



UPPER CAMPUS HOUSING PROJECT

NICOLE HAZY

STRUCTURAL

ADVISOR: DR HANAGAN

Executive Summary

The following report is an examination into the design and analysis of an alternate structural system for the Upper Campus Housing Project. This building is a ten-story dormitory located on the campus of the University of Pittsburgh. The existing system is a one-way hollow-core concrete plank system with concrete masonry bearing and shear walls. The alternate design is a two-way flat plate system.

The two-way system design for the Upper Campus Housing Project will affect other buildings systems. The columns for this system were placed in areas to be used for HVAC. Therefore, the HVAC equipment will need to be placed in another location. The lateral system for this building is also greatly affected. The existing structure has reinforced concrete masonry bearing and shear walls, which are placed as all exterior walls and in the center of the structure. The alternate lateral system will be reinforced concrete shear walls placed only at various places along the exterior of the building.

Another system that will be affected by the alternate design is the exterior envelope. The shear walls for the original system make up the exterior for the building. In the alternate system, a light gauge metal stud curtain wall with a brick façade will be used.

The two-way design will allow for this building to be developed into another type of structure in the future if needed because of the flexibility of the floor plan and the ability to carry higher live loads. However, the schedule and the cost of the two-way system are higher than that of the one-way system. Therefore, the original system is a better design for this structure.