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STRUCTURAL OPTION
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UNIVERSITY OF CENTRAL FLORIDA'S ACADEMIC VILLAGES
ORLANDO, FL



THESIS PROPOSAL
EXECUTIVE SUMMARY
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Introduction:

The University of Central Florida's Academic Villages located in Orlando, Florida is a complex of 10 separate dormitories built to accommodate approximately 500 new freshman students. Each building is 4 stories tall and range from approximately 14,000 to 22,000 square feet in area. Each floor typically has between eleven and fifteen 24 ft x 28 ft apartment units.

Current System:

The current structural system consists of a 2" Epicore metal deck and 4 ½" reinforced concrete slab supported by masonry bearing walls over a 12 foot span. The lateral system is composed of interior and exterior masonry shear walls in both directions.

Proposed System:

This proposed thesis will observe an investigation for an alternative structural system for the University of Central Florida's Academic Villages. A post-tensioned concrete system will be explored as a possible alternative. By switching to a post-tension system, I hope to achieve longer spans without sacrificing slab thickness to achieve greater flexibility in terms of floor layout.

Breadth Analysis 1:

Due to the building being occupied by students, it is important for it to be acoustically insulated. I am concerned that by switching to post-tensioned system, the acoustics properties of the structure will be less effective than the existing system. This proposal will explore various methods to supply this building with additional sound barriers.

Breadth Analysis 2:

The existing mechanical system may present problems with the proposed structural system since some of the ductwork protrudes through the metal deck and slab in the existing structural system. This is not good design for a post-tensioned system since it will weaken the slab significantly. This proposal will explore alternative mechanical systems to work with the new design.