

## ARCHITECTURAL DESIGN APPROACH OF A PUBLIC BUILDING; BOLU REGIONAL DIRECTORATE OF FORESTRY

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### ABSTRACT

When the concept of space is considered at the social level, it appears as a set of relationships rather than any product or object. It is possible to define public service buildings, which can be divided into education, art, and health, which are essential parts of the social order, as areas where a service-based relationship takes place and where buildings mediate communication between society and the state. The space can increase or restrict social interaction with its arrangements in public buildings, which are intended to respond to the users' needs and society's general expectations. In addition, public administrative service buildings, which exist to serve the public and consist of institutions affiliated with the state, are an architectural design problem that includes several factors such as environmental sensitivity, sustainability, aesthetic concerns, and purpose, function, budget, and identity concepts. This study examines the conceptual and systematic approach to the architectural project design of a public building, Bolu Regional Directorate of Forestry Building. The study focuses on how a public building design problem is addressed and the design principles of the developed architectural preliminary design and implementation projects.

**Keywords:** Architectural Design, Spatial Organization, Public Service Buildings, Design Process

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### ÖZET

Mekân kavramı toplumsal düzeyde ele alındığında herhangi bir ürün ya da nesneden ziyade bir ilişkiler bütünü olarak karşımıza çıkmaktadır. Toplumsal düzenin önemli bir parçası olan eğitim, sanat ve sağlık olarak ayrılabilir kamusal hizmet binalarını da hizmet temelli bir ilişkinin gerçekleştiği, binaların toplum ve devlet arasındaki iletişime aracılık ettiği alanlar olarak tanımlamak mümkündür. Kullanıcıların ihtiyaçlarına ve toplumun genel beklentilerine cevap vermesi amaçlanan kamu binalarında mekan sahip olduğu düzenlemelerle toplumsal etkileşimi artırıcı veya kısıtlayıcı olabilmektedir. Bunun yanı sıra kamuya hizmet vermek için var olan ve devlete bağlı kurumlardan oluşan kamu idari hizmet binaları amaç, işlev, bütçe ve kimlik kavramlarının yanı sıra çevresel duyarlılık, sürdürülebilirlik ve estetik kaygılar gibi bir dizi faktörü de içeren bir mimari tasarım problemidir. Bu çalışma, bir kamu binası olan Bolu Orman Bölge Müdürlüğü Binası'nın mimari proje tasarımına yönelik kavramsal ve sistematik yaklaşımı incelemektedir. Çalışma kapsamında bir kamu binası tasarım probleminin nasıl ele alındığına ve geliştirilen mimari ön tasarım ve uygulama projelerinin tasarım ilkelerine odaklanmaktadır.

**Anahtar Kelimeler:** Mimari Tasarım, Mekânsal Organizasyon, Kamu Hizmet Binaları, Tasarım Süreci

### 1. INTRODUCTION

In Production of Space, Lefebvre (1991) states that the concept of space builds a relationship between the mental and the cultural, the social with the historical. "Space" is neither a pure abstraction or object, nor just a concrete, physical entity. In all its dimensions and forms, space is both a concept and reality; that is, it is social. On the other hand according to Habermas (2003), the boundaries of using the concepts of public in everyday language are unclear. These concepts with contents that have become ambiguous, are increasingly blurred because a disciplinary definition cannot be made, and spaces open to everyone's use are considered public spaces. In this sense, while the subject of the public or public space is "the public", defining the state's institutions as public buildings because they are open to public use means designating the state as a public power (Odabaş, 2018). In other words, Habermas declares that the state's position in defining public space is the state's responsibility to society. As such, in the relationship established between the state and society, political management power can be achieved in the public sphere controlled by laws made for the benefit and service of the society.

Public administration buildings act as intermediaries for communication between society and the state. Buildings representing political power and dominance due to state ownership are responsible for serving the public. Benefiting from services, obtaining information, and reaching the central government or relevant unit through institutions, buildings are the public's access to space and also become a public activity area (Çelik, 2022).

Government buildings are also called official buildings, administrative buildings, or service buildings defined as “general administration buildings in which official duties are carried out”, in the State Buildings Operation, Maintenance and Repair Regulation published in the Official Gazette in 1971 (Public Buildings Operation, Maintenance and Repair Regulation, 1971). In this context, public administration buildings belong to administrative and official institutions that serve society (Çelik, 2022).

Furthermore, any concept of public architecture to be defined also relates to structures or built forms that symbolize unidentified entities (Cuff, 2012). The production and rearrangement of the physical environment involves solution-oriented approaches in architectural design. Architectural design developed within the framework of a defined problem is an essential process for forming the physical environment. A physical environment is created through controlled or uncontrolled design processes, from the smallest housing unit up to an urban scale. From this point of view, buildings built within the framework of specific design rules and within the institutional system appear as the essential elements of the physical environment (Wolfe & Rivlin, 1987; Tunçok Sariberberoğlu, 2020).

In his study, Graham (2006) asks, “Can there be public architecture?” and states that a building is appropriated by a user when that user understands its features to be “fit for purpose”. Such appropriation is necessary for the building to be functional. The practical properties of a building suitably become functional only when appropriated by someone who then uses the building. What constrains the appropriation of function? Appropriation is more than just perceiving fitness for purpose; the building must serve the purpose in question. As a result, good design and qualified construction improve the quality of life.

The question arises if it is possible to define space, which is more than a simple volume that surrounds us, as a physical form (such as length, width, scale, geometry, etc.) that can be easily resolved and defined with its concrete structure. Conversely, space has abstract and complex features shaped by codes and rules that make it meaningful (Dursun, 2012). Architectural design is more than just finding spatial solutions to specific regulations. Some theories emphasize that the physical setup will also support the social structure in the space. Hillier and Hanson (1984) states that a relationship exists between the forms produced and the social structure. Lawson (2007) also emphasizes that we can socialize and interact with our environment more richly in areas when the building is designed holistically. The boundaries, connections, and divisions created in the spaces designed within this holistic structure also determine the relationships between people. Furthermore, Carr et al. (1992) state that public spaces, seen as common areas where activities are conducted, are accessible, democratic, and meaningful, have a visual identity and connect people to society.

This study explores the architectural design process of the Bolu Regional Directorate of Forestry Administrative Building, located in a province of the country that stands out with its forests. The design in question presents the principles of architectural preliminary design and application projects, with a focus on the basic approaches to spatial design.

## 2. CONCEPTUAL APPROACH OF THE PROJECT

The space syntax theory, which emphasizes that the physical setup will also support the social structure in the space, suggests that there is a relationship between the forms produced and the social structure. Lawson (2007), who states that visual perception is essential to be able to examine the social structure of spatial behavior and space construction, also emphasizes that we can socialize more and better interact with our environment in areas where we have visual dominance (Tunçok Sariberberoglu, 2018).

Public buildings should be considered holistic structures with different functional uses, corridors, and office units. The boundaries, connections, and divisions created inside the spaces designed within this holistic structure also determine the relationships between people. The social logic of space suggests that daily life should not be disconnected, and social relations can be shaped, which constitutes the basic conceptual approach in a building setup (Peponis & Wineman, 2002).

According to Hillier (2003), the layout not only affects movement and circulation but also enables the individual to understand the relationship between spaces and to form an image of that relationship. If it is difficult to understand how one space is connected to another, orientation in spatial layout becomes difficult. At this point, visibility and intelligibility of the space become vital, and therefore, corridors in public buildings appear as the primary design element in the perception of space. Spatial legibility is one of the critical aspects of understanding the space in a coherent pattern in an imaginable way. Spatial characteristics influence the legibility of a layout. Readable and perceivable environments contain elements that are relatively simple, coherent, comprehensible, and organized (Lynch, 1960); at this point, it is possible to say that as the level of complexity in spatial layout increases, the cognitive relationship established with space will weaken.

The subject of this article is the need for a new public building that serves the community and its occupants effectively. The subject is The Bolu Regional Directorate of Forestry, which manages the region's affairs under the provisions of legislation and instructions of the General Directorate and organizes and controls the activities of the affiliated units to implement plans, projects, and annual programs (Url-1). The need for a holistic building is vital for a city with multiple forests and natural environments.

In line with all these formal and conceptual data, the building in question was aimed to function on the axis of city culture, public service, and life during the design phase, for which a holistic design was intended. Henceforth, the basic design approach for the building setup is presented.

## 3. ARCHITECTURAL DESIGN PROCESS

Architectural design is a complex and multifaceted process that requires a thorough understanding of various factors, including the client's needs, site conditions, zoning regulations, and sustainable design principles (Norouzi et al., 2015). Designing involves both the analysis and synthesis of the elements, characteristics, and requirements for a work of architecture. In the context of a new architectural design, the methodology for explaining the design can be broadly divided into three main stages: research and analysis, conceptual design, and detailed design (Stanković et al., 2018; Ziff, 2000).

On the other hand, the formation process of buildings and spaces consists of a series of feed-forward steps, defined as the architectural planning process. This process, which starts with preliminary design studies or strategic planning steps, creates a cycle of many steps, such as planning, design implementation, use, and evaluation (Preiser & Schramm, 1997).

At the beginning of the design process, the required functions, and sub-meanings of the spaces in the public service building are determined. The functional and semantic equivalents of the physical spaces to be designed are emphasized, and the preliminary existence of the building is questioned. Within the scope of the design process, the spatial identity requirements of the design problem were examined, and the requirements of spatial functions based on spatial order were considered.

The functional and semantic equivalents of the spaces intended to be designed were questioned based on the social, cultural, and economic expectations of the subject. At the decision stage, the main goal was to create an environment supporting public-city interaction and administrative unit form search. In this context, spatial and functional data shaped the process starting with the analysis and design phase. The keywords for the design were determined as efficiency in the office units, while privacy, productivity and functionality were required. Also at the same time, it was aimed to create a system that supports social interaction and establishes visual dominance over the landscape (Figure 1).

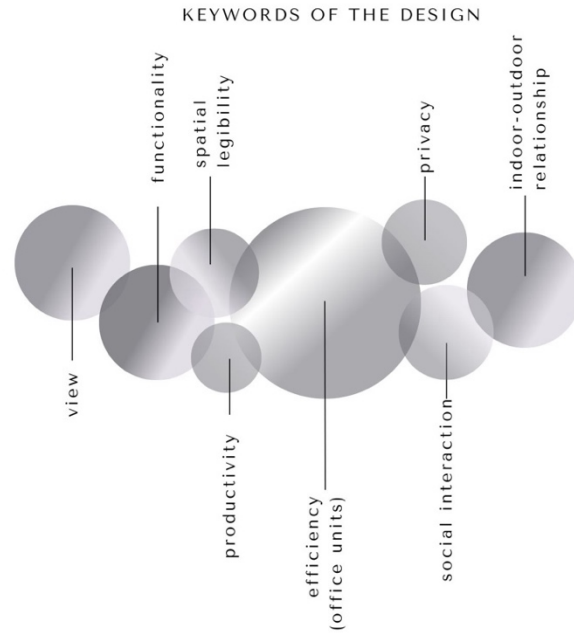


Figure 1. Keyword diagram of the design (produced by the author).

The requirements program constitutes another important stage of the design phase. In the needs program setup, an attempt was made to create a scheme based on the requirements determined by the business directorates within the regional directorate. To be considered a holistic structure, the building should include these main categories: regional directorates, educational and social areas, central administrative units, open-air and closed parking areas, and technical areas (Figure 2).

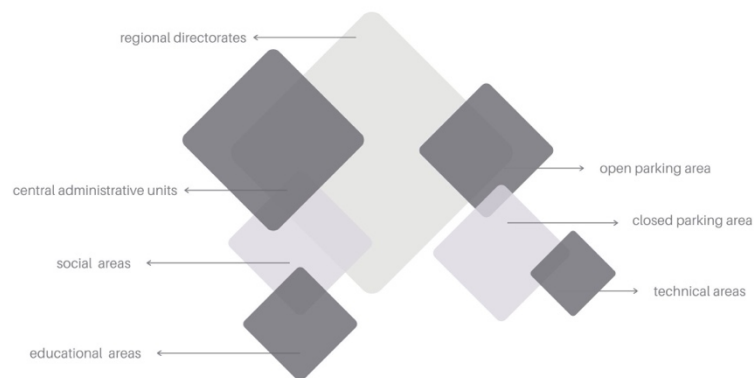


Figure 2. Structural program diagram of the design (produced by the author).

The design process, which started with determining user needs (public and people), was performed by establishing a relationship between conceptual approach and form. Considering the program's intensity and the land's shape, an inner garden was created as the best approach to provide natural lighting. Courtyards can positively impact occupant comfort in office buildings in several ways such as thermal comfort (Bekar & Manioğlu, 2018), daylighting and views (Taleghani et al., 2012; Qi et al., 2021), air quality (Ghaffarianhoseini et al., 2015).

Inner courtyards act as a central void, shaping the flow of movement within the building. This can reduce reliance on long, enclosed corridors and create a more intuitive and pleasant circulation experience (Jamaludin et al., 2016). Moreover, courtyards introduce natural light into the building's core, reducing the need for artificial lighting and creating a more inviting and stimulating environment. This natural light can penetrate surrounding rooms, brightening the interior spaces and fostering a connection with the outdoors (Taleghani et al., 2012). However, the design of the courtyard itself is crucial to maximizing these benefits. Factors like the courtyard's orientation, size, and the presence of vegetation all play a role in its effectiveness in enhancing occupant comfort (Ghaffarianhoseini et al., 2015).

### 3.1. Project Site

A project's site location is fundamental in architectural design as in context and user experience. A building should respond to its surroundings, whether it's a bustling urban street or a serene natural landscape (van Nes & Yamu, n.d), and how people will access and move through the site is crucial. Proximity to transportation, amenities, and views all contribute to the user experience (Özgece et al., n.d). It is vital to consider all these factors to create designs that are not only aesthetically pleasing but also functional, sustainable, and integrated with their surroundings.

The project site is located in Bolu's city center, which is between the capital Ankara and İstanbul, Turkey. In the south of the project area, there is a main road, D-100, also known as Bolu–Ankara Road. In the southeast of the project area is Atatürk Forest Park, which is essential for the province of Bolu and spreads over a wide area. Due to the location of the project area, the administrative building in question was designed to interact visually with this park to enrich the user experience not only aesthetically but also integrated with the surrounding (Figure 3).

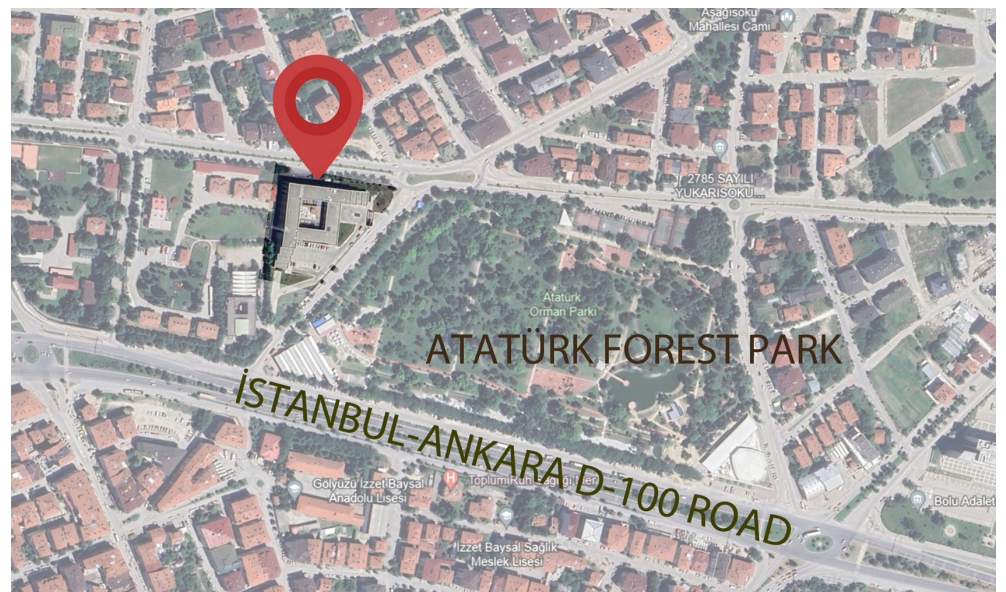


Figure 3. Project site (produced by the author).

### 3.2. Conceptual Frame of the Design

Seamon (1982; 1987) defines the dimensions of the person–space relationship by analyzing the daily experiences of places, spaces, and environments and states that the dialectic of space (inside–outside) is the essence of the experience of space. The site's strong relationship with the largest open green area in the city center has also influenced the building's general shaping decisions. The dominant façade of the building is terraced towards the upper floors to strengthen the relationship with the dominant landscape. The general form of the building consists of administrative units located around a square inner courtyard to achieve a dialectic of inside-outside concept, while Inner courtyards and gardens significantly impact a public building's circulation and light. On the other hand, the north and west corridors on the ground floor gradually decrease in length on the upper floors and turn into open terrace areas. Due to the receding floor plans on the upper floors, open areas were transformed into small terrace gardens. Also, this structuring enables users to view the forest park from the administrative upper floors (Figure 4).

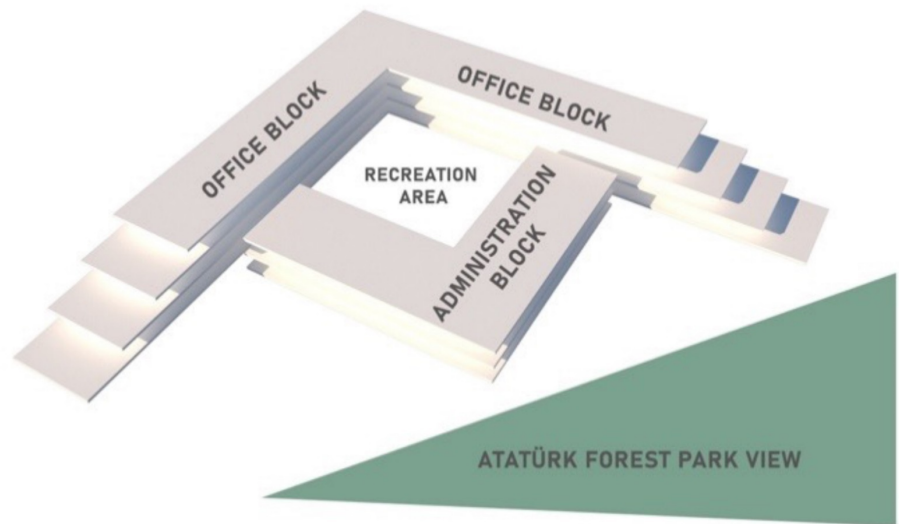


Figure 4. Graphical layout of the design (produced by the author).

Norberg-Schultz (1980) discussed the concept of place through a sense of belonging, orientation, and identification, of which its essence could be amounted to the “atmosphere” of that place. Therefore, the structure of the place is defined by its landscape, settlement, space, and character. Based on this discourse, an attempt was made to create an atmosphere in which the sense of belonging could be strengthened by providing orientation with the designed corridor system and, at the same time, visually increasing the indoor-outdoor relationship. However, the building's main characteristic is being an office building, necessitating a corridor-based approach. The interior garden aims to maintain recreation and strengthen the bright and green perception of the corridor spaces. The main design decision is based on the accessibility of spaces and the legibility of their relationships. A design approach with an inner garden connecting the corridors was preferred to maintain architectural designs that are readable and perceivable environments that contain elements that are relatively simple, coherent, comprehensible, and organized, as Lynch (1960) described.

### 3.3. Design Process

The main design for the building consists of a basement, ground floor, and three additional floors with a total construction area of 16,509 m<sup>2</sup>. The building was designed to accommodate several directorates, such as the Aladağ Forestry Operation Directorate, Bolu Forestry Operation Directorate, Bolu Forestry Operation Directorate, National Parks Directorate, and Research Directorate, which are within the Bolu Regional Directorate of Forestry, within a single building, with each floor divided into one or two different operation



directorates. The main request for the design was for the growing Operation Directorate units to be together under one roof. In addition to the desire for each unit to have its own space, accessibility between units was also considered important. A meeting room within the building where the units could come together, and meetings could be organized on a provincial and national scale when necessary was also a prime necessity. Another factor influencing design decisions is that building owners approach the overall identity of the building as a matter of regional prestige. For this reason, the landscape factor, which effectively shapes the building's basic form, has caused the management and protocol spaces to be considered in this area. In the square-based plan scheme, the corners are handled as core spaces for vertical circulation, and the corner of the building that establishes a relationship with the landscape view is designed for the upper management units.

As in detail, the ground floor plan, which has a construction area of 3,490 m<sup>2</sup>, includes the Aladağ Forestry Operation Directorate and Bolu Forestry Operation Directorate. The building is entered through a large entrance hall designed toward the Forest Park. In addition, a second personnel entrance to the west of the building provides access to the lodging area. The building has five staircases and four elevator units to ensure vertical circulation. In addition to the administrative (protocol) stairs and elevator area in the entrance hall, there are also stairs and elevators in the administrative unit corridors. This floor has a 300 m<sup>2</sup> meeting room with a foyer directly opposite the entrance hall. This hall is located under the inner courtyard of the building and is an area that interacts with the open garden areas on its right and left sides (Figure 5).



Figure 5. Ground floor plan (produced by the author).

In the preliminary design process, the north wing of the ground floor was designed as an exhibition hall for forestry science. In this area, an interaction was intended to occur between the public and forestry. However, later in the design process, the management changed. The new management wanted to convert this area into an office space.

The first floor has a construction area of 2,858 m<sup>2</sup>, and the entire floor is reserved for Bolu Regional Directorate of Forestry. This floor is directly above the entrance hall, where the Regional Directorate waiting hall and the Manager's room are located. Direct access to this area is via the protocol staircase in the ground floor entrance hall. From this floor, there is access to the planted inner courtyard terrace area of the building (Figure 6).



Figure 6. First floor plan (produced by the author).

The most important area on this floor is the roof terrace courtyard created by the conference hall located on the lower floor. The open courtyard system, which exits from the wide corridor area created in the block where the administrative units are located, is designed to allow employees to access fresh air during the day.

Although the concept of environment is defined with different meanings by various disciplines, when associated with behavior it is considered a social environment that is shaped and given meaning by the physical space (Proshansky et al., 1983; Barker, 1968; Golledge, 2001). Public service, one of the most fundamental areas that supports and organizes the quality of social life, is essential in terms of its potential to define a social interaction environment rather than just being considered a daily business practice.

The second floor covers a construction area of 2,667 m<sup>2</sup>, and the National Parks Directorate and the Research Directorate are located on this floor. On this floor area, administrative units are located in line with the needs of the relevant directorates (Figure 7). The floor setup consists of office units lined up along the main corridor. Thanks to the ascending and gradual design, it is aimed to break the long monotony of the floor layout.



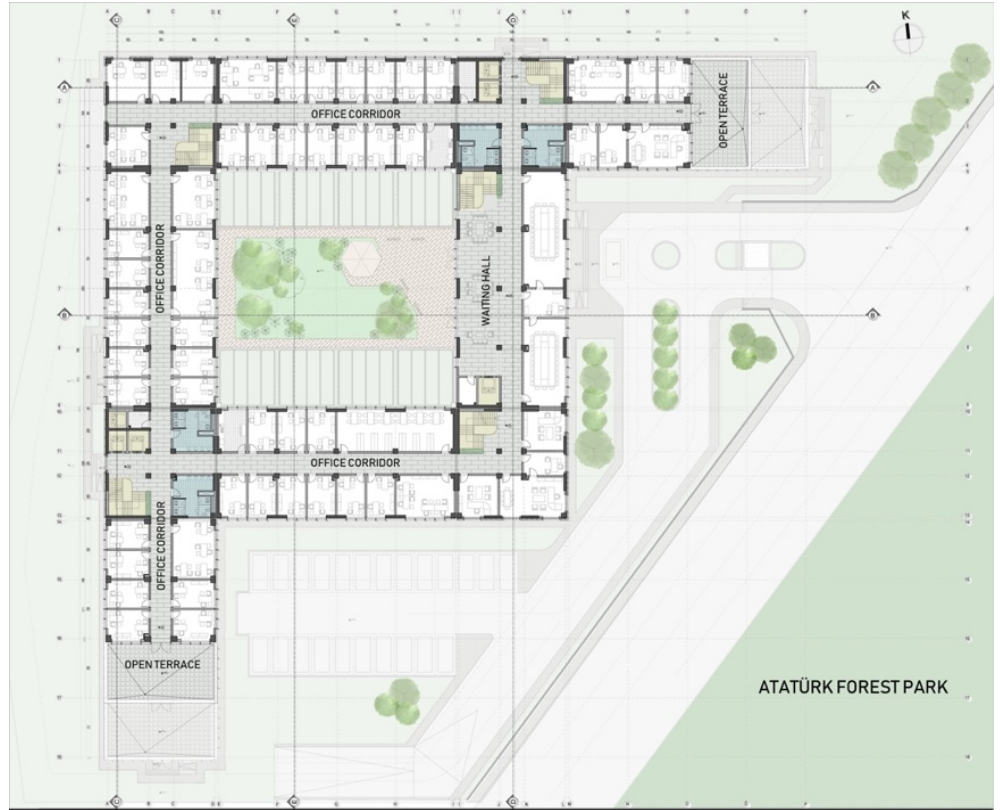


Figure 7. Second floor plan (produced by the author).

The third floor has an area of 1,518 m2. On this floor, the Regional Directorate, a dining hall, and a prayer room are found. Guest restrooms were designed before the terrace areas at the end of the corridors. The view of Bolu can be seen from the terraces created by the general architectural form of the building, and especially on the last floor, the dining hall and recreation areas are allowed to connect with the view of the Bolu (Figure 8).



Figure 8. Third floor plan (produced by the author).

Due to its dominant view, the top floor was designed as a entirely closed recreation area at the initial design phase. Just as the exhibition area on the ground floor was converted into office units, the initial design decisions for the top floor were also abandoned. At the first stage, the space was designed entirely as a dining area and guest reception area, but the dining area was reduced in size, and office units and prayer area were added to the northern corridor.

The building, which has a total basement floor construction area of 3,900 m<sup>2</sup>, includes the shelter area directly under the inner garden and archive and warehouse units belonging to the Directorates. In addition, laboratory areas have also been designed and are suitable for use when needed. Furthermore, a total of 2,076 m<sup>2</sup> is designated for an indoor parking area with a capacity of 32 cars, 25 pickups, and a car wash area on the basement floor. This area is accessed via a ramp behind the open car parking area for 23 vehicles in the south of the building (Figure 9).



Figure 9. Basement floor plan (produced by the author).

The design of office buildings significantly impacts the productivity, well-being, and overall satisfaction of the employees who occupy them. One crucial aspect of office design that has been gaining increasing attention is the concept of spatial flexibility (Shahu, 2017; Gibson, 2003). The top three factors determining employee productivity are comfort, access to people and equipment, privacy, and flexibility (Zawawi et al., 2014). These factors are all closely tied to the spatial configuration and layout of the office (Gibson, 2003). Employees desire access to the spaces and resources they need to execute their tasks efficiently and opportunities for privacy and social interaction (Anuar et al., 2019).

As the nature of office work continues to evolve, the demand drivers for office space are also changing with the increasing use of information and communication technologies (Gibson, 2003). Flexible workspaces that can accommodate a variety of work styles and activities are becoming more important. For this reason, the size of the office units in the corridor area has been altered based on the main axes of the building. Administrative room units throughout the building are derived from 340x500 cm dimensions. Room dimensions are as follows: 340x500, 705x500, and 1060x500 cm. The basic room types, with an area of 17 m<sup>2</sup> for 340x500 cm dimensions, are designed to accommodate two staff members and a third external person (Figure 10). Larger volumes are intended for meetings and situations where more staff need to congregate. Volumes smaller than these ratios are generally

reserved for technical and warehouse use. The primary purpose of this design is a flexible structuring proposal for office spaces that might be needed in the future. When there is a need for expansion in office areas, it is aimed to have new large areas on the floors with minimum space, using fixed axes.



Figure 10. 340x500 cm2 plan of a typical office layout (produced by the author).

An important purpose of the design was to allow visual access of the Atatürk Forest Park with stepped terraces. While achieving this, the Atatürk Forest Park should be visible from the end of the office corridors with the stepped terraces. In addition, alternative outdoor recreation is created for spaces where the Forest Park cannot be seen. With the central courtyard, the interior offices are to benefit from natural light. The terrace roof of the conference hall in the middle area can also be used as a recreational area and is designed to be accessible to all employees. Alternative outdoor recreation areas were created with interior gardens at two different elevations, allowing users to access them (Figure 11).

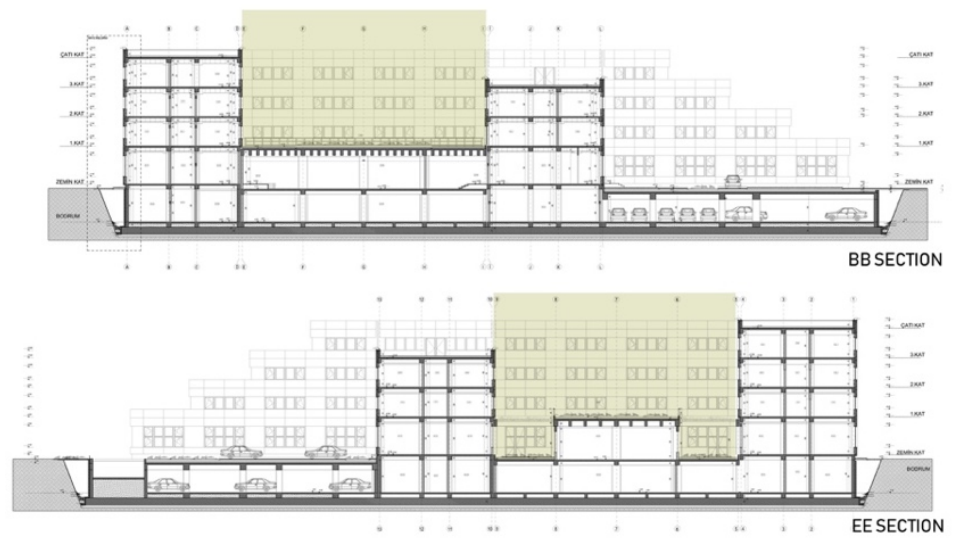


Figure 11. Selected sections of the building (produced by the author).

When making aesthetic decisions, the building was evaluated as a whole. Priority was given to strengthening the perceptual form of the building and strengthening the visual interaction with the inner garden. The conceptual stance of the area and the building's design problem is related to the tradition to the future. It has been deemed appropriate to use wooden vertical panels, a traditional material, and composite coating systems, which can be considered as a modern material. An attempt was made to achieve form-based balance with vertical elements in the window openings to manage the horizontal form of the area and the building (Figure 12).



Figure 12. 3D model of the building  
(produced by the author).

#### 4. CONCLUSIONS

The design of administrative buildings is often seen as a cultural object closely tied to a particular social context and the historical moment of the nation. Public buildings, fundamental elements in forming common culture and social belonging, also appear as prestigious buildings with their official identities. This paper uses the paradigm of structuralism and the principles of semiotics as a methodological approach to analyze the Bolu Regional Directorate of Forestry building. The architect's design principles emphasized local and regional characteristics to highlight the role of environment and culture. The design process of the building was intended to meet maximum physical requirements and to strengthen the social and emotional relationship with the building and its spaces. In other words, in the Bolu Regional Directorate of Forestry building, which contains both public and official identity, the spatial organization designed in line with the needs program and the symbolic identity of the building are aimed to come to the fore with structural movements on the facade. In the design process, the relationship of the spaces with each other and with the user was considered. Possibilities for growth aligned with future needs have been explored, and solutions have been produced accordingly. In the design, the architectural form of the building and the details on the facade are aimed at reflecting and contributing to the identity of the building.

This study is an example of the conceptual approach to considering the spatial needs of a public building design nourished by traditions and aimed at directing the future. The building, for which the design process and scope have been described, was open for use at the end of 2022. In the future, evaluating the design performance of the building through post-use evaluation analyses can provide important information to shed light on basic design approaches in public buildings.

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#### KAYNAKLAR

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