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Senior Living Facility III
2614 Chapel Lake Drive
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Pro-Con Structural Study of Alternate Floor Systems

Executive Summary

This document will discuss the possible alternatives for a floor system in The Village at Waugh Chapel – Senior Living Facility III. The existing floor system is composed of 18" deep pre-engineered wood floor trusses on the 2-4 floors and a composite steel system at the first floor. The existing system seems to be the best choice for the building from a structural standpoint. However, there are some setbacks to it. Not being able to make any adjustments to the trusses is a great downfall because there are usually problems with the erection or repairs that need to be made to the trusses which can take extensive time and cost. Some of the main issues taken into account when picking alternative floor systems are cost, durability, system depth, and vibrations among other. To examine these issues, four alternative floor systems will be discussed in-depth to examine whether or not the other systems would be cost and labor effective to use. A typical span area from a residential floor was used as the basis for the design of the alternative systems. The alternative systems were examined on the issues of cost, constructability, and the effects the system had on the other building systems. The four alternative building systems which were considered for in-depth design analysis are:

- ❖ Engineered Wood I-Joists
- ❖ Open Web Steel Joists
- ❖ Pre-Cast Concrete Plank
- ❖ One-Way Concrete Joist

The engineered wood I-Joists did not show any great advantage over the wood trusses and were ruled out as an effective alternative. The other three systems each have their own advantages, but would require the use of alternate framing systems. It has been found that these floor systems can be effective alternatives given an analysis into the material and labor costs of the change in framing systems.