

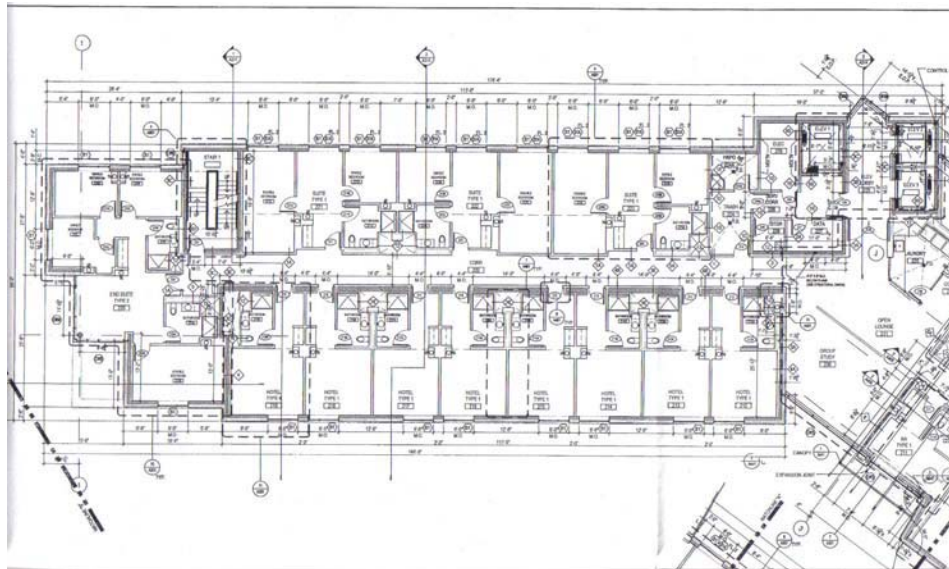


UPPER CAMPUS HOUSING PROJECT

NICOLE HAZY
Structural
Advisor: Dr Hanagan

Problem Statement

Due to the nature of a one-way plank and bearing wall system, there is no flexibility to the architectural floor plan. For example, a hallway exists to one side of the center masonry wall running along approximately the centerline of the structure. This hallway must be designed at 100psf. The spaces to either side of this hallway are dorm rooms, which are designed to withstand only 40psf. Because of the nature of the plank, the main wall could not be moved if this building is ever converted for another use. The most common conversion that would be needed is office space. With office space loading equaling a minimum of 50psf, this would not be a possibility. On an ever-changing college campus, it is impossible to tell the university's needs for the structure down the road. Below is a typical architectural layout for the Upper Campus Housing Project.





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Proposed Solution

The proposed solution to the above-mentioned design setback is a two-way system. A two-way flat-plate system was designed for the Upper Campus Housing Project to allow for higher floor loads. The use of this system will also allow for less shear walls, none of which will be located in the interior bays of the structure. Because the center shear wall can be removed, a more flexible floor plan will be possible for the future development of the

structure. Shown to the right is a typical bay in the North/South direction of the building.

Designing the Upper Campus Housing Project as a two-way system will not only affect the structural system, but will also affect the lateral system and the exterior envelope. As mentioned above

the lateral system will be 10" concrete shear walls placed only at the exterior and in the elevator shafts and stairs of the building. The exterior building envelope will become a light gauge metal stud curtain wall.

