

The background of the entire page is a blue-toned topographic map with white contour lines and street grids. Overlaid on this are several rectangular panels of grayscale aerial photography, showing various landscapes including urban areas, forests, and bodies of water. The text is primarily on the left side, set against a solid blue background.

PEM 411E

LANDSCAPE DESIGN

STUDIO - IV

2022-2023

SPRING SEMESTER

I.T.U LANDSCAPE ARCHITECTURE
DEPARTMENT
STUDIO REPORTS

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PEM411E LANDSCAPE DESIGN IV

landscape design studio IV

Prof. Dr. Gülşen Aytaç
Res. Assist. Lâl Dalay

STUDIO .01
DESIGNING PUBLIC OPEN SPACE TO SUPPORT SEISMIC RESILIENCE .02

.01 STUDIO

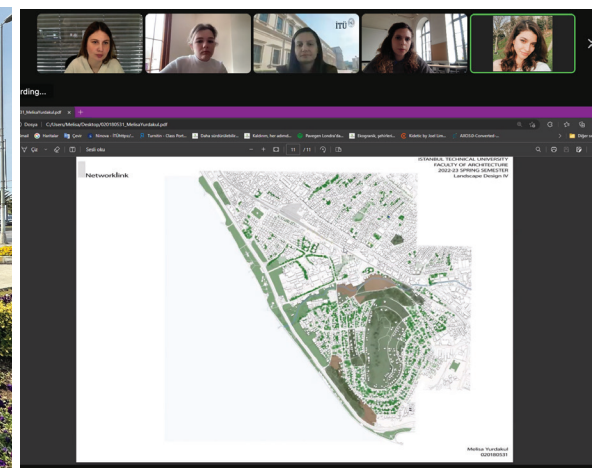
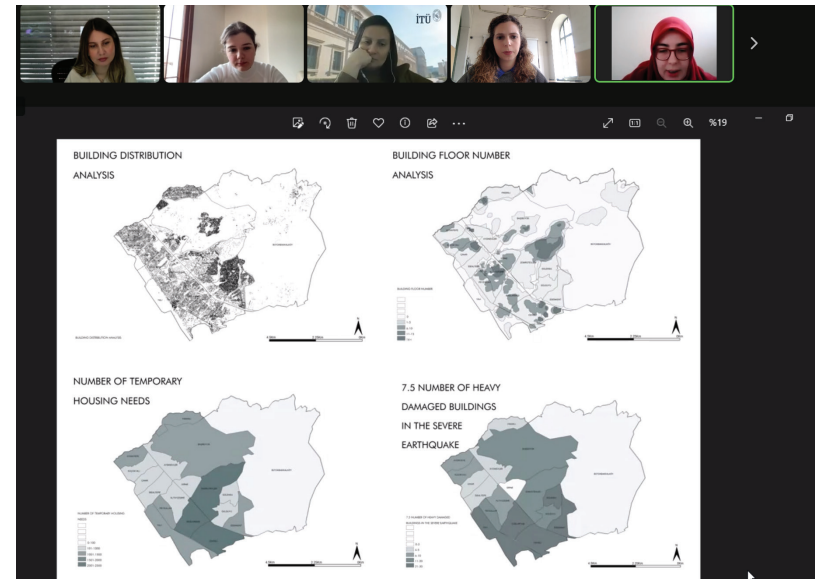
landscape design IV

Following major earthquakes, like the recent example of Kahramanmaraş, public open spaces transform into spaces that respond to short-term disaster recovery, middle and longer term recovery needs. However, few open spaces are currently designed to support these critical uses [1]. In this context, earthquake parks can be defined as public open spaces that meet the needs of nutrition, shelter and safety for people to sustain their daily needs after a disaster. Open spaces are critically needed for safety and shelter in the post-disaster environment. Post-disaster needs for evacuation, medical assistance, communication, shelter and food can be met in such spaces with the help of networks and social connections through established urban open spaces [2]. It is also known that interaction with vegetation such as city parks and gardens in disaster situations helps the resilience and resistance of those who are affected, not only through psychological rehabilitation but also by evoking memories [3].

In this context, under the theme "Designing Public Open Space to Support Seismic Resilience ", Landscape Design Studio IV invites participants to re-examine the urban landscape design of Istanbul with a perspective that supports seismic resilience. Through this studio, fourth year students, landscape architects of the future will study ways to plan and design open spaces for a post-disaster environment. Within the scope of the studio, students will be expected to plan and design systems at various scales and produce solutions for the given workspace in Istanbul.

References

- [1] French, E. L., Birchall, S. J., Landman, K., & Brown, R. D. (2019). Designing public open space to support seismic resilience: A systematic review. *International Journal of Disaster Risk Reduction*, 34, 1-10.
- [2] Caymaz, G. F. Y., & Komar, H. (2021). Analysis of Earthquake Park Design Criteria: Cases in Ataşehir and Topkapı Parks, Istanbul. *Architecture and Urban Planning*, 17(1), 88-102.
- [3] Tidball, K. G., Krasny, M. E., Svendsen, E., Campbell, L., & Helphand, K. (2010). Stewardship, learning, and memory in disaster resilience. *Environmental Education Research*, 16(5-6), 591-609. ISO 690



From Online Juries and Maltepe Field Trip





1



2



3



Maltepe Field Trip



6

02 DESIGNING PUBLIC OPEN SPACE TO SUPPORT SEISMIC RESILIENCE

MALTEPE | İSTANBUL

2022-2023 SPRING SEMESTER

Prof. Gülşen Aytaç PhD. - Res. Assist Lâl Dalay

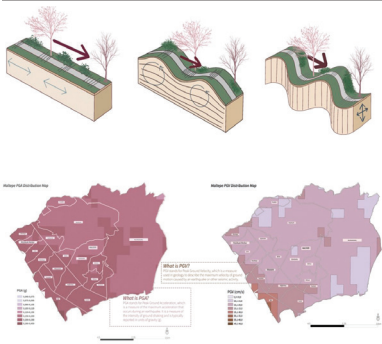
DESIGNING PUBLIC OPEN SPACE TO SUPPORT SEISMIC RESILIENCE

Following major earthquakes, like the recent example of Kahramanmaraş, public open spaces transform into spaces that respond to short-term disaster recovery, middle and longer term recovery needs. However, few open spaces are currently designed to support these critical uses. In this context, earthquake parks can be defined as public open spaces that meet the needs of nutrition, shelter and safety for people to sustain their daily needs after a disaster. Open spaces are critically needed for safety and shelter in the post-disaster environment. Post-disaster needs for evacuation, medical assistance, communication, shelter and food can be met in such spaces with the help of networks and social connections through established urban open spaces. It is also known that interaction with vegetation such as city parks and gardens in disaster situations helps the resilience and resistance of those who are affected, not only through psychological rehabilitation but also by evoking memories [3]. In this context, under the theme "Designing Public Open Space to Support Seismic Resilience", Landscape Design Studio IV invites participants to re-examine the urban landscape design of Istanbul with a perspective that supports seismic resilience. Through this studio, fourth year students, landscape architects of the future will study ways to plan and design open spaces for a post-disaster environment. Within the scope of the studio, students will be expected to plan and design systems at various scales and produce solutions for the given workspace in Istanbul.

LANDSCAPE DESIGN IV

DESIGNING PUBLIC OPEN SPACE TO SUPPORT SEISMIC RESILIENCE

STUDIO OUTPUTS



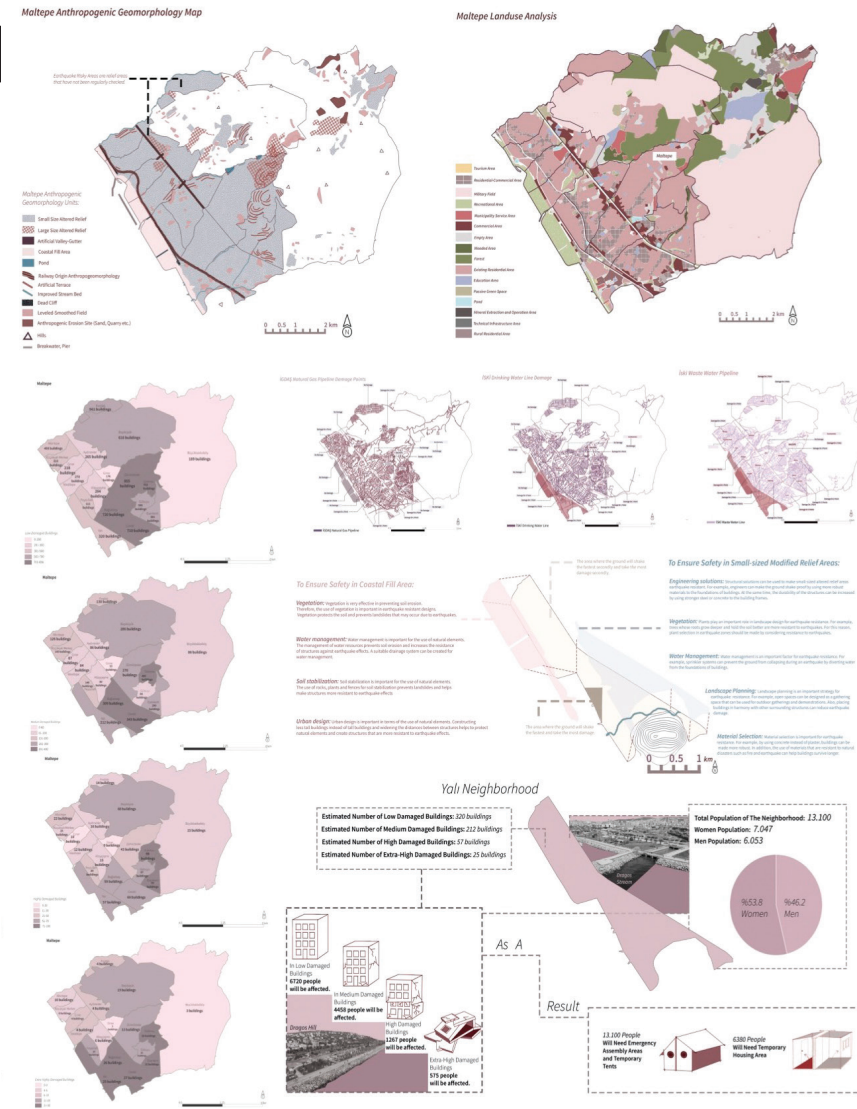
EARTHQUAKE RESISTANT MALTEPE / DRAGOS STREAM AYŞE ALEYNA ÇOLAK

The Maltepe-Dragos Seismic Resilience Project proposes several strategies to protect against natural disasters and ensure environmental sustainability. Firstly, in order to manage water flow and minimise flood damage after earthquakes, buffer zones will be established around the creek beds. Afforestation within these zones will strengthen soil structure, preventing erosion and slowing the speed of water flow. River beds will also be realigned and a thorough flood risk analysis will be in place.

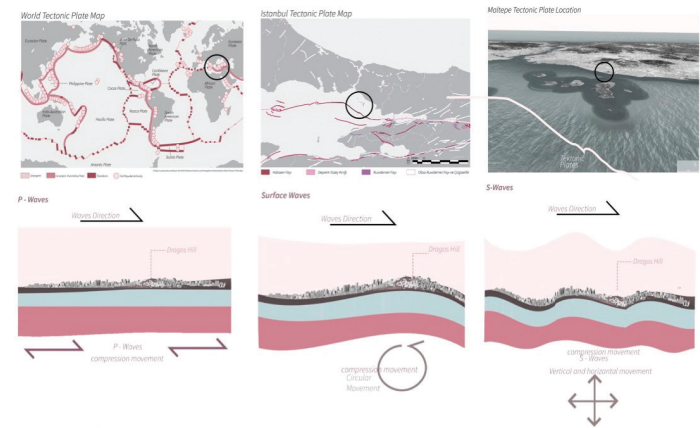
For the comfort and safety of visitors, earthquake-resistant pavilions will be constructed. These will provide rest areas, amenities and key information. The creation of artificial green mounds to enhance visual appeal while providing environmental benefits such as erosion control, soil stability and habitat enhancement is another key design element.

This project proposes to build ecological bridges across riverbeds, thus promoting genetic diversity. The bridges will reflect the natural habitats, facilitating effective use and natural mobility.

Finally, an offshore earthquake-proof breakwater with tidal and wave energy generation will provide coastal protection during seismic events, while contributing to environmental sustainability. This comprehensive design approach seeks to make the Maltepe Dragos coastal area a safe, sustainable and attractive tourism destination.



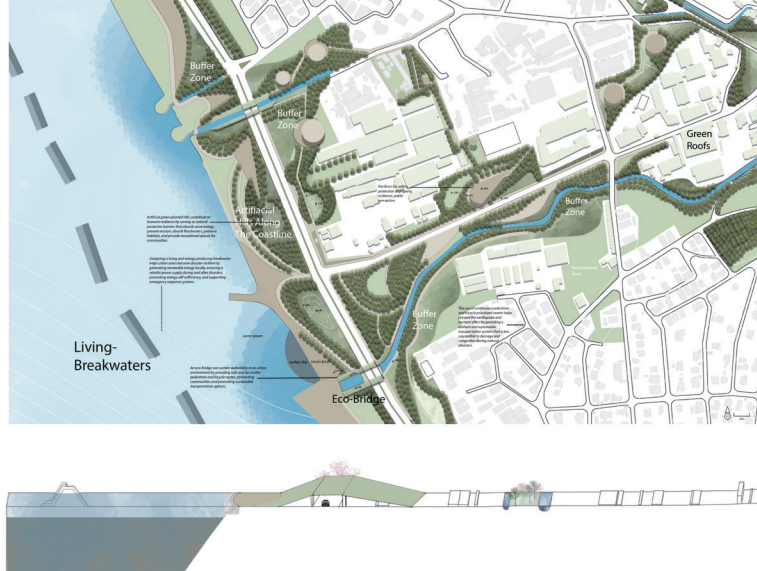
1/5000 PLAN



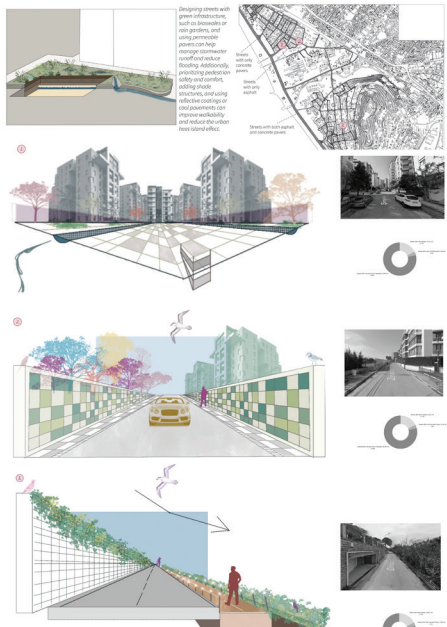
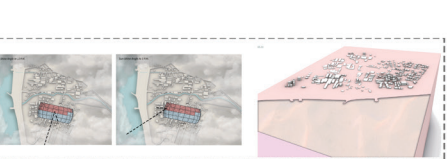
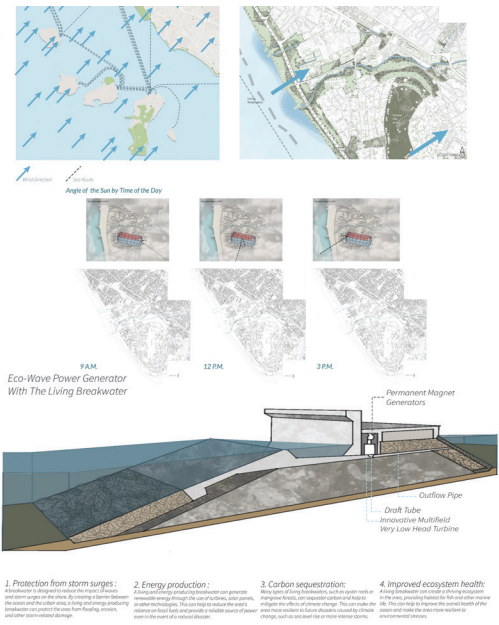
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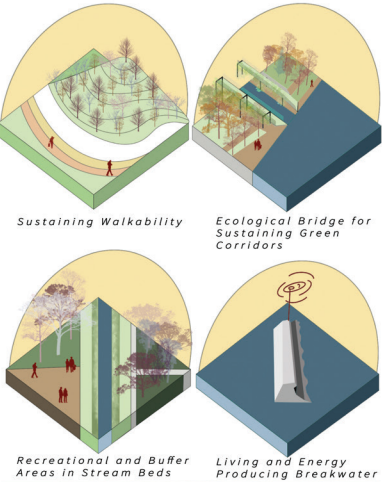
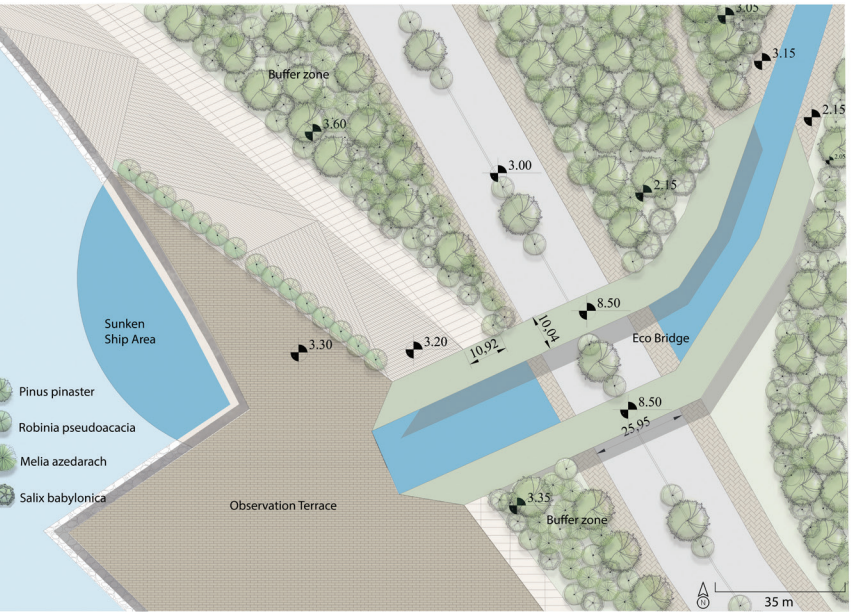
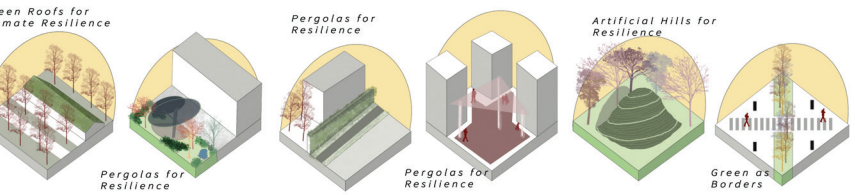
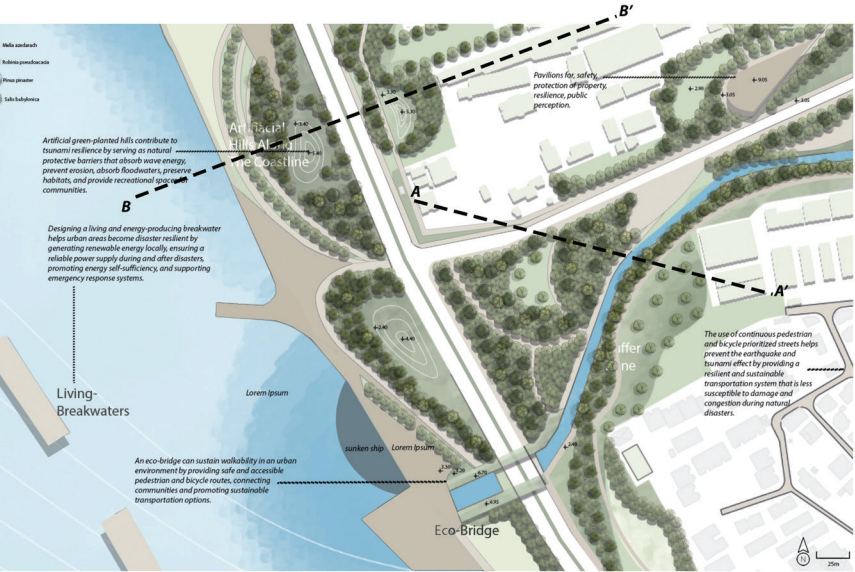
1/1000 PLAN



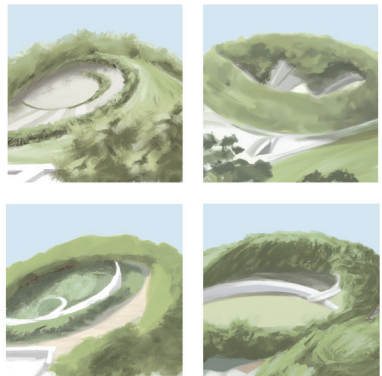
Buffer zones around the creek beds are an important design element that aims to reduce the effects of flooding during earthquakes. These buffer zones are designed to control the water flowing into the coastal area and minimize the damage that may occur due to flooding. Afforestation and vegetation arrangements are of great importance in these buffer zones. Trees and vegetation strengthen the soil structure, prevent erosion and slow down the flow rate of water. Thus, the impact of water moving towards the coast is reduced and its damaging effects are prevented. It is also crucial to realign riverbeds and analyze flood risks. Stream beds are risky areas that can be flooded by earthquakes and heavy rainfall. Therefore, various regulations are required to control the natural flow of river beds and minimize the risk of flooding. Analyzing the flood risk requires a detailed study of the geological structure and hydrological characteristics of the stream beds. In this way, factors such as water flow paths, flow rate and velocity are determined and flood risk areas are identified. These analyses aim to minimize flood risks that may occur after an earthquake by ensuring that the right measures are taken during the design process. As a result, buffer zones around stream beds are an important design strategy to reduce the effects of flooding, prevent erosion, prevent damage to the coastal area and protect natural habitats. Reorganizing the stream beds and analyzing flood risks also helps to control the natural flow of water and minimize the risk of post-earthquake flooding. In this way, an earthquake-resistant environment can be created in the Maltepe Dragos coastal area and a safer region can be created against natural disasters.



1/500 & 200 PLAN



AI Based Image Generation: "Imagining Living Breakwater in The Coast of Maltepe"



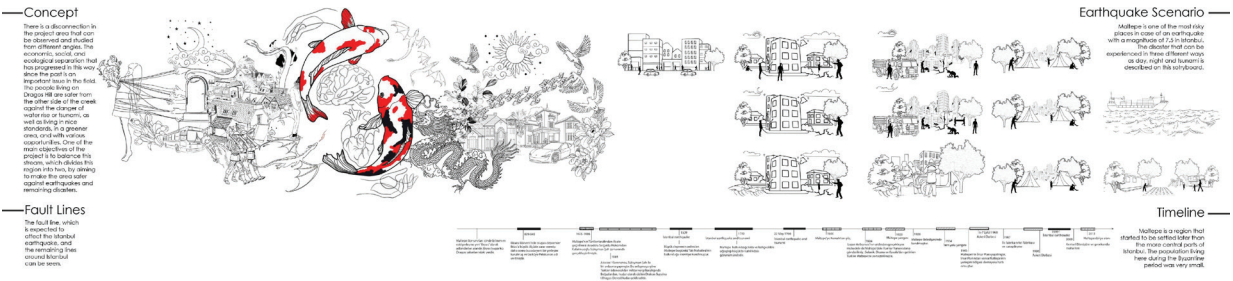
Artificial Hills on The Coastal Hill Area As Buffer Zones and Disaster Shields:

The purpose of plant-based (green) artificial hills on the coastal hill area as buffer zones and disaster shields is to provide natural and engineered protection against erosion, storm surges, floods, landslides, while promoting biodiversity and ecosystem conservation.

In order to create an earthquake-resilient area in the Maltepe Dragos coastal area, various design proposals such as buffer zones, pavilions, artificial green mounds and ecological bridges have been presented around the river beds. Furthermore, the construction of a living, electricity-generating breakwater over the sea is proposed. These design measures will provide protection against earthquake risk while promoting environmental sustainability and enhancing the touristic attractiveness of the area.

Balance in Duality

Almira Endican 020180510



BALANCE IN DUALITY

ALMIRA ENDICAN

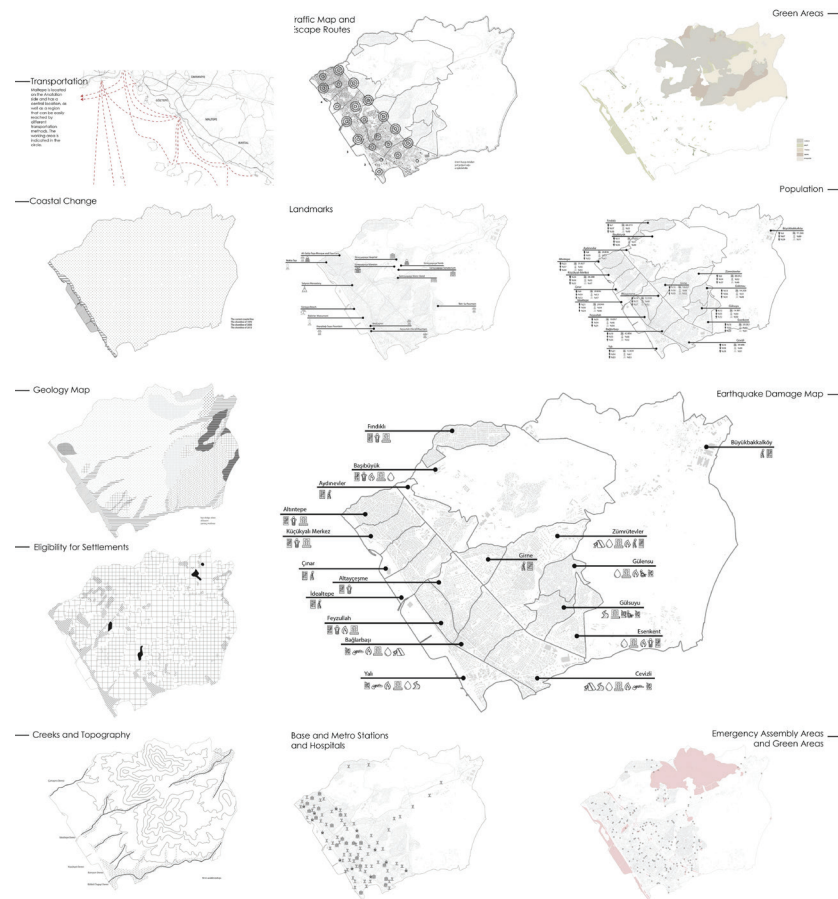
In this project, a landscape design resistant to earthquake risk was studied in Maltepe district of Istanbul. It has been determined that Maltepe has the highest damage risk in the earthquake scenario and various measures have been taken to reduce this risk. As a result of the analyzes and field trips, it has been determined that both sides of the stream have social, ecological and economic injustices. Research has revealed that this segregation has existed since the Ottoman period. For this reason, a design approach has been adopted that aims to eliminate this separation and share the potentials of both parties.

In the project, protection measures suitable for the earthquake scenario and infrastructure systems have been developed to ensure the sustainability of life after the disaster. In addition, design decisions have been taken to eliminate injustice and imbalance. Abandoned areas have been revitalized and useful and functional areas such as public spaces, parks, green spaces and social- cultural facilities have been created.

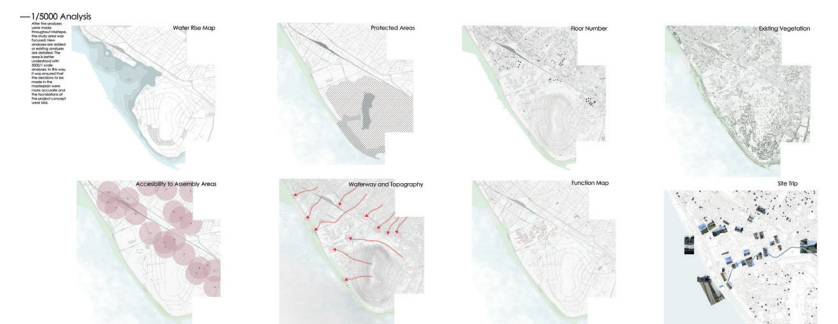
Designs have been made to eliminate injustices and support the society by preserving existing structures, adding new functions and providing a balanced use. A fair and balanced approach has been adopted in the design, with protection measures aimed at creating a living space that supports Maltepe's society and encourages development.

The project evaluated Maltepe's potentials with designs prepared in different scales and details. In order to facilitate and protect human life in disaster situations, design elements such as temporary living spaces and measures against water rise have been used. In addition, in order to connect the two sides of the stream, the concept of the bridge was discussed and the project was explained in detail with visualization methods.

This study aims to contribute to the community coming together after a disaster with a resilient landscape design in Maltepe and its surroundings.



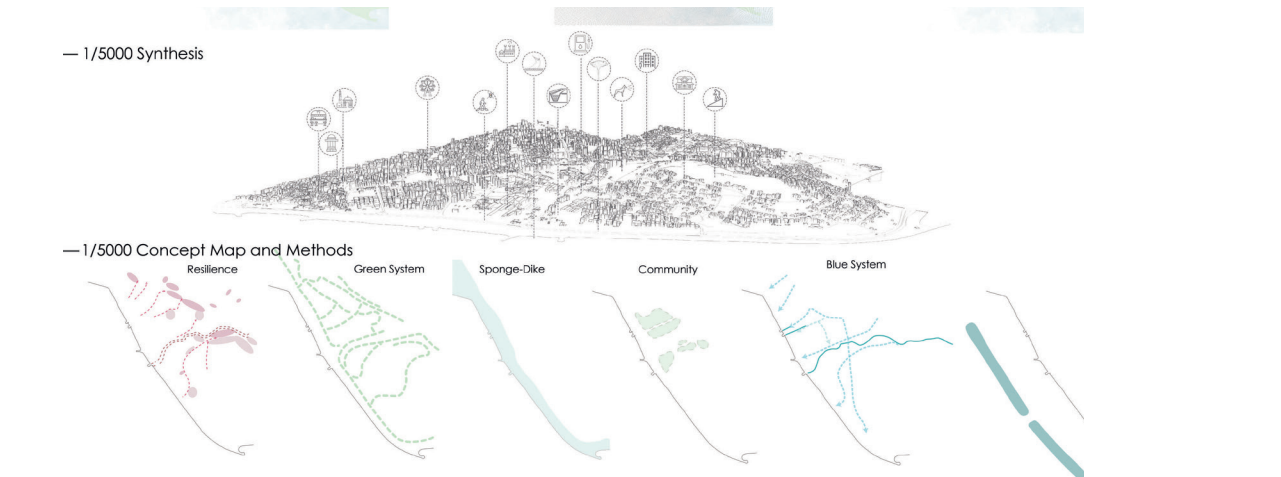
In this project we focused on Resilience Landscape Design, we focused on Maltepe, one of the districts with the highest damage risk in the expected earthquake scenario in Istanbul. After becoming aware of the earthquake and the dangers it brought, we tried to understand Maltepe and its surroundings in more detail. During the field trip and subsequent analyzes, one of the issues that caught our attention was the fact that the area separating the two sides of the creek differs in many ways. There was social, ecological and economic injustice. As a result of my research, I learned that this disconnect has existed since the Ottoman conquest of Istanbul. While resolving this deep-rooted divergence that has been going on for centuries, I also aimed for both sides to share their potential. In the event of a disaster, it is extremely important that the post-disaster society can become a whole, no matter how much the opportunities are improved, even if the damage is minimized. My aim was to protect people and Maltepe by creating durable areas, and to contribute to the formation of a society that supports each other by creating different areas to support this social structure.



— 1/5000 Synthesis

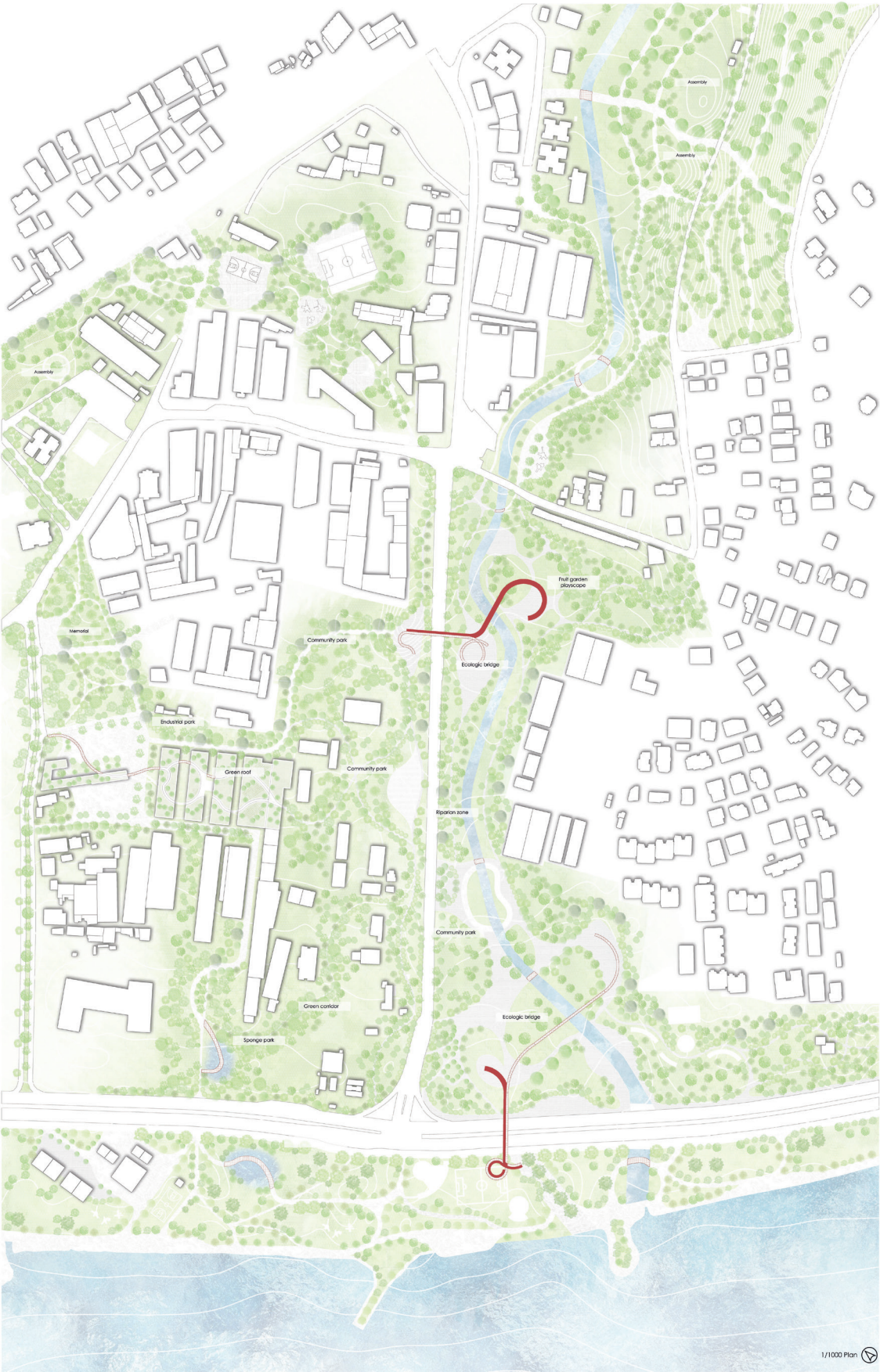


In the earthquake scenario, as the first step taken to protect Maltepe and the people living in it, I researched what kind of infrastructure I could establish and how I could improve life after the disaster. The concept plan, which included protection measures suitable for the earthquake scenario, included various strategies to ensure the safety of the people living in Maltepe. I also aimed to develop infrastructure systems to meet basic needs such as energy, water and food in order to ensure the sustainability of life after a disaster. However, instead of being content with only protective measures, I also aimed to make design decisions to eliminate injustice and imbalance. Therefore, I have developed various strategies to revitalize the abandoned and neglected areas within the field. I aimed to make these areas useful and functional areas such as public spaces, parks, green areas or social and cultural facilities and offer them to the benefit of the society.



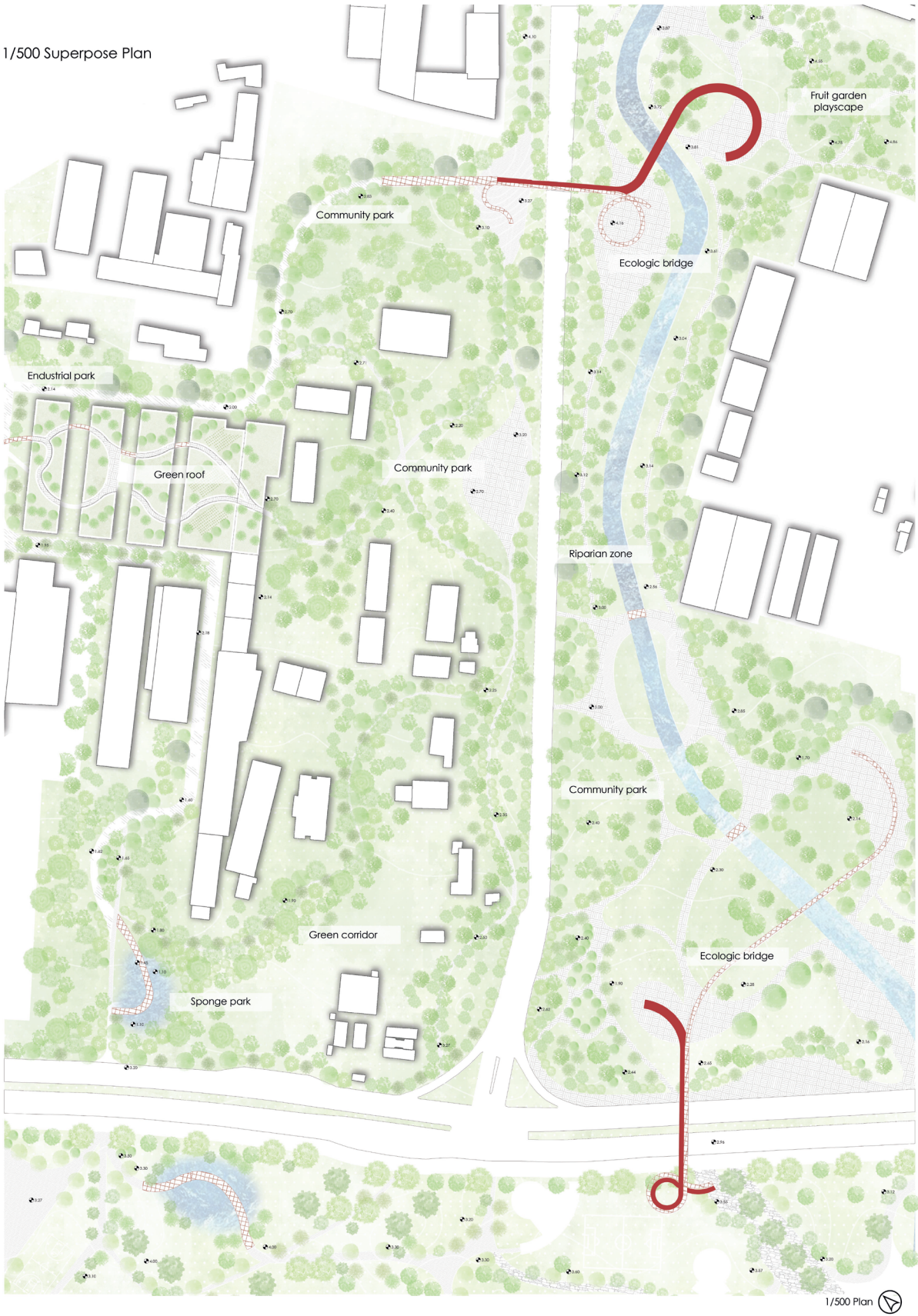
1/1000 PLAN

— 1/1000 Plan



1/500 PLAN

— 1/500 Superpose Plan

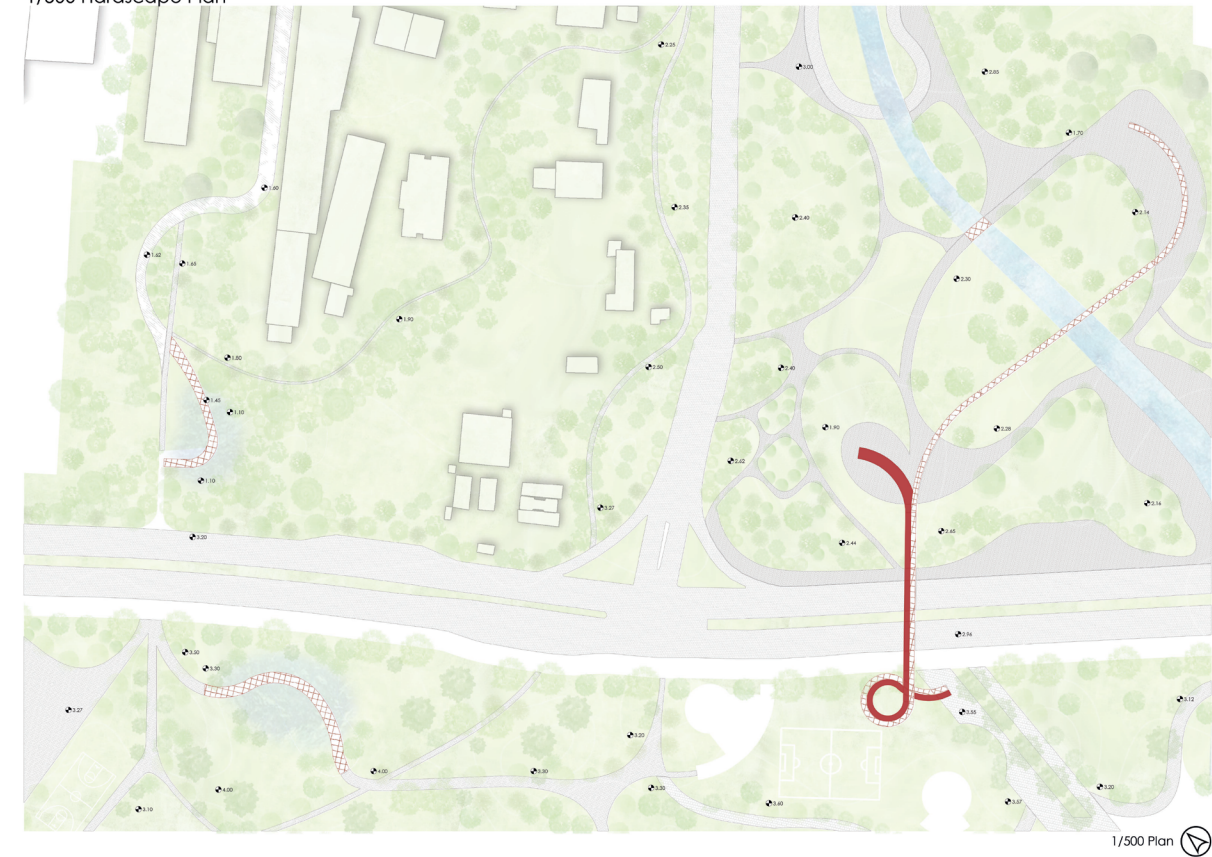


1/500 PLAN

— 1/500 Softscape Plan

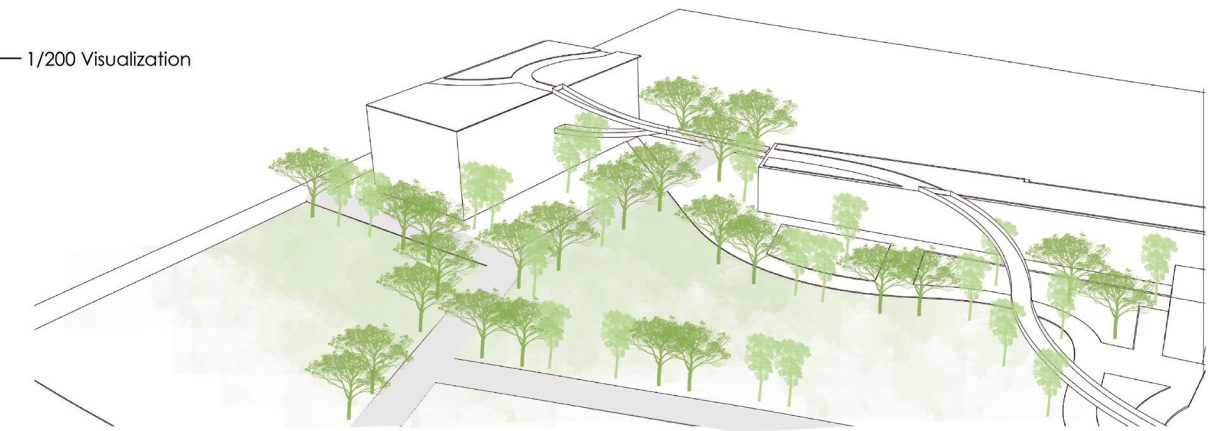


— 1/500 Hardscape Plan



1/200 VISUALS & PLAN

— 1/200 Visualization



— 1/200 Plan



— 1/200 Section

