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RESEARCH ARTICLE

ENVIRONMENTAL DESIGN PROJECT ON JULY 15 CAMPUS OF NECMETTIN ERBAKAN UNIVERSITY

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ABSTRACT

University campuses are important urban spaces established in or around the city. Like other urban spaces, these spaces, which contain a large young population, affect the socio-cultural structure of the city and contribute to the formation of urban identity. Especially the universities with multiple campuses have adverse conditions in terms of the common use of resources as well as administrative difficulties. Spatial disarray drifts apart common spaces. Environmental design is needed to establish connection between spaces and to increase the availability of common areas for all users. In addition, planning open and green spaces in university campuses as a park is important for the faculty and students in terms of quality and safety. This also reflects positively to the quality of education and training. In this study, a landscape project has been prepared for Necmettin Erbakan University July 15 campus and recommendations are made in order to transform the campus to a place that meet the academic, social, artistic, cultural, and sportive needs of the users comfortably in all periods.

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INTRODUCTION

Universities are the most important gathering places of cities with their wide areas, functions, actions, and number of users. These features of the universities have positive and negative impacts on the urban ecosystem. There are 186 universities in total; 113 state and 73 private universities. Approximately 7.2 million students are having education in these universities. Therefore, approximately 10% of the country population is active users on university campuses. Not only the basic rights and needs such as education and training, housing, nutrition, and health but also the recreational and leisure needs of this large young population should also be met. For this reason, it is expected that environmental designs of campuses are planned to be multifunctional. It is also important that the planned university campuses are designed in a sustainable way. Universities and necessary collaborations not only play a key role in the cultural, economic, and social sustainability of cities; but also constitute a role model for the formation of a new cultural structure based on sustainability, creativity, and innovation in cities (Höger, 2010). In this context, "sustainable university" can be defined as an institution of higher education that works to reduce problems arising from environmental, social, and economic aspects, and pioneers community for a sustainable way of life while performing its own activities (Velaquez *et al.,* 2006).

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In urban areas; squares, gardens of public institutions, coastal areas, urban parks, and university campuses are important potential areas for creating green spaces (Tanrıverdi, 1975, Pamay, 1979; Ertekin and Çorbacı, 2010). Thus, a significant number of the first universities and almost all of the new universities have been founded as campus universities. Some changes in the campuses lead to physical growth. For example, the increase in the number of students over time, the developments in science, and the establishment of some new faculties or departments make it necessary to design expandable campuses (Karaaslan, 1979; Erkman, 1990). The planning of university campuses also requires the consideration of landscape planning and design principles. Planning the open and green areas in the campuses as parks where recreational needs are met is important for the quality of education and for providing the instructors and students a peaceful environment. Sports facilities, cultural facilities, open and green area landscapes, and the circulation system linking these spaces are treated as components of recreation function (Yılmaz, 1998). Among these, recreational areas are particularly important. As is known, recreation comprises all activities that cause people to regain their spiritual and physical vitality by watching and participating by which they relax, entertain, and enjoy the natural beauty and relieve fatigue of daily activities and work (Güçlü, 1992; Kaplan, 2002). The open and green area components in university campuses can be classified as; campus perimeter, main gates, active recreational areas, passive open recreational areas, vehicle circulation system, pedestrian circulation system,

Figure 1. Necmettin Erbakan University July 15 campus previously

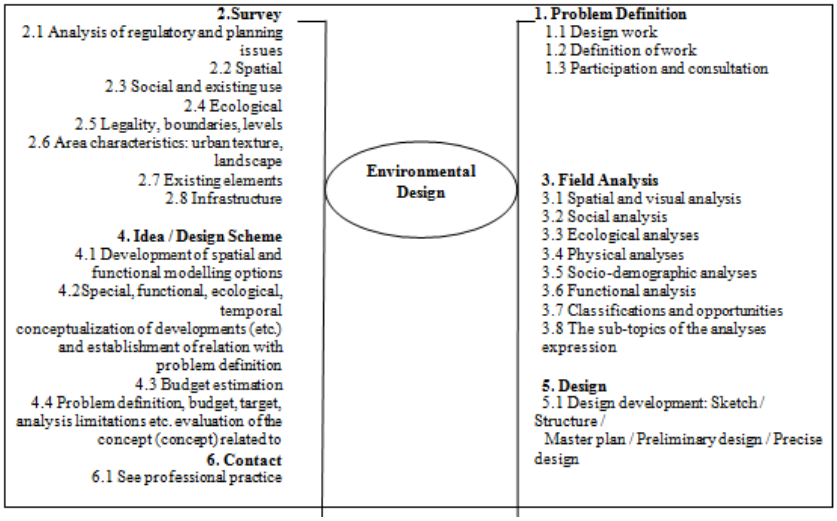

Figure 2. Flow diagram of the study

plastic objects (fountain, sculpture, monument), crossroads, outdoor furniture (pergola, bench, arbor), lighting, planting, and other special applications (Dober, 1992). This concept design project has been prepared in 2016 in accordance with the request of Necmettin Erbakan University, General Directorate of Construction and implemented by the University in 2017. In the research, the landscape planning principles of "July 15 Campus Environmental Design Project" was considered and suggestions were made by considering the project principles.

MATERIALS AND METHODS

Necmettin Erbakan University was founded on July 14, 2010, in Konya, which is the 6th largest city in Turkey in terms of population. Currently, it continues its educational activities with 18 faculties, 2 colleges, 6 vocational schools, and 4 institutes. The "July 15 Campus", which is a conceptual design project, started its education and training activities in 2017. One of the buildings in the campus hosts the Faculty of Law and the Vocational School of Justice and the other hosts the Faculty of Tourism and the Architecture and Urban and Regional Planning Departments of the Faculty of Engineering and Architecture (Figure 1). By the year of 2017, Necmettin Erbakan University has 1600 academic staff and 35.686 students, and its main campus is the Köyceğiz Campus.

The methods followed in the study are given below

- Determining the boundaries of the are using the 1/1000 scale map sections
- Transferring the hardcopy layout to the computer environment,
- Digitalization of contour lines of the area and determining the topographic structure by using this image,
- As a part of the field survey;
- Determination of the elevation and dimensions of existing constructions,
- Determination of the places, numbers, and landscape values of existing plants,
- Determination of the traces of current circulation system and pedestrians.

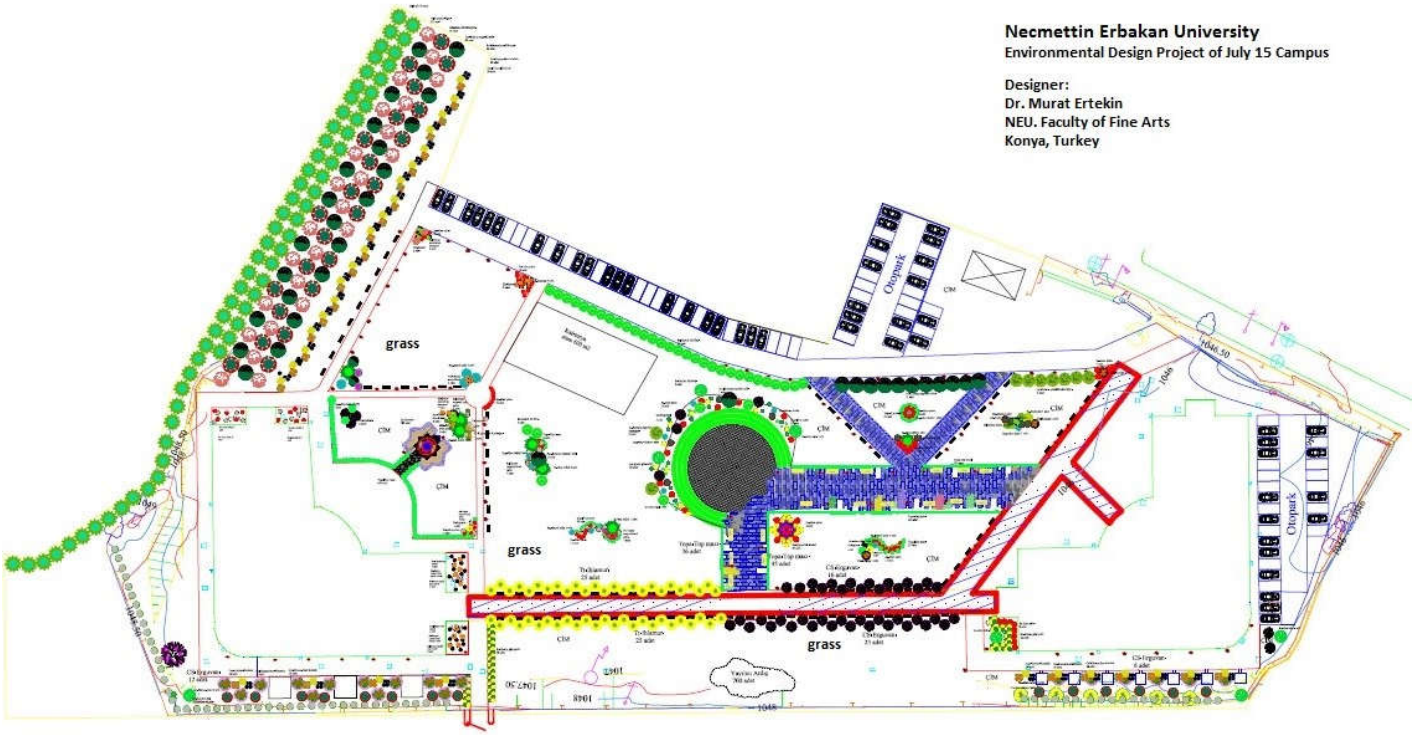

Figure 3. Necmettin Erbakan University July 15 campus landscape project general view

Figure 4. View of the parking lot and ceremony area

Development of the project and design processes: The aim of the prepared concept design project is to transform the university campus into an area where students, visitors, academic and administrative staff and their children at different ages comfortably use for their academic, social, artistic, cultural, and sportive needs (Figure 3). The usage patterns that should be included in the area were determined and a needs program was created. In line with obtained data and needs program, proposals including different circulations and locations have been developed. Implementation processes of the study are prepared as a work plan. The flow diagram for the study is shown in Figure 2.

Entrance and entrance Unit: In the campus area, two entrances are designed; one for vehicles and the other for pedestrians. The pedestrian entrance that the students, visitors, and the staff will use is planned on Meram Yeniyol Street. The vehicle entrance is planned to be at the point where the side road that parts from Meram Yeniyol reaches the back of the campus. Entrance units and security cabins were established in the campus area.

The pedestrian aggregation and dispersion areas are planned in linear structure and special attention was paid to prevent their intersection with the vehicle circulation. Three different transportation networks were considered on campus. The first is access to the administrative unit, the second is access to the academic area, and the third is the access to the common use area. Ring circulation is provided around the educational buildings, whereas direct access is available at the main gate. During the design work, direction and warning signs were placed in order to guide people about how and where they will go.

Park Areas: Parking lots in the campus are: staff parking lot, visitor parking lot, shuttle parking lot, bicycle parking lot, and disabled parking lot. Parking lots have been designed for 100 vehicles.

Ceremony Area: 320 m^2amphitheater was designed at the center of the campus to host events such as ceremonies, festivals, and other activities. This area can also be used as a living space by all users in their leisure time.

Figure 5. View of the amphitheater designed in the project

Table 1. Tree and shrub used in the Necmettin Erbakan University July 15 campus environmental design project

Platanus orientalis L.	*Euonymusalatus* (Thunb.) Siebold.
Cedrusdeodoraglauca Roxb. ex D. Don	*Euonymusjaponica* L.
Piceaglauca conica	*Thujaorientaliscompacta* L.
Cedrusatlanticaglauca	*Rosaosiria*
Acer platanoides L.	*Phyracantacoccinea*nana M.Roem
Acer palmatum L.	*Syringavulgaris* Mill
Cerrissiliquastrum L.	*Buxusmicrophylla "faulkner"* L.
Tiliatomentosa Moench.	*Wisteriachinensis*
Betulapendula Roth	*Parthenocissusquinquefolia*
Prunuscerassuspendula L.	*Hederahelix*
Prunuscerasifera	*Juniperushorizontalis*
S*ophorajaponica* L.	*Thujaoccidentalis* Smaragd
Cupressussempervirenspyrd. L.	*Jasminumfructicans*
Cupressussempervirensarizonica L.	*Chamaecyparislawsoniana*
Tamarixgallica auct.	*Cupressocyparisleylandi* Dallim

Amphitheater: A 320 m^2 amphitheater with 500 people capacity was designed at the center of the campus area where concerts, shows, recitals, meetings, lectures for students will take place and stands will be set during spring festivals. It was also planned to be used as an open-air cinema (Figure 5). The seats of the amphitheater are planned to be made of wood.

Planting Design: Plant design in the campus area includes green areas of faculties, road afforestation, refuges, coppices, grass areas, and other green areas. Depending on the seasonal changes, suitable planting designs were carried out taking the duration and intensity of sunbathing, the amount of rainfall, and the number of open days into account. The aesthetic and functional features of plants used in the area were also put first. In this context, theme gardens, hobby gardens, and an ornamental pool were created. The plants used in the design have been carefully selected from plants found naturally in the Central Anatolian Region and from exotic plants that are adapted to this region. Species such as *Pinusnigra, Platanus orientalis* and *Quercus sp* which are found in natural vegetation were predominantly used in design. The Latin names of the plant species used in the campus design are given in Table 1.

Equipment: Campus area landscape arrangements should include equipment such as benches, pergolas, litterbins, water features, plastic objects, lighting units, flooring materials, irrigation systems, and retaining walls that can meet the needs of users in the campus. In this context, the following equipment were included in the Necmettin Erbakan University July 15 campus area landscape project. The detail measurements of these equipment are shown in Figure 6.In recreational areas, benches have been placed at suitable places such as; around the ceremony area, along the concourses, around the outskirts of the faculty buildings, in the areas where the sitting and resting terraces are located. Benches are designed with two or three people capacity.

***Pergola*:** In the vicinity of the faculty buildings, 7 middle and 3 big pergolas each with a size of 6 m² and 10 m^2 respectively, were used to meet the recreation and entertainment needs of the users.

- ***Water features*:** A cascaded fountain pool has been designed as a water element to provide dimension, depth, and charm to the campus area (Figure 7). Besides, a public fountain has been designed in the campus area to strengthen historic ties and to keep the cultural values alive.
- ***Plastic objects*:** Different plastic objects have been used throughout the campus concourses to allow people to express themselves, develop their design power, and engage in artistic interaction.

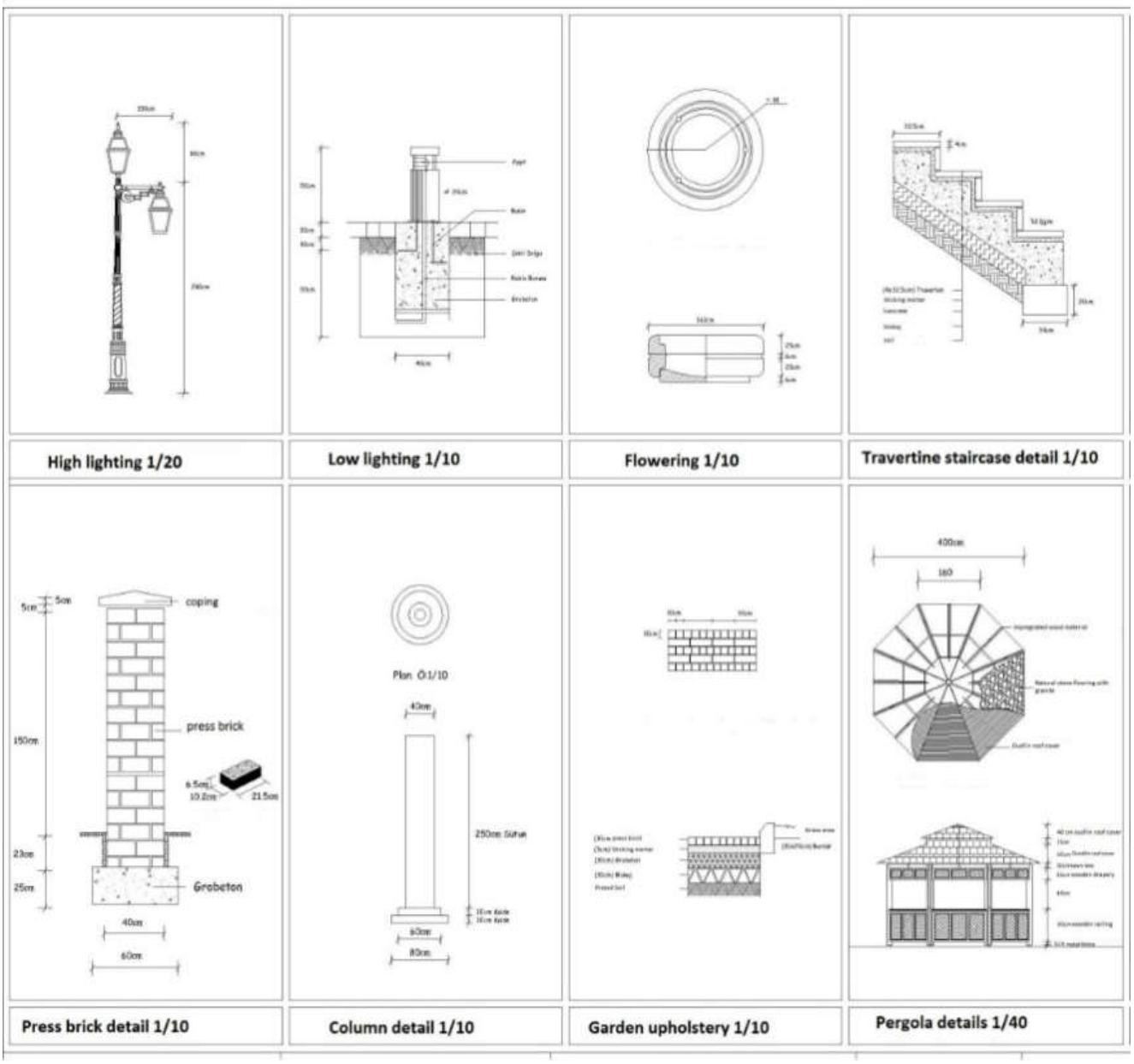

Figure 6. Detail measurements of equipment planned to be used in the area

Figure 7. The cascaded fountain pool in July 15 campus

Figure 8. Bank and high lighting in July 15 campus

- ***Lighting units*:** Day and night changes are very important in terms of the security of the academic, administrative, and student settlements at the campus. As the social spaces inside the campus are not always available during the day, these spaces are designed considering the day-night changes. High, low, and spot lighting fixtures were used. Lighting elements were used around special plants and water features at the campus (Figure 8).
- ***Flooring material*:** Flooring materials are used selectively according to the climate characteristics.
- *Irrigation system*: A central irrigation system has been installed to ensure that the maintenance of green spaces efficiently.

Conclusion and Recommendation

University campuses are important urban living spaces. They are the educational and cultural investments that enable the region and the city where they are located to develop in social, cultural, and economic aspects. They are also obliged to provide contemporary lifestyle patterns to their employees, users, the people around them, and the city where they are located. In addition to activities such as education, teaching, and research, universities also aim to be include artistic, cultural, social, and sports activities. They plan appropriate facilities and spaces to achieve this. In these spatial plans, the open spaces of campuses should be planned in line with landscape planning and design principles. The planning of university campuses should be assessed on the urban design scale, just like those made in other urban areas. The connection between the places at the campus area are connected to each other through green spaces, thus, interrelations can be established. Campus landscape arrangements enable the application of holistic and sustainable approaches in planning. One of the most important features to be noted in the planning of universities is their being designed in a dynamic structure open to development and growth over time.

It is important to design the development and growth in the planning stages in the campuses in order to prevent unlimited and random growth. Necmettin Erbakan University July 15 Campus has a conceptual design and has been planned to ensure that the basic recreational needs of the users are continuingly met. The environmental design project implemented in 2017 started to be used intensely by the students and staff during the academic terms. It is also predicted that it will provide a space for graduation ceremonies and open-air concerts and meetings that are held in summer.

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