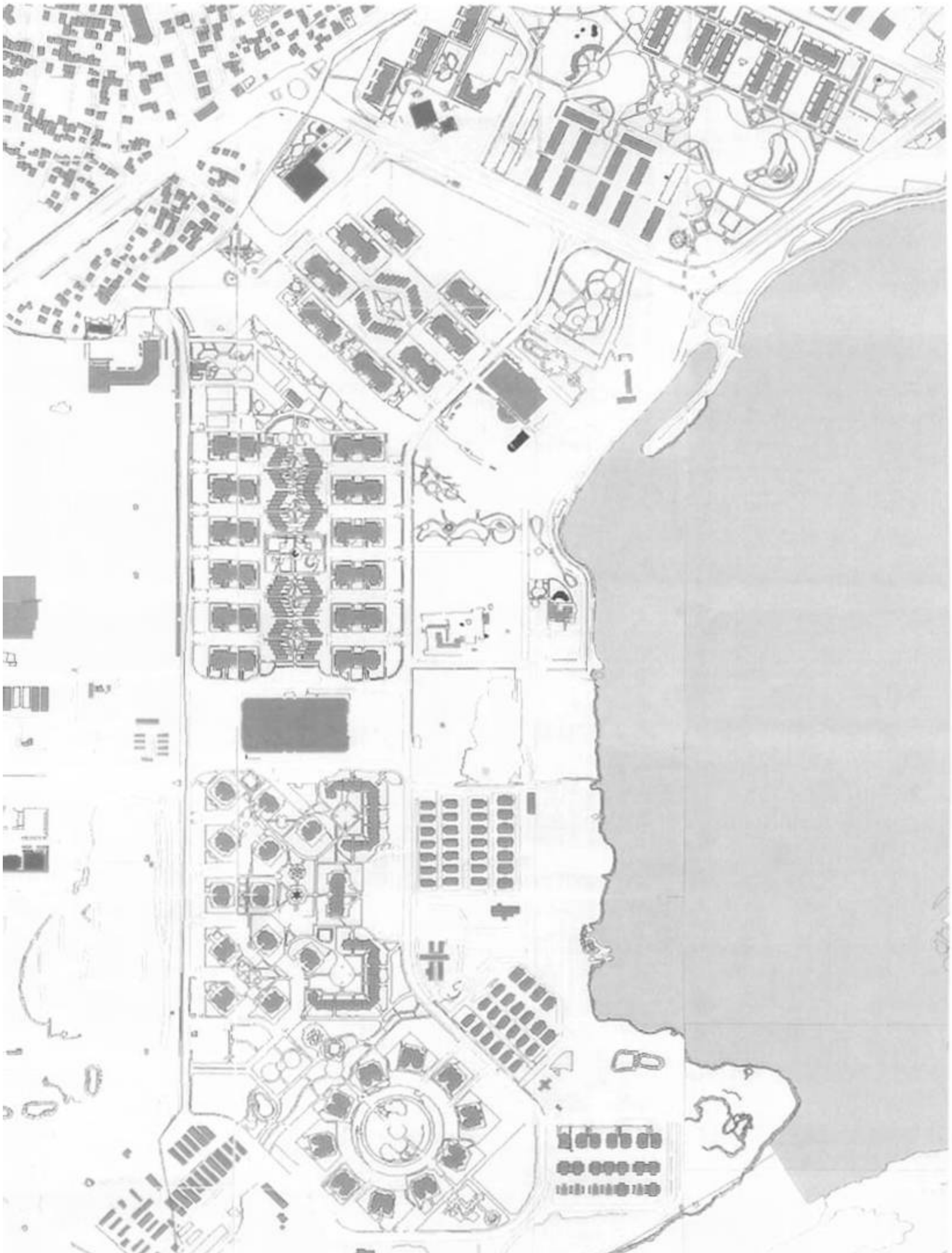


Figure 4.3 General Settlement Plan of the Mavişehir Project

4.3.1. Mavişehir I

Mavişehir I is built on two urban blocks (260,000 m^2) and consists of 20 apartment blocks, with 2,784 residences in 16, 18 and 19 storeyed apartment blocks. It also houses 4 kindergartens, one office of the *Muhtar*, one police station, and 88 villas. To sum up, Mavişehir I consists of 2,872 residences. The types of the blocks are Pamukkale and Selçuk.

There are a total 20 apartment blocks which are distributed into 3 apartment blocks of 16 storeys, 10 apartment blocks of 18 storeys, and 7 apartment blocks of 19 storeys. 341 residences in the apartment blocks are one-room units with an area of 69.58 m^2. 341 residences have two rooms with a total area of 115.38 m^2; 1,420 residences have three rooms with an area of 152.00-148.46 m^2; and finally 682 residences have four rooms with an area of 170.85-176.21 m^2. Each of the apartment blocks has two entrances, with two elevators serving each entrance. From the elevator lobby on each floor, four residences are accessed. Thus there are eight residences on each floor.

Figure 4.4 View of Mavişehir I

Figure 4.5 View of Mavişehir I

Figure 4.6 View of Mavişehir I

The plans represented in Figures 4.7 and 4.8 respectively show the ground floor and the typical floor plans of the higher floors. Thus, not only are the Pamukkale and Selçuk apartment blocks identical in floor plan, all floors are identical with each other with the obvious exception of the respective ground floors.

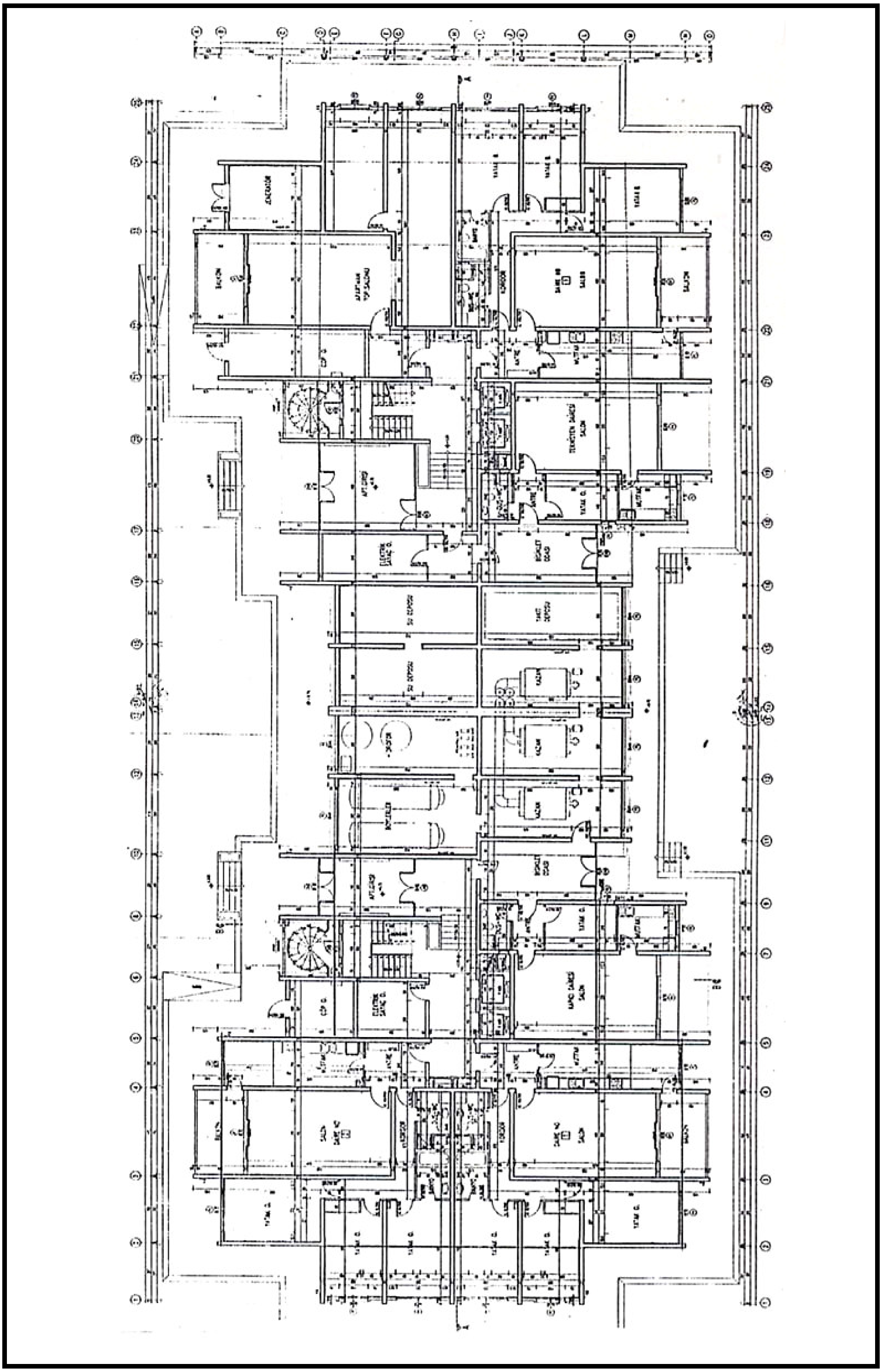


Figure 4.7 Mavişehir I; Pamukkale and Selçuk Ground Floor Plan

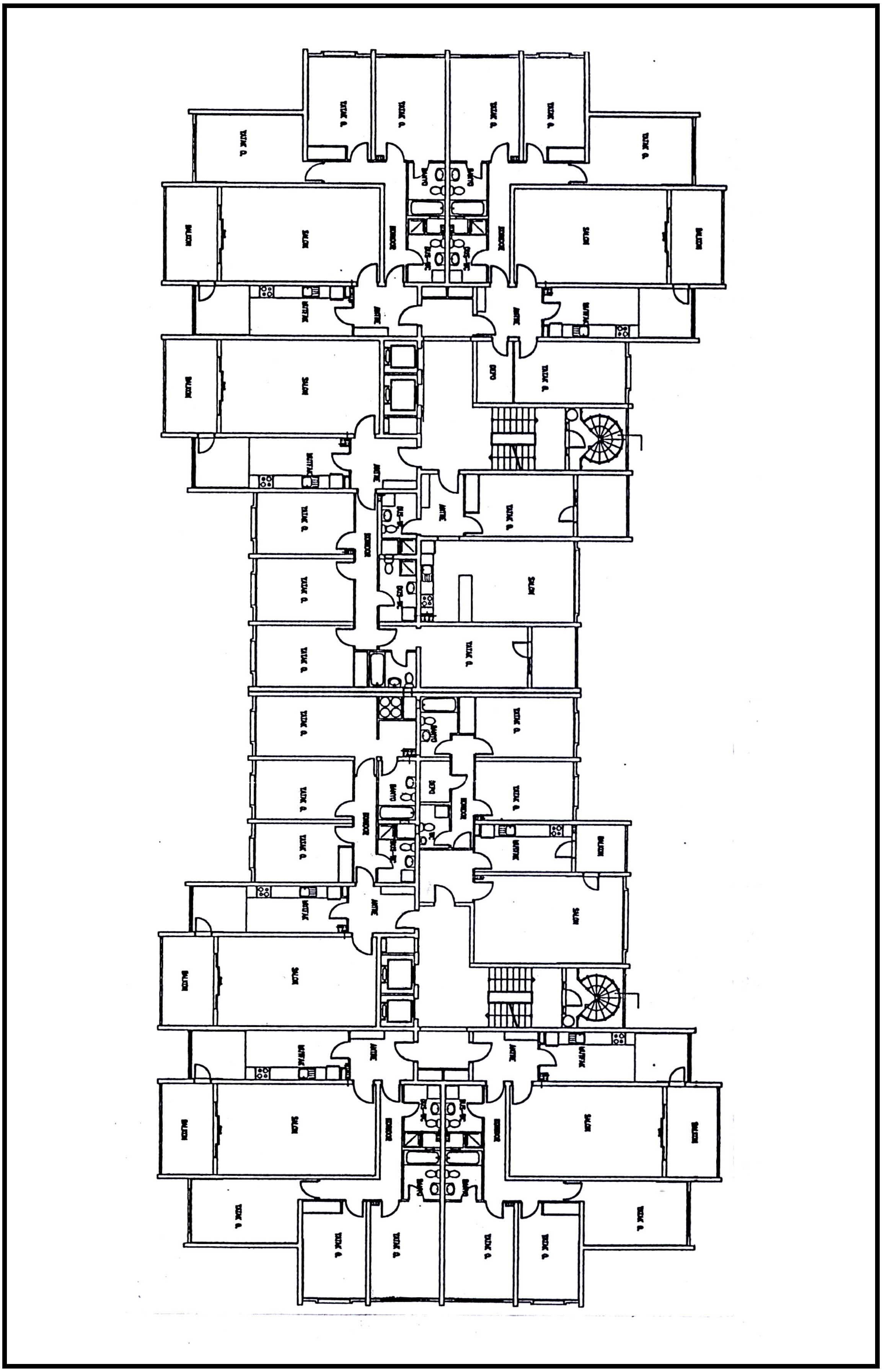


Figure 4.8 Mavişehir I; Pamukkale and Selçuk Typical Floor Plan of floors higher than the ground floor

The 88 villas are located between the Pamukkale and Selçuk apartment blocks although the first settlement plans showed the place of the villas as lying to the south of the high-rises, i.e. with open view on the sea. In the construction phase, however, the location of villa and block was reversed. Now the high-rises tower on the south of Mavişehir I, with the villas lining the north.

Figure 4.9 Villas among Apartment Blocks in Mavişehir I

The infrastructure facing the waterfront in Mavişehir I includes pedestrian roads, landscape planning, play grounds for children, bicycle roads, system for collecting, draining, and dispensing rain water and sewerage, electricity, clean tap water, and cable TV. Inside the project, post office and police precinct are also present. There is also a canal system built inside Mavişehir I to collect the rain water coming from the mountains of Şemikler and Yamanlar in the north and north-east of the project. Şemikler and Yamanlar also house residential areas attached to the municipality of Karşıyaka.

Figure 4.10 Canal collecting the rain water coming from Şemikler and Yamanlar

Residential units in Mavişehir I contain refrigerator, oven, kitchen fan, laminated kitchen cupboards in the kitchen; coat closet at the residence entrance, closet, PVC blinds, PVC work of joinery, central heating system, water reservoir and 24-hour hot water is avaible in all residential units.

Because Izmir is located in a first-degree earthquake zone, the foundation and ground work ought, of course, be prepared and constructed with utmost care to regulations. Pile size in the foundation varies in Mavişehir I buildings according to building height and number of storeys. In all the high-rises of Mavişehir I, approximately 560 piles have been used with a length of 30 m. or 35 m. and a radius of 0.65 m. each.

4.3.2 Mavişehir II

Mavişehir II was the second stage of the Mavişehir Project and was completed in 1997. In contrast to Mavişehir I, Mavişehir II introduced rhythmic recessing and apses and jumps on the façade, which aesthetically give it dynamism. It is constructed on four urban blocks of a total area of 512.803.97 m^2 and consists of 38 apartment blocks with 2,448 residential units. The names of the blocks are Albatros (albatross), Turna (crene), Kuğu (sway), Kırlangıç (swallow), and Flamingo (flamingo), reiterating, as already pointed out, names of vulnerable bird species. These apartment blocks vary between 7 and 22 storeys. 406 residences have four rooms with an area of 173.12-184.25 m^2; 1,326 residence have three rooms with an area of 157.27-183.74 m^2; 460 residences have two rooms with an area of 112.32-149.84 m^2; and 252 residences have one room with an area of 73.54-97.12 m^2. Mavişehir II also has duplex residential units (with an area of 138.35-195.00 m^2) on the top floor of each apartment building (Emlak GYO; Gürbüz, 2004). There are no detached or semi-detached houses (or villas) in Mavişehir II.

Figure 4.11 Kuğu, Kırlangıç, Flamingo and Albatros apartment buildings in the Mavişehir II Project

All of the apartment buildings in Mavişehir II have the following fixtures: granite ceramics in each building lobby, two elevators per building, central heating system, uninterrupted power supply in common areas, audio system door control, bevelled bizote floating mirror, ceramic-covered bathroom and kitchen flooring and walls, wall-to-wall carpeting in living and all other rooms, closet in one room, steel safe, and blinds on the balconies. The counter-top stove, dishwasher, refrigerator, waste–disposal unit, kitchen fan, laminated modular kitchen counters are avaible in all residential units in the apartment buildings.

There are 10 Albatros apartment buildings in the Mavişehir Project. This type consists of 22 storeys including the ground floor. The Albatros buildings are designated as A1, A2, A3, A4, A5, A6, A7, A8, A9, and A10. There are 89 residential units in each Albatros high-rise. Of the 89 units, 34 residences have four rooms with a total area of 207.51 m^2; 31 residences have three rooms with a total area of 173.83 m^2; 8 residences have two rooms with a total area of 151.57-173.70 m^2; and 16 residences have one room with a total area of 82.89-109.38 m^2.

Figure 4.12 Mavişehir II; View of Albatros Apartment Buildings

Figure 4.13. Mavişehir II; View of Albatros Apartment Buildings

Below, in figures 4.14 to 4.19 (inclusive), the floor-plan typology of Albatros apartment buildings are shown starting with the ground-floor plan up through the 21st, and highest, floor.

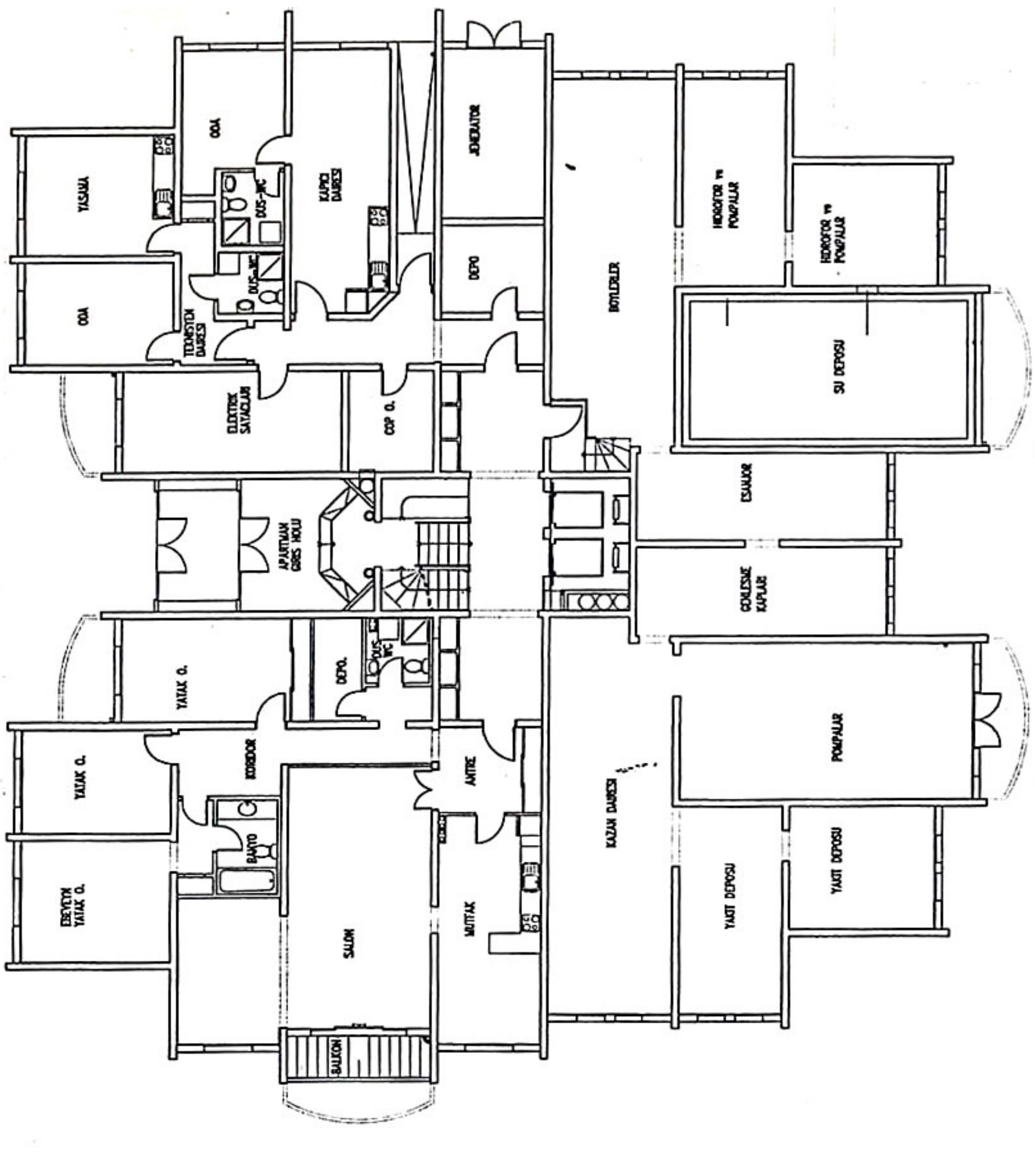


Figure 4.14 Mavişehir II; Albatros Ground Floor Plan

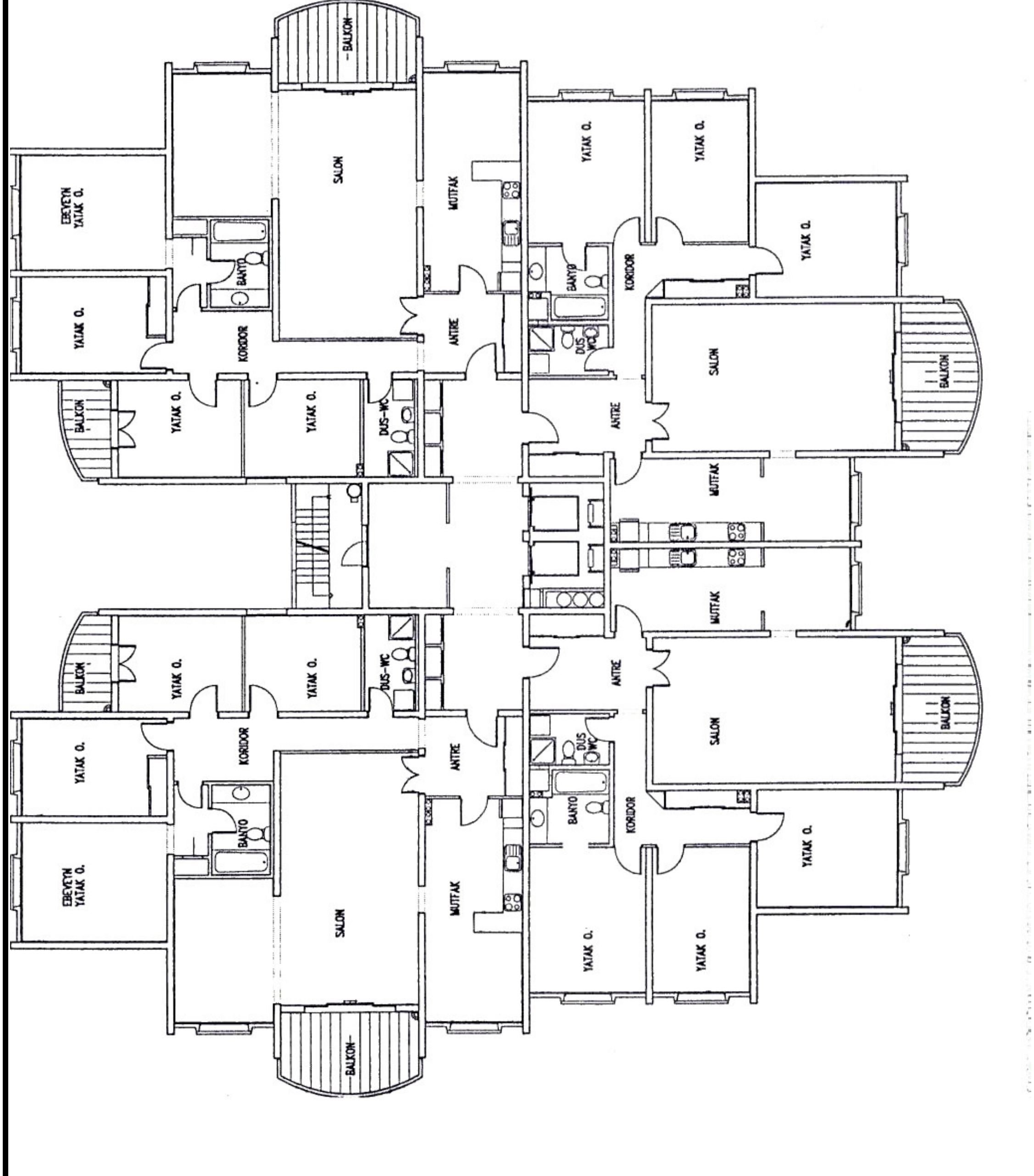


Figure 4.15 Mavişehir II; Albatros 1st–16th Floor Plan

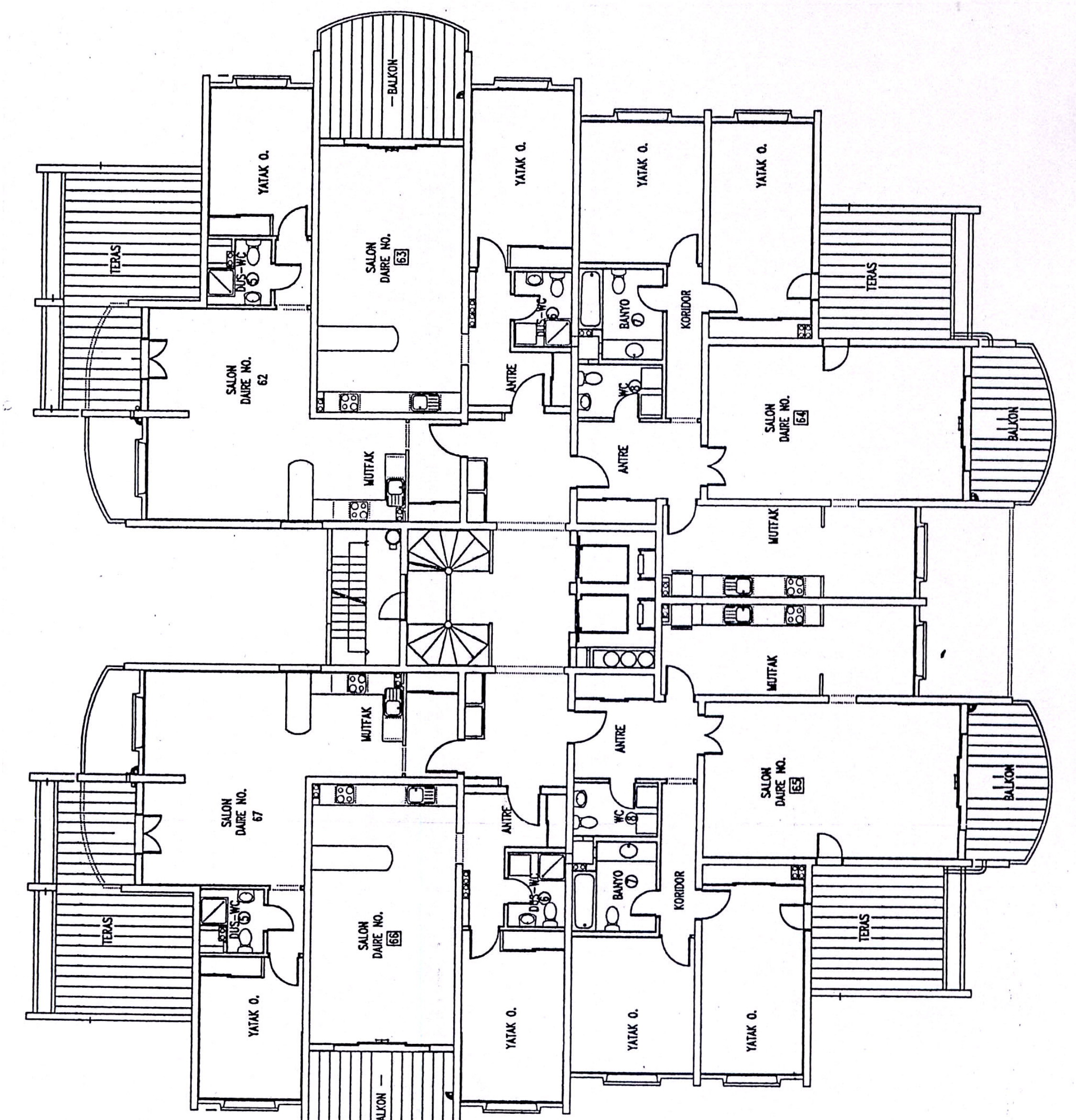


Figure 4.16 Mavişehir II; Albatros 17th – 19th Floor Plan

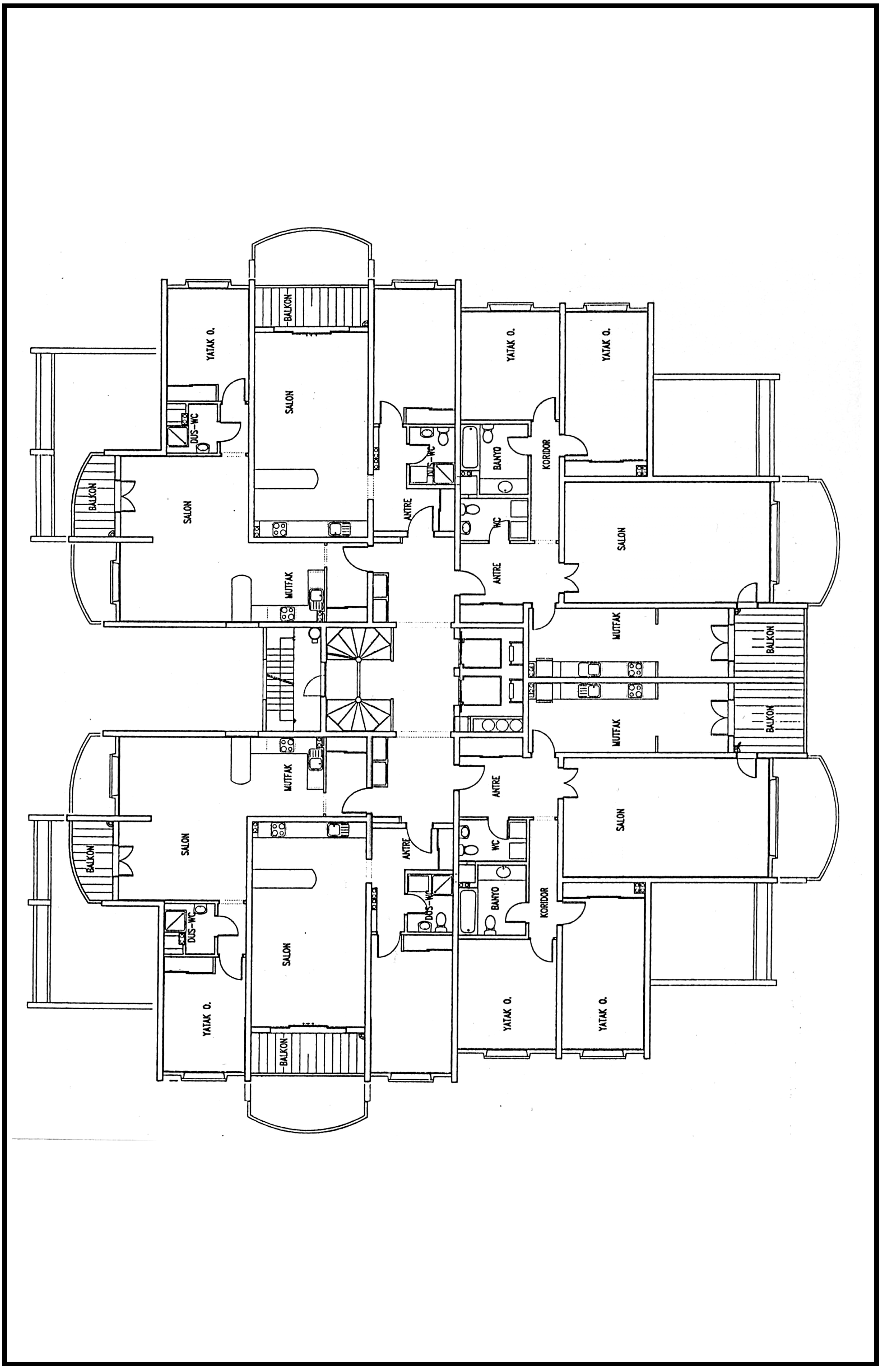


Figure 4.17 Mavişehir II; Albatros 17th – 19th Floor Plan

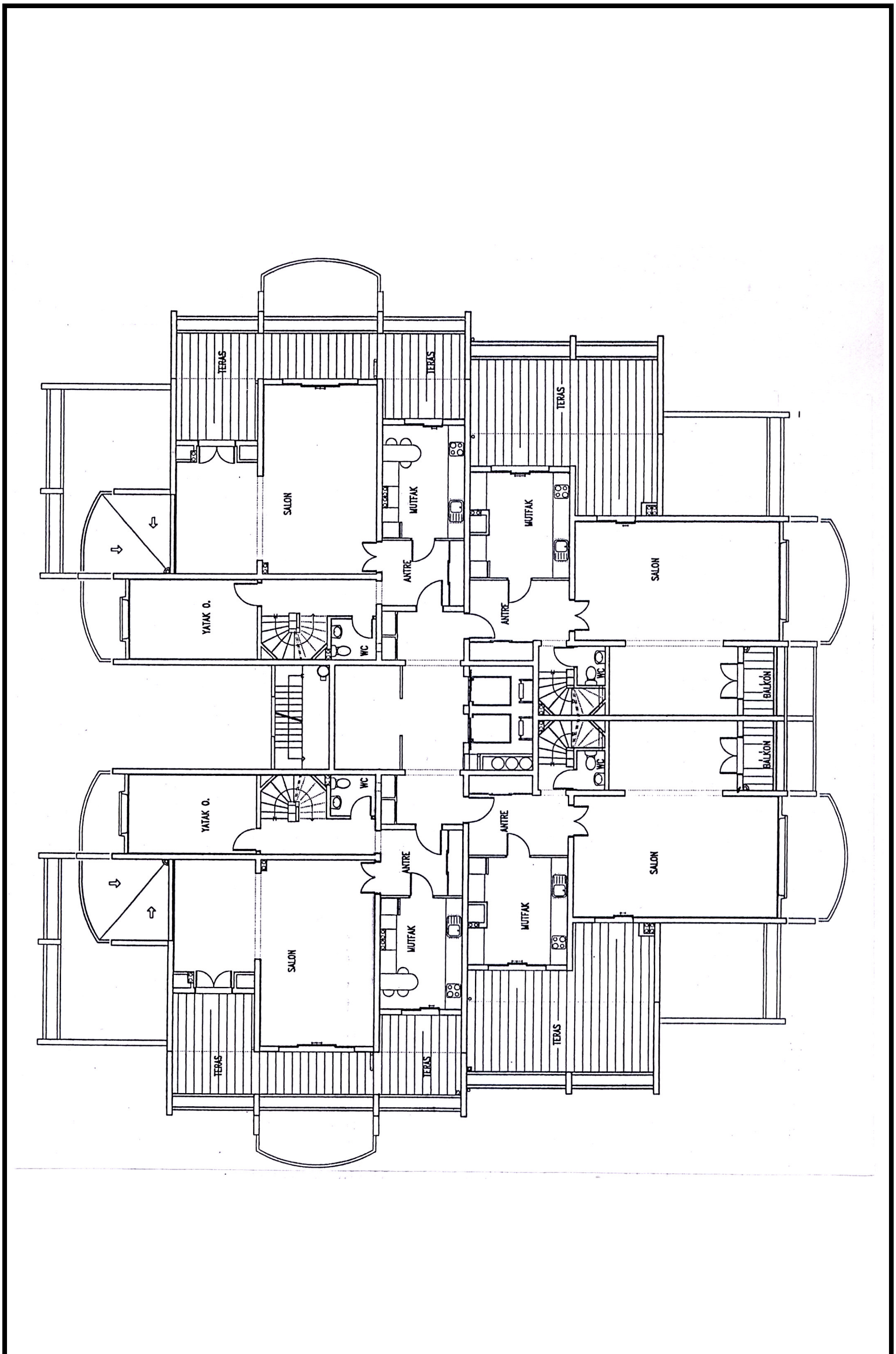


Figure 4.18 Mavişehir II; Albatros 20th-Floor Plan

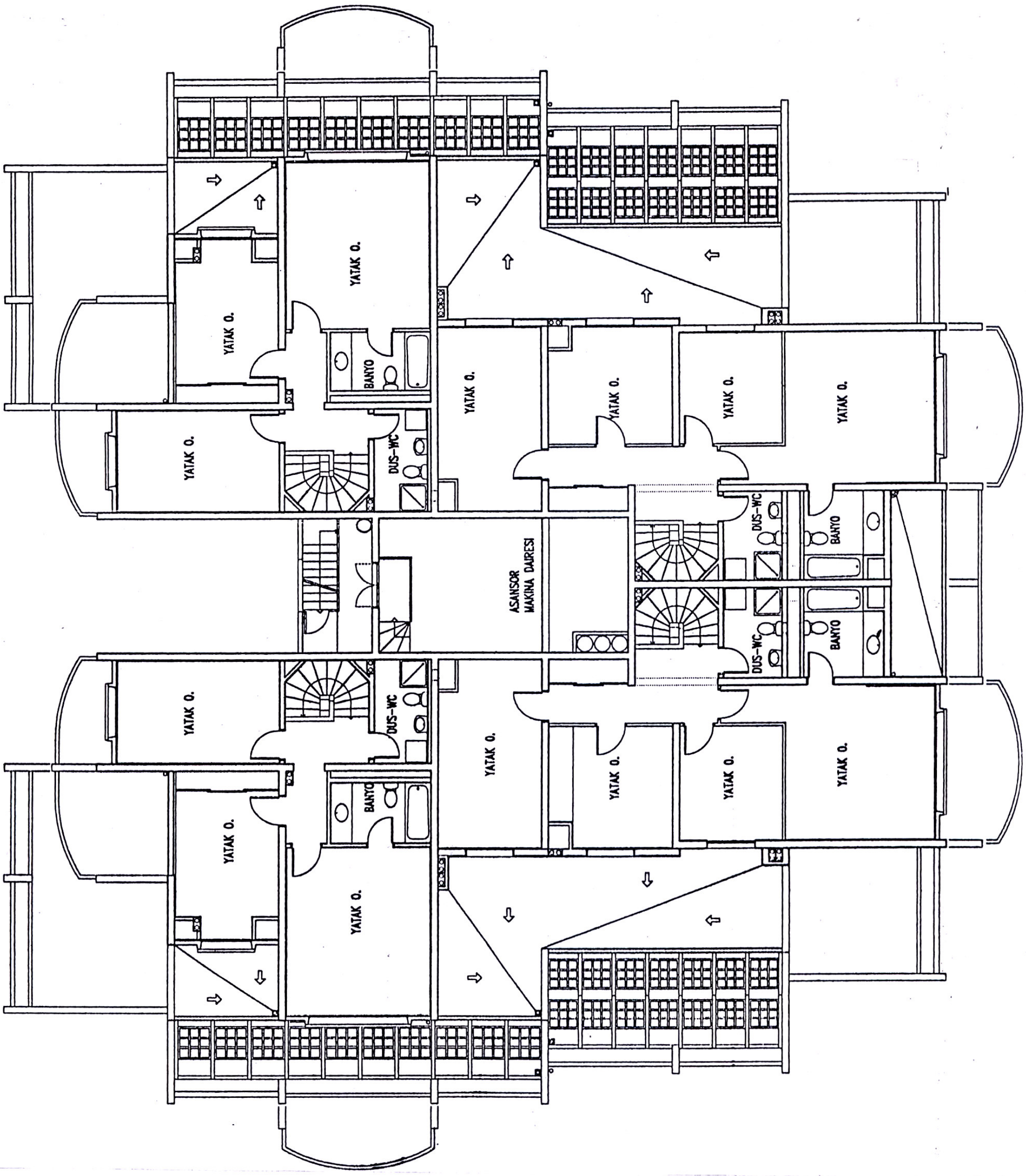


Figure 4.19 Mavişehir II; Albatros 21st-Floor Plan

There are 10 Flamingo Apartment buildings in the Mavişehir II Project. This type consists of 23 storeys including the ground floor. The Flamingo buildings are designated as A11, A12, A13, A14, A15, A16, A17, A18, A19, and A20. Three of the apartment blocks have 80 residences while nine of them have 84 residences. 58 residences have three rooms with an area of 121.67 -149.35 m^2 each; 22 residences, of which two are duplex, have two rooms with an area of 101.63-147.73 m^2 each. 60 residences, of which two are duplex, have three rooms with an area of 121.67-149.35 m^2 each; 24 residences have two rooms with an area of 101.63-124.18 m^2 in 9 apartment blocks which have 84 residences in total.

Figure 4.20 Mavişehir II, View of Flamingo Apartment Buildings

Below, in figures 4.21 to 4.29 (inclusive), Flamingo apartment buildings' floor plan types are shown starting with the ground-floor plan and ending with the plan of the 22nd floor plan.

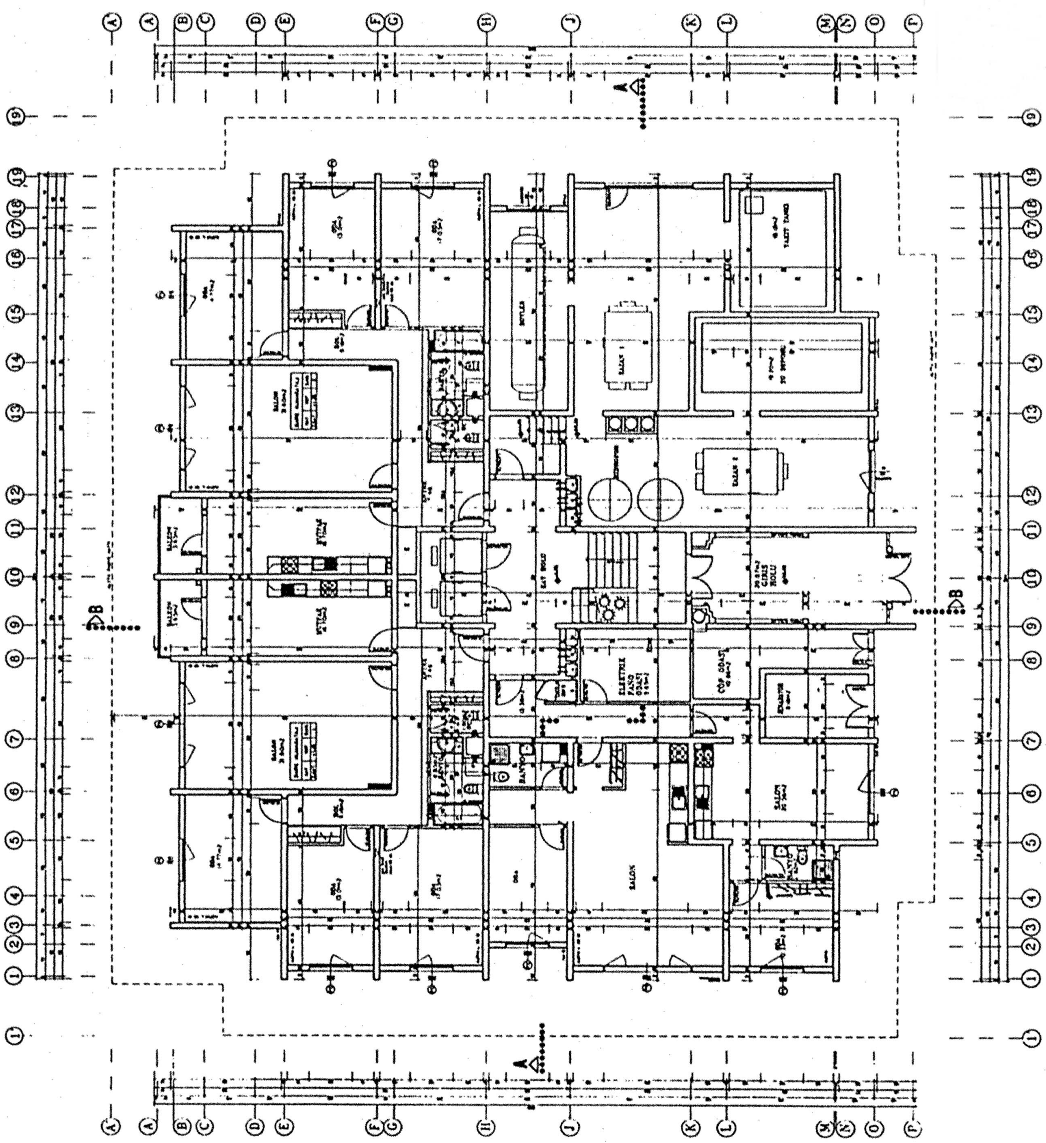


Figure 4.21 Mavişehir II; Flamingo Ground-Floor Plan

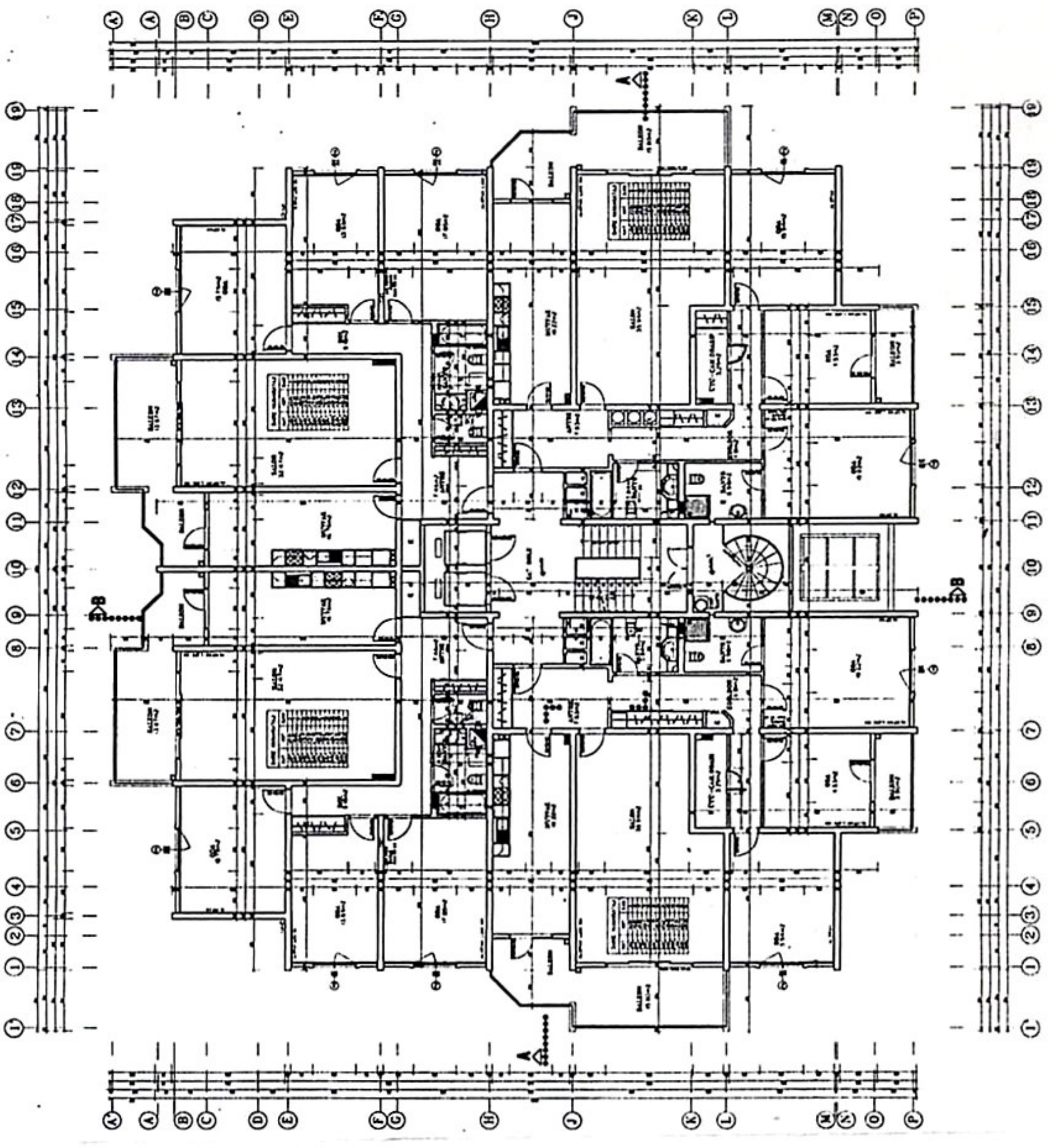


Figure 4.22 Mavişehir II; Flamingo 1st – 13th Floor Plan

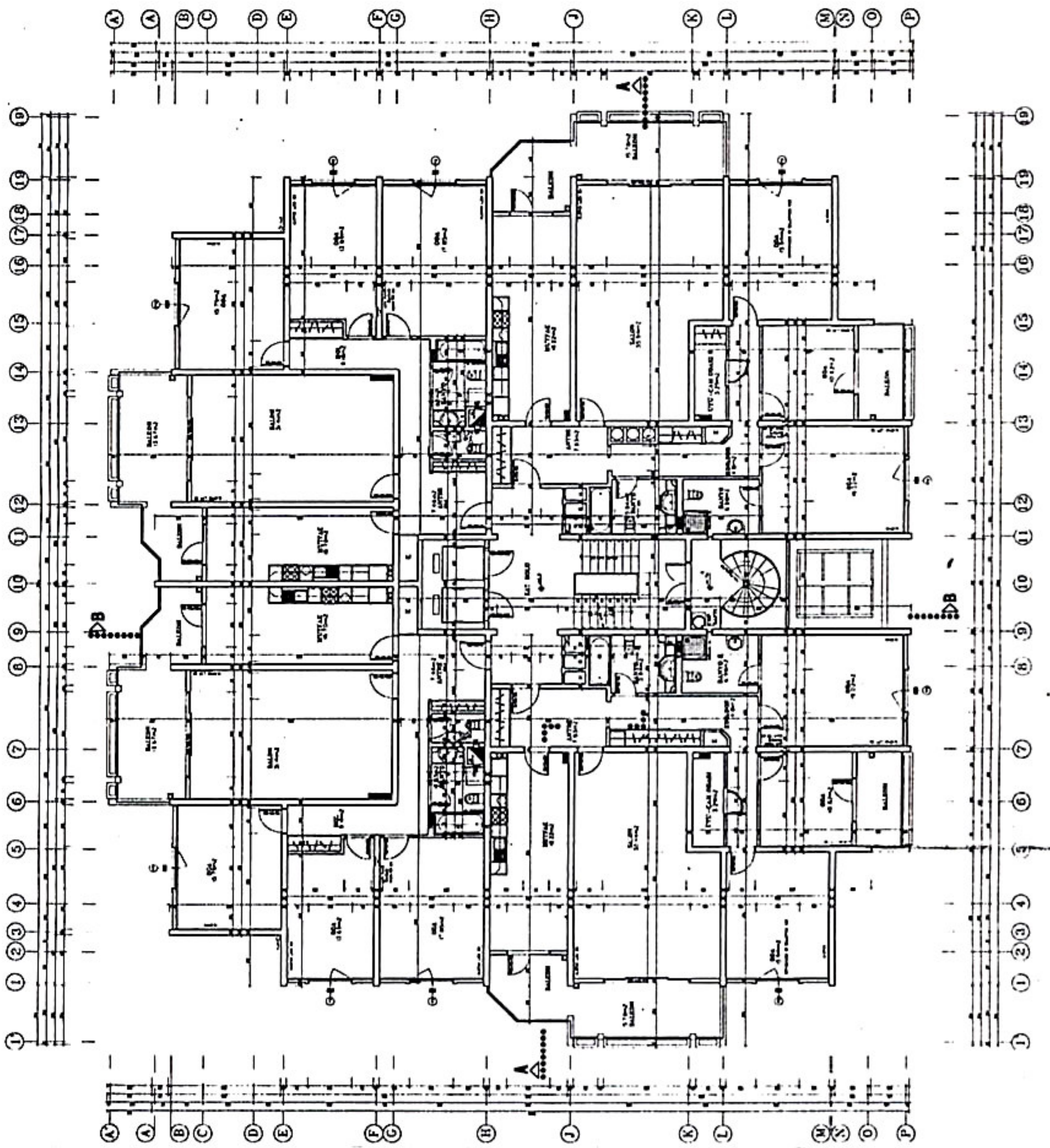


Figure 4.23 Mavişehir II; Flamingo 14th-Floor Plan

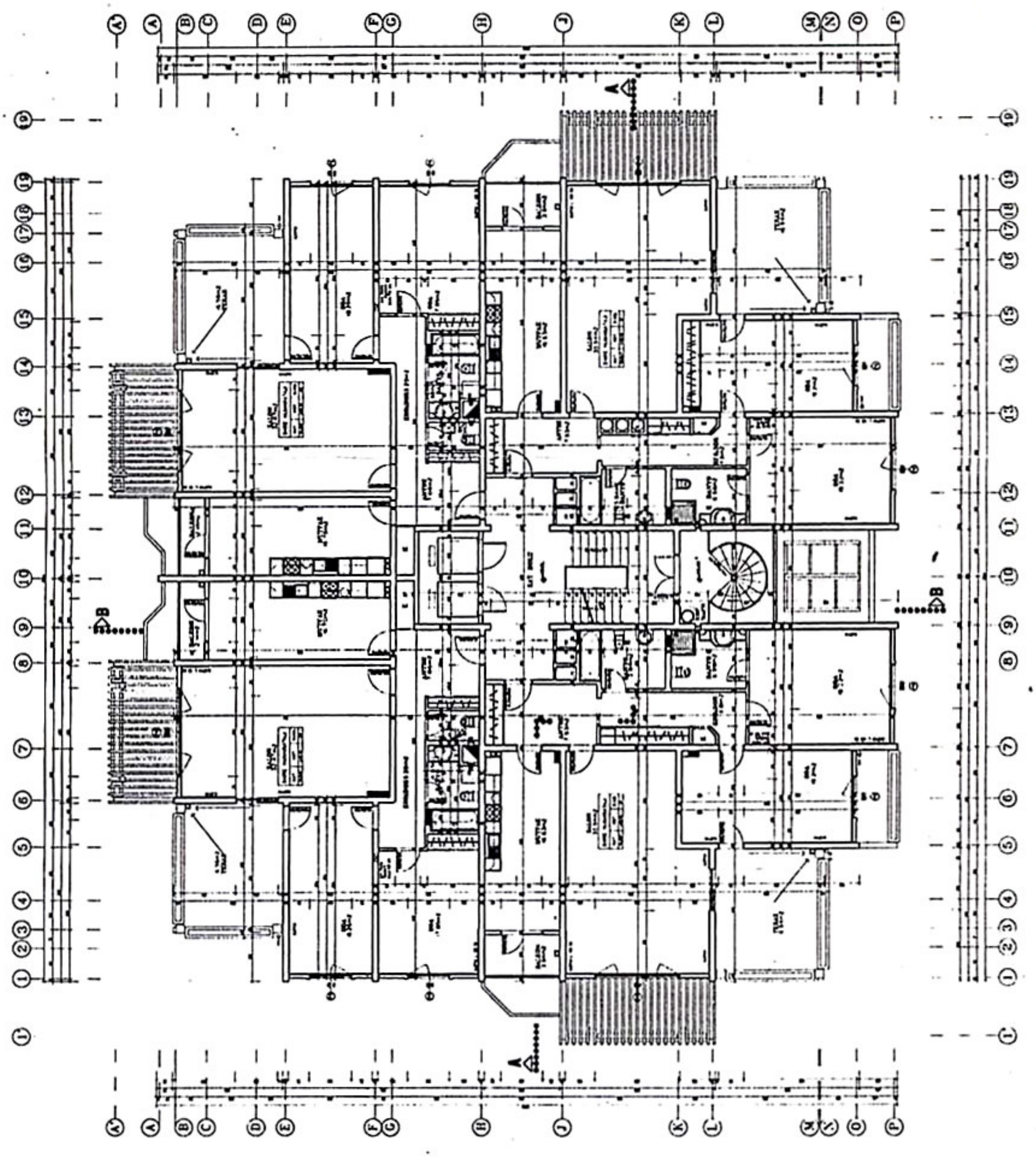


Figure 4.24 Mavişehir II; Flamingo 15th-Floor Plan

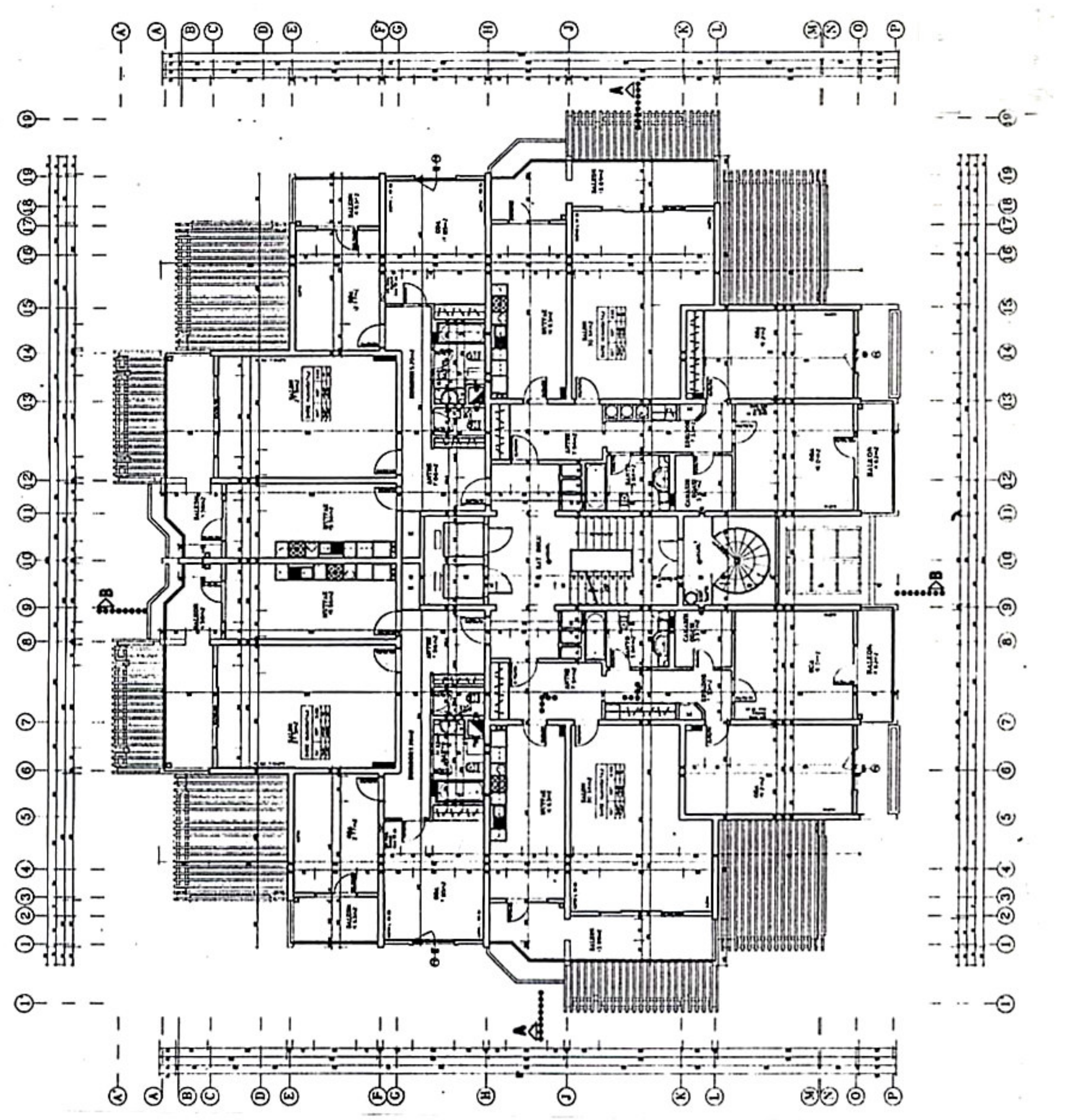


Figure 4.25 Mavişehir II; Flamingo 16th -17th Floor Plan

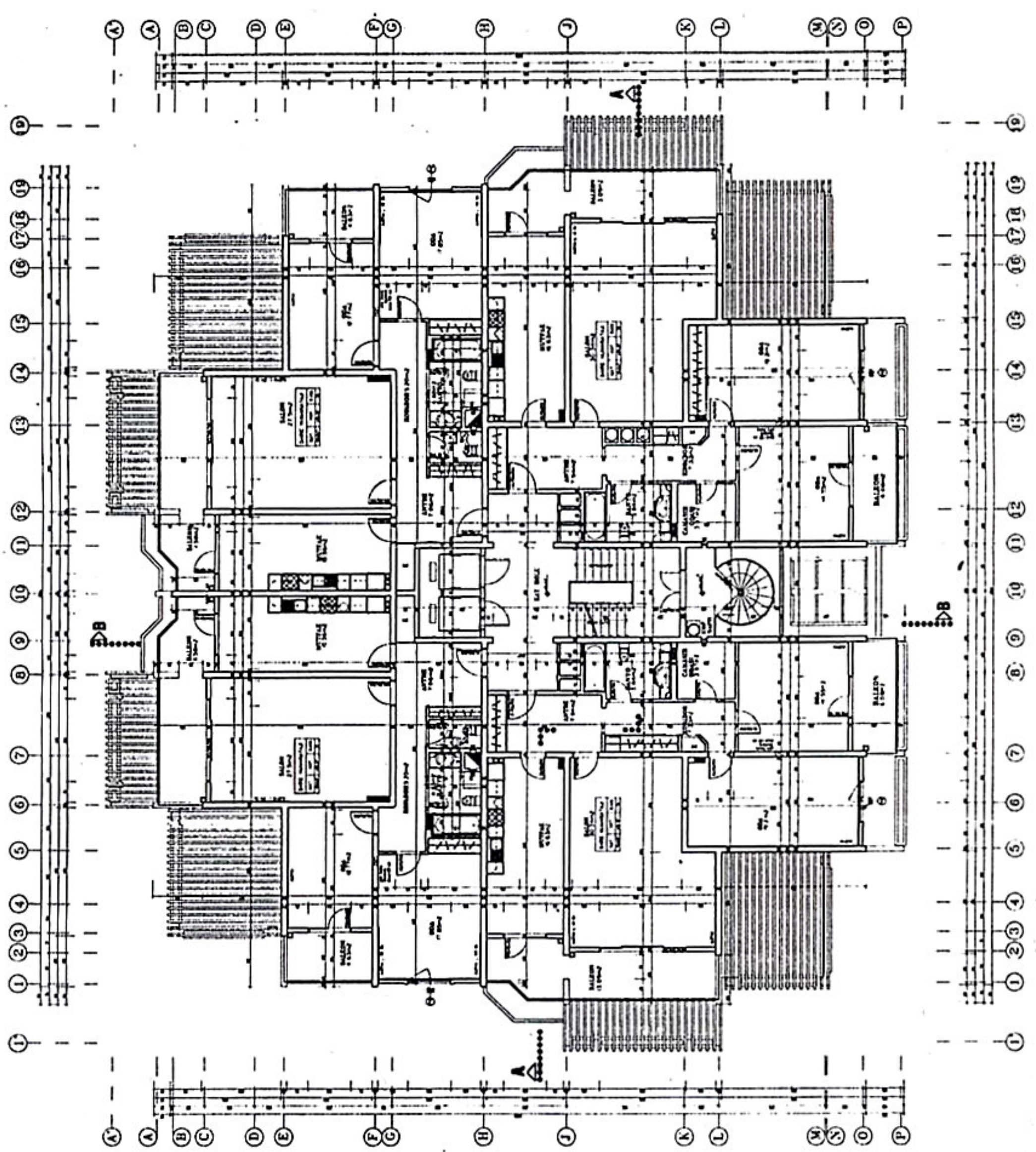


Figure 4.26 Mavişehir II; Flamingo 18th-Floor Plan

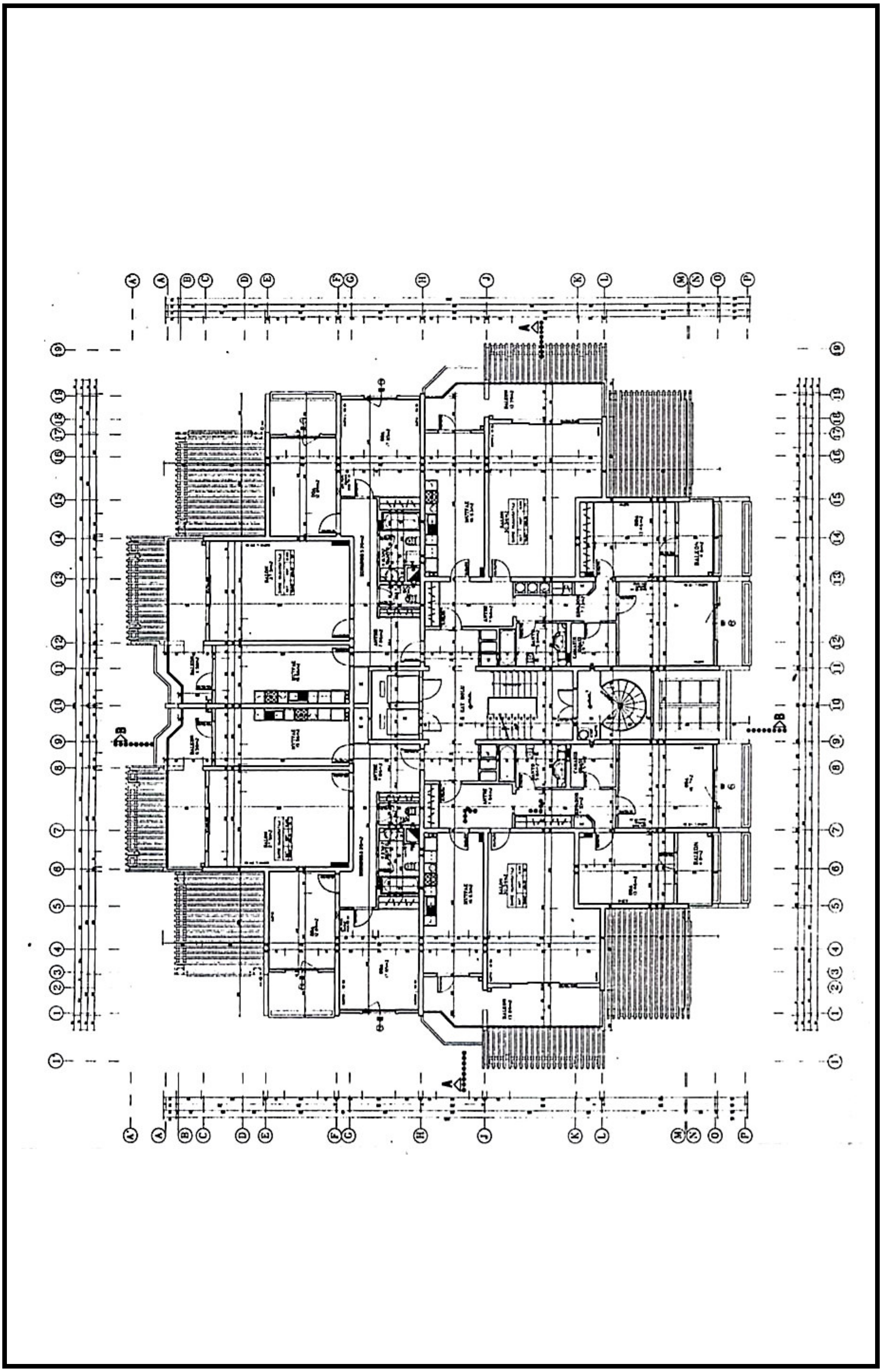


Figure 4.27 Mavişehir II; Flamingo 19th-Floor Plan

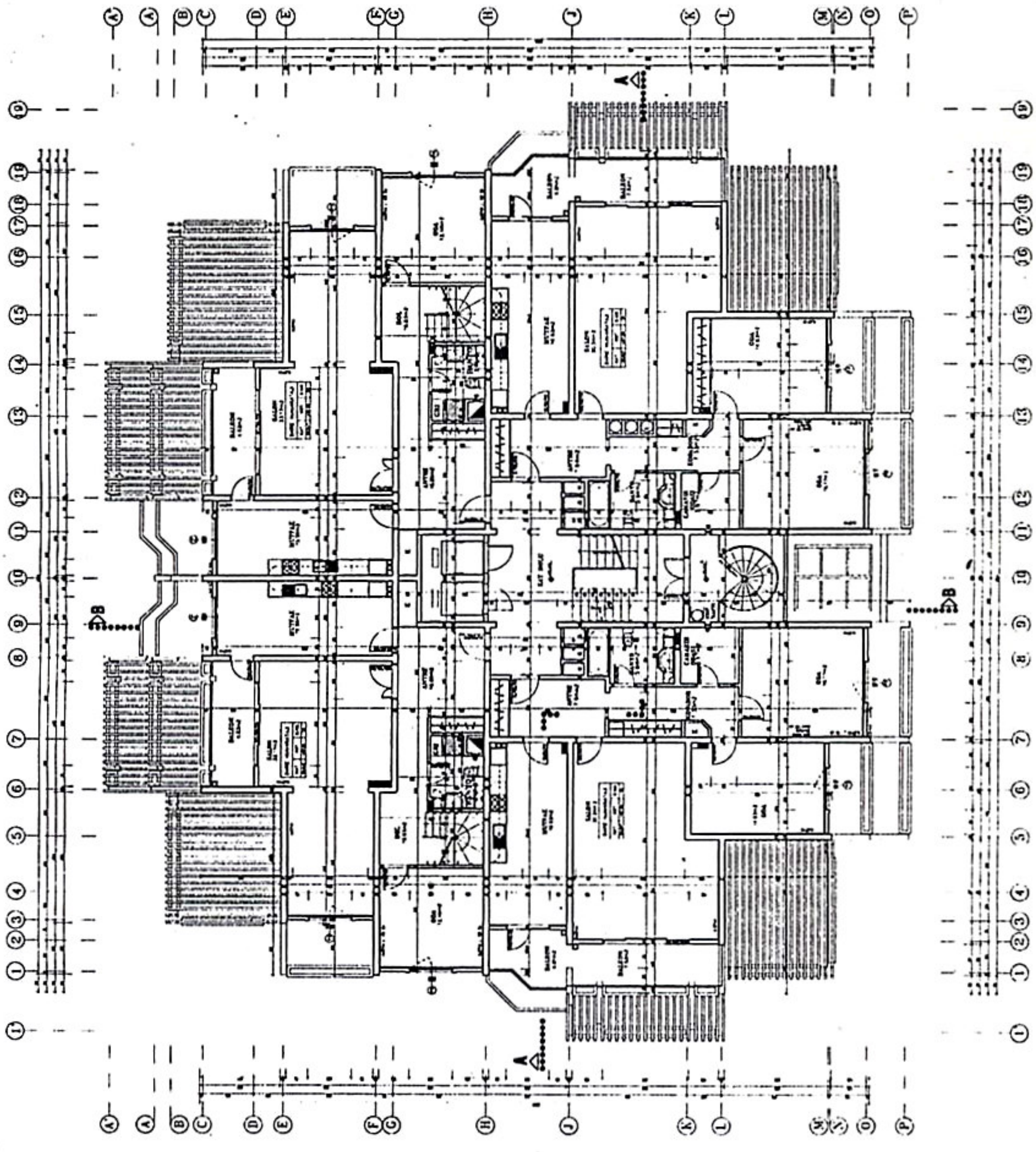


Figure 4.28 Mavişehir II; Flamingo 20th-Floor Plan

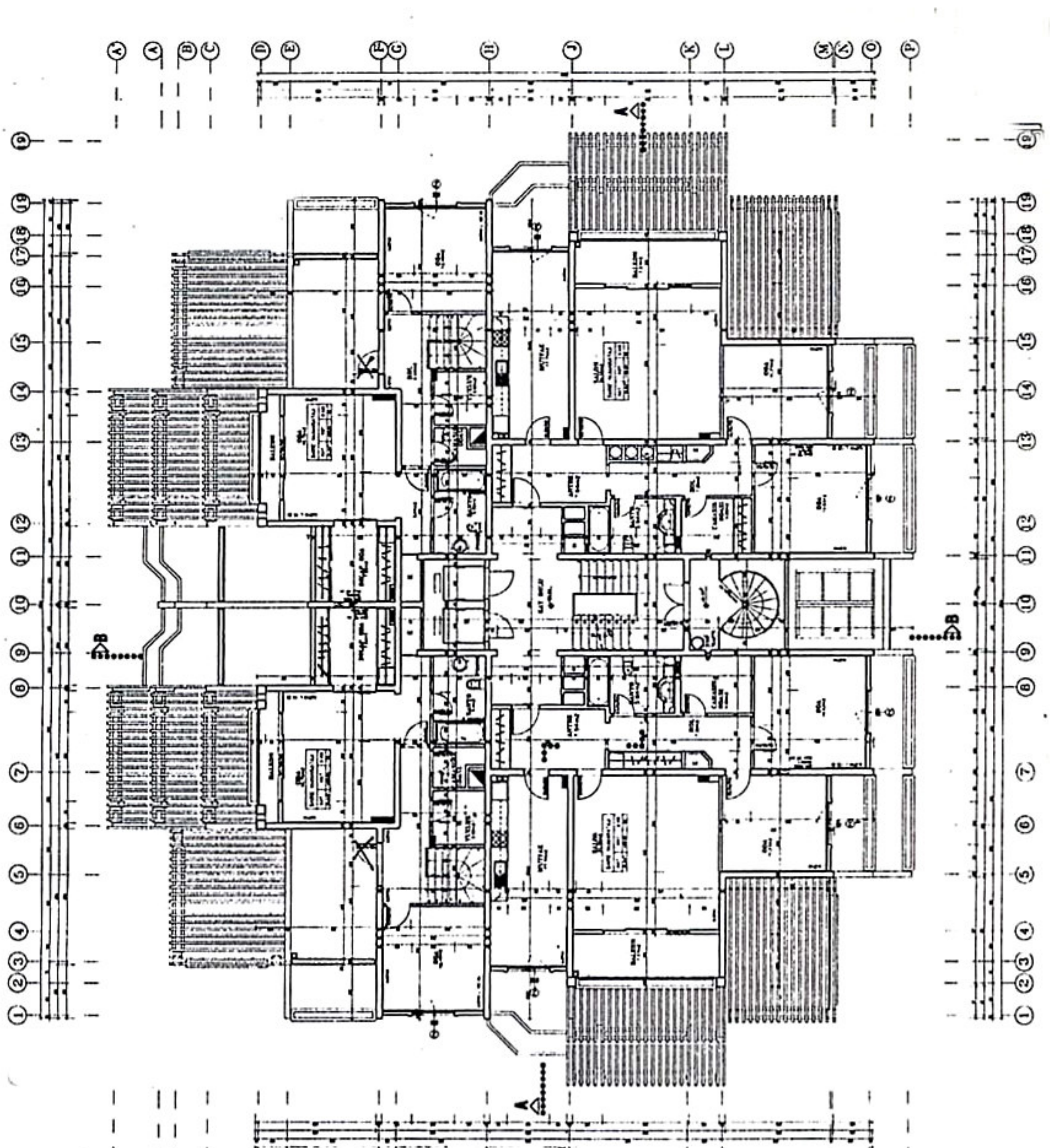


Figure 4.29 Mavişehir II; Flamingo 21st Floor Plan

There is one Kuğu apartment building. Owing to its width, it has three entrances which have been marked on the photograph in Figure 4.30. The three entrances also correspond to floor-plan variations organized vertically and horizontally. While the central entrance commands that vertical segment of the entire building which towers the highest,[4] it also has the floor plan which shows the least variation. The two side entrances (numbered 118 and 122) lead up through floors with plans that vary along the vertical vector, but are identical with one another on the horizontal plane. In other words, 118 and 122's ground plans are identical and located to the left and right of 120. 118 and 122 have 59 residences each, two of which are duplex in every segment. These 12 residences have four rooms with an area of 142.91-149.35 m^2; 22 residences have three rooms with an area of 121.06-148.65 m^2; 7 residences have two rooms with an area of 72.89-126.69m^2; and 18 residences have one room with an area of 61.14 m^2. The central segment whose entrance has the number 120, has 84 residences of which four are duplex. In this segment, 24 residences have two rooms with an area of 71.29-119.59 m^2 and 60 residences have one room with an area of 60.49-66.85 m^2.

Below, in figures 4.31 to 4.44 (inclusive), the Kuğu building's floor plan types are shown starting with the ground floor plan. As will be seen, the plan typology of this building indicates an almost artistically creative variation of plan form.

Figure 4.30 Mavişehir II; View of Kuğu Apartment Block

[4] The central segment runs up 22 floors above the ground flor, while the two side segments run up 20 floors above the ground floor.

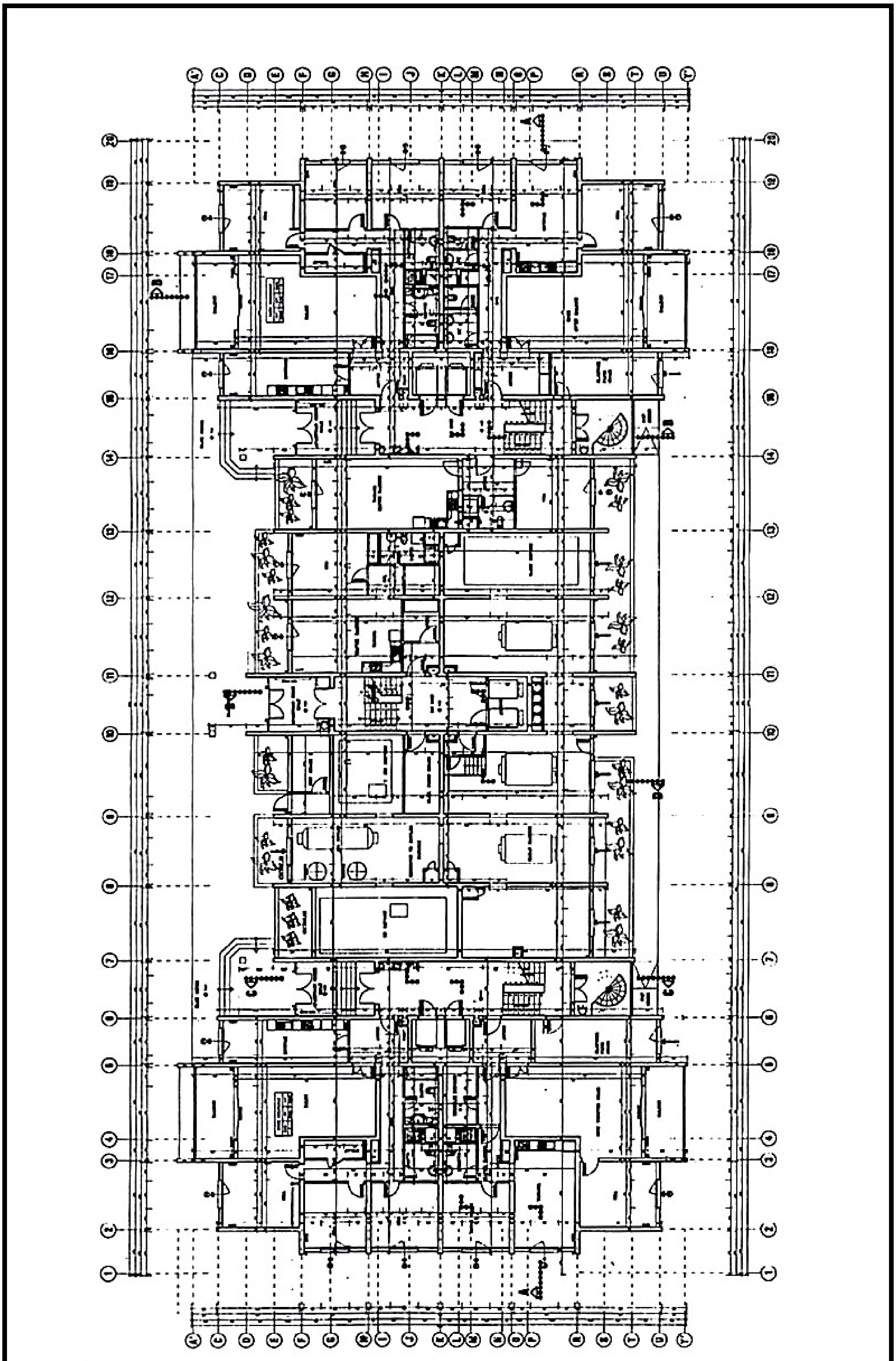


Figure 4.31 Mavişehir II; Kuğu Ground–Floor Plan

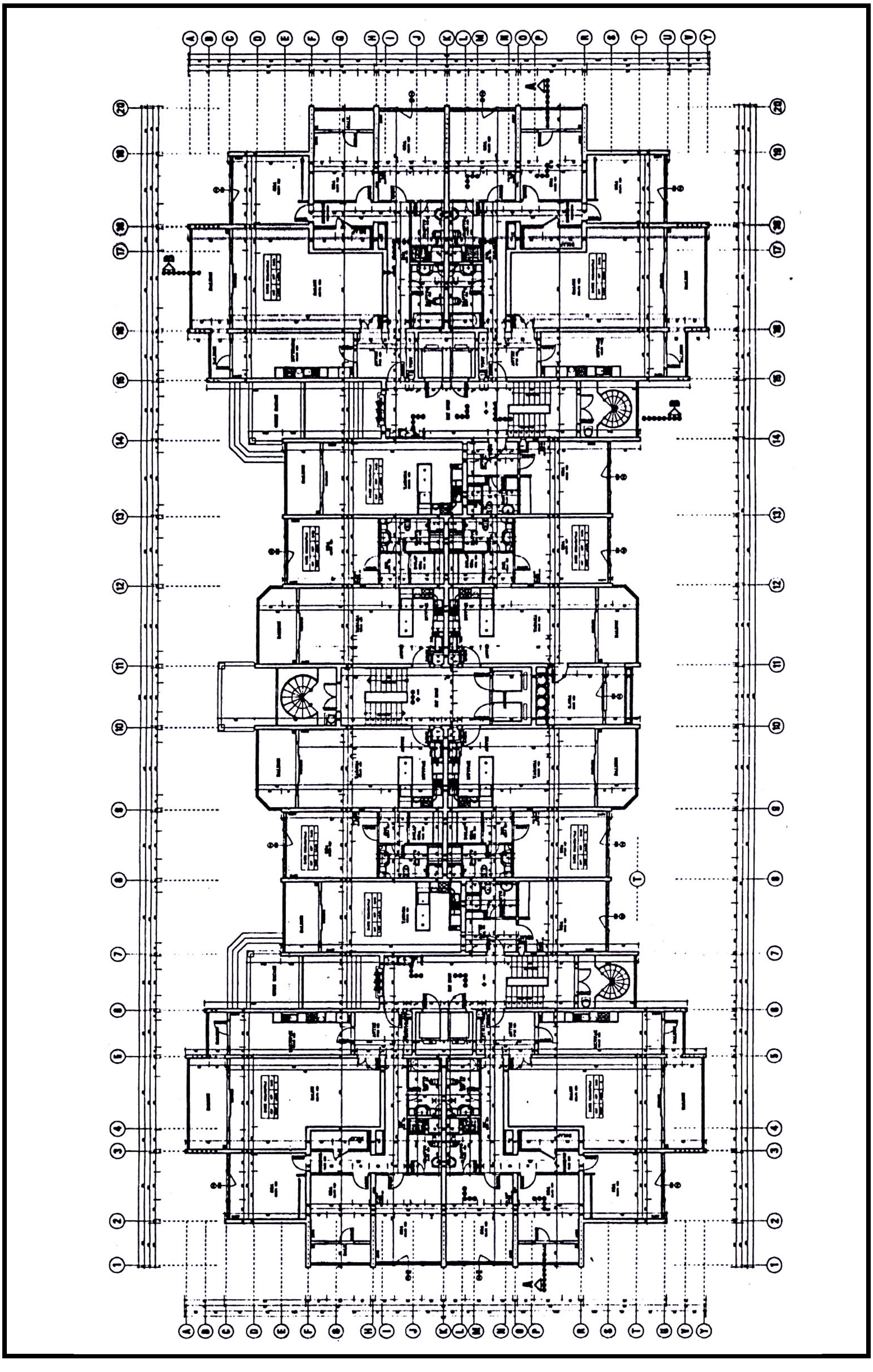


Figure 4.32 Mavişehir II; Kuğu 1st-Floor Plan

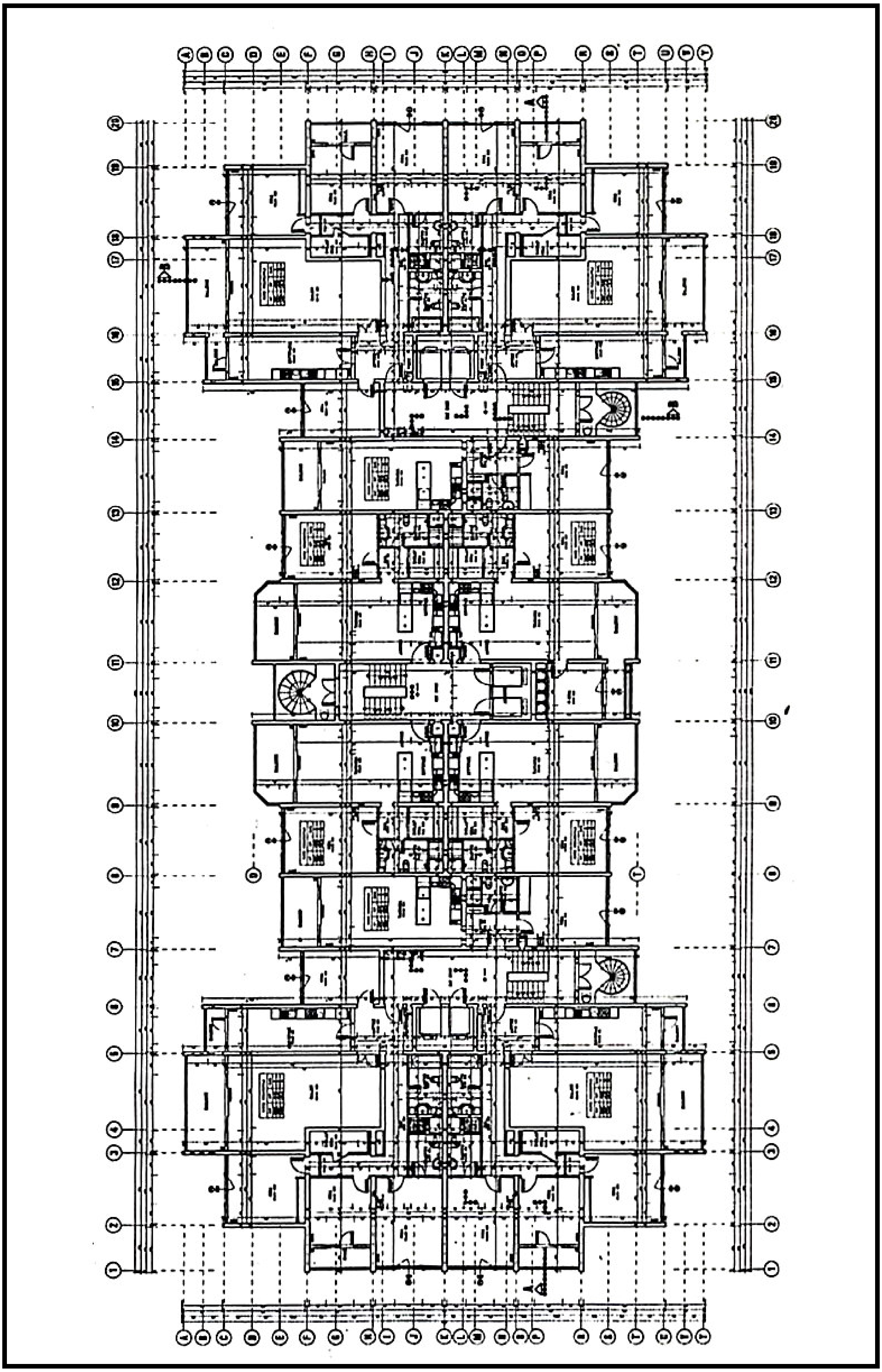


Figure 4.33 Mavişehir II; Kuğu 2nd – 4th Floor Plan

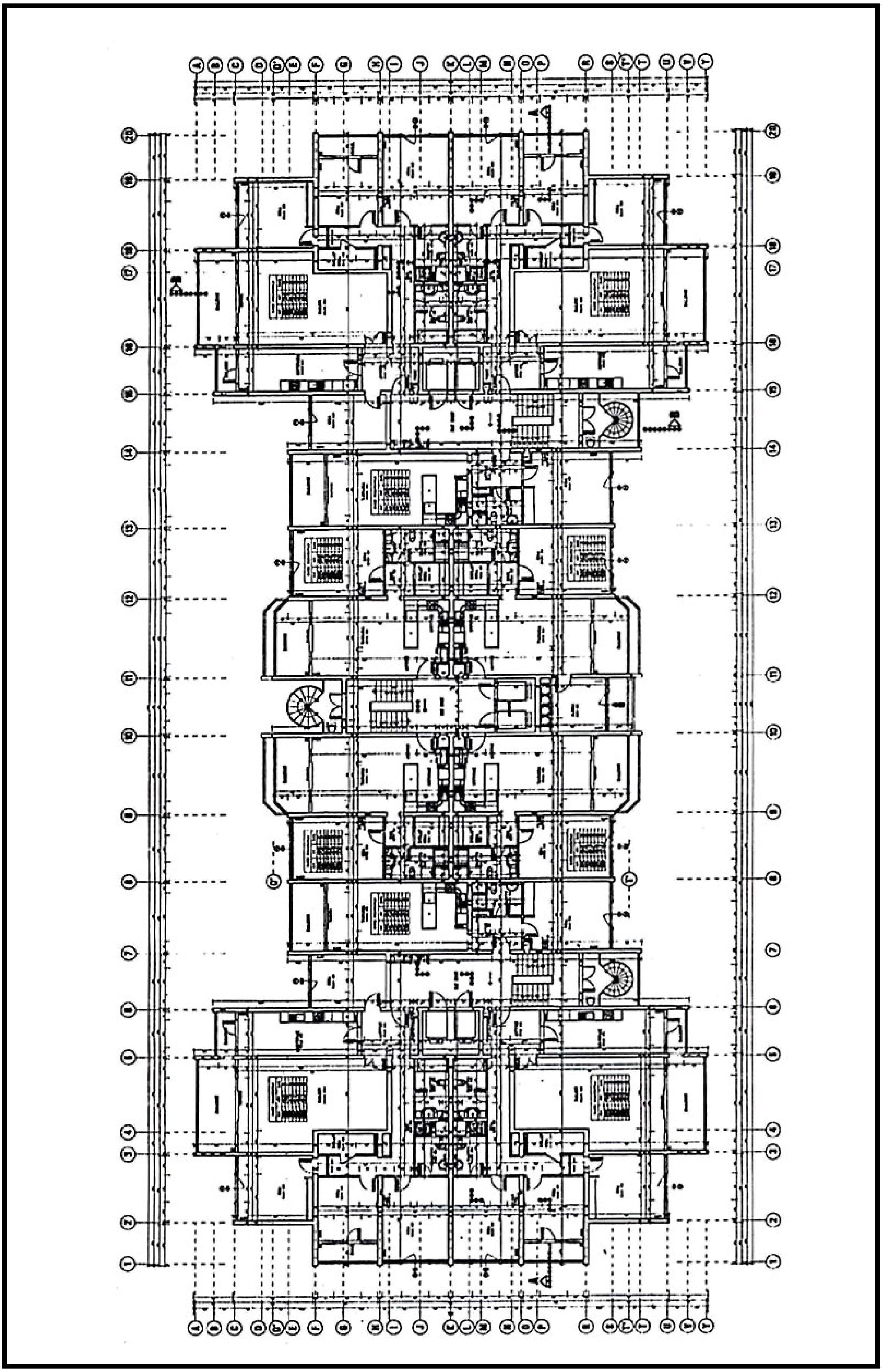


Figure 4.34 Mavişehir II; Kuğu 5th – 11th Floor Plan

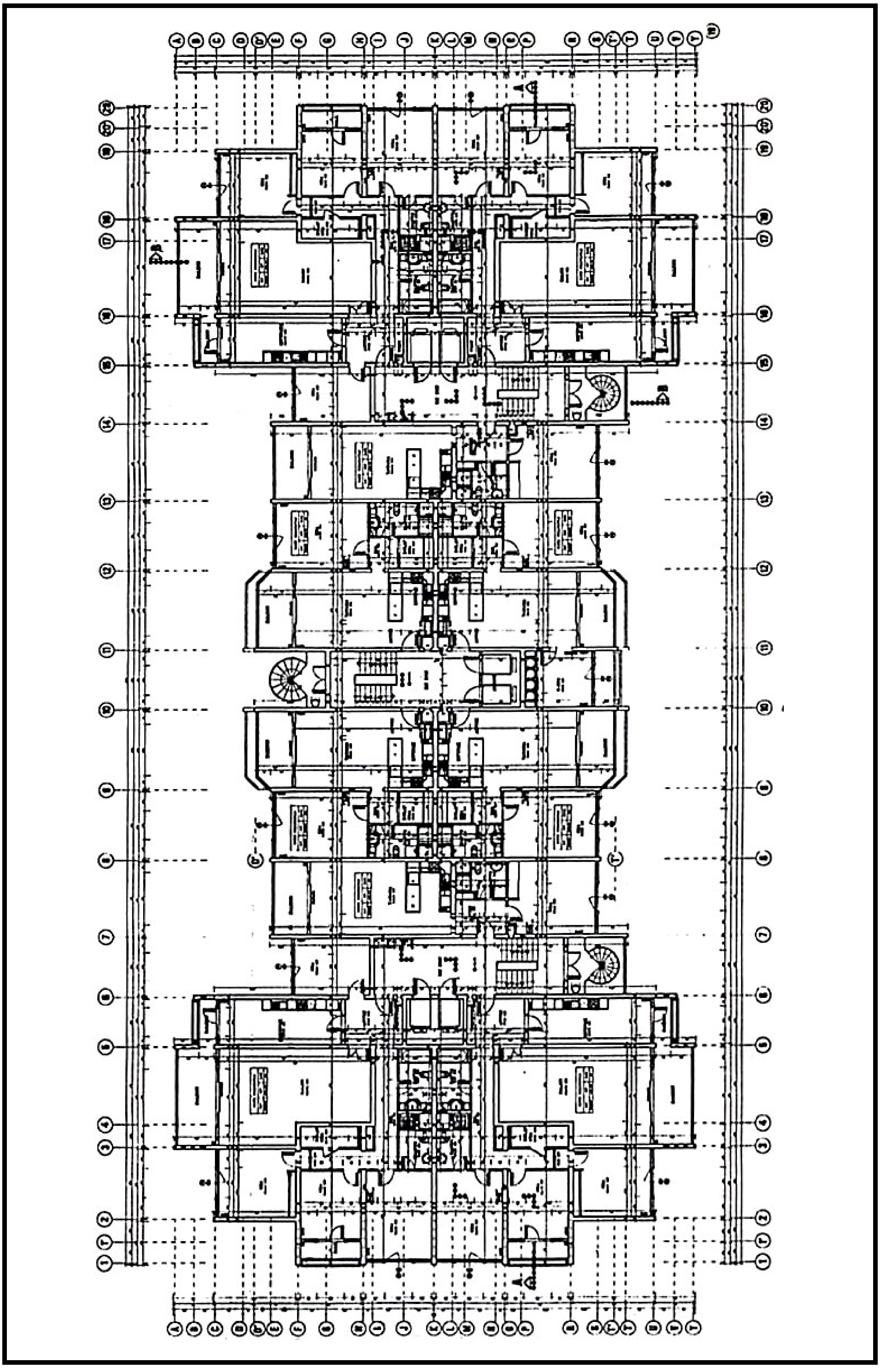


Figure 4.35 Mavişehir II; Kuğu 12th-Floor Plan

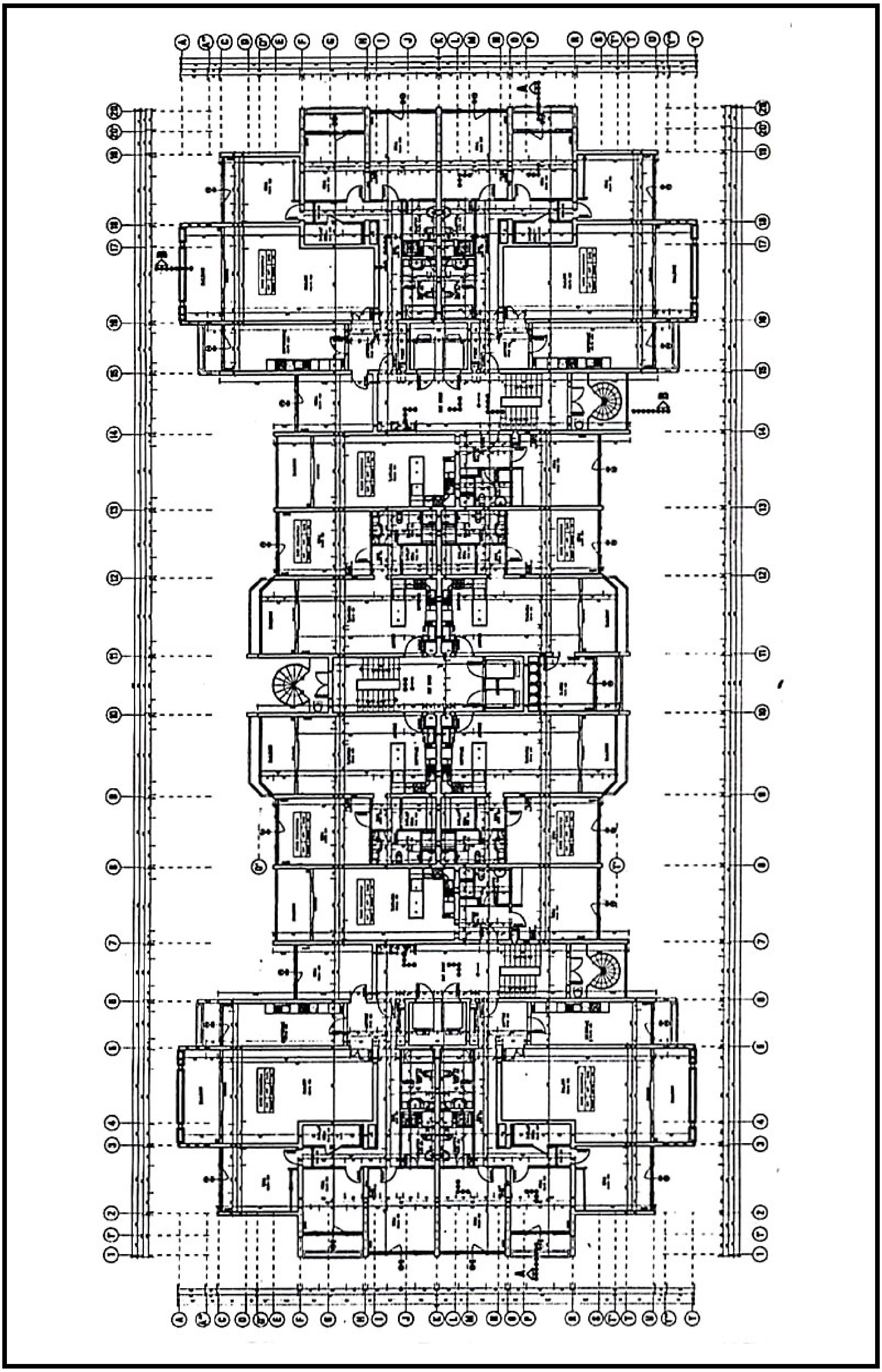


Figure 4.36 Mavişehir II; Kuğu 13th-Floor Plan

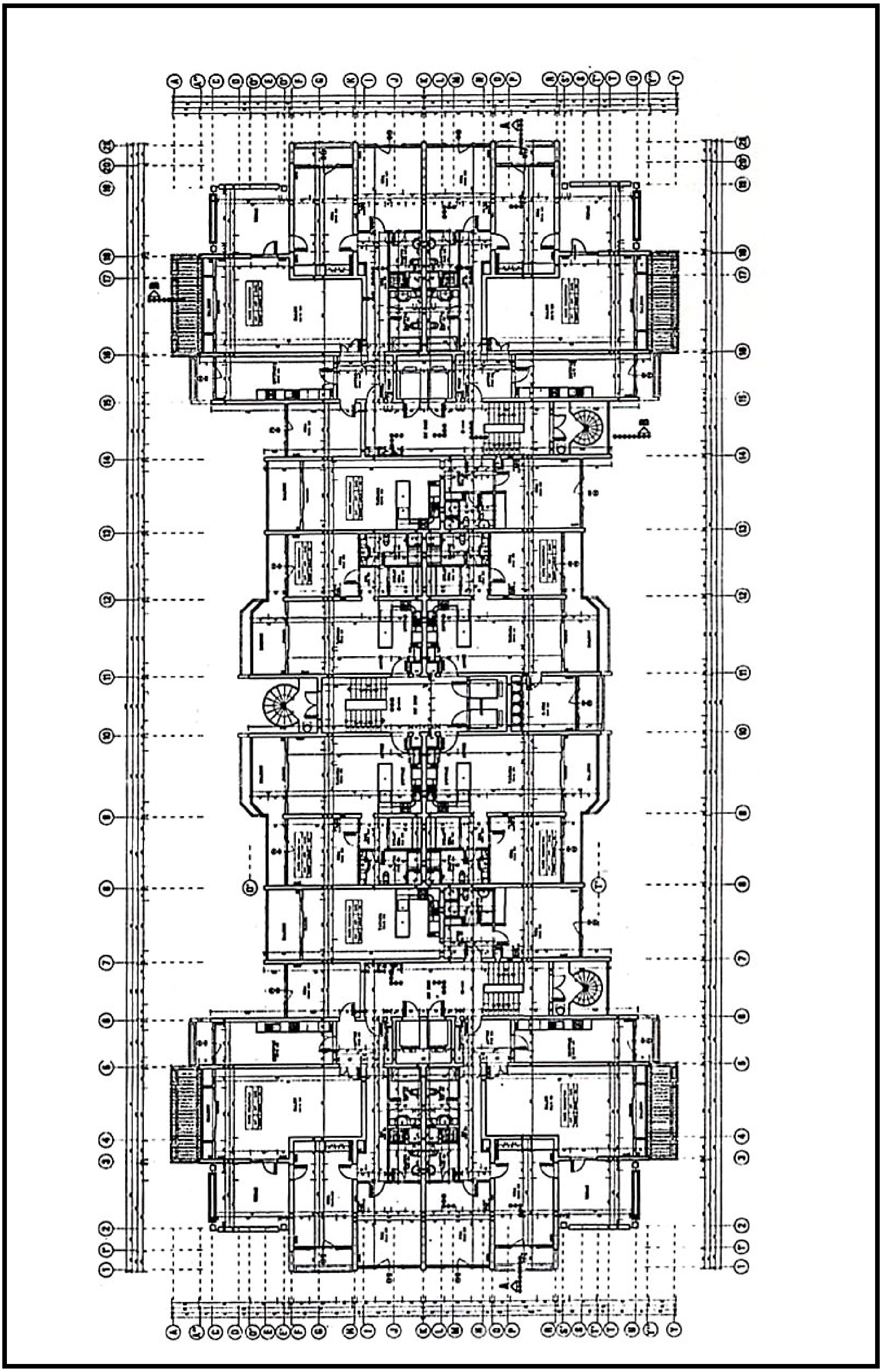


Figure 4.37 Mavişehir II; Kuğu 14th-Floor Plan

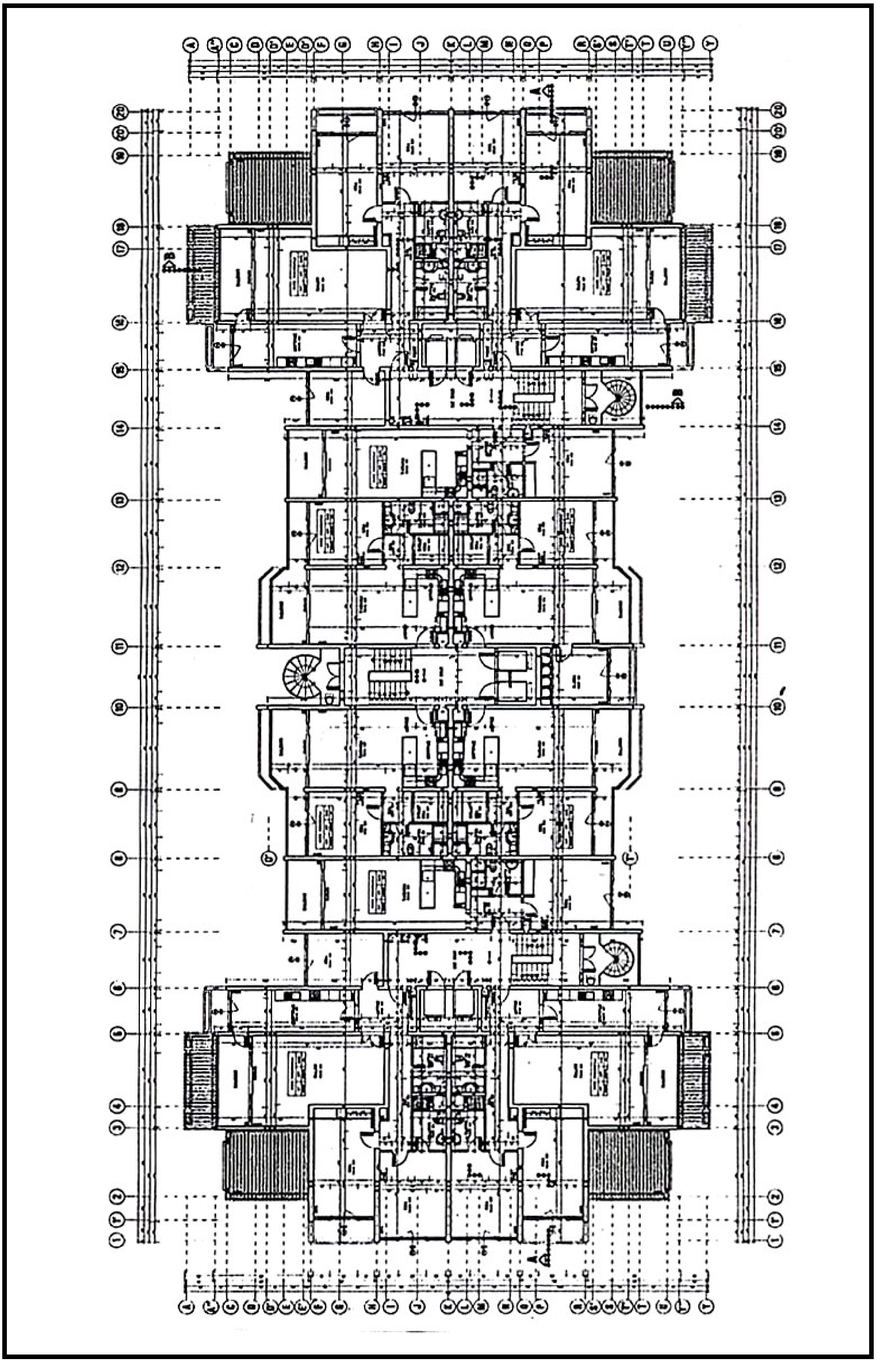


Figure 4.38 Mavişehir II; Kuğu 15th-Floor Plan

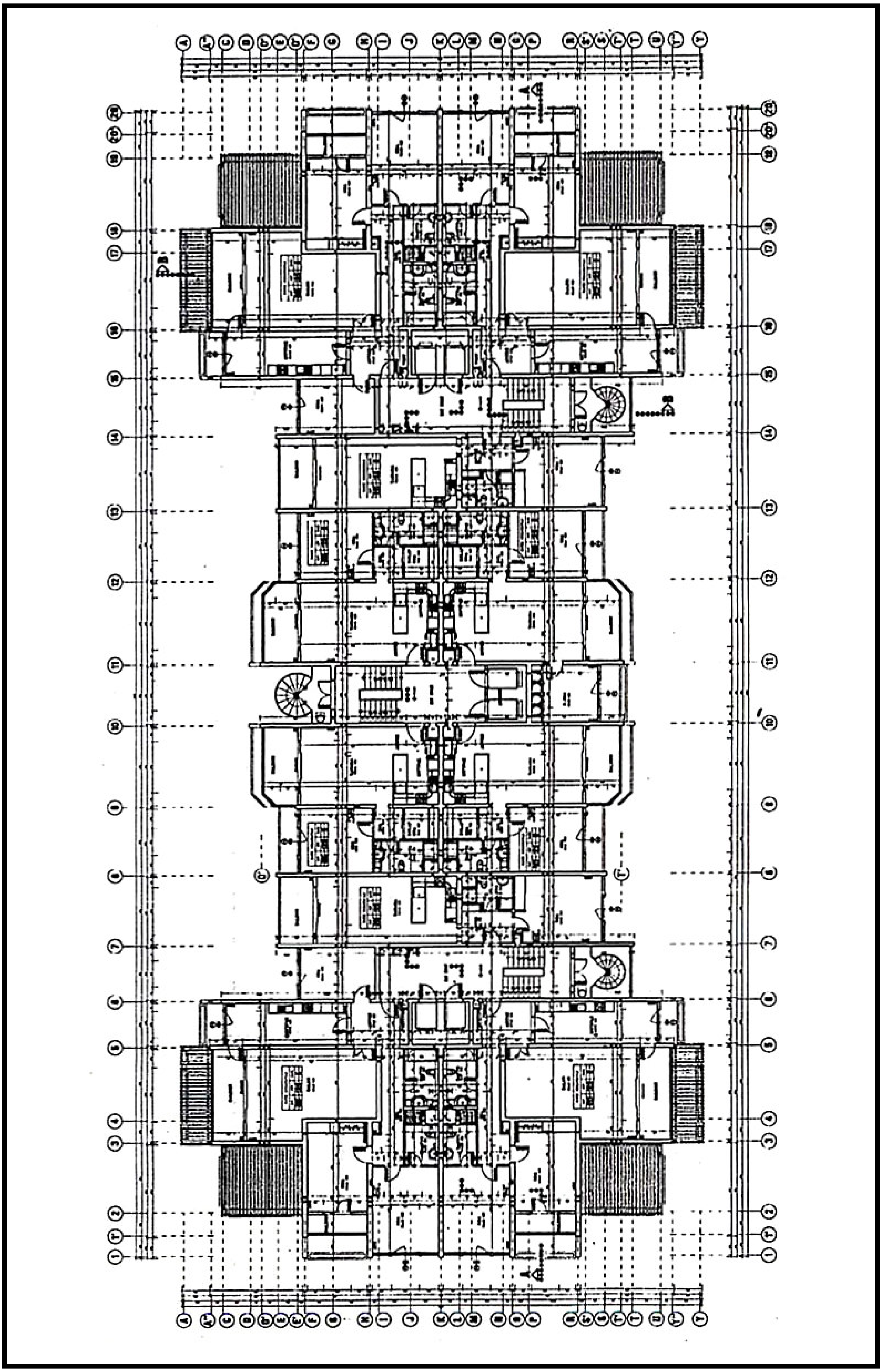


Figure 4.39 Mavişehir II; Kuğu 16th – 17th Floor Plan

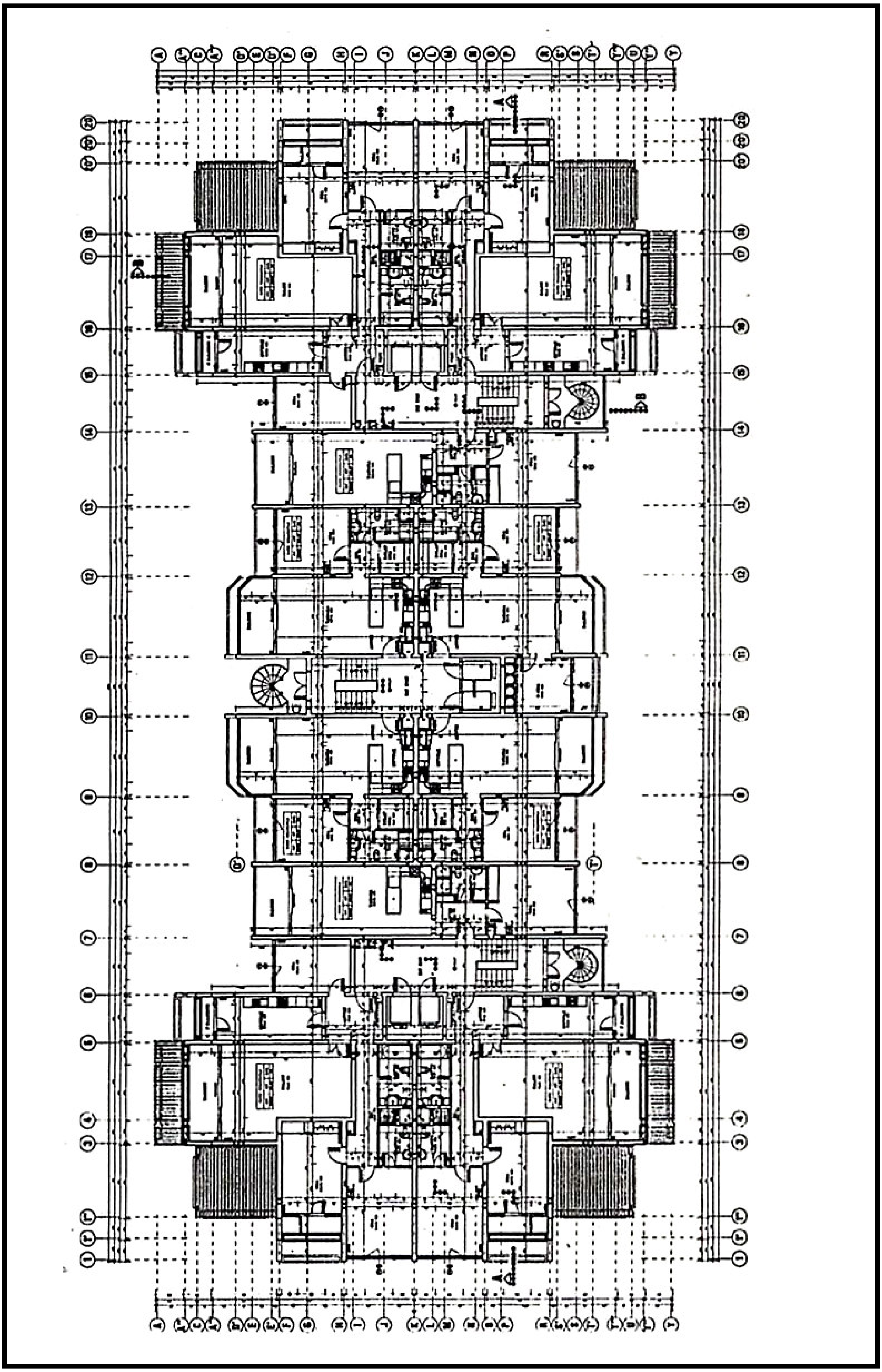


Figure 4.40 Mavişehir II; Kuğu 18th-Floor Plan

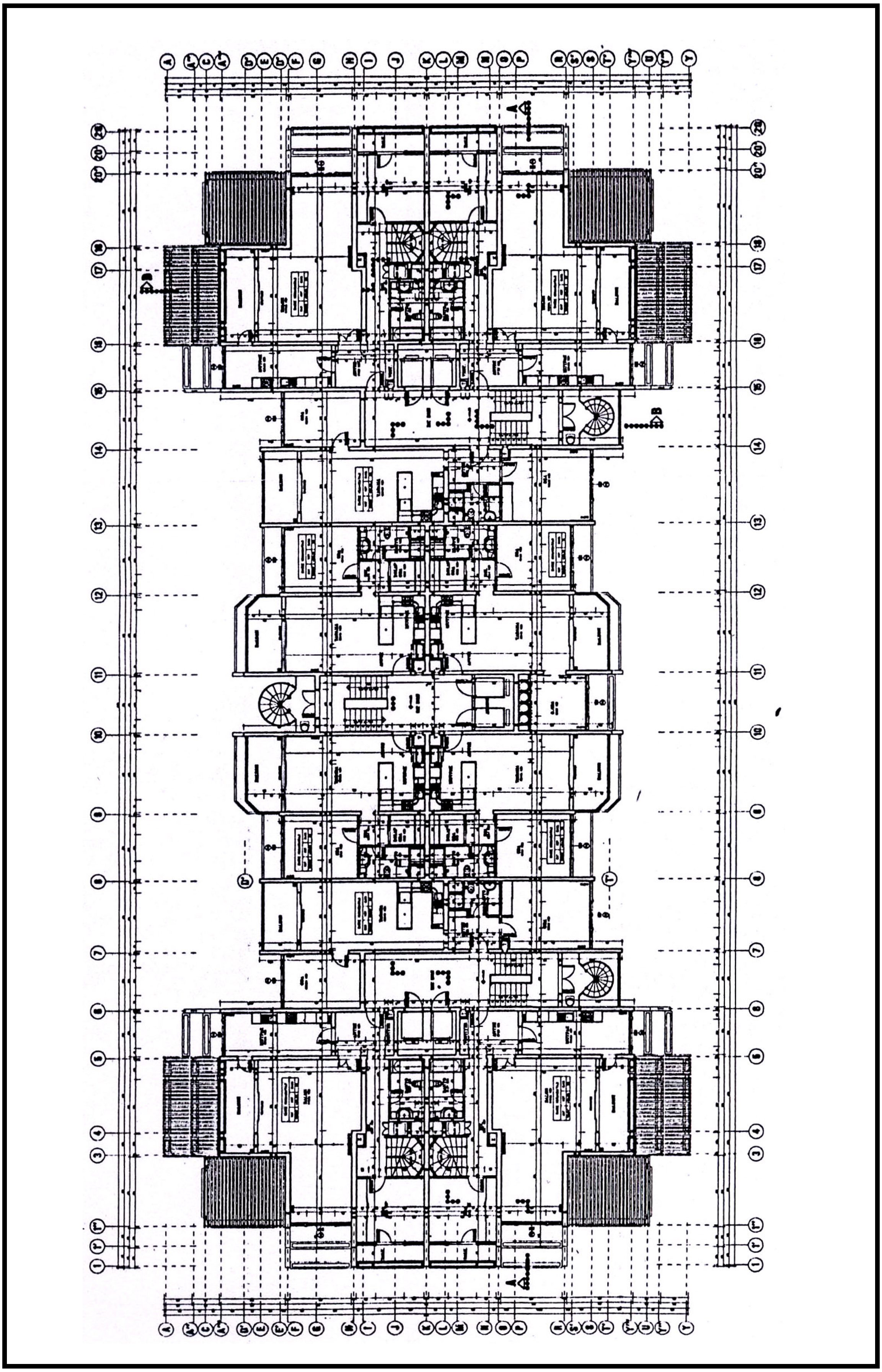


Figure 4.41 Mavişehir II; Kuğu 19th-Floor Plan

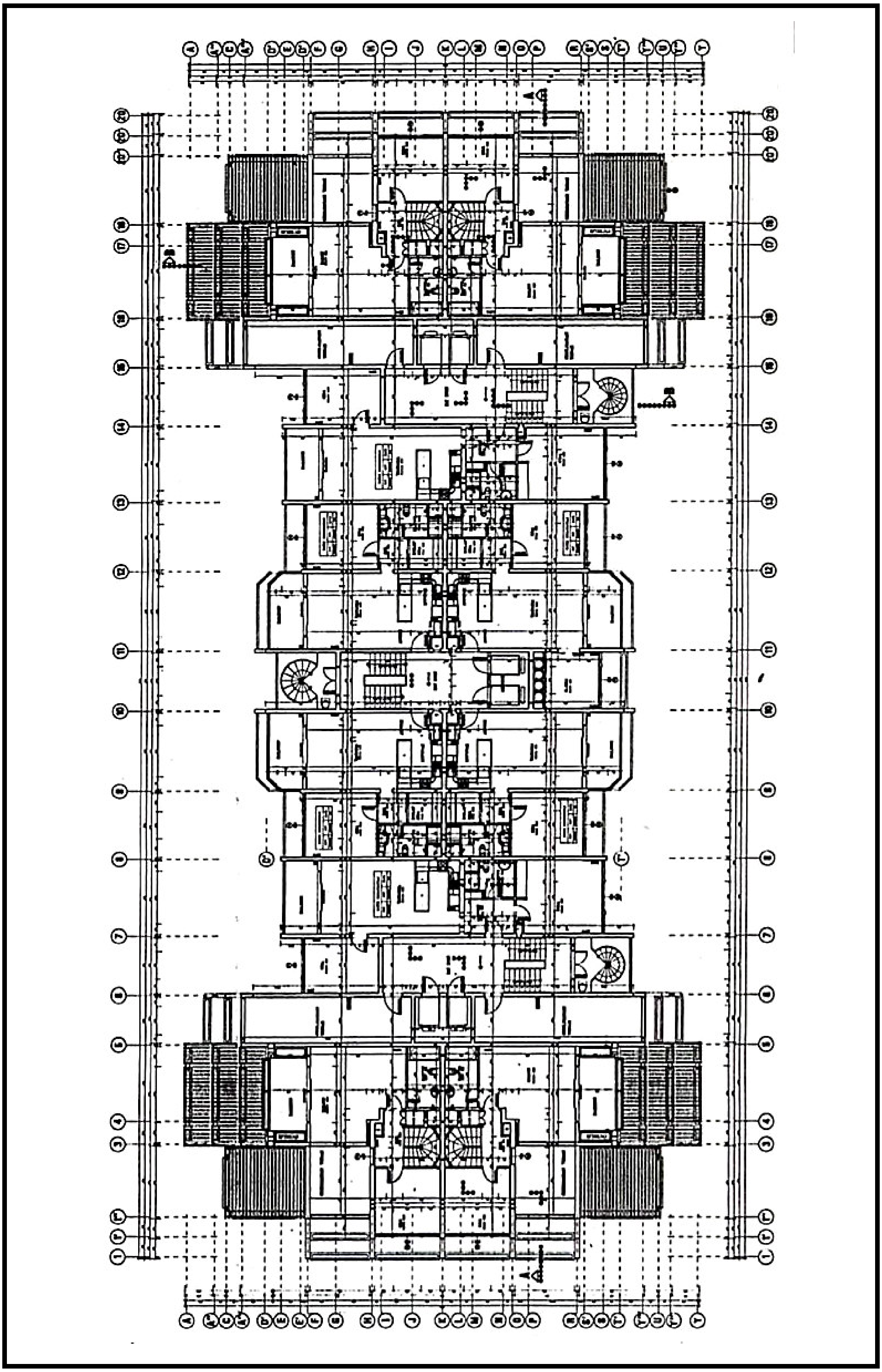


Figure 4.42 Mavişehir II; Kuğu 20th-Floor Plan

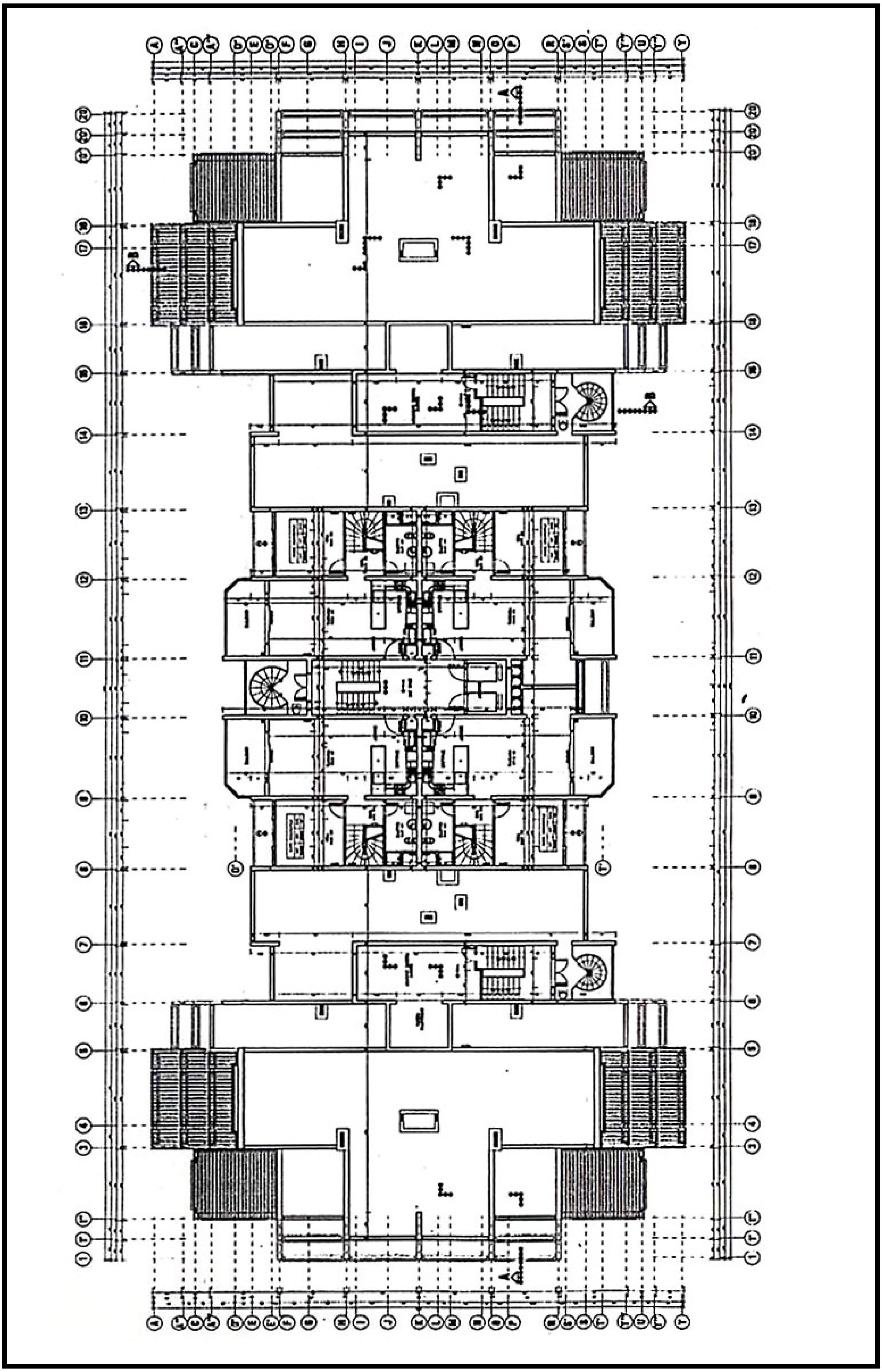


Figure 4.43 Mavişehir II; Kuğu 21st-Floor Plan

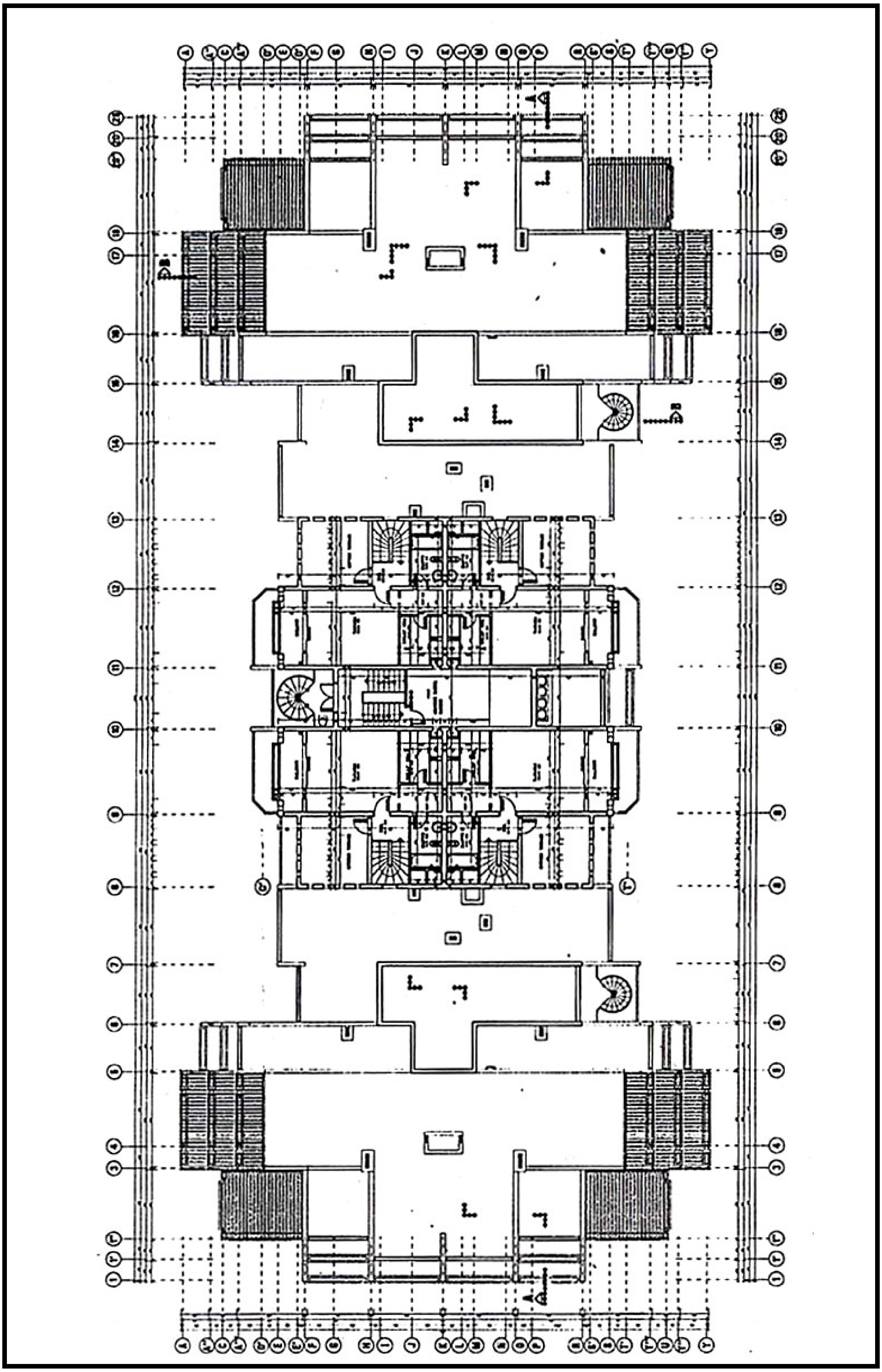


Figure 4.44 Mavişehir II; Kuğu 22nd-Floor Plan

The Turna Apartment Blocks are formed by the combination of seven different plan types. The blocks are distinguished in two, namely as B (corner blocks) and C. There are three corner blocks, designated B 21, B 23, and B 26. The C blocks run as C 22, C 24, C 25, and C 27.

The block B 21 has 26 residences and ground + 12 floors. 14 of these residences have three rooms with an area of 138.98 m^2; 12 residences have four rooms with an area of 146.61 m^2. B 23 has 26 residences and ground + 12 floors. All of these residences have three rooms with an area of 138.98 – 142.46 m^2. B 26 has 22 residences and ground + 10 floors. All of these 22 residences have three rooms with an area of 138.98 - 142.46 m^2.

C 22 has 28 residences and ground + 13 floors and all of the C 22 residences have three rooms with an area of 130.04-139.30 m^2. C 24 has 24 residences and ground + 11 floors. All the 24 residences have three rooms with an area of 130.04 -139.30 m^2. C 25 has 22 residences and ground + 11 floors. All of the residences have three rooms with an area of 133.52-139.30 m^2. C 27 has 20 residences and ground + 9 floors. 11 of these residences have three rooms with an area of 130.04-135.19 m^2; and 9 of them have four rooms with an area of 143.57-149.35 m^2.

Figure 4.45 Mavişehir II; View of Turna Apartment Blocks

Below, in figures 4.46 to 4.51 (inclusive), B apartment building's floor plans and C apartment Building's floor types are shown starting with the ground floor.

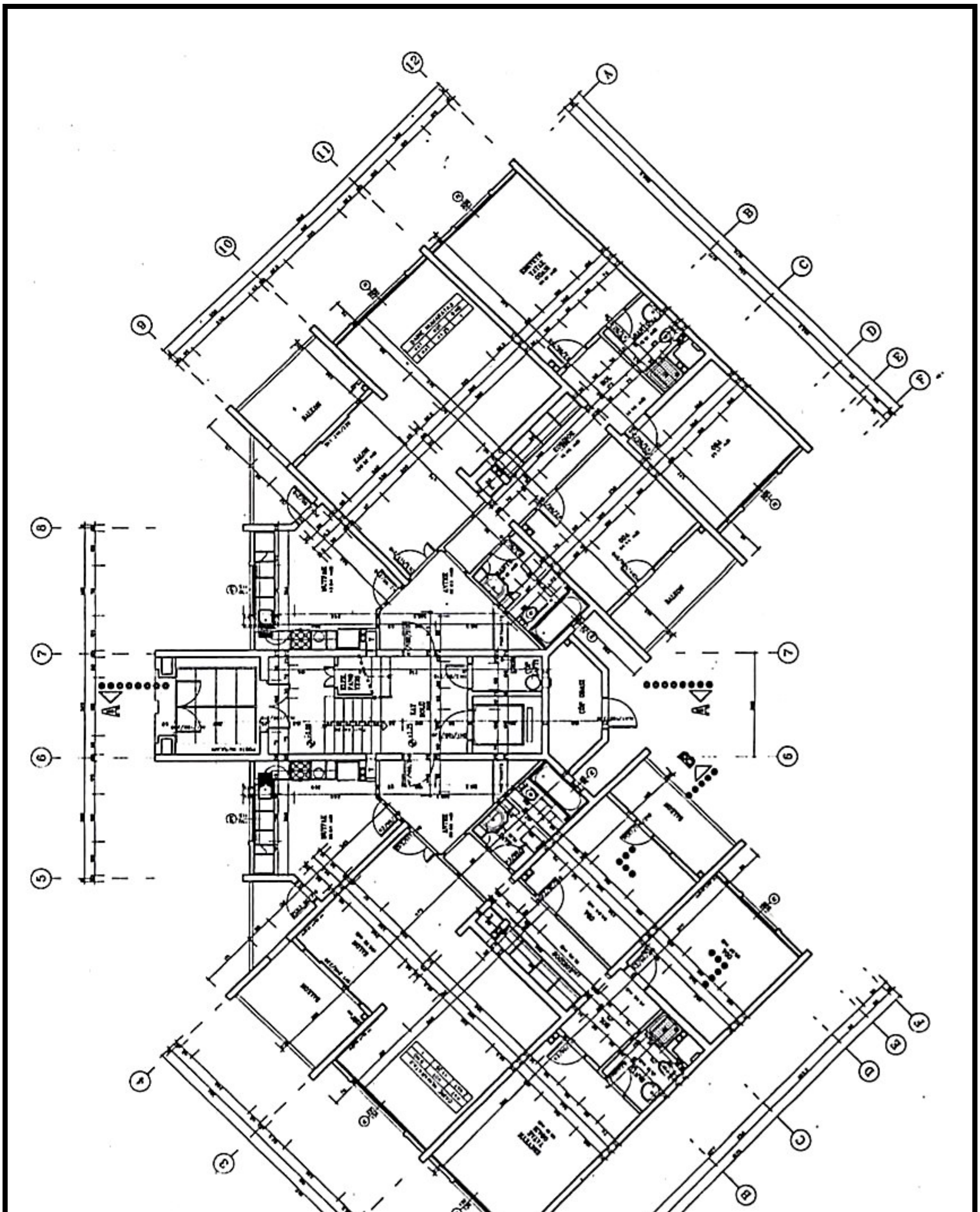


Figure 4.46 Mavişehir II; B Apartment Building Ground–Floor Plan

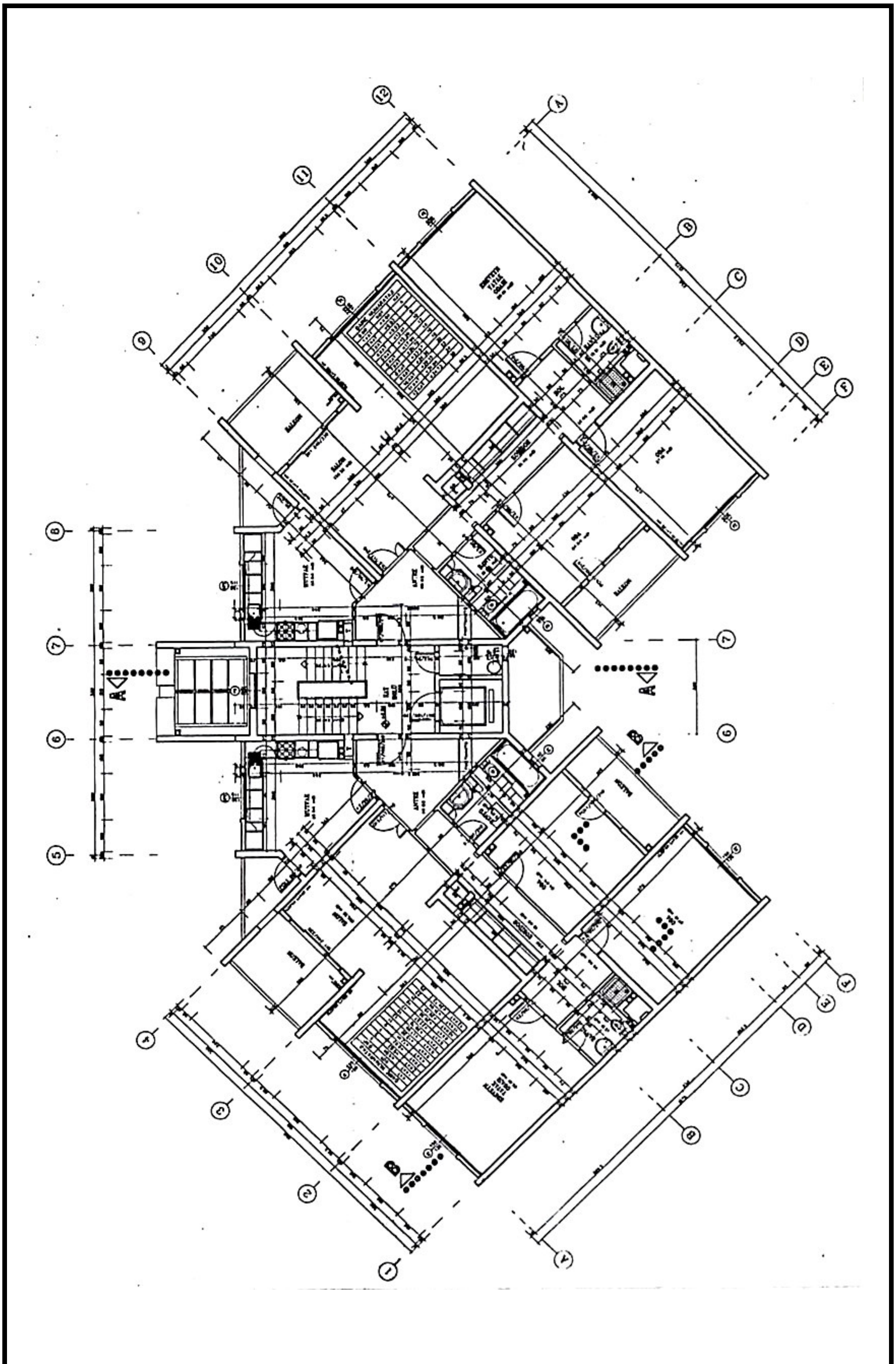


Figure 4.47 Mavişehir II; B Apartment Building Typical Floor Plan

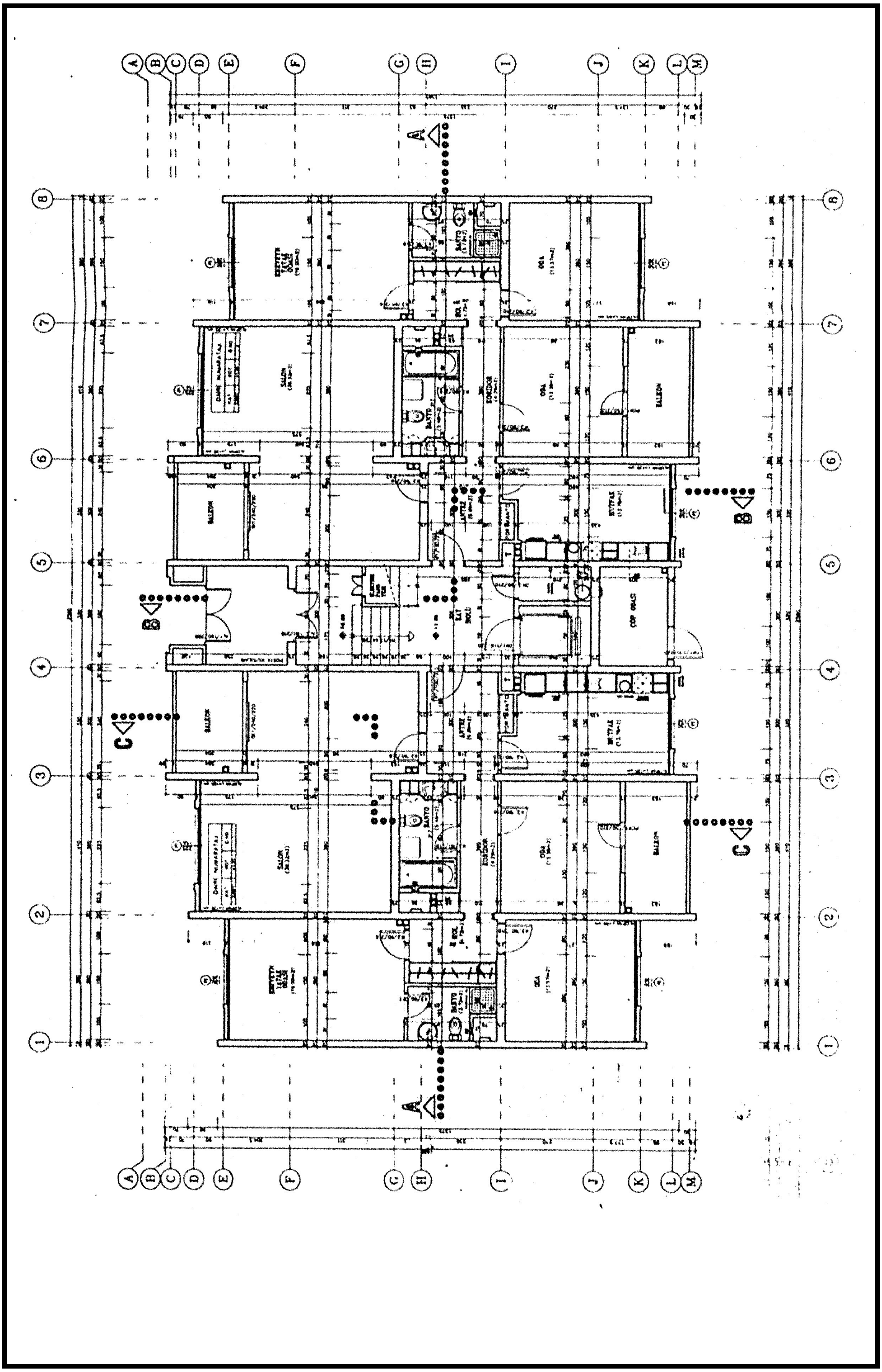


Figure 4.48 Mavişehir II; C Apartment Building Ground–Floor Plan

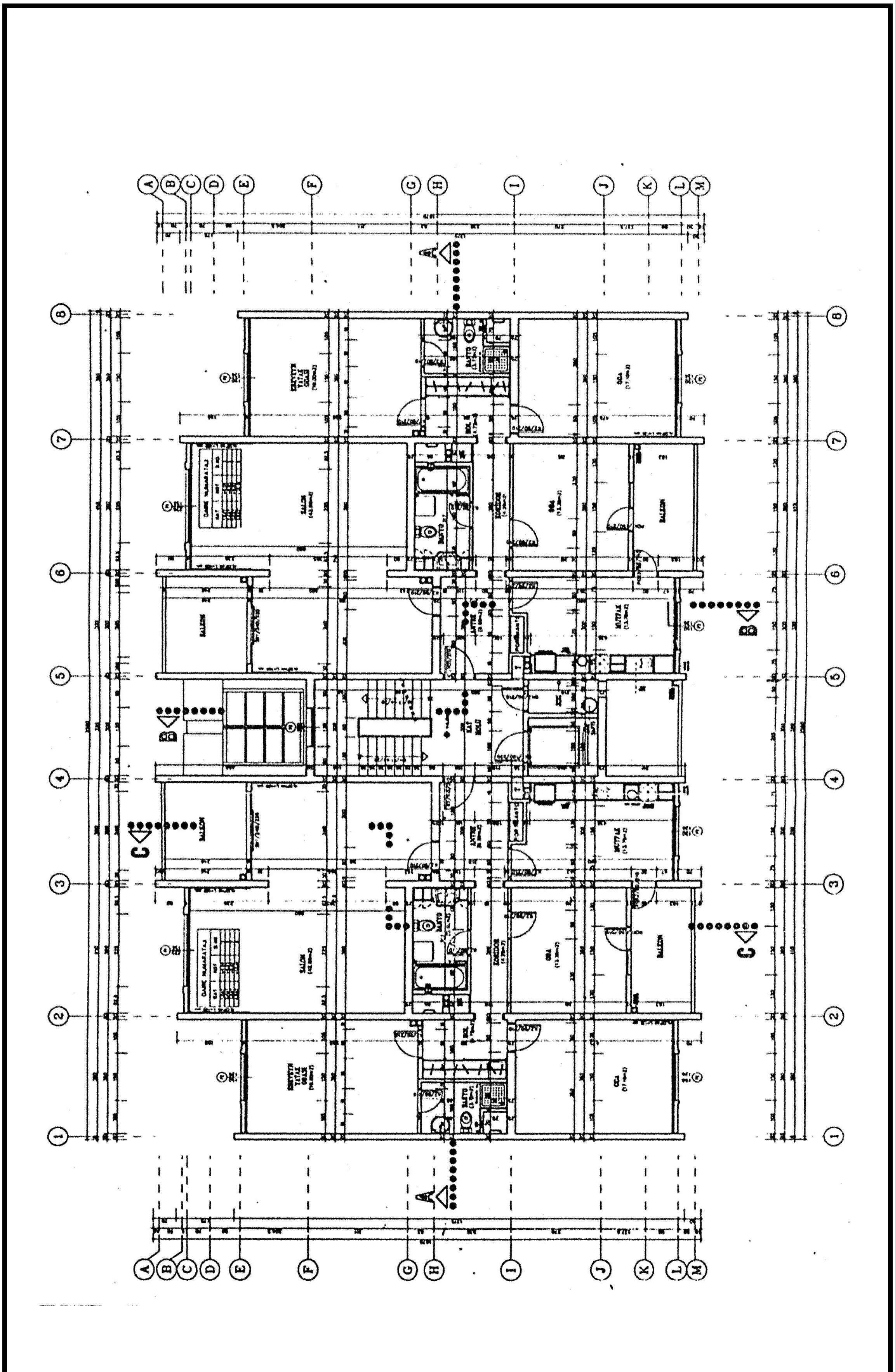


Figure 4.49 Mavişehir II; C Apartment Building 1st – 4th Floor Plan

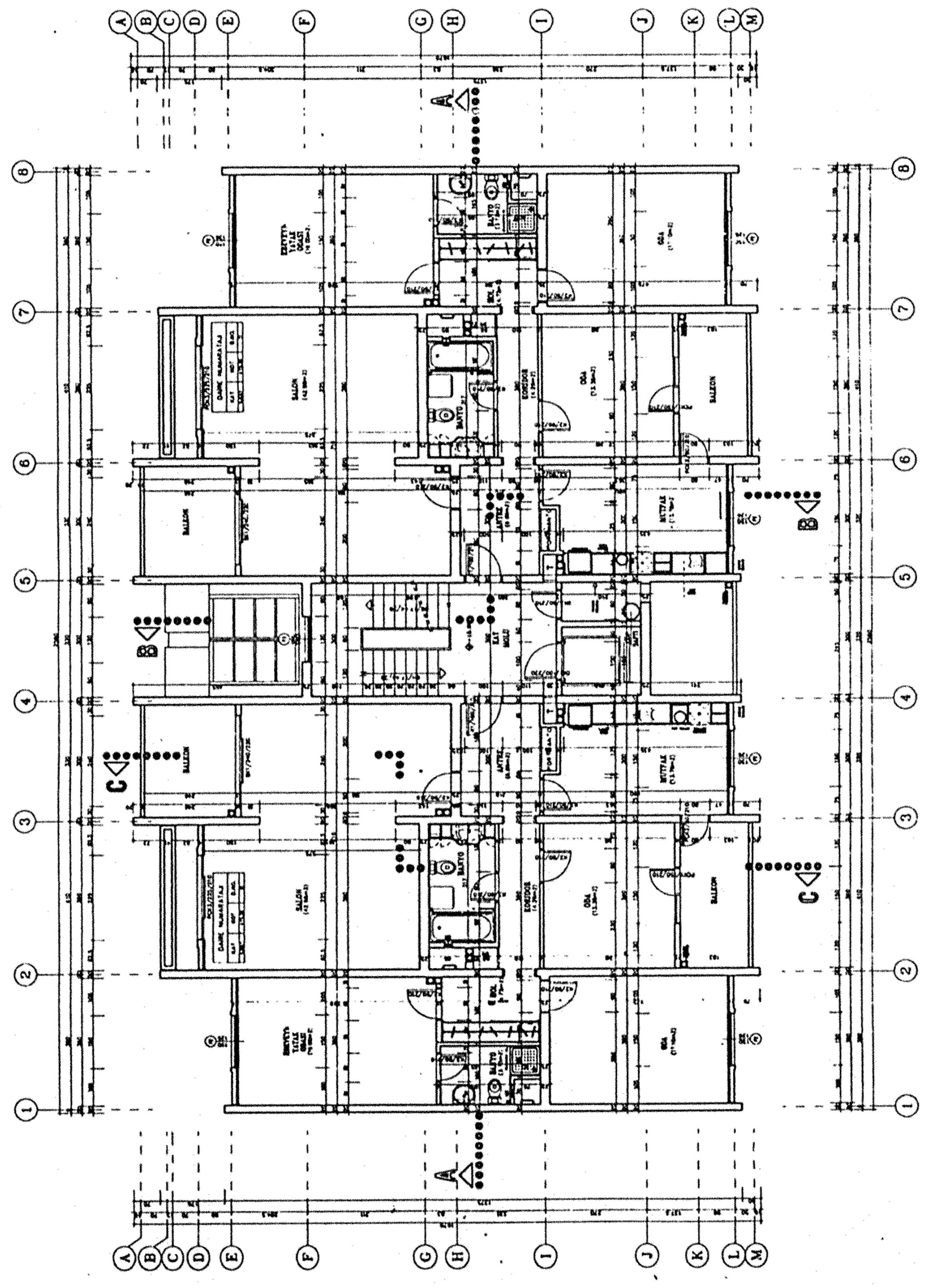


Figure 4.50 Mavişehir II; C Apartment Building 5th- Floor Plan

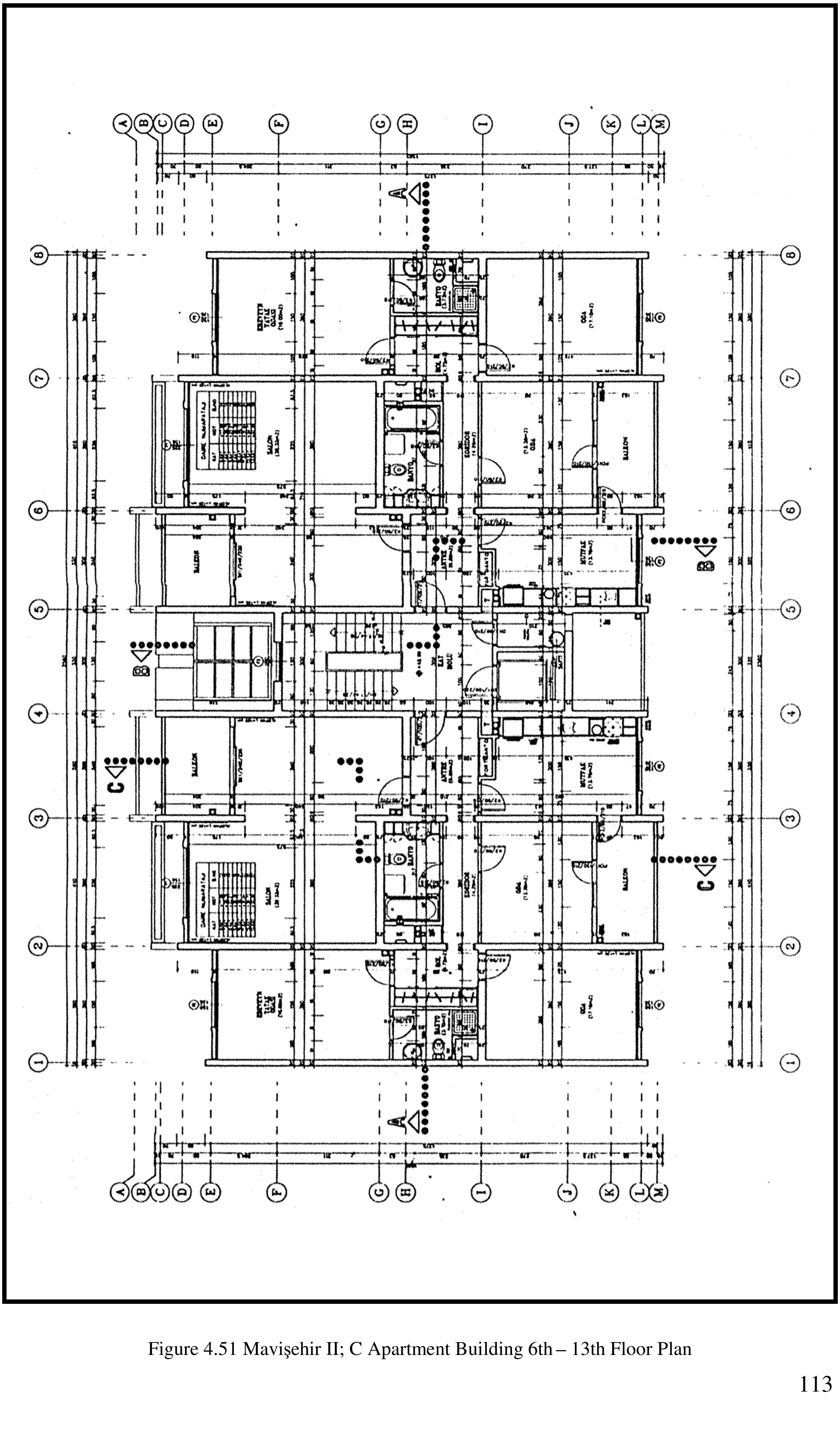


Figure 4.51 Mavişehir II; C Apartment Building 6th – 13th Floor Plan

The Kırlangıç Apartment Blocks are formed by the combination of eight different plan types. As in Turna type, the blocks are distinguished in two, namely as B (corner blocks) and C. There are three corner blocks designated B 1, B 4, and B 7. The C blocks run as C 2, C 3, C 5, C 6, and C 7.

The block B 1 has 26 residences and ground + 12 floors. 14 of these residences have three rooms with an area of 138.98 m^2; 12 residences have four rooms with an area of 146.61 m^2. B 4 has 26 residences and ground + 12 floors. All of these residences have three rooms with an area of 138.98-142.46 m^2. B 7 has 22 residences and ground + 10 floors. All of these 22 residences have three rooms with an area of 138.98 -142.46 m^2.

The block C 2 has 28 residences and ground + 13 floors. All of these residences have three rooms with an area of 130.04-139.30 m^2. C 3 has 26 residences and ground + 13 floors. All of these 26 residences have three rooms with an area of 133.52-139.30 m^2. Number 5 has 24 residences and ground + 11 floors. All of these 24 residences have three rooms with an area of 130.04-139.30 m^2. C 6 has 22 residences and ground + 11 floors. All of these residences have three rooms with an area of 133.52-139.30 m^2. C 8 has 20 residences and ground + 9 floors. 11 of these residences have three rooms with an area of 130.04-135.19 m^2, and nine of them have four rooms with an area of 143.57-149.35 m^2.

Above, in figures 4.47 to 4.52 (inclusive), the B blocks' floor plans and the C blocks' floor plans have been shown starting with the ground floor.

Figure 4.52 Mavişehir II; View of Kırlangıç Apartment Block

4.3.3. Mavişehir III

Mavişehir III, which is not researched by questionnaire in this thesis as it does not comprise tall buildings, is the stage that followed Mavişehir II. It is located between the sea and Mavişehir II and consists of triplex and duplex villas. There are 122 villas, 20 of them are duplex and 102 are triplex. The area of the triplex villas is 413.656 m^2 with a garden area that varies between 306 m^2 and 785 m^2. The duplex villas have more floor area, at 486.16 m^2, with a garden area that varies between 590 m^2 and 1.345 m^2.

All the Mavişehir III villas have the following amenities and fixtures: wooden roof with gutter tile; window shutters or blinds on all the windows and doors except at the entrance; oriel repluace window; a garage with an automatic door; fixed barbeque stand on the terrace (in the triplex type) and on the lawn (in the duplex type); wooden pergola on the ground floor and in the first floor balcony; central heating system; water reservoir; uninterrupted power supply; false ceiling; Hilton sink in bath and toilet rooms; a closet and steel safe in the master bedroom; faux (pasteboard) ceiling ornament; laminated modular kitchen countertops.

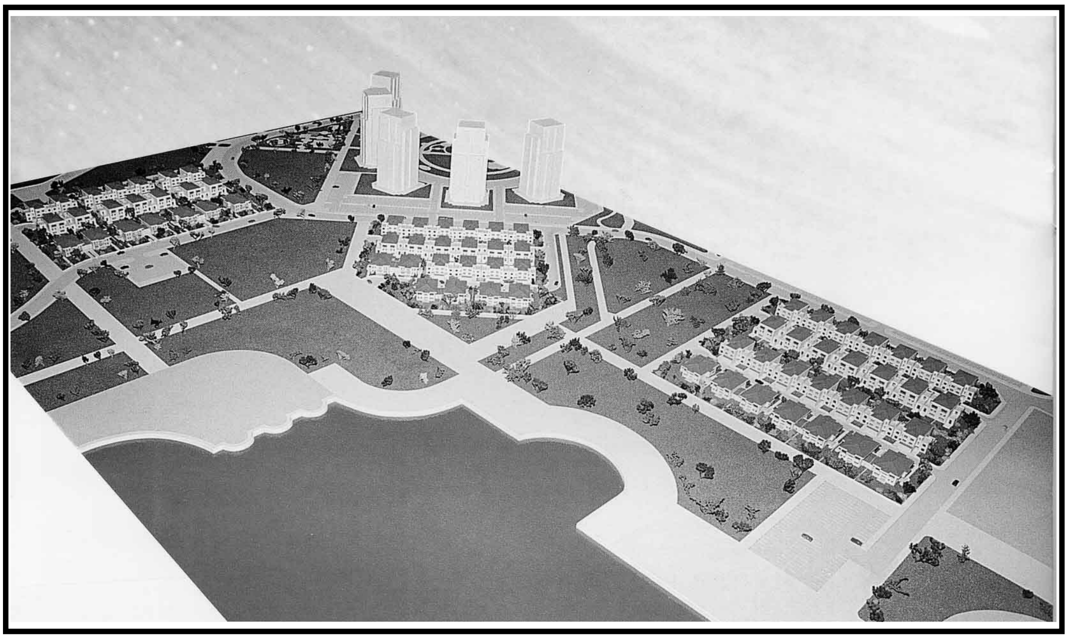


Figure 4.53 Location of Mavişehir III

Figure 4.54 Mavişehir III; Villas

4.4. Review of Other Studies About Mavişehir

There have been two studies of Mavişehir prior to the present thesis. A 1998 Master's thesis by Özçelik concentrates on previous studies devoted to the Housing Estate Bank's residences. The aim of the thesis is to amass the information on the public housing applications of the Housing Estate Bank in Izmir and investigate the development of economical social, and cultural differences in Turkey. The other study is empirical, questionnaire-based research directed at people who decided to, but then change their minds, to buy a residence in Housing Estate Bank projects (TEB-f, 1994). Conducted in 1994, it was directed by Italian marketing and research corporation Piar Gallup. It sought to discover the criteria by which the Bank's project's residents felt–or failed to feel-satisfaction and by which they made their choices. The important point in Özçelik which is relavent to the present thesis is the second part of Özçelik's work concerned with the qualities of public housing and their environment, and also the coherence of the principle of design at work throughout a project.

Residents who are living in the Housing Estate Bank's residences in Izmir are looking for different factors such as on which floor of the apartment block the residence is, how many rooms they have, the floor square of the residence, and the fixtures and amenities available. TEB-f (1994) found that Residents especially choose lower storeys to live on. Higher storeys were found to decrease residents' social and cultural relationship with the environment and neighbors, and caused cultural isolation. The Turkish Housing and Estate Banks questionnaires, prepared in 1994, clearly indicate that people choose to live on the third and fourth floors regardless of whether the residential building is in a low or high-rise building. The ground floor and the floors higher than the tenth floor are not chosen for living.

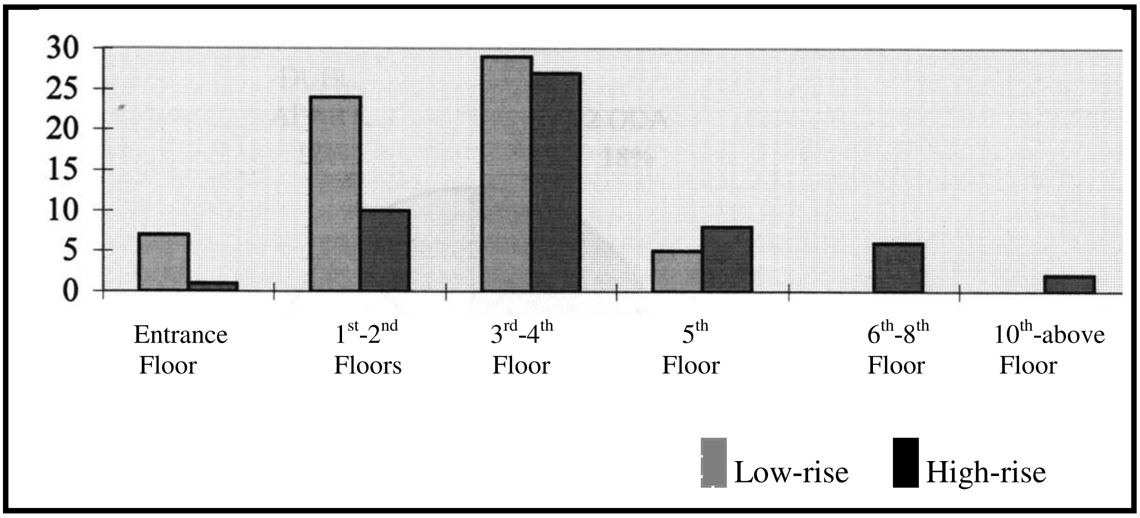


Figure 4.55 Preferred Floors in the apartment buildings (TEB-f, 1994)

Different from the creation of highness run the results of questions concerning floor area. Given the options for areas (m^2) of the residences, $100m^2$-$149m^2$ were chosen by a percentage of %55.61 – 99 m^2 by a percentage of %33, 150 m^2 and higher was chosen by a percentage of %10, and $60m^2$ and lower were chosen by the lowest percentage of %2 (TEB-f, 1994).

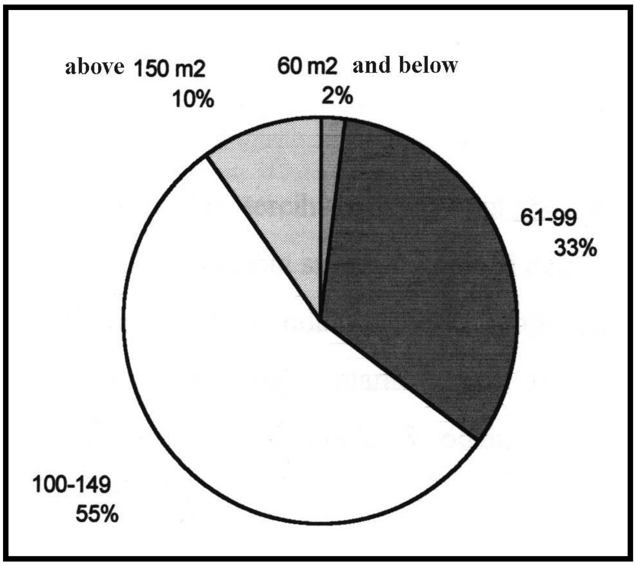


Figure 4.56 Preferred Areas in the Residences (TEB-F, 1994)

Room number is another factor which affects the preference of the residents. According to Türkiye Emlak Bankası-f (1994) (Turkish Housing and Estate Bank), residences which have three rooms are chosen by a percentage of % 61, two rooms are chosen by a percentage of % 24, four rooms are chosen by a percentage of %12, and studios are chosen by the lowest percentage of %3. Özçelik (1998), adds that because of the highness of the rents and sale prices the studios are not preferred among the elderly and single persons.

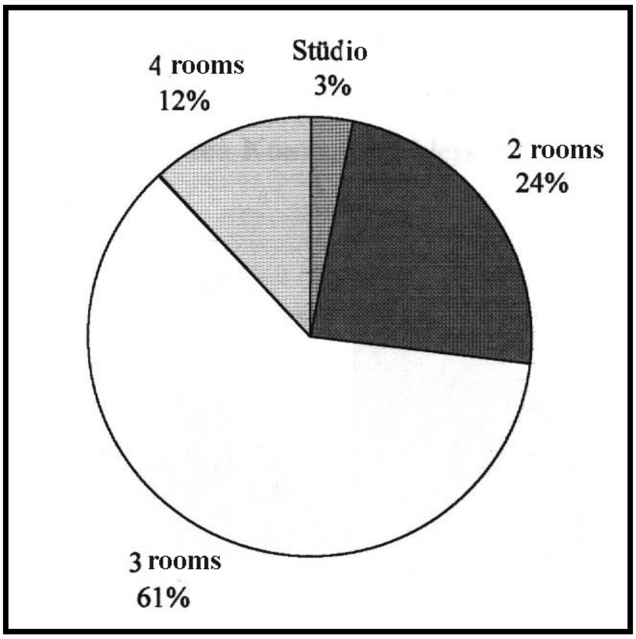


Figure 4.57 Preferred Room Numbers in Residences (TEB-f, 1994)

Özçelik is justified in the critisim she directs at the location of the Mavişehir blocks. Becouse, for example, the Pamukkale Apartment Blocks are situated perpendicularly to the sea, sea view is avaible from the bedroom windows, but not from the living room or else where. The design goal of the Mavişehir Project in situating the buildings perpendicularly to the sea was not block the sea view of the residences and to make available the same sea view in every residence. The result, however, was not satisfactory to the residents. Also Özçelik adds that the green areas among the apartment blocks are not felt to be safe by the residents.

Another problem is car park which is insufficient. The Mavişehir Project was designed according to car park regulations that determined one car per two residences (Özçelik, 1994). Because reality entails a car per resident, a car park space planning that calculates approximately two cars per flat is going to prove sufficient.

4.5. Conclusion

The Mavişehir Project, comprised of the Mavişehir I, Mavişehir II, and Mavişehir III stages, consists of heterogeneous achipelagoes of buildings. As the object of study of this thesis is resident satisfaction in high-rise apartment buildings, Mavişehir III, consisting of villas alone, has not been examined.

The heterogeneity of the Mavişehir Project is not made up only of different blocks, but even the storeys within a block type show variance. As we are going to see when analyzing the results of the questionnaire implementation, each floor plan and material character of each unit will come into play in obtaining and interpreting the results. Hence this chapter offered a detailed overview of the physical characteristics of Mavişehir I and II.

CHAPTER 5

RESEARCH METHODOLOGY

5.1. Research Population and Sampling

The present chapter focuses on the methodology of the study and describes the researched population, participants, instruments, procedure, pilot study, questionnaire administration procedures, and data collection.

The research methodology centers around the administering of a survey questionnaire and the procedural tasks comprising the stages of preliminary research toward the preparation of the questionnaire, the pilot study followed by adjustments made in the questionnaire, determining ratio of researched population to total population and sub-ratios according to building type, administering of the questionnaire, data analysis, and drawing of conclusions. In this study the research population and sampling takes an important place. The number of persons to whom a questionnaire has been given has not been determined arbitrarily. The formula (Sanders, 1990, p. 298) used to find the number of questionnaires that should be implemented in this thesis is given below:

Sample Size:

$$ss = \frac{z^2 \times (p) \times (1-p)}{c^2}$$

Table 5.1 Sample Size Formula

where:

Z = Z value (e.g., 1.96[8] for 95% confidence level)

p = percentage picking a choice, expressed as decimal (.5 used for sample size needed)

c = confidence interval, expressed as decimal (e.g., .06 = ±6)

× = multiply

Applying the formula, the results were as follows:

[8] 1.96 is the numerical equivalent of 95% confidence level (Sanders, 1990, 294).

$$ss = \frac{(1.96)^2 \times (0.50) \times (1 - 0.50)}{(0.6)^2}$$

ss = 266.77

Correction for Finite Population:

$$new\,ss = \frac{ss}{1 + \frac{ss - 1}{pop}}$$

Table 5.2 Correction for Finite Solution

Where:

pop: population

As already pointed out in Chapter 4 above, there are 2,784 residences in Mavişehir I and 2,448 residences in Mavişehir II apartment buildings, making up a total of 5,232 residences in Mavişehir I and II apartment buildings. Applying the formula, the result was as follows:

$$new\,ss = \frac{266.77}{1 + \frac{266.77 - 1}{5{,}232}}$$

new ss = 253.8 which means 254 questionnaires. 262 questionnaires were distributed, filled in, and studied for conclusions in the present study.

5.1.1. Participants

A total of 262 participants (including the 10 residents in the pilot study) took part in the study. The number included 98 males and 164 females. The age range of the sample group was between 16 and 85.

5.1.2. Instruments

The data sheet prepared for this investigation was a *questionnaire* comprising 74 questions. The questionnaire grouped bales[9] with reference to two personal traits: age and sex. It addressed questions which identified:

i. reasons for choosing to reside in Mavişehir
ii. changes they made in the residence
iii. the general sense of satisfaction with Mavişehir residency regarding,
  a. flat
  b. the building
  c. the environment.

5.1.3. Procedure

The questionnaires were administered to the residents in one of four methods:

i. face to face
ii. by e-mail
iii. by telephone
iv. by distributing and collecting at an appointed time.

All four methods involved the researcher herself, including the distributing and collecting of the questionnaires.

5.2. Questionnaire Administration Procedures and Data Collection

The Mavişehir complex is divided into three administrative units. Administrative Office I maintains the apartment blocks of Pamukkale & Selçuk. Administrative Office II maintains all of Mavişehir II, which is comprised of the apartment blocks Flamingo, Turna, Kırlangıç, and Kuğu. Administrative Office III maintains the apartment blocks of Albatros. The Administrative Offices of Mavişehir II and III aided the researcher by facilitating her access to buildings and residents as well as providing for her introduction and security. Both administrations appointed a security officer for accompanying the researcher. Together with the security officer, the researcher rang the doorbell and presenting to the resident the necessary introductions,

[9] The definion of bale is the a large bundle of goods. In this thesis the term is used for the groups of subjects who answered the questionnaires.

applied the questionnaire by method i or iv listed in item 5.1.c above. While the presence of the familiar and uniformed security officer enabled the resident to feel safe in admitting the researcher, it equally faciliated sense of the researcher's security. A second convenience afforded by the presence of the security officer was facilitation to the buildings, as they are entered by applying a code to the electronic access system. The third convenience afforded by the presence of the security office was aid in the recovery of those questionnaires which had not been collected for various reasons. In such cases, the filled-in questionnaire was collected upon a telephone call placed from the Security Office of the building to the resident asking for the questionnaires which had been distributed before.

This researcher encountered no problems with Administrative Offices II and III in the research process. Questionnaires distributed in Flamingo, Turna, Kırlangıç, Kuğu and Albatros, comprising the jurisdiction of Administrative Offices II and III, were administered and results obtained within two weeks, excluding weekends. All questionnaires were administered using Procedure iv cited above, in section 5.1.c.

Administrative Office I did not offer permission to this researcher, so that alternate means of access to the residents had to be devised instead of the direct mode of circulation afforded by central permit in spaces maintained by Administrative Offices II and III. Thus, the following alternative means were used for spaces under the jurisdiction of Administrative Office I:

1. For Pamukkale VI, permission was obtained from the Administrative and Maintenance Office of the individual building. 30 questionnaires were administered in Pamukkale VI.

2. In Pamukkale buildings excluding number VI and in Selçuk buildings, 27 questionnaires were administered by telephone, using telephone numbers and prior introductions to residents obtained through personal acquaintances of the researcher.

3. Three questionnaires were administered in Pamukkale and Selçuk buildings by electronic mail, using electronic mail and electronic mail box addresses.

4. 20 questionnaires were administered in Pamukkale and Selçuk buildings face to face by the researcher using prior introductions to residents obtained through personal acquaintances of the researcher.

5. 70 questionnaires were administered in Pamukkale and Selçuk buildings by the distributing and collecting method, with the researcher distributing and collecting the questionnaires, by using prior introductions obtained through personal acquaintance.

Administrative Office I offered as reason for denial of permit the fact that the proposed time of research involved the summer months of July and August and residents did not wish to be disturbed during these leisurely months. Also mentioned was the anxiety residents might feel about burglary and thus be reluctant to respond to unfamiliar persons at their door.

5.3. Pilot Study

There were two pilot studies conducted on ten residents. Results of the pilot study were used to make alterations in,

a. the grouping of the questions,
b. the context of the questions (e.g., some were eliminated and others were added),
c. the wording of the questions in order to eliminate ambiguity.

The resulting questionnaire implemented in this study is given below in English translation. For the Turkish original, the reader may refer to the Appendix.

5.4. The Questionnaire

Date: ____________________________________

Residence name and number: _______________

Floor number: _____________________________

Residence m^2: _____________________________

Number of rooms: __________________________

Sex: ______________________________________

1) Why did you prefer to live in Mavişehir?

____

2) Where would you prefer to live if you had the option?

____

3) What were the changes you made in your residence?

____

4) Age

a) 24 and under b) 25 – 34 c) 35 – 44 d) 45-54 e) 55 – 64 f) 65 and up

5) Owner or renter of the residence

a) Owner b) Renter

6) How many persons living in the residence?

a) 1 b) 2 c) 3 d) 4 e) 5 f) 5 +

7) Are you living on the floor on which you wish to live? (If not, which floor do you wish to live on?)

a) Yes b) No

____

8) In comparison to the residence you are living in now, what was the residence you lived in before?

a) Low-rise apartment building (1 – 12)

b) High-rise apartment building (13 – higher)

c) Detached house

<u>About the residence:</u>

9) Are you satisfied with the size of your residence? (Why?)

a) Yes b) No c) No opinion

____

10) Do you find your residence functional? (Why or why not?)

a) Yes b) No c) No opinion

____

11) Are you satisfied with the ceiling height? (Why or why not?)

a) Yes b) No c) No Opinion

____

12) Is daylight distribution adequate in your residence?

a) Yes b) No c) No Opinion

____

13) Are you satisfied with water insulation? (Why or why not?)

a) Yes b) No c) No opinion

____

14) Are you satisfied with thermal insulation? (Why or why not?)

a) Yes b) No c) No opinion

____

15) Are you satisfied with the sound absorption ? (Why or why not?)

a) Yes b) No c) No opinion

____

16) Are you satisfied with the window materials and water tightness at the windows? (Why or why not?)

a) Yes b) No c) No opinion

____

17) Are you satisfied with the electrical fixtures (Why or why not?) number of sockets and their location?

a) Yes b) No c) No opinion

____

18) Are you satisfied with sanitary fixtures (wash basins, water closet, etc)? (Why or why not?)

a) Yes b) No c) No opinion

____

19) Are you satisfied with the location of your flat? (Why or why not?)

a) Yes b) No c) No opinion

____

20) Are you satisfied with the view from your flat? (Why or why not?)

a) Yes b) No c) No Opinion

____

21) Are you satisfied with the quality of television transmission? (Why or why not?)

a) Yes b) No c) No Opinion

____

22) Do you have uninterrupted hot water service?

a) Yes b) No c) No Opinion

____

23) Are you satisfied with the central heating system? (Why or why not?)

a) Yes b) No c) No Opinion

____

24) Are you satisfied with the acoustic quality of your residential space? (Why or why not?)

a) Yes b) No c) No Opinion

____

25) Are you satisfied with the water quality? (Why or why not?)

a) Yes b) No c) No Opinion

____

26) How many neighbors do you have?

____

27) Do you find you are deprived of neighborly relations? (Why or why not?)

a) Yes b) No c) No Opinion

____

28) Are you satisfied with the degree of privacy from your neighbors? (Why or why not?)

a) Yes b) No c) No Opinion

____

About the Apartment Building:

29) Are you satisfied with the external appearance of your apartment building? (Why or why not?)

a) Yes b) No c) No Opinion

____

30) Are you satisfied with the building height? (Why or why not?)

a) Yes b) No c) No Opinion

____

31) Are you satisfied with the design of the entrance/lobby of your apartment building? (Why or why not?)

a) Yes b) No c) No Opinion

____

32) Are you satisfied with the exterior color of the building? (Why or why not?)

a) Yes b) No c) No Opinion

____

33) Are you satisfied with the vertical circulation within your building (lifts and stairways)? (Why or why not?)

a) Yes b) No c) No Opinion

____

34) In spite of your floor number do you use the stairways? (Why or why not?)

a) Yes b) No

____

35) Are you satisfied with stair-step height in your building? (Why or why not?)

a) Yes b) No c) No Opinion

____

36) Are you satisfied with the stairway material? (Why or why not?)

a) Yes b) No c) No Opinion

____

37) Are you satisfied with the lift speed? (Why or why not?)

a) Yes b) No c) No Opinion

____

38) Are you satisfied with the waiting time for the lift? (Why or why not?)

a) Yes b) No c) No Opinion

____

39) Are you satisfied with the horizontal distance (hallway distance)? (Why or why not?)

a) Yes b) No c) No Opinion

____

40) Are you satisfied with the material used in the hallways? (Why or why not?)

a) Yes b) No c) No Opinion

____

41) Are you satisfied with the postal service? (Why or why not?)

a) Yes b) No c) No Opinion

____

42) Are you satisfied with the lighting level inside the apartment building? (Why or why not?)

a) Yes b) No c) No Opinion

____

43) Are you satisfied with the doorkeeping service? (Why or why not?)

a) Yes b) No c) No Opinion

____

44) Are you satisfied with the maintenance and repair service? (Why or why not?)

a) Yes b) No c) No Opinion

____

45) Are you satisfied with the disposal service? (Why or why not?)

a) Yes b) No c) No Opinion

____

46) Are you satisfied with the cleanliness of your apartment building? (Why or why not?)

a) Yes b) No c) No Opinion

____

47) Are you satisfied with building entrance security? (Why or why not?)

a) Yes b) No c) No Opinion

____

48) Are you satisfied with the security in the corridors? (Why or why not?)

a) Yes b) No c) No Opinion

____

49) Are you satisfied with the security inside the lift? (Why or why not?)

a) Yes b) No c) No Opinion

____

50) Are there adequate number and quality of fire extinguishers? (If yes, are you satisfied?)

a) Yes b) No c) No Opinion

____

51) Adequacy of escape routes in case of fire or earthquake?

a) Yes b) No c) No Opinion

____

52) Are escape routes in case of fire or earthquake unencumbered?

a) Yes b) No c) No Opinion

____

53) Do you think your building is safe against an earthquake?

a) Yes b) No c) No Opinion

---

54) Are you satisfied with the construction stability of the apartment building? (Why or why or why not?)

a) Yes b) No c) No Opinion

---

55) Does your building have a shelter?

a) Yes b) No c) No Opinion

---

56) Are your requests met by the Administration and Maintenance Office?

a) Yes b) No c) No Opinion

<u>General:</u>

57) Are you satisfied with the location of Mavişehir? (Why or why not?)

a) Yes b) No c) No Opinion

---

58) Are you satisfied with the public transport access at Mavişehir? (Why or why not?)

a) Yes b) No c) No Opinion

---

59) Are there leisure facilities? (If yes, are you satisfied with them?)

a) Yes b) No c) No Opinion

---

60) Are you satisfied with the distance of convenience stores/markets? (Why or why not?)

a) Yes b) No c) No Opinion

---

61) Do you experience difficulty in finding automobile parking space? (Why or why not?)

a) Yes b) No c) No Opinion

---

62) Are you satisfied with the entrance and exits of the automobile parking? (Why or why not?)

a) Yes b) No c) No Opinion

____

63) Are you satisfied with the cleanliness of public areas? (Why or why not?)

a) Yes b) No c) No Opinion

____

64) Are you satisfied with the illumination in public areas? (Why or why not?)

a) Yes b) No c) No Opinion

____

65) Are you satisfied with the security in public areas? (Why or why not?)

a) Yes b) No c) No Opinion

____

66) Are there shopping and social places? (If yes, are they sufficient in number and quality?)

a) Yes b) No c) No Opinion

____

67) Are there culture and arts facilities (cinema, theatre, etc.)? (If yes, are they sufficient in number and quality?)

a) Yes b) No c) No Opinion

____

68) Are there facilities for the elderly?

a) Yes b) No c) No Opinion

____

69) Are you satisfied with children's playgrounds? (Why or why not?)

a) Yes b) No c) No Opinion

____

70) Are you satisfied with the nurseries, primary and high schools? (Why or why not?)

a) Yes b) No c) No Opinion

____

71) Are there religious facilities? (Are you satisfied with them?)

a) Yes b) No c) No Opinion

____

72) Are you satisfied with the density of population in Mavişehir? (Why?)

a) Yes b) No c) No Opinion

____

73) Are you satisfied with the sufficiency of public spaces? (Why?)

a) Yes b) No c) No Opinion

____

74) Are you satisfied with the work of Administrative Offices? (Why or why not?)

a) Yes b) No c) No Opinion

____

5.5. Conclusion

The methodology of the study, description of the research population, participants, instruments, procedure, pilot study, questionnaire administration procedures, and data collection have been described above. The results to the questions of the questionnaires are collected through SPSS software and program, which are described in Chapter 6.

CHAPTER 6

OVERVIEW OF SPSS STATISTICAL ANALYSES AND DATA MANAGEMENT SYSTEM

6.1 Introduction to SPSS

Statistical Package for the Social Sciences (SPSS) is a program which provides a statistical analysis and data management system in graphical environment. It was utilized in compiling results obtained in the present research in order to arrive at reliable conclusions with minimal error margin. While SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and complex statistical analyses, the files prepared for SPSS implementation in this study comprised Word files consisting of groupings of questionnaires. The results were obtained in pie charts and bar charts. Questionnaire groupings used in this study consisted of the following:

1. subjects' responses to all questions
2. subjects' responses to questions concerning the residence
3. subjects' responses to questions concerning the building in which residence is located
4. subjects' responses to questions concerning the environment
5. subjects' responses to open-ended questions.

6.2 Data Entry

The questions in the questionnaires were stored in the SPSS data file, using Microsoft Office Excel with rows and columns. Thus were obtained two kinds of 'sheets':

1. A cross-listing of all questions on the questionnaire against all questionnaires implemented, which yielded a sheet of answers subjects gave to all questions. Answers were represented in numerical code and entered manually. In other words, the researcher went through all questionnaires and converted subjects' answers according to a pre-designated numerical representation scheme, and entered responses by numerical value.

This pre-designated numerical representation scheme ran as follows:

1.00	yes
2.00	no
999	no opinion

Table 6.1 Numerical representation scheme

The *Data View* is the sheet that is visible when one first opens the Data Editor on the columns and contains the data. The data entered started with residence name, floor number, etc., following the order of questions on the questionnaire, and ended with the question, “Are you satisfied with the work of the Administrative Office?”, which is the final question on the questionnaire.

2. Items entered on the second sheet, labeled *Variable View,* do not derive directly from data obtained on the questionnaire, but involve intermediary codification of data so obtained, and the itemization and entering of the codes for variant answers given by subjects to a specific question. For example, residence names indicated by a subject in the questionnaire in response to Question 1 were numerically codified as in the following table:

1.00	Pamukkale and Selçuk
2.00	Kırlangıç
3.00	Turna
4.00	Kuğu
5.00	Flamingo
6.00	Albatros

Table 6.2. Variable Table: subjects’ response to question about name of residence

A distinction between two often confused terms, *variable* and *value*, is in order: A *variable* is a measure or classification scheme that can have several values. *Values* are the numbers of categorical classification representing individual instances of the variable being measured.

In the first sheet (*Data View*) described above, each row contains a case: all responses given by one subject to all the questions in the questionnaire. Each column is a variable. For example, there were 262 subjects and 74 questions in the questionnaire implemented. The result was a data file with 262 cases (rows). As the number of variables depends upon the types of questions and the survey, and since in this study's questionnaire 63 questions with 3 check-box answers to each question were deployed, the present survey had 189 variables. The remaining nine questions were open-ended, including those such as Question No. 1, which inquired why the subject chose to reside in Mavişehir. These were individually tabulated and are discussed in Section 7.3 below.

The *Missing Values* column available on the second sheet allowed this researcher to define which values of a variable should be treated as missing data. The Missing Data in this thesis were those answers which subjects gave by selecting the *no opinion* option. The *Label* column, again avaible on the second sheet, was used to define labels for variables. The *Values* column was used to assign labels to the particular values of a variable. For example, in this questionnaire a variable has been assigned the values 1, 2, and 999 for the labels *yes*, *no*, and *no opinion,* respectively. In open-ended questions the value labels were assigned directly according to the individual answer of a resident. As an example, in the third question, "What were the changes you made in your residence?", there were 7 different answers given:

i. no changes
ii. floor covering
iii. window and door joinery
iv. kitchen, bathroom, adding closets
v. annexing balconies
vi. more than one answer
vii. changed everything

6.3 Conclusion

Each answer by a subject was assigned a different value label. Data systematized as described above was subjected to analysis, which is described in Chapter 7.

CHAPTER 7

DATA ANALYSES AND RESULTS

7.1. Introduction

"The experience of high-rise housing varies from person to person between social groups, from place to place and across cultures and time" (Kim, 1997). Every person reacts differently to his or her environment so that planners and architects must design products by thinking of the users of that space, refraining from simply creating physical products. The analysis of data obtained through the questionnaire implemented for investigating resident satisfaction in Mavişehir once again demonstrated the truth of this statement.

7.2. Data Analysis and Results

In Chapter 3, factors that carried impact on resident design initiative and tasks to be undertaken regarding the task of the designer and planner which most likely would dissolve dissatisfaction were discussed on the basis of the literature offered. The present chapter offers data analysis and results of the thesis research, and reflections on the factors taken up in Chapter 3.

As already cited in Chapter 3, Howell (1979) stated that the concept of 'residential area' could not be limited to the flat where people lived and must be expanded to include the environment. The questionnaires implemented in this thesis study were prepared on the basis of this wider notion of 'residential area'. The questions were not simply asking about the subjects' flats, but also asked about their apartment buildings and their environment in order to establish presence or absence of residential satisfaction. Another important influence on the constitution of the questionnaire used were the respective frameworks presented by Liu (1999) and Philips (1990). The important factors which were identified by these researchers and which were put to use in the present questionnaire were dwelling unit and housing system, safety and security, social interaction and relationships (neighborhood), physical qualities of materials, and finally, the management.

The overall results of the data obtained from the questionnaires recording subjects' response have been tabulated below with reference to the four conceptions of 'satisfaction':

1. the all-comprehensive category of overall resident satisfaction in Mavişehir (Table 7.1and Figure 7.2)
2. flat satisfaction in Mavişehir (Figure 7.2)
3. building satisfaction in Mavişehir (Figure 7.3), and environment satisfaction in Mavişehir (Figure 7.4)

Overall resident satisfaction in Mavişehir, shown in Figure 7.1, comprises the combination of responses to 65 questions in the questionnaire. We might recall that though subjects were asked to respond to 74 items, nine of these concerned open-ended questions which would be defined under the subheading of the open-ended Question in Section 7.2 below. Apartment building, flat satisfaction and environment satisfaction are indicated in Figures 7.2, 7.3 and 7.4, and respectively comprise responses to flat, building, and environment satisfaction questions.

In Table 7.1 below the Overall Resident Satisfaction in Mavişehir is given by the codes, counts and percentage of responses to the residential satisfaction questionnaire. The words in the category label are numerical values given by subjects as the responses to questions in the questionnaire. Codes are the numbers used when entering the data; count is the number found by the multiplication of 262 subjects by the response code numbers assigned to *yes*, *no*, or *no opinion* questions in the residential satisfaction questionnaire. Percentage of responses is found in the results of responses:

Category label	Code	Count	Pct of Responses
Yes	1	9335	75.6
No	2	2803	22.7
No Opinion	999	213	1.7
Total responses		12351	100.0
0 missing cases; 262 valid cases			

Table 7.1 Overall resident satisfaction in Mavişehir: SPSS results

The first and fundamental finding of the research is that residents of Mavişehir I and II are satisfied with their residency. This can be observed clearly in the figure below, where a percentage of 75% is indicated in behalf of satisfaction. This finding was based on the analysis of responses by all subjects to all questions.

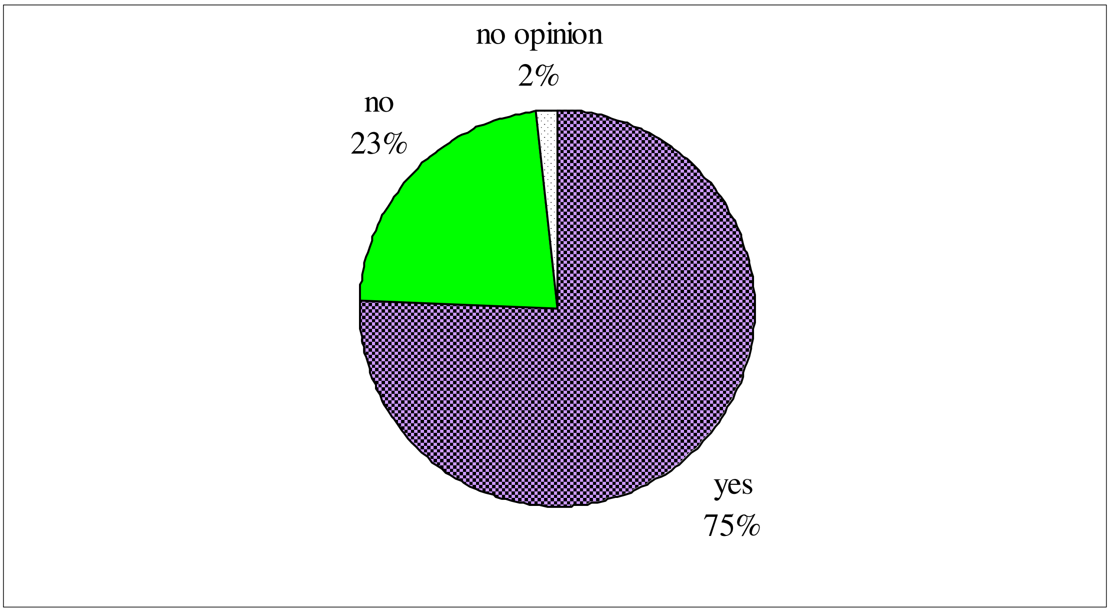


Figure 7.1. Overall residential satisfaction in Mavişehir (pct. rounded off to nearest whole number)

Findings from the questions concerning flat satisfaction, apartment building satisfaction, and environment satisfaction are in uniformity with the finding on general satisfaction, with percentages varying only slightly among the three distinct areas of residential satisfaction:

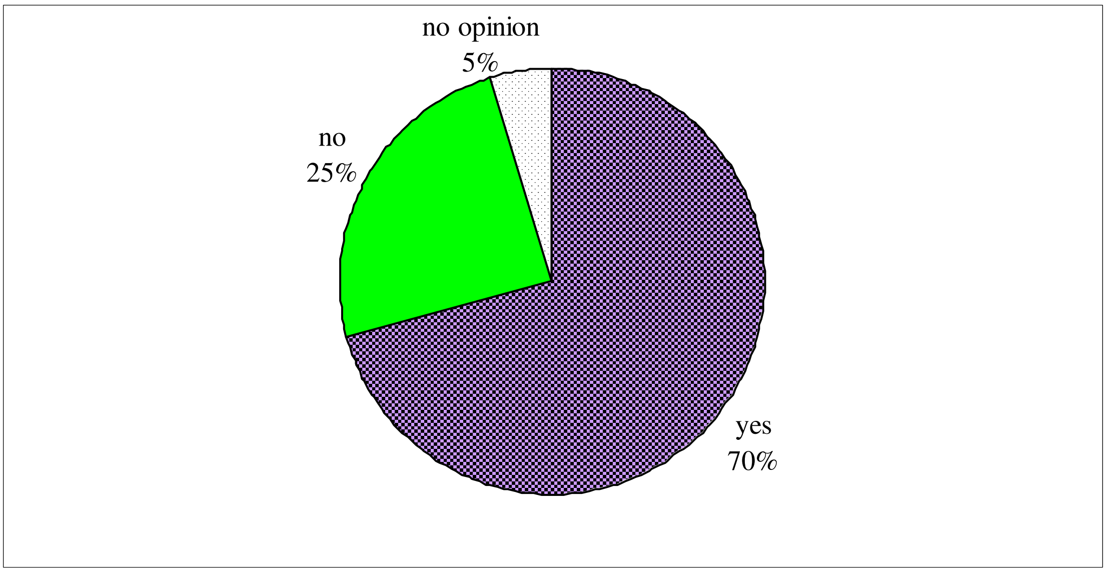


Figure 7.2. Flat satisfaction in Mavişehir (pct. rounded off to nearest whole number)

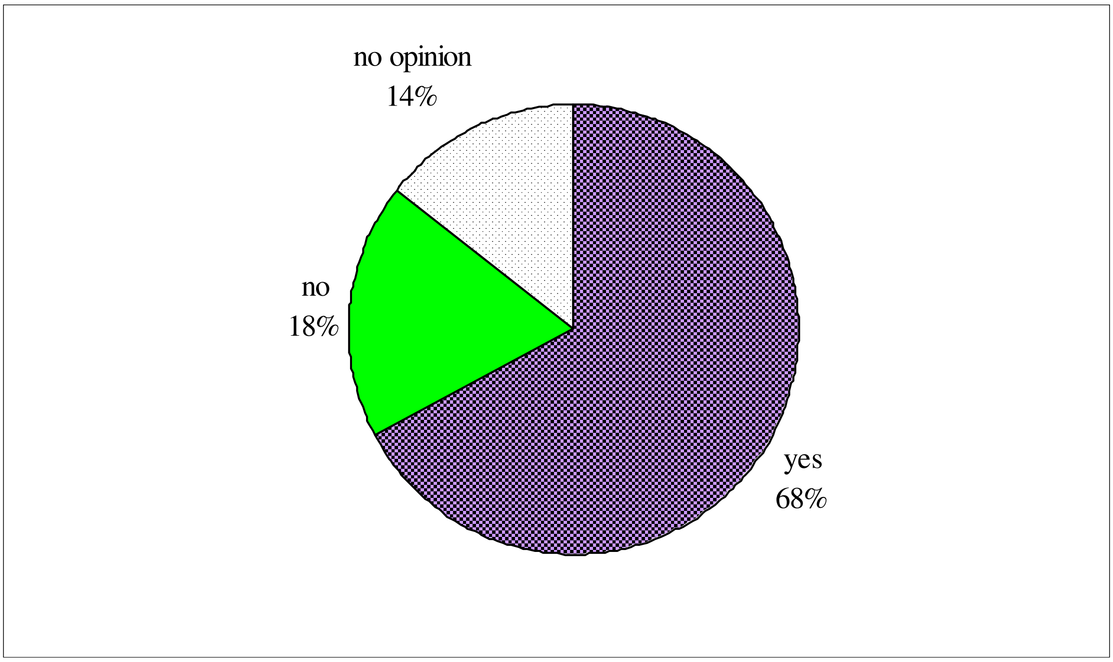


Figure 7.3 Building satisfaction in Mavişehir (pct. rounded off to nearest whole number)

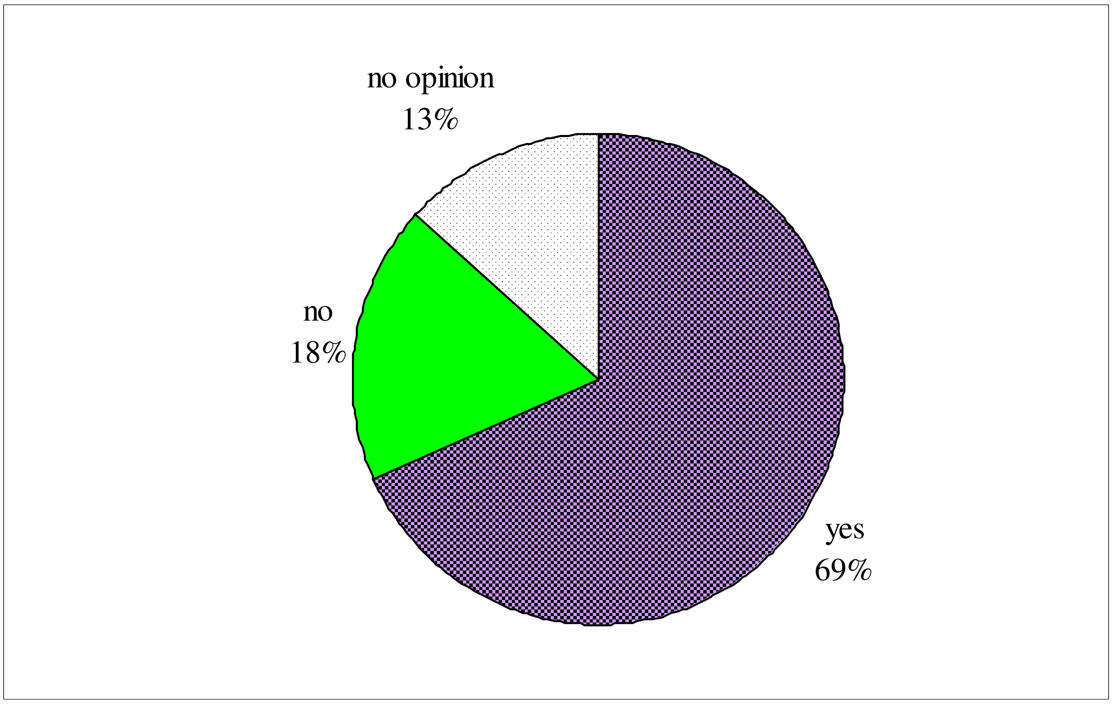


Figure 7.4 Environment satisfaction in Mavişehir (pct. rounded off to nearest whole number)

The important question to be realized is, ‘Are the results of each question the same?’ or ‘What are the points regarding which people are not satisfied?’ Consequently, the researcher ought to look in detail at the answers to those questions below in the figures which indicate lack of satisfaction as particularly these are expected to have important effect in the process of project design. The responses reflect that residents were not satisfied completely with everything in Mavişehir. The negative results will indicate the way in which architects and planners can make residents more comfortable and capable of deriving satisfaction. They will indicate the mistakes not to be committed again.

The changes people make in their dwellings, which as we have seen in Chapter 3, is defined as 'personification', emerge in the residences of Mavişehir especially in the Pamukkale and Selçuk apartment buildings. Here, people were found predominantly to annex balconies to the rooms (8.8%). There are of course explicit reasons subjects who have done so indicated for their decision. 70% of the subjects voluntarily pointed out that either their kitchen or their living room was darker because of an erroneous design decision by the architect which placed by a balcony in front of the living room. Subjects said that annexing the balcony yielded lighter spaces in which to live. Other reasons given were rendering the view from a balcony visible from the living room, and possessing larger space. Similar results were found regarding annexing the balconies in research by Eyüce (1991), Göregenli (1991), and Altaş and Özsoy (1998) conducted in Istanbul and Izmir.

The changes residents made in Mavişehir residences are not limited to simply annexing balconies to rooms. Residents have also changed floor coverings, door and window joinery, kitchen and bathrooms (adding closets to both). Further investigation and documentation of changes residents made will be taken up in Section 7.3 under the heading of the open-ended question.

Similar to Spain and the United States, in Turkey too, personal and social differences formed the architectural and physical characteristics of dwellings. Gillis (1977), moreover, had found in research conducted in the United Kingdom that residents of households which were separated from each other horizontally or vertically by the same walls, floors and ceilings tended to be dissatisfied. Similar results have been obtained in the present research. With a startling 72.9% of Mavişehir residents expressing dissatisfaction in response to the question, "Are you satisfied with the sound absorption?" present study results indicate similarity to Gillis' findings.

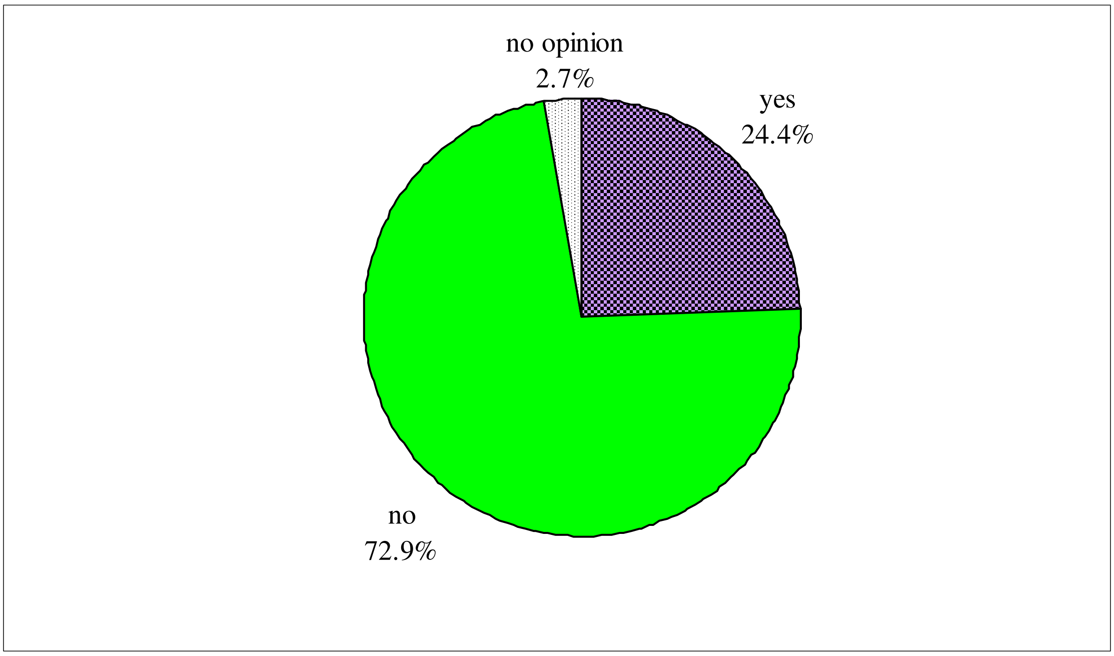


Figure 7.5. Satisfaction with sound absorption in Mavişehir

Gillis did not tabulate the results of his research in percentiles. Nor did his study concentrate exclusively on high-rises: he studied high-rise, semi-detached as well as detached units, inquiring into residents' reaction to sharing walls horizontally or vertically. His findings indicated that the overwhelming majority were dissatisfied with any sharing of wall, floor, and ceiling. Indeed, it is ultimately unsurprising that 72.9% in Mavişehir expressed dissatisfaction. What *is* surprising is that 24.4% indicated satisfaction. While this researcher was administering the questionnaires, she had ample opportunity to experience the nature of sound proofing inside the flats. Not only could one overhear discussion conducted in stronger tone in every direction including up- and downstairs and horizontally adjacent neighbors, but also use of plumbing and water flow at neighbors' in all directions.

The way to decrease dissatisfaction would be by focusing on the isolation materials in general, including those pertinent to sound absorption. The Housing Estate Bank's fundamental aim should be use of quality materials in sound absorption so as to increase satisfaction in general. Perhaps an equally essential solution, however, would consist in regarding this dissatisfaction as a design problem and proposing a solution in a design process that separates the residences horizontally and/or vertically by decreasing the amount of shared surface including walls, floors, and ceiling. The staggered design, whose history may be traced to early twentieth-century modernism and Wrightian 'cantilevering' and which, along with use of the right materials, is the contemporary design solution to the issue of sound pollution, thus was researched in the present study, too. Clearly, the overall dissatisfaction with sound absorption in Mavişehir had to be compared with the data obtained in the particular case of the blocks that pursued the staggered design approach.

In fact, the designers of Albatros seemed to have identified this solution for increased satisfaction regarding not only sound absorption but also other factors in privacy satisfaction. They focused on a staggered vertical placement as well as floor plan that staggered adjacent spaces of neighboring flats. Before we look at the details of these characteristics, the reader may want to view again the Albatros floor plans given at 4.14 to 4.19, pages 76-81 above. Figures 7.6 and 7.7 provide details of horizontal and vertical staggering while 7.8 and 7.9 offer external views of the Albatros type:

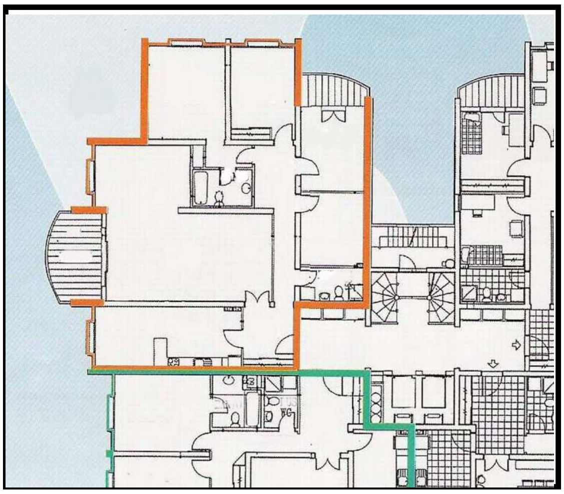


Figure 7.6. Detail of floor plan in Albatros Apartment Building (1-16th floors)

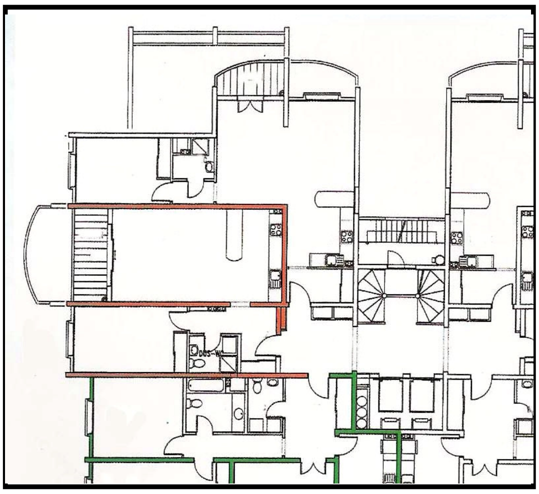


Figure 7.7. Detail of floor plan in Albatros Apartment Building (17-19th floors)

Figure 7.8. External View of Albatros Apartment Building

Figure 7.9. External View of Albatros Apartment Building

The principle of staggering may be observed in the Pamukkale and Selçuk type, too:

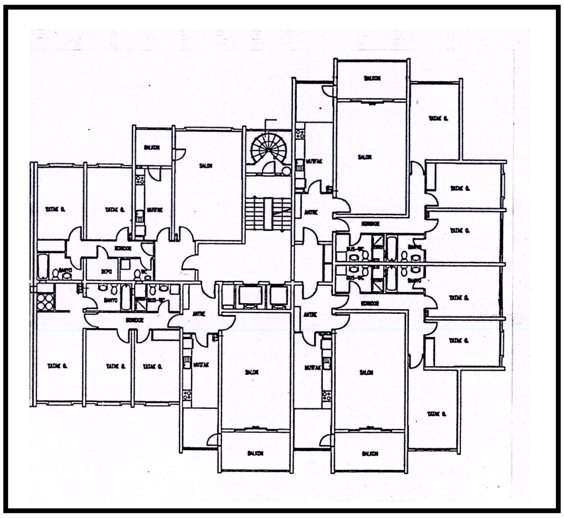


Figure 7.10. Typical plan of Pamukkale & Selçuk Apartment Building

Figure 7.11. External View of Pamukkale & Selçuk Apartment Building

Vertical staggering is more self-evident in the Flamingo type:

Figure 7.12. External View of Flamingo Apartment Building

Figure 7.13. View of Flamingo Apartment Building

One must point out, however, that there are two significant problems in the Flamingo type, one of which is relevant to design in a wider sense: at least from this architect-researcher's perspective overall choice of building materials is poor. Also the placement of the Flamingo in the site plan leaves much to be desired.

Thus the Albatros and Pamukkale and Selçuk types were selected as particular cases to compare with overall satisfaction with sound absorption in Mavişehir. The hypothesis was that, owing to horizontally and vertically staggered design, particularly Albatros, but to some extent Pamukkale and Selçuk too, would yield less dissatisfaction with sound absorption. Further to demonstrate the above-stated difference in sound-absorption satisfaction produced by the staggered design in Albatros, we compared residents' answers to the question in Albatros and Pamukkale and Selçuk. The results were astoundingly negative. Residents in the Albatros type expressed dissatisfaction with sound absorption at 90.91% while those in the Pamukkale and Selçuk type expressed dissatisfaction at the rate of 65.00%.

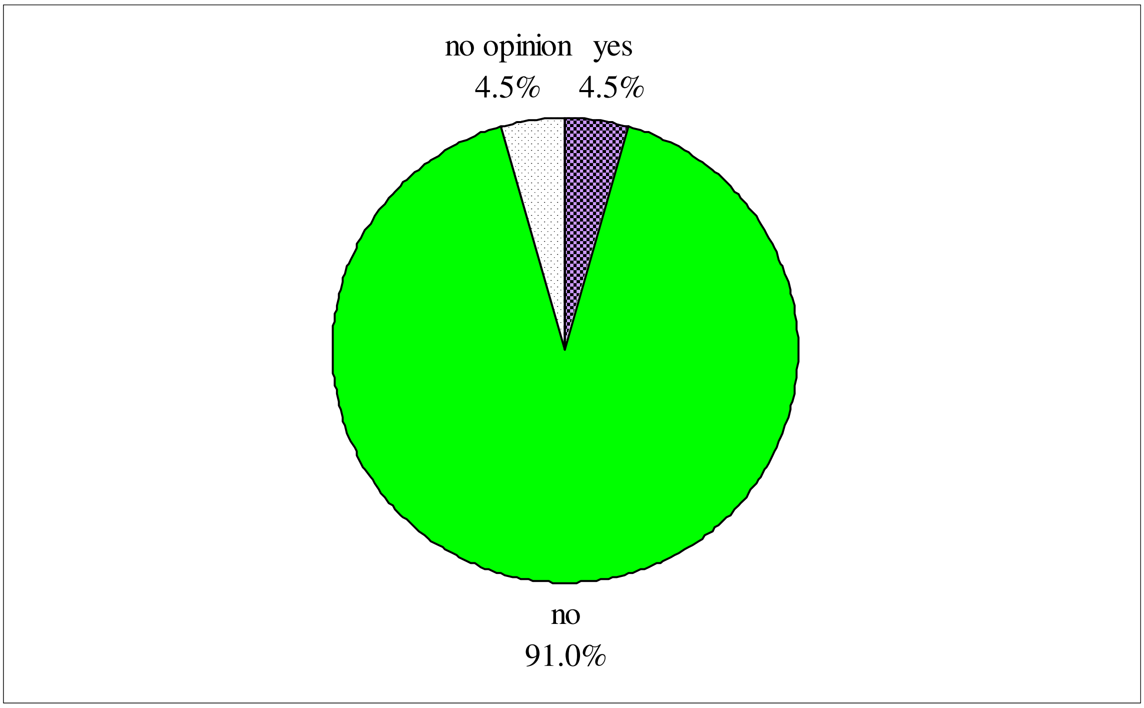


Figure 7.14. Satisfaction with sound absorption in Albatros apartment blocks

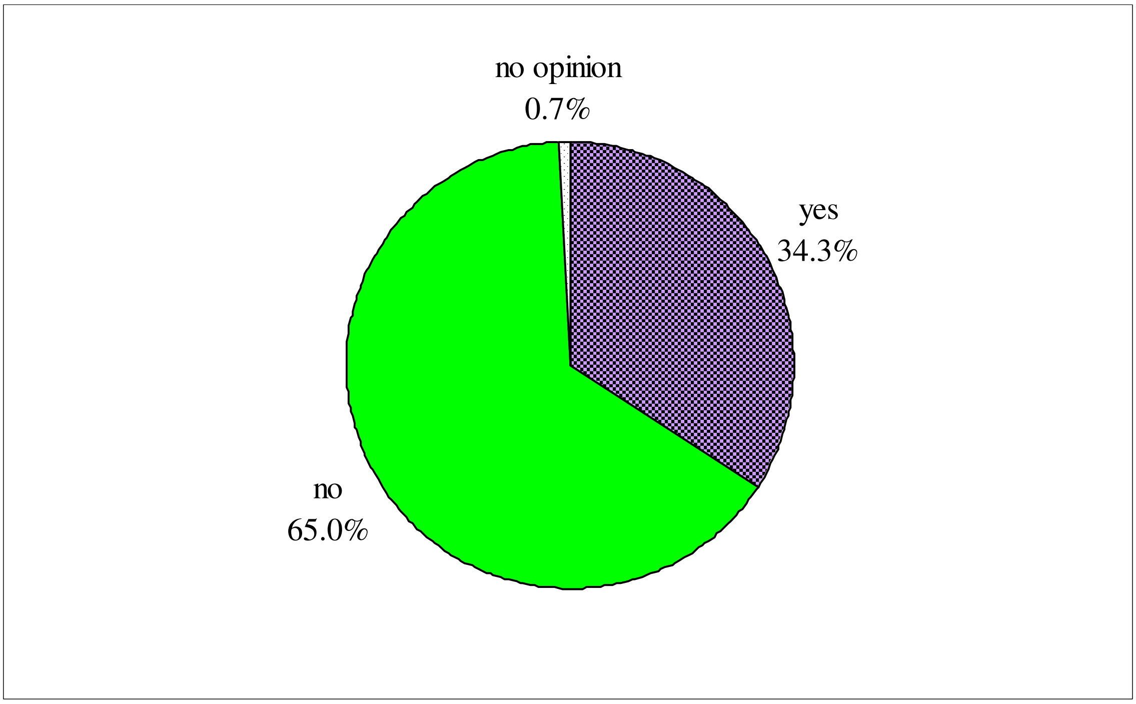


Figure 7.15. Satisfaction with sound absorption in Pamukkale & Selçuk apartment blocks

On the basis of one century's architectural experience with the relationship between staggered design and sound issues in high-rises, one may argue that the problem in Mavişehir consists of choice and perhaps quantity of proofing material.

In fact, another point which is important from the architectural point of view is the level of satisfaction with the materials used in Mavişehir residences in general. Most residents indicated satisfaction in responses they gave to the questions concerning the quality of materials used in stairways, corridors, bathrooms, and windows. Finally, let us briefly recall a definition made in detail in Chapter 3: quality and satisfaction are related concepts. Perez et al. (2001) demonstrated that 'quality of life' is an exceedingly important term which cannot be measured directly just as it is a term frequently understood in different ways. They showed that the objective of 'quality of life' is to meet the demands of the balance between peoples' needs and the personal valuations that define satisfaction. In the present thesis, findings regarding Overall Residential Satisfaction (Figure 7.1), Flat Satisfaction (Figure 7.2), Buildings Satisfaction (Figure 7.3), and Environmental Satisfaction (Figure 7.4), coincide almost directly with Materials Satisfaction:

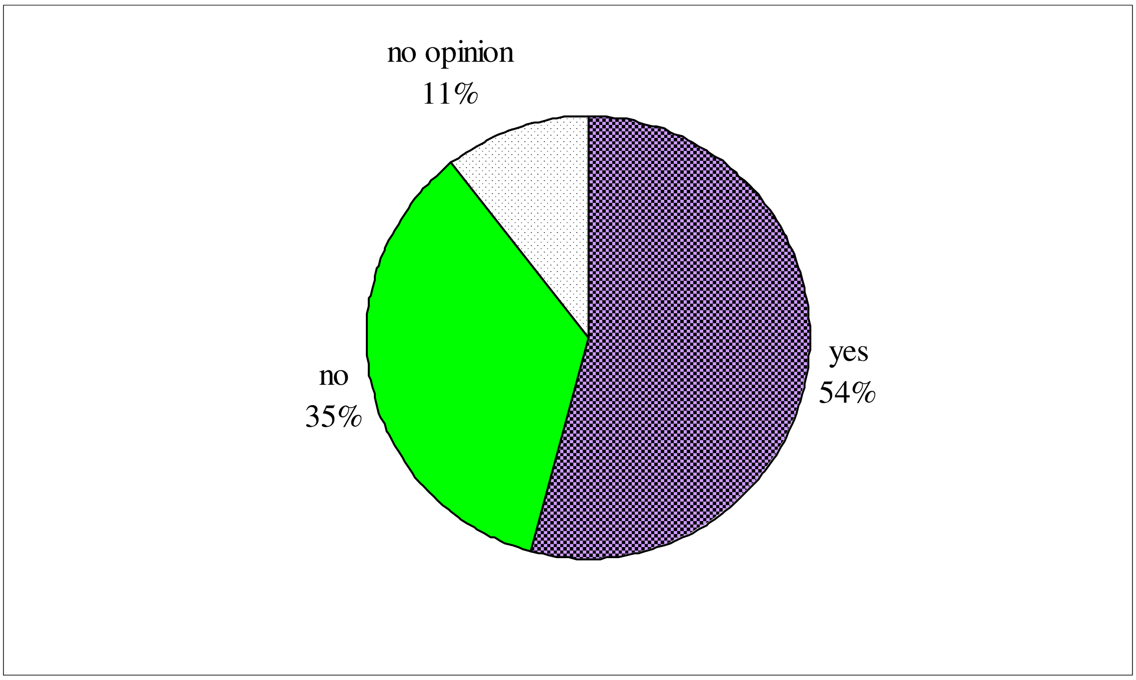


Figure 7.16. Materials satisfaction in Mavişehir (pct. rounded off to nearest whole number)

Residential Satisfaction is not achieved only through the interior of the dwelling or apartment block. It is also achieved with the external characteristics of the building including the appearance. In the questionnaire there was a question that asked about satisfaction with the external appearance of the apartment building and the answers may be represented as in the following figure:

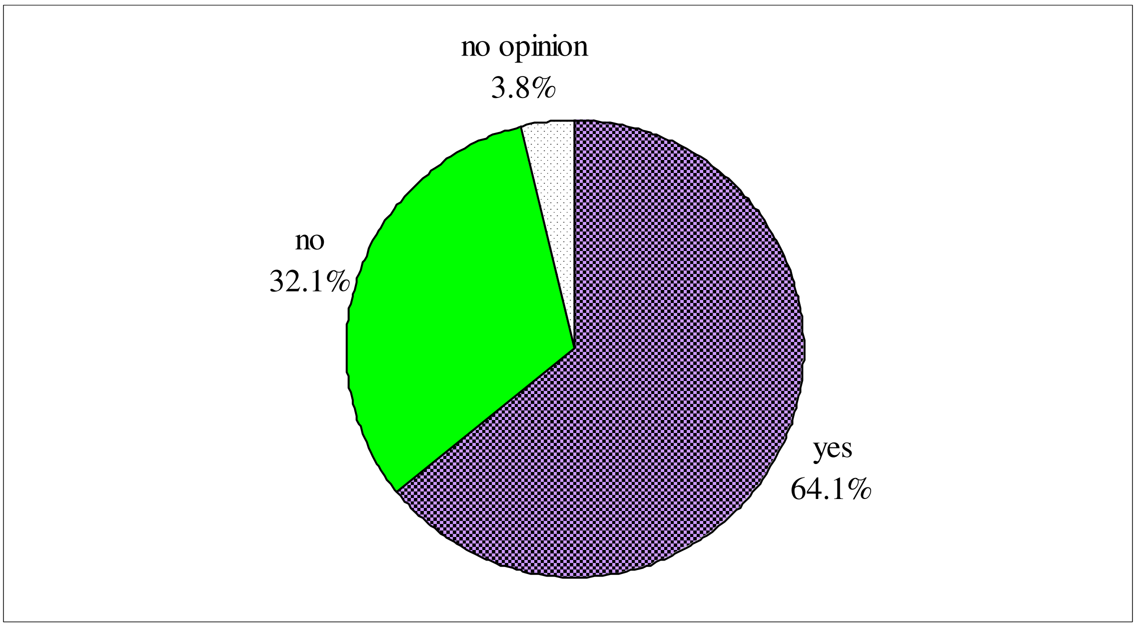


Figure 7.17. External appearance satisfaction in Mavişehir

In the answer to the question of satisfaction with height there was found a nearly as large difference among the percentages. 62.6% said they were satisfied with the height. On the basis of this result it may be argued that people are getting used to living in high-rises in Turkey. One important point to be made, however, is that those who answered the question “Are you satisfied with the building height?” with “no,” indicated as their reason for dissatisfaction that the blocks were too high. Thus the no-sayers had to be scrutinized more closely. This bale pointed out that they would choose lower blocks to live in if they had another choice. Therefore, we examined the concrete data in the open-ended questions on the questionnaire, and concluded that this response belonged to subjects who in Mavişehir buildings live on lower floors. Among those who expressed dissatisfaction with height and pointed out that they would prefer living in lower buildings, 71 live on lower floors while 20 that gave this answer live on higher floors. ‘Lower’ and ‘higher’ are still defined as in Chapter 2.6 above: the dividing line is at the 13th floor.

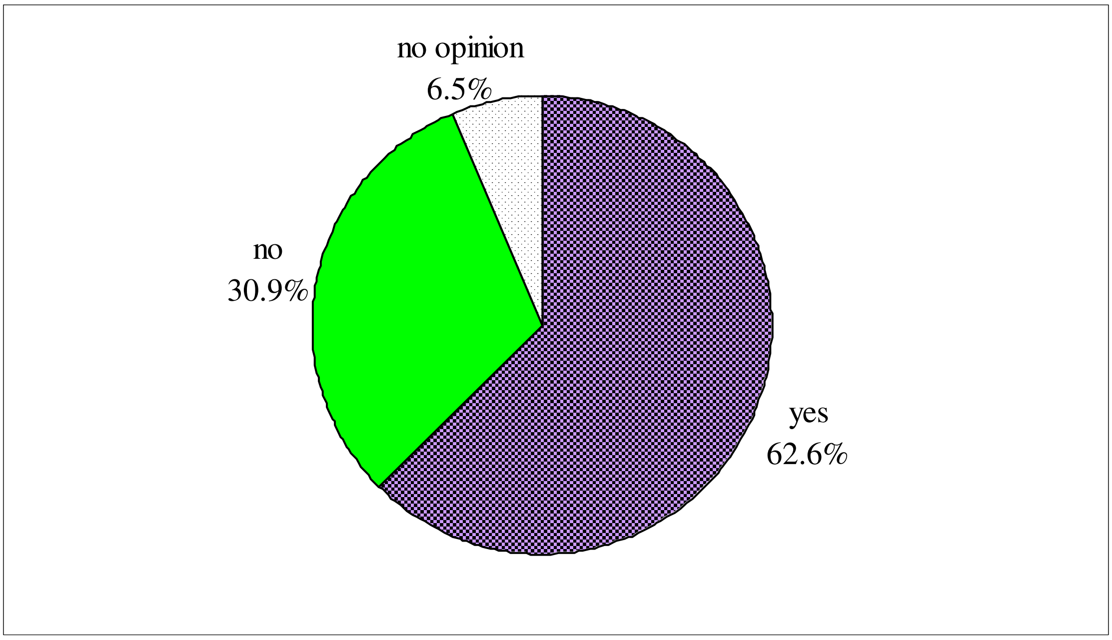


Figure 7.18. Highness satisfaction in Mavişehir

Different from results indicating positive satisfaction was the result obtained concerning satisfaction with auto park facilities. One of the most important problems in the Mavişehir Project is the auto park problem. In Chapter 4 it has been mentioned that the rule in the planning of auto park space had been on the basis of one car for two residences. The results readily show the existence of a problem with a percentage of 66% indicating dissatisfaction.

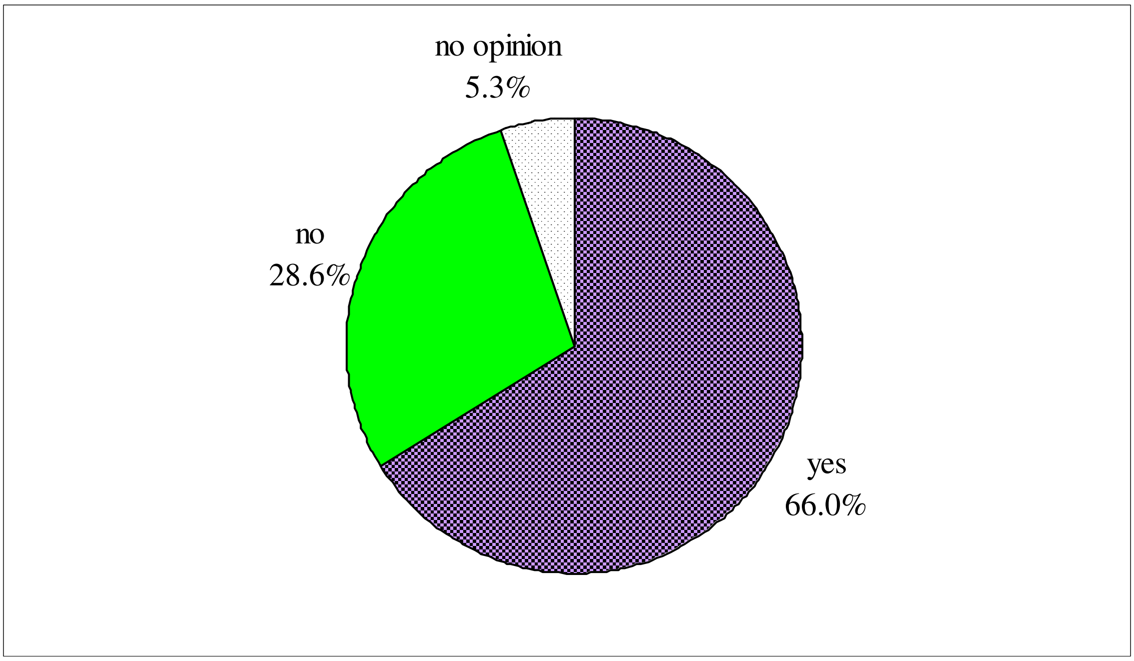


Figure 7.19. Difficulty in finding auto park place in Mavişehir

One of the factors of satisfaction identified above is the sense of safety and security which took a part in the questionnaire. Cozen et al.'s investigation conducted in the United Kingdom indicated negative results in this respect, showing dissatisfaction in high-rise buildings about safety and security. On the contrary, positive data was obtained from Mavişehir residences in this regard, as indicated by Figure 7.20:

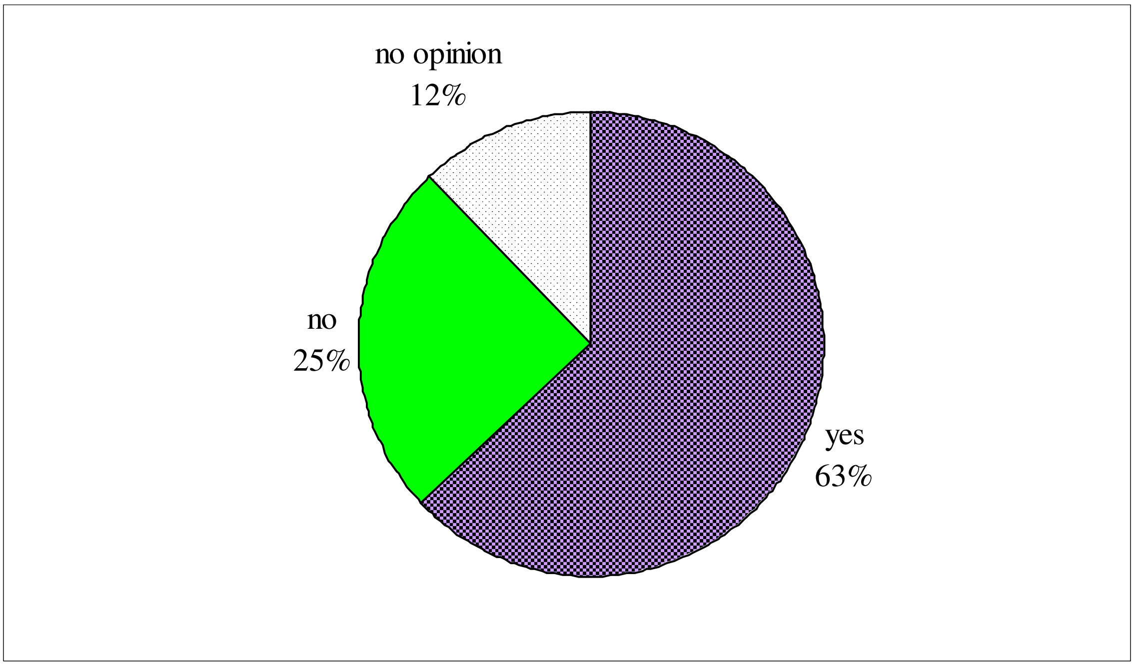


Figure 7.20. Safety and security satisfaction in Mavişehir

Cozen et al.'s "Crime and the Design of Residential Property: Exploring the Perceptions of Planning Professionals, Burglars and Other Users" aimed at studying the *perception* of space with reference to the concept of "defensible space" and the design and material properties that constituted the *image* of "defensible space." In design and planning language, this term indicates 'unsafe space' perceived as accessible by burglars and as needing protection by residents. As pointed out, the British study concluded negatively regarding safety and security in high-rise residences. The design types studied by Cozens and this group, however, comprised distinctly lower income housing groups than Mavişehir and displayed the "Broken Windows" syndrome identified by Wilson and Kelling (1982). From the perspective of the theory of "hierarchy of space" the high-rise residences bore all the physical marks of the lowly perceived as opposed to Mavişehir residences which are in all aspects marked as high-ranking in that hierarchy. Therefore, the contrasting results in the two studies ought not seem surprising.

Despite the positive results obtained in Mavişehir regarding safety and security in response to the questionnaire, however, perhaps equally telling were the following facts observed:

1. When the researcher rang the flat door, in order to open people turned their lock at least two, often three times. This took place in day time when residents were at home.
2. Some residents had installed reinforced doors to the flat entrance.
3. Some residents had installed iron gates on their windows even though they resided on storeys higher than the tenth.

The speculation concerning the discrepancy between the positive responses on the questionnaire and these practices which clearly imply lack of sense of security and safety is perhaps better left to psychologists and social psychologists who study residential psychology also with respect to criminal activity. These professions would also have to take into account whether these practices were spread in Izmir outside of high-rise residences as well. The question remains, however, whether there are measures that may be taken in aspects of the design of a high-rise that can eliminate residential practices indicating lack of sense of security and safety. To answer that question, on the other hand, one would again need data on practices outside high-rises and burglary statistics. The present study may provide data and starting points to such further studies as well.

Gifford (1997, p. 190) had claimed that short hallways indicated to residents more privacy than long ones. Similar results were obtained in questionnaires of the present research, as may be seen on the pie below:

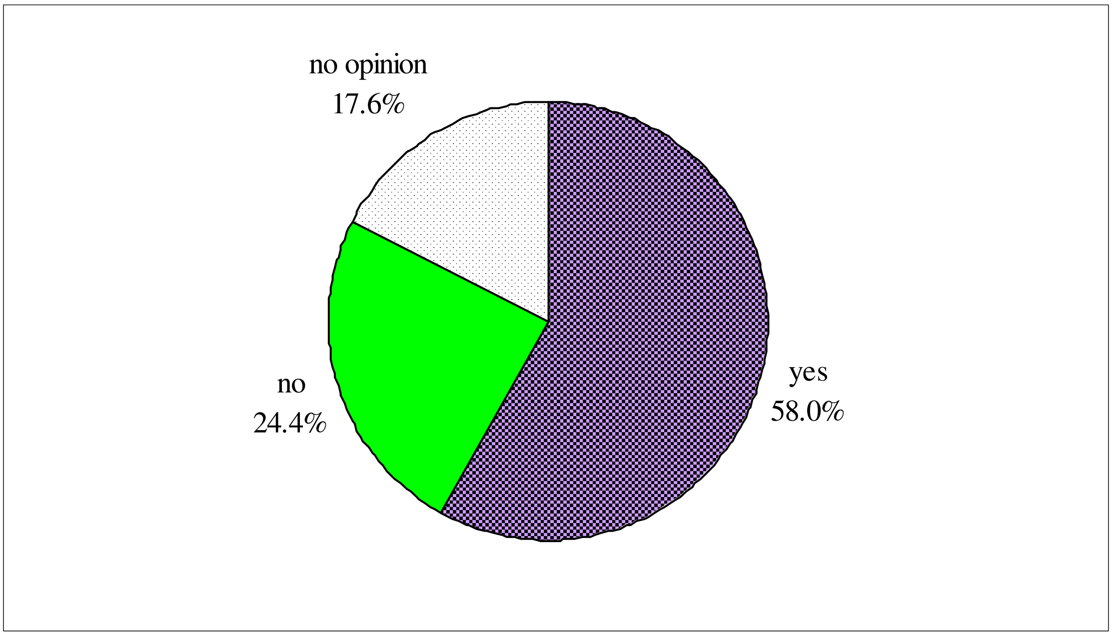


Figure 7.21. Hallway security satisfaction in Mavişehir

Pursuant of the discussion in Chapter 3 of Gür's 1996 investigation about sense of neighborhood it can be said that very many residents in Mavişehir do not know even the people who live next door. The chart below exactly shows the diagram of people who know who their neighbors are. One reason for residents not knowing too many neighbors is the rapid turnover of renters. An even larger number of Mavişehir residents than those who do not know their immediate neighbors consist of those who do not know the other residents on the same floor as they in their building.

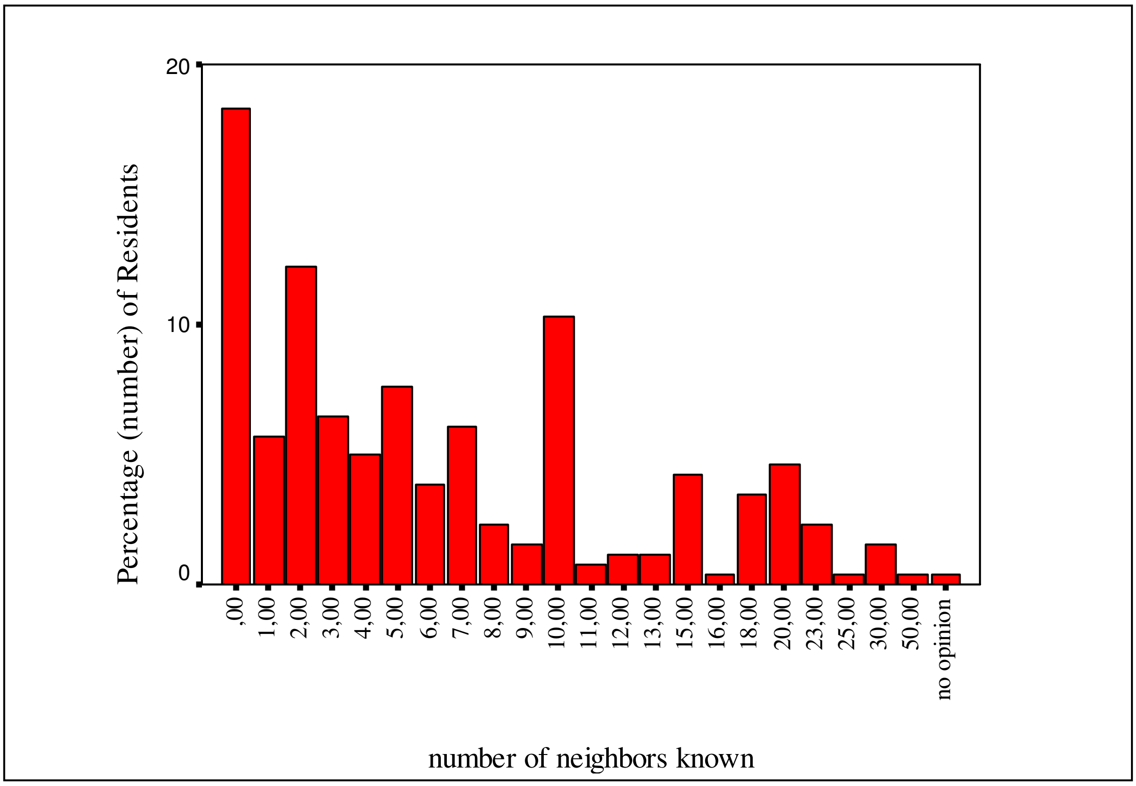


Figure 7.22. The number of neighbors residents know in Mavişehir (pct. rounded off to nearest whole number)

For the above data to be placed in perspective, one may have to recall the number of residences on a floor in a Mavişehir apartment building. A sampling is offered in Table 7.2 below:

Apartment Block Name	**Number of Residences on the Ground Floor**	**Number of residences on other floors**
Pamukkale & Selçuk	2	4
Albatros	2	4-6
Flamingo	2	2-4
Kuğu	1-2	3
Kırlangıç	2	2
Turna	2	2

Table 7.2. Number of residences located per floor in Mavişehir apartment buildings

From the Figure 7.22 above it is demonstrated that nearly half of the Mavişehir residents questioned do not know any of their neighbors. Moreover, we find that in the flats of Kırlangıç and Turna this number increases (Figure 7. 23). The distinguishing feature of these apartment buildings is that the number of storeys in them is fewer than in the others and that in every storey there are two residences. There are at most ground + 13 floors in the Turna and Kırlangıç Apartment Blocks. Floor number increases in the other blocks with 16, 18 and 19 storeys in Pamukkale & Selçuk Apartment Buildings, 22 storeys in Albatros Apartment Buildings, 23 storeys in Flamingo Apartment Buildings, 22 storeys in the Kuğu Apartment Building. Therefore it can be claimed that as the total number of storeys in the building decreases, the sense of neighborliness and familiarity increases. It may be seen in Figure 7.23 that familiarity with neighbors increased in Turna and Kırlangıç Apartment Blocks to 23, which is a surprising number when compared to the findings in the other apartment buildings.

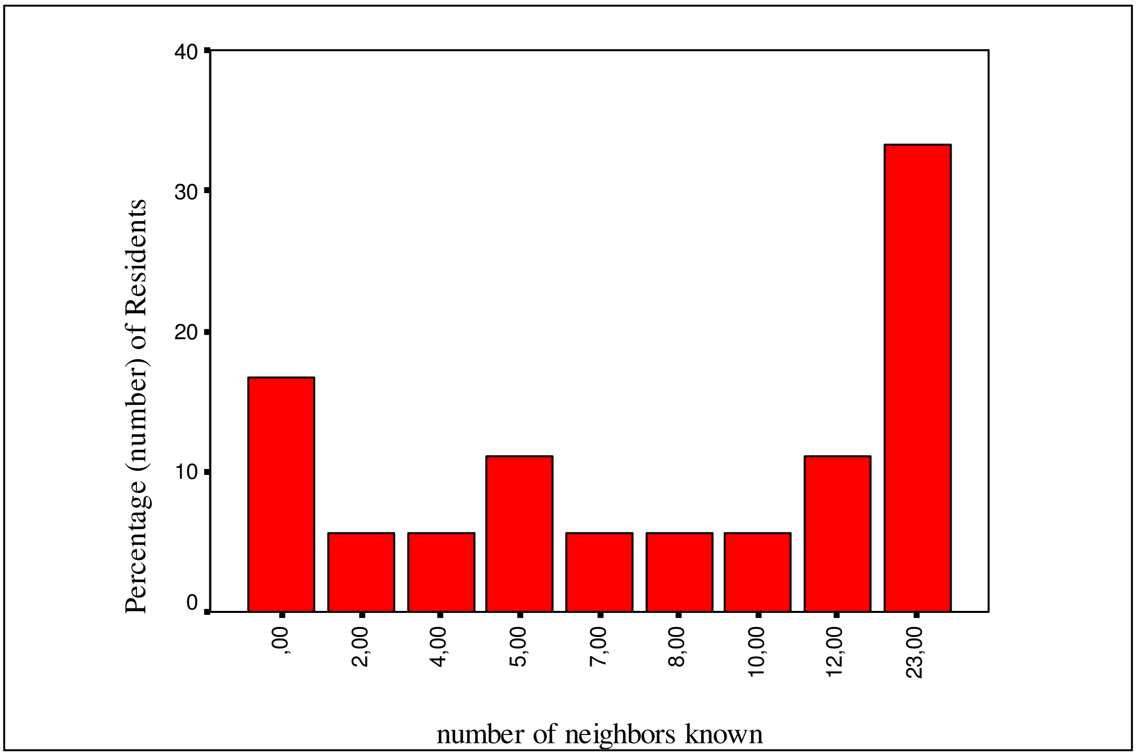


Figure 7.23. The number of neighbors residents know in Turna and Kırlangıç (pct. rounded off to nearest whole number)

With respect to the question "Do you find you are deprived of neighborly relations," there is positive data: it may be surmised that because of increase in population and residence numbers, residents are unable to know their neighbor and become strangers to each other. These results show that the all-important traditional neighborhood relationship in Turkish culture may be in the process of becoming eradicated and may even be said to have entirely disappeared in some parts of Mavişehir residences.[10]

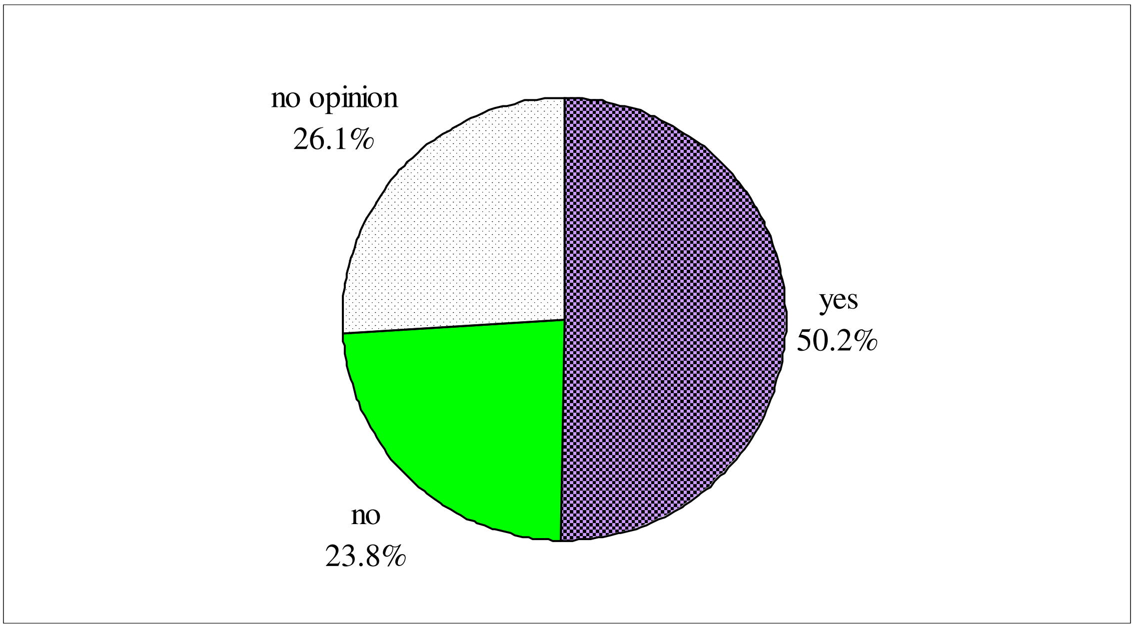


Figure 7.24. Sense of deprivation of neighborly relations in Mavişehir

Another question−the obverse of the question of familiarity−concerning neighbors entails the sense of privacy. Responses to this question are positive so that it may be concluded that Mavişehir residents feel that their residence has privacy from other residences.

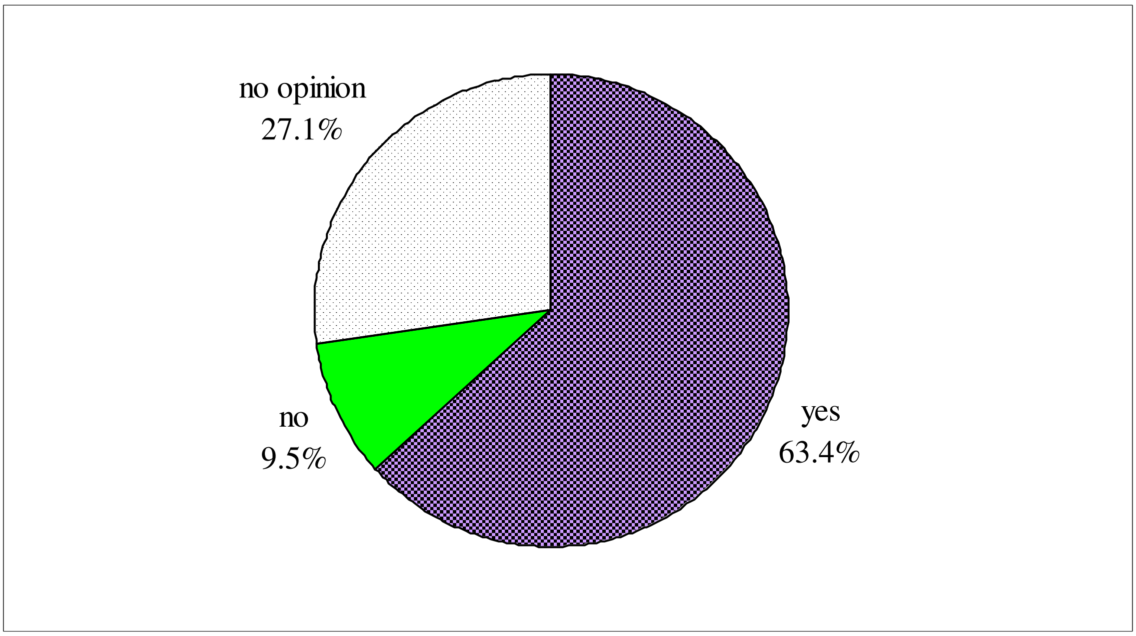


Figure 7.25. Sense of privacy from neighbors in Mavişehir

[10] A recent study on Seyrek, a rural settlement rapidly turning urban and at short distance from Mavişehir, also investigates changes in neighborly relationships and finds similar results of sense of deprivation (Durmuş Arsan, pp. 270-75 and pp. 316-17). Also see Asatekin, 1994, p. 193.

There is, however, a contradiction here, too: flats are segregated from other flats and public circulation areas by components such as doors and walls, which are the physical means of obtaining privacy. Even though 63.4 % percent of residents determined they had privacy and 27.1% indicated no opinion, the results of the question concerning sound absorption were negative, as we saw in Figure 7.5 above. We may conclude that there is privacy, but it is interrupted by noise.

Another factor which may seem contradictory may be represented through a discussion of Gifford's 1997 investigation. This discussion of both residential and office spaces indicates that the sense of privacy is gained from neighbors and from not seeing other houses and buildings from the windows (p. 178; Dawes et al., 1997). Thus we may add the visual factor to the audial factor as factors in establishment and experience of privacy. In fact, Gifford too, asserts the joint operation of these two factors (p. 178).

As evinced in Figure 7.25 above, Mavişehir residents are satisfied in reference to privacy with a percentage of 63%. We have seen, however, that they are extremely dissatisfied with the sound criterion. Even though the questionnaire did not contain a separate item concerning visual privacy, as may be observed especially in the balconies facing each other at close distance as in the Pamukkale & Selçuk types, there is no privacy in Mavişehir in the visual respect in Gifford's sense. Despite the facts, residents indicated satisfaction with privacy. This implies that the subjects did not identify privacy with the sound and visibility factors. Therefore, such different results appeared in regard to the two questions. What Mavişehir residents mean by 'privacy' escapes definition at this point. The question invites investigation by social scientists, but is at the same time an architectural or design question.

Like everywhere else in Turkey, Mavişehir residents grasped quite clearly the meaning and implications of an earthquake on August 17th, 1999, nearly five years before this study was undertaken. They also learned that there is no escape from this reality and that they (we) must learn to live with it while taking all possible precautions against a destructive outcome to the natural occurrence. They have learned that they are always living under the risk of an earthquake. Izmir is located in a first-degree earthquake zone and it is particularly adamant that people become earthquake conscious.

In the questionnaire, there was a question about precautions and reinforcements against earthquake and resident satisfaction with them: “Do you think your building is safe against an earthquake?” Another question regarding the strength and construction of the blocks intended for understanding the consciousness of the residents was:“Are you satisfied with the construction stability of the apartment building?” As may be seen in Figure 7.26, however, 51.1% of Mavişehir residents have no opinion about precautions so that it may be concluded that despite the tragic experience, consciousness regarding the earthquake is seriously lacking still.

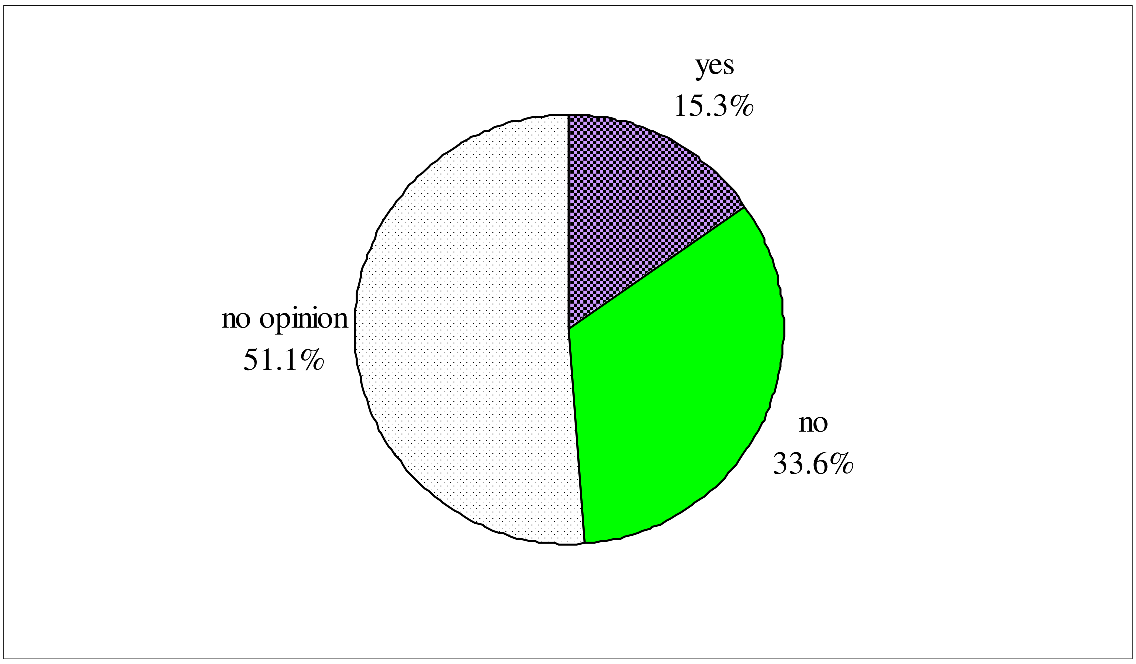


Figure 7.26. Building safety satisfaction against earthquake in Mavişehir

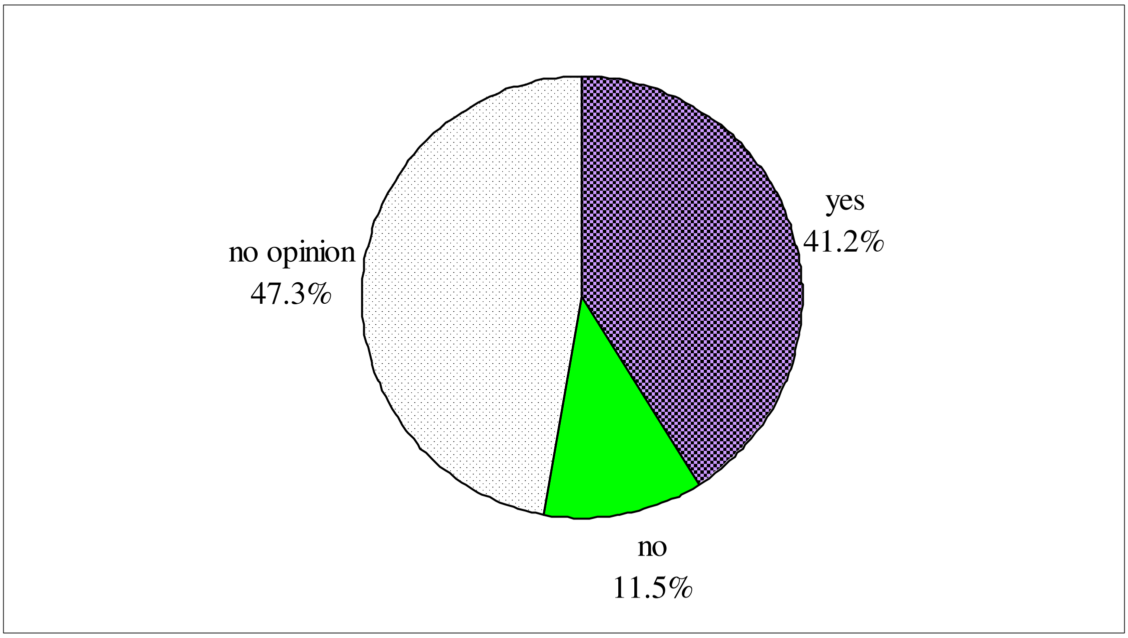


Figure 7.27. Satisfaction with the construction stability of the apartment buildings in Mavişehir

Residents are equally unaware of the stability of their apartment buildings as is evinced in Figure 7.27 above. These results are surprising for people living in a first-degree earthquake zone who have spent a substantial amount of money to purchase their residence.

Consciousness about adequacy of escape routes in case of fire or earthquake yielded more positive results with higher consciousness percentage as may be seen in Figure 7.28 below. This may owe to wider spread knowledge and consciousness about fire:

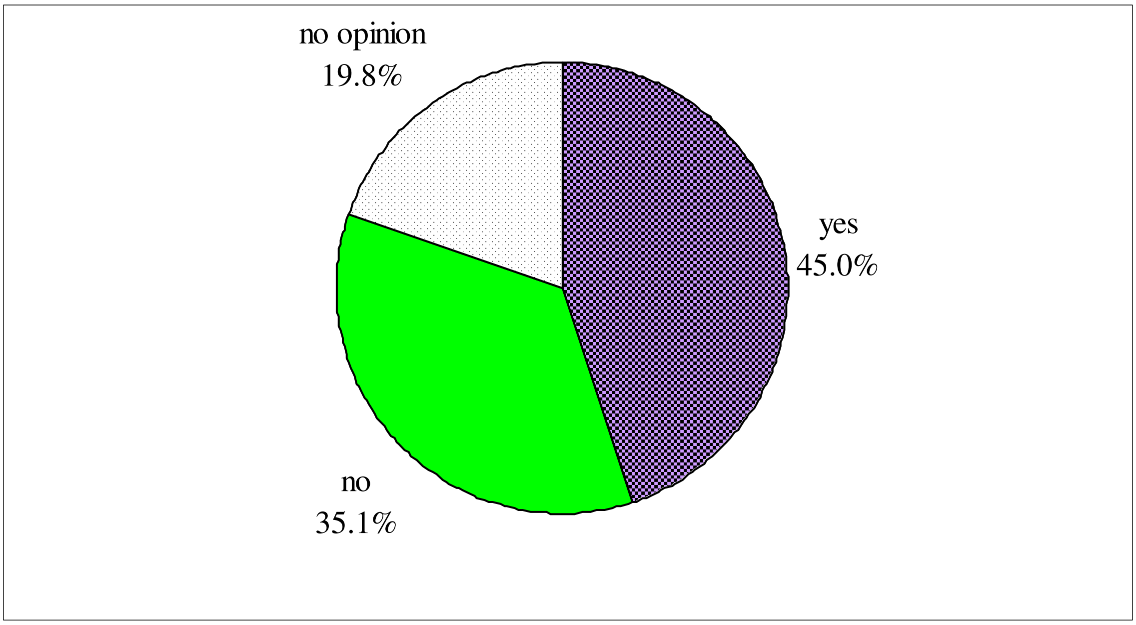


Figure 7.28. Adequacy of escape routes in case of fire and earthquake in Mavişehir

An important defect in Kırlangıç and Turna apartment buildings is the lack of any fire stairways. Residents felt anxious about the possibility of a fire. In fact, one resident pointed out that there had been a fire in the Turna block and residents did not know what to do or how to escape.

7.3 Open-ended Questions

The questionnaire had some open-ended questions as in the case of questions 1, 2, and 3. Nearly in every question except the questions 4, 5, 6, and 8, open-ended questions were formed with the question "why." In the framework of the SPSS software, answers to open-ended questions were codified in terms of numerical values.

For example, to the first question, “Why did you prefer to live in Mavişehir?” 19 different answers (values) were given by residents:

i. human quality
ii. no auto park problem
iii. quietness
iv. security
v. facilities
vi. view from the flat
vii. construction quality
viii. cleanliness
ix. architecture
x. parks and childrens’ playgrounds
xi. transportation facilities
xii. more than one reason
xiii. community of buildings (*site*)
xiv. infrastructure
xv. special reasons
xvi. well-designed
xvii. no neighborhood
xviii. proximity to work place
xix. cosmopolitan quality

The indication “more than one reason” at No. xii above is that residents chose more than one answer: e.g., cleanliness and view from flat. The answer at No. xv. above, “special reasons,” indicates presence of multiple answers on the order of particular reasons such as proximity to work place or spouse’s wishes. Others used directly the term “special reasons.” Since this occurred on multiple occasions, this researcher finds it necessary to indicate that instances of “special reasons” coincided with security guards’ or Administrative Officer’s identification of a given flat’s use for illicit business or relations.

In the second question which is, “Where would you prefer to live if you had the option?” 18 different answers were given by residents:

i. satisfied to live in Mavişehir
ii. Narlıdere
iii. Sahilevleri
iv. Karşıyaka Yalı
v. Bostanlı
vi. Alsancak
vii. Atakent
viii. Bornova

ix. Karşıyaka Çamlık
x. in a green environment
xi. detached house
xii. near the seaside
xiii. countryside
xiv. another city
xv. Hatay
xvi. Güzelyalı
xvii. Low-rise apartment building
xviii. Stable ground

In the third question which was, “What were the changes you made in your residence?” 7 different answers were given by residents:

i. no changes
ii. floor covering
iii. windows and door joinery
iv. kitchen, bathroom, adding closets
v. annexing balconies
vi. more than one answer
vii. changed everything

The kinds of changes made may be represented by percentage as follows:

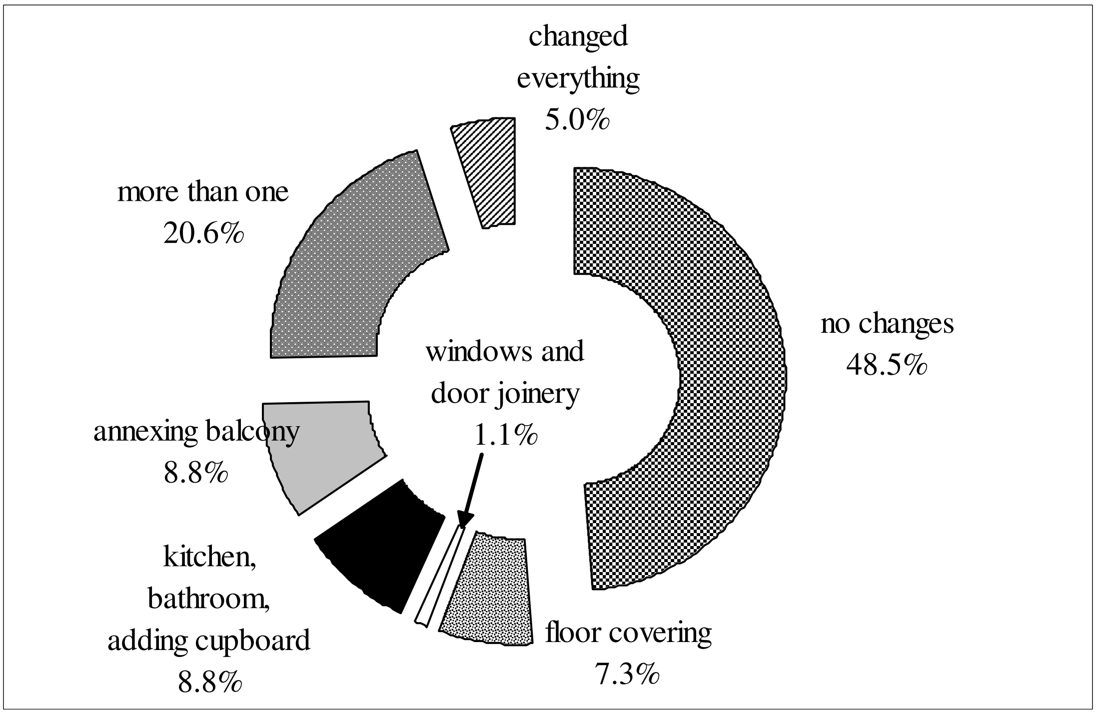


Figure 7.29. Changes made in Mavişehir residences

7.4. Observations

The responses given by the residents to the items on the questionnaire notwithstanding, there were important points noted by the researcher herself while implementing the questionnaire. These were discussed above, particularly those observations in residents' practice that were at odds with their answers to the questions. These included:

1. expression of satisfaction with safety and security, accompanied by the flat doors which were locked at least two times in day time; reinforced doors to the flat doors; iron gates in residences located even higher than the tenth storey;

2. expression of satisfaction with overall privacy, accompanied by expression of dissatisfaction with sound absorption and presence of windows and balconies facing each other at a distance of visibility;

3. expression of overall satisfaction with quality of building materials, accompanied by expression of dissatisfaction with sound absorption; and accompanied by changes in aspects like fixtures, floor coverings, etc. ultimately attributable to lack of quality.

A second observation concerns design alterations undertaken by residents: annexing the balcony obtained lighter spaces rendering the view from a balcony visible from the living room especially in Pamukkale & Selçuk apartment buildings. More than half also made extensive changes in fixtures, floor coverings, and so on. 5% said that they changed "everything" in the apartment.

Issues that concern the public facilities of the apartment building external to the flat are:

1. Mavişehir residents have no opinion about precautions concerning a likely earthquake, so that it may be concluded that despite the recent tragic experience of 1999 in Kocaeli, consciousness regarding the earthquake is seriously lacking still and residents are extremely unaware of the level of stability of their apartment buildings.

2. An important defect to be mentioned is the lack of shelter in every apartment building in the Mavişehir Project.

One of the most pressing problems in the Mavişehir Project is the auto park problem.

7.5. Conclusion

This chapter presented the data analysis and documented the results by figures with respect to satisfaction and dissatisfaction. The impacts on design initiative and tasks to be undertaken disscussed in Chapter 3 were implemented and tested in the present chapter.

This investigation agrees with Kim and others cited in the above chapters concerning their findings about floor satisfaction and dissatisfaction: "When the buildings are well designed and well-maintained, residents showed a high degree of satisfaction in all floors" (Kim, 1997).

Chapter 8 below will present the conclusion of the present thesis.

CHAPTER 8

CONCLUSION

8.1. Evaluation of Research

While residents expressed overall satisfaction with their Mavişehir residency, regarding some particulars they tended to express dissatisfaction. Conspicuous cases were those of privacy, materials satisfaction, sense of safety, insufficiency of auto park space, and so on. Equally contradicting with subjects' positive responses were residents' practices observed by the researcher such as security measures and other examples discussed in Chapter 7 above. Thus a researcher may hesitate to draw conclusions, facing the choice of privileging subjects' response and own observation and judgment. This researcher decided to point out the discrepancies and note the dilemma, but then to base conclusions on actual resident response to the questionnaire.

8.2. Findings and Recommendations

The main findings of this study have been recorded in Chapter 7. The overall result is that people are satisfied to live in Mavişehir. Scientific research, however, shall not remain at this level of conclusion and concentrate more on the negative data. We have also pointed out in Chapter 7 as well as throughout the remaining chapters of the thesis that factors influencing residential satisfaction may owe to aspects of the construction phase as well as the phases of architectural design and complex planning. User satisfaction is affected by all of these phases. While the architect-designer is not in direct control over all these phases, the architectural design of the project makes up the first step of the development. The architect, therefore, may not control but may determine many of those factors that determine resident satisfaction. There are, however, aspects of resident satisfaction which the architect may clearly and exclusively determine. For example, we have seen in Chapter 3 that in their 1999 study of Ataköy high-rise residences, Altaş and Özsoy found that numerous residents had made alterations in the floor plan (pp. 52-53 above). The reasons for making the alterations were identical to reasons why we found Mavişehir residents making alterations in their residence's floor plans. True, the results of the Altaş and Özsoy research had not been published by the time the plans of the Mavişehir Project had been drawn. Given the presence of these studies, however, there seem scientific reasons for not repeating what seem to be design errors.

The findings of studies such as the present one and Altaş and Özsoy's are ideally taken into consideration in future projects. Yet they should also be taken into account in projects already realized. Given the extreme level of dissatisfaction with sound proofing in Mavişehir, for example, Project Administration ought to look into reinforcing, by introduction of new coating materials, the sound absorption capacity at least between flats, if not within a flat. This ought to be done vertically and horizontally. While this method would amend a construction-materials fault, there are methods a management can directly tackle, such as the strategic placement of large-leaved plants in the public areas inside a building. This is a known method of sound absorption that works vertically as well as horizontally.

Another major cause of dissatisfaction in Mavişehir has been found to be the auto park problem. We have seen above that the basis of this repeated error in Turkish planning is the regulation that determines one car per two residences. In the case of Mavişehir, following Özçelik's recommendation, we ought to reiterate the target of at least one auto park per one resident. Too many residents have complained of "spending hours looking parking place." As it is already understood from this point too, architects, planners, engineers and landscape architects should work together from the beginning of a project to carry out the development of building and—in the context of the focus of this thesis—of high-rise building.

Another important finding is the lack of consciousness about earthquake and fire: residents overwhelmingly did not know whether their building was resistant to potential disaster in these areas and whether escape routes and means were effective. Even if Mavişehir buildings are well-equipped in these areas, lack of residential consciousness is a problem for management. Mavişehir Administration ought, with the help of architects and engineers, devise means—meetings, posters, flyers, and the like—to inform residents about construction stability, escape routes, and other vitally important facts.

In conclusion the design of the apartment buildings and residences should be planned with full knowledge of residents' needs and demands because they are the real users of those places. Furthermore it should not be forgotten that the residential area is not limited to the flat where the users live. The notion should be expanded to include apartment building and environment.

8.3. Directions for Further Research

There may be said to derive three directions for further research on the basis of the above study: Firstly, materials engineers, civil engineers, designer- and materials-architects, planners need to look jointly into these results and together determine remedies in two contexts: 1. to ameliorate the present situation of residents; 2. to find solutions for future projects. Secondly, analysis of Mavişehir constructions should be conducted with particular attention to absorption materials used and experiments carried out to find the remedy to a pressing problem. It should be pointed out, however, that the sound issue in Mavişehir is not only a problem of isolation and absorption material. It is also a matter of design and floor-planning which, of course, can no longer be remedied. Thirdly, terms such as 'human behavior', 'psychology', and 'environmental sociology' are related to the topic—residential satisfaction—of this thesis. While this thesis, devoted to architectural issues, has not taken up its findings with reference to these terms, the above findings may serve social scientists as starting point for further research. The discrepancy between residents' response to the questionnaire and their practice observed by the researcher are cases in point that were left to psychologists and sociologists.

The topic is a multi- and interdisciplinary one. Whatever the discipline or group of disciplines that takes it up, this thesis argues that the primary characteristic must be the value placed upon human life. That is the primary trait of studies in residential satisfaction regardless of discipline. Saying this does not exclude belief in 'great architecture'. Of Pruitt-Igoe, Charles Jenks had commented: "These are big buildings, but not great architecture" (1987, p. 9). Losing the human perspective of architecture is more easily done when it comes to big buildings. When this is done in big *residential* buildings, the cost becomes too high. Let us end with the statement by Hugh Stubbins: "What monuments we leave behind in the form of buildings reveal more clearly than anything else the value we place on the quality of life" (1976, p. 56). This is perhaps truest of housing.

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APPENDIX A

THE ORIGINAL QUESTIONNAIRE IN TURKISH

Görüşme Tarihi:…………………………………….

Oturulan Konut Adı ve Numarası:………………….

Oturulan Kat:…………………………………….

Dairenin Alanı:……………………………………..

Oda Sayısı:…………………………………………

Cinsiyet:…………………………………………….

1. Mavişehir'de oturmayı neden tercih ettiniz?

   ……………………………………………………………………………………….

2. Başka bir şansınız olsa nerede oturmak isterdiniz?

   ……………………………………………………………………………………….

3. Mavişehir'deki konutunuzda yapmış olduğunuz değişiklikler nelerdir?

   ....

4. Yaş Aralığınız?

a) 24 ve altı b) 25 – 34 c) 35 – 44 d) 45-54 e) 55 – 64 f) 65 ve üstü

5. Konutta Mal sahibi mi Kiracı mısınız?

a) Mal sahibi b) Kiracı

6. Konutta Kaç Kişi Oturuyorsunuz?

a) 1 b) 2 c) 3 d) 4 e) 5 f) 5 +

7. Oturmak istediğiniz katta mı oturuyorsunuz? (Değil ise oturmak istediğiniz kat aralığı)

a) Evet b) Hayır

   ……………………………………………………………………………………….

8. Şimdi oturduğunuz kat göz önüne alınarak daha önce oturduğunuz konut hangisidir?

a) Az Katlı (1 – 12 Kat)

b) Çok Katlı (13 – Üstü)

c) Müstakil Ev

Konut ile İlgili:

9) Dairenin Alanından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………………

10) Daireniz Kullanışlı mı? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

11) Tavan Yüksekliğinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

12) Eviniz Yeterli Gün Işığı Alıyor mu?

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

13) Su Yalıtımından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

14) Isı Yalıtımından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

15) Ses Yalıtımından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

16) Pencere Malzemeleri ve Geçirgenlikten memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

17) Elektrik Düğmelerinden (Sayıları ve Yerleşimi) memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

18) Vitrifiyeden (Lavabo, Küvet, Klozet) memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

19) Dairenin Yönünden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

20) Dairenin Manzarasından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

21) Televizyon / Antenden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

22) Dairenizde sürekli sıcak su var mı?

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

23) Kalorifer den memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

24) Akustikten memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

25) İçme Suyu Kalitesinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

26) Komşularınızın yaklaşık kaç tanesini tanıyorsunuz?

……………………………………………………………………………………...

27) Komşulardan Mahrumiyetten memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

28) Komşulardan Mahremiyetten memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

<u>**Bina ile ilgili:**</u>

29) Binanın dış görünüşünden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….................…...

30) Binanın Yüksekliğinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………….....................

31) Bina Giriş Holünden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………………......................

32) Binanın Renginden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………..................

33) Bina İçindeki Düşey Sirkülasyondan (Asansör / Merdiven) memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………….................

34) Oturulan kata oranla merdiveni kullanıyor musunuz? (Neden?)

a) Evet b) Hayır

………………………………………………………………………………………………

35) Merdiven Basamak Yüksekliğinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………………..................

36) Merdivenin Malzemesinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………………..................

37) Asansörün Hızından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………………..................

38) Asansörü Bekleme Zamanından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………………..................

39) Yatay Sirkülasyondan (Koridor Mesafesi) memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………………..................

40) Kullanılan Malzemenin Kalitesinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………………..................

41) Posta Servislerinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………..................

42) Bina içi Işıklandırmadan memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

43) Kapıcı Hizmetlerinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………….....................

44) Bakım ve Onarım Hizmetlerinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………….....................

45) Çöp Atımından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………...................

46) Bina İçi Temizliğinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………….......................

47) Apartman Girişi Güvenliğinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………...................

48) Koridorda Güvenlikten memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………...................

49) Asansörde Güvenlikten memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………...................

50) Yangından Korunma önlemleri var mı? (Varsa memnun musunuz?)

a) Evet b) Hayır c)Fikrim yok

…………………………………………………………………………………...................

51) Yangın ve Deprem Durumunda Acil Çıkış Mekanları Yeterli mi?

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………….....................

52) Yangın ve Deprem Durumunda Çıkış Yönleri Belirgin mi?

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………….....................

53) Depreme Karşı Alınan Önlemler var mı?

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

54) Binanın Sağlamlığından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

55) Sığınak Var mı? (Var ise memnun musunuz?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

56) Oturulan Bloğun İstekleri karşılanıyor mu? (Memnun musunuz?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

Genel:

57) Mavişehir'in Yerinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

58) Toplu Taşınım Olanaklarından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

59) Aktivite Mekanları var mı? (Var ise memnun musunuz?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

60) Market / Bakkal Mesafesinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

61) Otopark yeri bulmada zorluk çekiyor musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

62) Otopark giriş-çıkışından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………...................

63) Çevre Temizliğinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

64) Kamusal Alanlarda Işıklandırmadan memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

65) Kamusal Alanlarda Güvenlikten memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

66) Alışveriş ve Sosyal Mekanlar var mı? Var ise yeterli buluyor musunuz?

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

67) Kültürel Alanlar (Sinema-Tiyatro) var mı? Var ise yeterli buluyor musunuz?

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

68) Yaşlılar İçin Merkezler var mı?

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

69) Çocuklar için Oyun Alanlarından memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

70) Anaokulları, İlköğretim, Liseden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

71) Dini Tesisler var mı? (Memnun musunuz?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

72) Konut Çevrelerinin Yoğunluğundan memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

73) Kamusal Alanların Yeterliliğinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

……………………………………………………………………………………….....................

74) Yönetimin Çalışması ve Yeterliliğinden memnun musunuz? (Neden?)

a) Evet b) Hayır c)Fikrim yok

………………………………………………………………………………….....................

APPENDIX B

RESPONSES TO NON-OPEN ENDED QUESTIONS

The table below shows by percentage responses to all questions by all Mavişehir residents questioned. The questionnaire items represented comprise non-open ended questions in items of "Yes," "No," and "No opinion" replies.

QUESTION NUMBER	(%) YES	(%) NO	(%) NO OPINION
9	92.7	5.3	1.9
10	93.1	5.7	3.1
11	92.4	4.6	3.1
12	88.2	10.3	1.5
13	64.1	30.5	5.3
14	65.6	29.4	5.0
15	24.4	72.9	2.7
16	47.3	48.9	3.8
17	74.8	19.8	5.3
18	62.2	35.9	1.9
19	82.1	15.6	2.3
20	85.1	13.0	1.9
21	76.7	18.7	4.6
22	98.1	0.0	1.9
23	69.5	22.9	7.6
24	56.5	23.3	20.2
25	29.4	60.7	9.9
27	50.0	23.7	26.3
28	63.4	9.5	27.1
29	64.1	32.1	3.8
30	62.6	30.9	6.5
31	88.2	9.9	1.9

32	78.6	16.0	5.3
33	81.7	13.0	5.3
34	34.0	66.0	-
35	77.5	1.9	20.6
36	68.3	5.3	26.3
37	82.1	14.1	3.8
38	66.4	27.1	6.5
39	89.7	2.7	7.6
40	39.3	50.4	10.3
41	74.0	15.6	10.3
42	88.5	8.8	2.7
43	75.6	18.7	5.7
44	62.2	24.0	13.7
45	85.1	11.1	3.8
46	70.2	28.6	1.1
47	62.6	33.2	4.2
48	58.0	24.4	17.6
49	61.8	18.7	19.5
50	53.4	13	33.6
51	45.0	35.1	19.8
52	54.2	30.5	15.3
53	15.3	33.6	51.1
54	41.2	11.5	47.3
55	5.7	59.9	34.4
56	58.8	17.9	23.3
57	88.5	8.0	3.4
58	77.9	15.3	6.9
59	8.8	9.5	81.7
60	76.3	20.2	3.4
61	6.6	28.6	5.3
62	65.6	26.7	7.6
63	90.1	8.4	1.5
64	75.6	19.1	5.3

65	69.8	22.1	8.0
66	85.5	11.5	3.1
67	73.7	21.8	4.6
68	5.3	61.5	33.2
69	76.0	8.4	15.6
70	44.7	6.5	48.9
71	13.0	43.9	43.1
72	50.0	30.9	19.1
73	55.7	18.7	25.6
74	53.4	26.0	20.6

APPENDIX C

RESPONSES TO NON-OPEN ENDED QUESTIONS BY RESIDENTS OF FLAMİNGO – ALBATROS – KUĞU – PAMUKKALE AND SELÇUK, TURNA AND KIRLANGIÇ BUILDING TYPES

The table below shows by percentage responses to all questions by resident of Flamingo – Albatros – Kuğu, Pamukkale and Selçuk types. The questionnaire items represented below comprise non-open ended questions in terms of "Yes," "No," and "No opinion" replies.

QUESTION NUMBER	(%) YES	(%) NO	(%) NO OPINION
9	93.0	5.3	1.6
10	92.6	6.1	1.2
11	92.2	4.9	2.9
12	87.3	11.1	1.6
13	63.9	32.0	4.1
14	66.4	29.5	4.1
15	24.6	73.8	1.6
16	47.5	48.8	3.7
17	74.6	20.5	4.9
18	61.1	36.9	2.0
19	80.7	16.8	2.5
20	84.0	13.9	2.0
21	77.0	18.9	4.1
22	98.8	0.0	1.2
23	70.1	23.0	7.0
24	57.4	23.0	7.0
25	30.7	59.8	9.4

27	51.6	23.8	24.2
28	65.2	8.6	26.2
29	65.6	30.3	4.1
30	60.2	32.8	7.0
31	88.1	10.2	1.6
32	79.5	14.8	5.7
33	81.6	13.9	4.5
34	33.6	66.4	-
35	77.0	2.0	20.9
36	68.0	5.7	26.2
37	83.2	14.3	25
38	66.4	28.7	4.9
39	90.6	2.9	6.6
40	39.3	50.4	10.2
41	73.8	16.0	10.2
42	88.9	9.0	2.0
43	75.8	19.3	4.9
44	62.7	24.6	12.7
45	86.5	9.8	3.7
46	70.9	27.9	1.2
47	63.5	32.4	4.1
48	59.4	23.4	17.2
49	62.7	20.1	17.2
50	56.6	9.8	33.6
51	48.0	31.1	20.9
52	58.2	26.2	15.6
53	15.2	31.1	53.7
54	41.8	10.7	47.5
55	6.1	58.2	64.3
56	59.8	17.2	23
57	88.1	8.6	3.3
58	77.5	16.0	6.6
59	72.1	18.0	9.8

60	76.2	20.5	3.3
61	65.2	29.5	5.3
62	64.8	27.9	7.4
63	90.2	8.6	1.2
64	76.6	18.4	0.0
65	71.3	20.9	7.8
66	85.7	11.5	2.9
67	74.6	20.5	4.9
68	5.3	60.7	34.0
69	74.6	9.0	16.4
70	45.1	6.1	48.8
71	13.1	43.3	18.9
72	50.8	30.3	18.9
73	56.1	18.4	25.4
74	54.1	25.0	20.9

The table below shows by percentage responses to all questions by residents of Turna and Kırlangıç types. The questionnaire items represented below comprise non-open ended questions in terms of "Yes," "No," and "No opinion" replies.

QUESTION NUMBER	**(%) YES**	**(%) NO**	**(%) NO OPINION**
9	88.9	5.6	5.6
10	100	0.0	0.0
11	94.4	0.0	5.6
12	100	0.0	0.0
13	66.7	11.1	22.2
14	55.6	27.8	16.7
15	22.2	61.1	16.7
16	44.4	50.0	5.6
17	77.8	11.1	11.1
18	77.8	22.2	0.0

19	100	0.0	0.0
20	100	0.0	0.0
21	72.2	16.7	11.1
22	88.9	0.0	11.1
23	61.1	22.2	16.7
24	44.4	27.8	27.8
25	11.1	72.2	16.7
27	27.8	22.2	50.0
28	38.9	22.2	38.9
29	44.4	55.6	0.0
30	94.4	5.6	0.0
31	88.9	5.6	5.6
32	66.7	33.3	0.0
33	83.3	16.7	0.0
34	38.9	61.1	-
35	83.3	16.7	0.0
36	72.2	27.8	0.0
37	66.7	11.1	22.2
38	66.7	5.6	27.8
39	72.8	22.2	0.0
40	38.9	50.0	0.0
41	77.8	11.1	11.1
42	83.3	5.6	11.1
43	72.2	11.1	16.7
44	55.6	16.7	27.8
45	66.7	27.8	5.6
46	61.1	38.9	0.0
47	50.0	44.4	5.6
48	38.9	38.9	22.2
49	50.0	50.0	0.0
50	11.1	55.6	33.3
51	5.6	88.9	5.6
52	0.0	88.9	11.1

53	16.7	66.7	16.7
54	33.3	22.2	44.4
55	0.0	83.3	16.7
56	44.4	27.8	27.8
57	94.4	0.0	5.6
58	83.3	5.6	11.1
59	72.2	16.7	11.1
60	77.8	16.7	5.6
61	77.8	16.7	5.6
62	77.8	11.1	11.1
63	88.9	5.6	5.6
64	61.1	27.8	11.1
65	50.0	38.9	11.1
66	83.3	11.1	5.6
67	61.1	38.9	11.1
68	5.6	72.2	22.2
69	94.4	5.6	0.0
70	38.9	11.1	50.0
71	11.1	55.6	33.3
72	38.9	38.9	22.2
73	50.0	22.2	27.8
74	44.4	38.9	16.7