

ODTÜ KIBRIS'LA BİLİM EĞLENCELİDİR.

Multipurpose Building for a University

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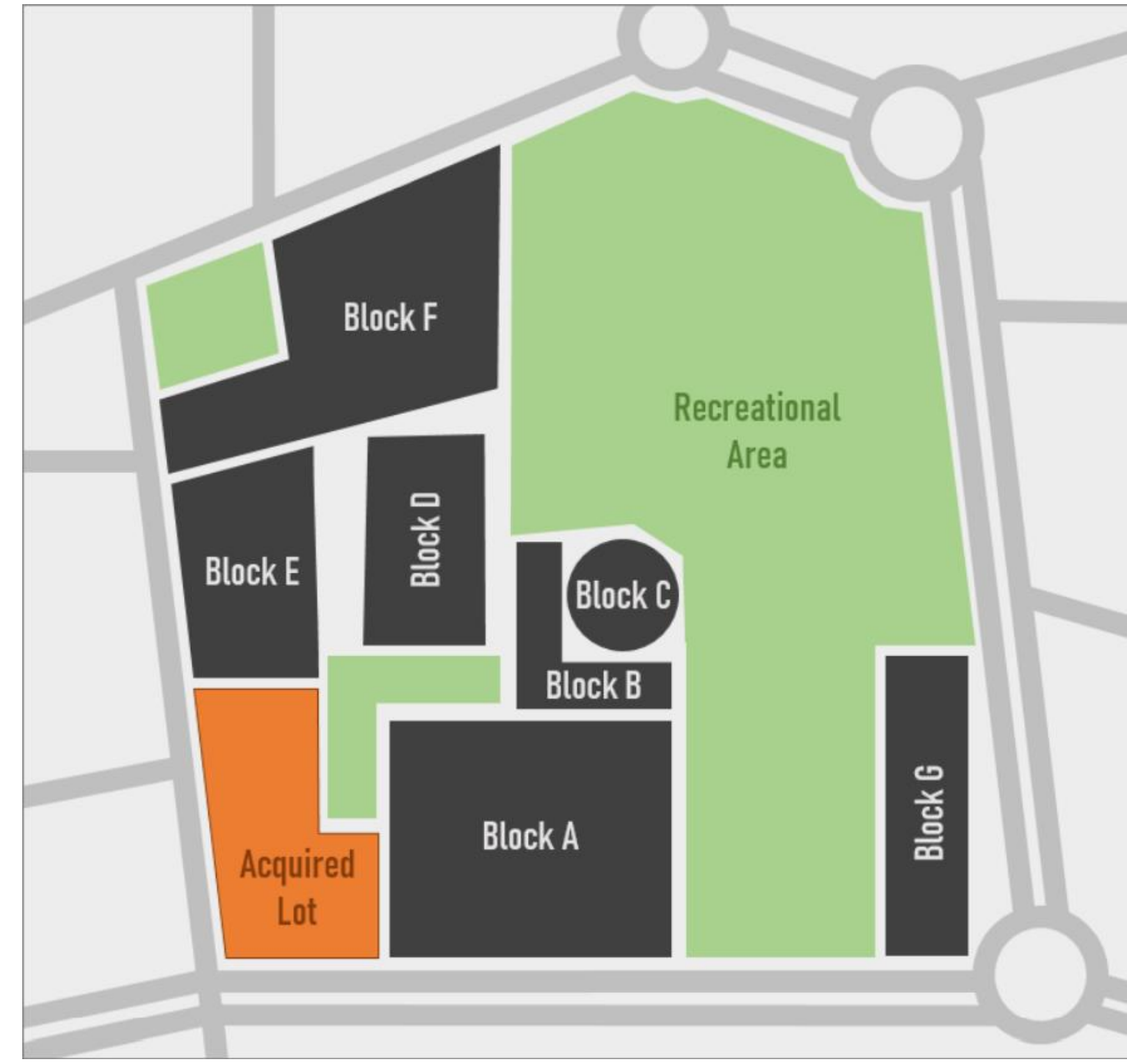
Civil Engineering Department, METU Northern Cyprus Campus

General Information About The Project

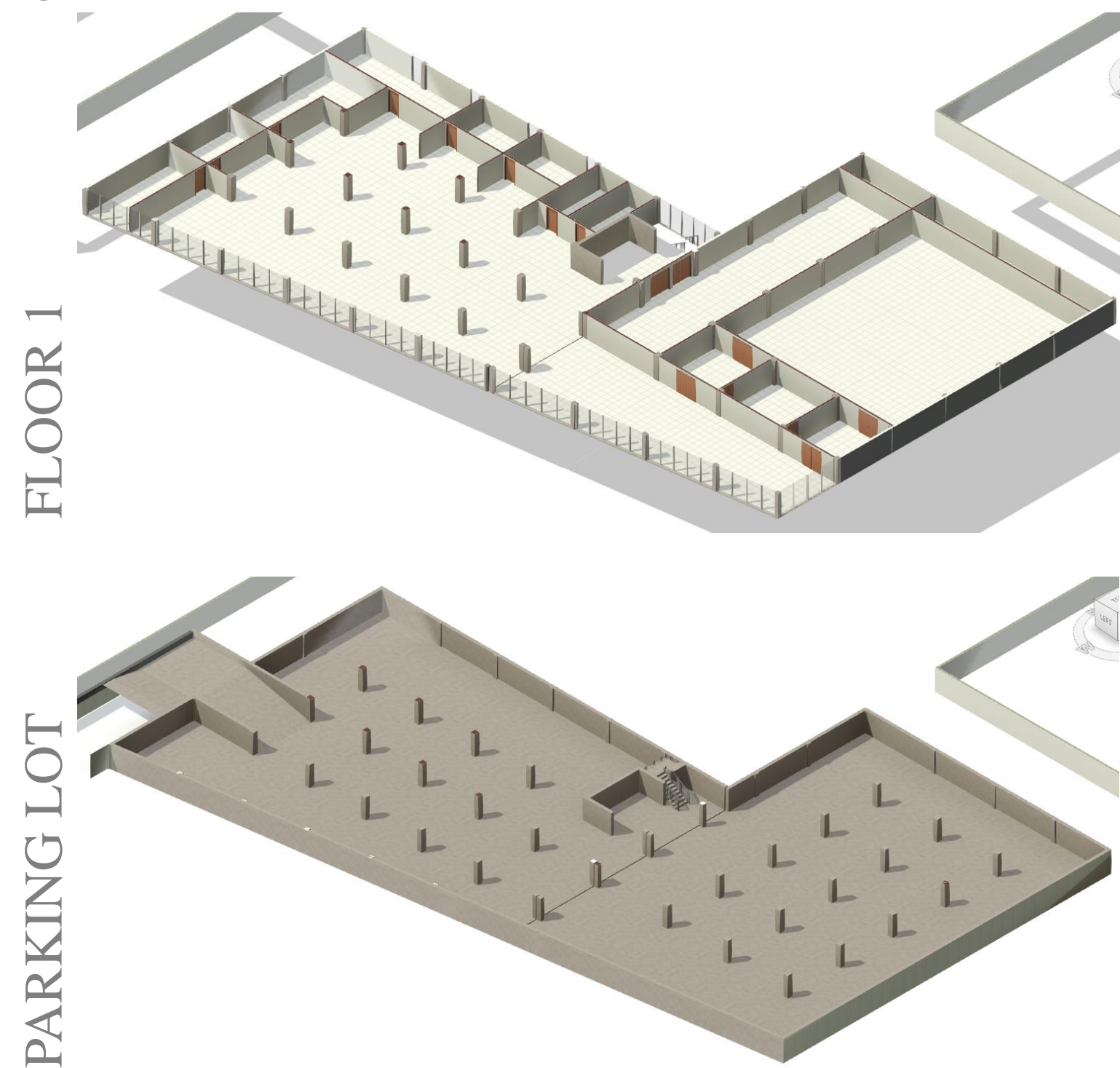
A university has acquired the adjacent lot to two of its academic blocks which has an abandoned multistory car park on it. This car park is 5 stories tall and has a footprint of 1800 m². The administration wants build a multipurpose building instead of abandoned car park. The project constrains are underground parking lot, 2 auditorium (320 & 130-person capacity), 300 person capacity dining hall with 6 food stalls society & meeting rooms sports center (gym hall, 2 group activity rooms, locker rooms), 2 bridge connections with academic Block E and A, silent study & meeting rooms, administrate offices. On the ground floor of the building, there are silent study rooms, administrative offices. On the first floor, there are social areas such as community rooms and a gym. In addition, there are two bridges on this floor that connect the neighboring academic blocks. On the second floor, which is the last floor of the building, there are two auditoriums with a capacity of 318 and 129 people, and a dining hall with a capacity of 300 people with 6 food stands.



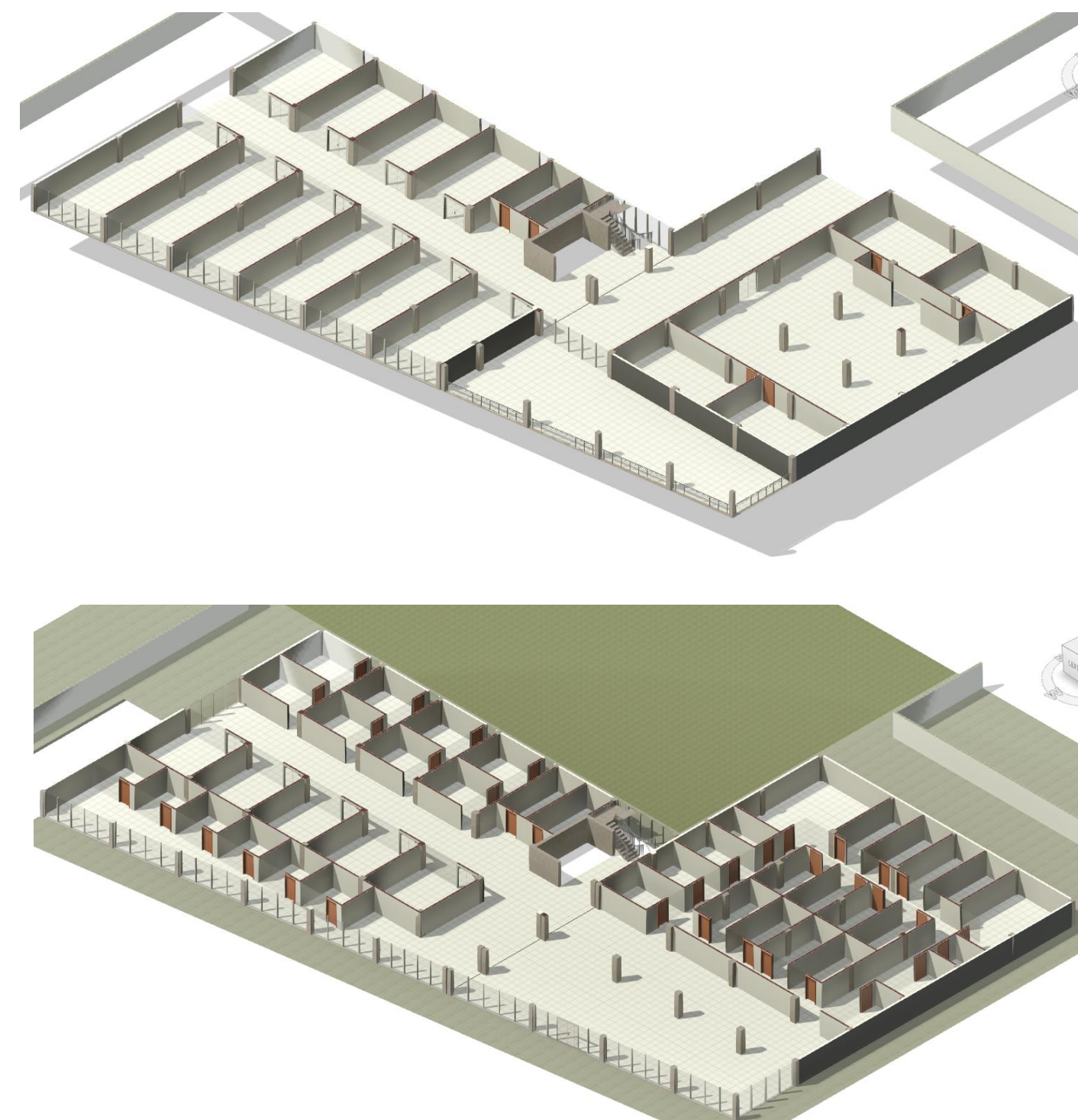
View of Building from Street



View of Building from Campus



FLOOR 1



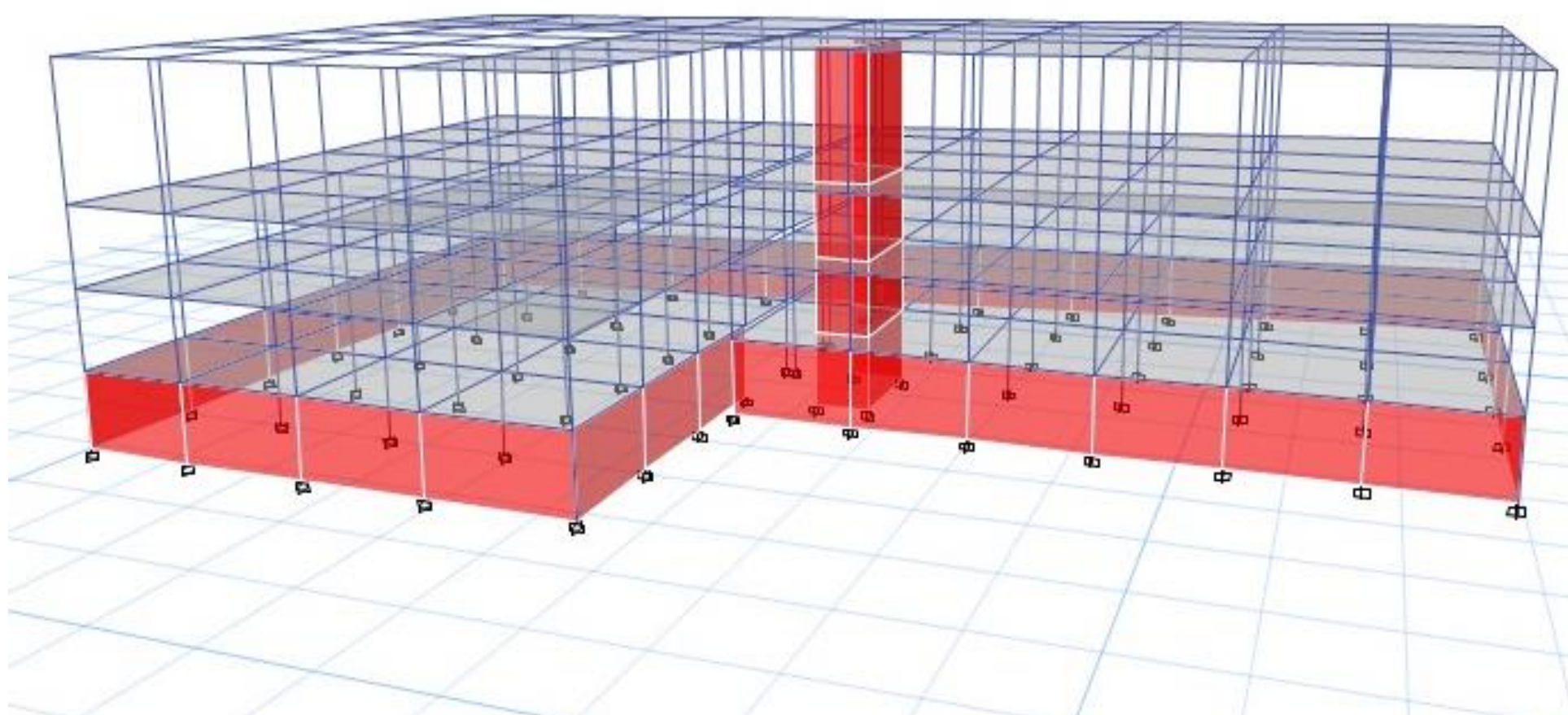
FLOOR 2

PARKING LOT

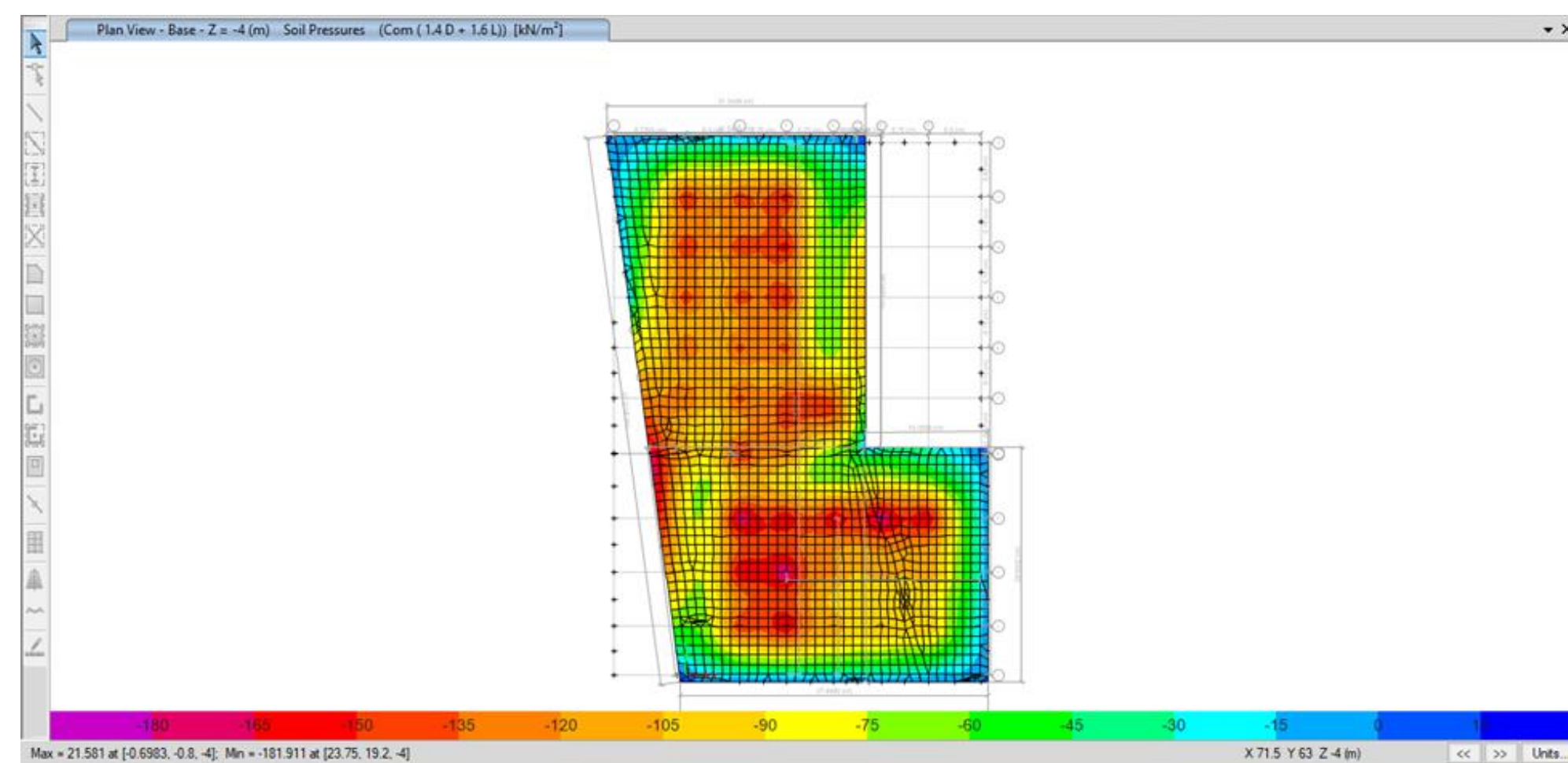
GROUND FLOOR

Project Details

This building, which has a floor area of 2222 m², consists of 4 floors and has a total height of 15 m. Social areas were placed on the street-facing part of the building, with no privacy concerns, and glass walls were preferred on this side to achieve a more modern look. While Revit was used for the architectural modeling of the building, the structural modeling was done in ETABS. ETABS was also used in the foundation design. It was preferred to be a reinforced concrete structure rather than a steel structure so that the construction would be easy, cheap and need less skilled workers. For reinforced concrete, C35 concrete and S420 reinforcement were chosen because of their prevalence and strength. ASCE7-10, TS500 and TBDY(2018) were followed in the structural design part. The most challenging part during the design was the auditorium, which has a span length of 23 m. The architectural design resulting from this span length was revised once. The problem here was solved using waffle slab. Another problem was L-shape and length of the building. This problem with expansion joint, these are the vertical gaps made for prevent the long structures from being affected by the movement. The problem solved with expansion joint on the middle of the building. In addition, the quantities of all materials to be used in the building were obtained from Revit's BIM feature. The unit prices of the materials used were taken from the Unit Price List of the Ministry of Environment and Urbanization. The total project cost was calculated as 18,308,220.68 TL.



Structural Model from ETABS



Foundation Heat Map from SAFE