

Executive Summary

This technical assignment will explore the current and proposed alternate floor framing systems for the Renaissance Schaumburg Hotel. The area of focus for this assignment will be a typical bay located on floors 8 through 14 that is currently comprised of post-tensioned concrete slab.

The four alternate floor systems are as follows:

1. One-way Pan Joists
2. Steel Joists
3. Steel Composite
4. Hollow Core Slab

The existing system has been found to perform with the most efficiency; it has the least floor depth of any of the other systems considered and is considerably light for its load capacity. Both steel systems are significantly deeper, but the steel joist system would have a much easier erection procedure and design process. The one-way slab system would be a good candidate for substitution since it has a competitively low floor depth and would not greatly affect the current column or foundation designs. Hollow core pre-cast slab also shares the advantages of the one-way pan joist system, and also decreases the amount of time spend with on-site construction.

After the analysis of all these systems, it appears that the post-tension system used for the Renaissance Schaumburg Hotel is the best solution in terms of final performance. Some of the other alternative systems do have some advantages, but do not appear to be a better replacement.

This report is limited to analysis based on the most current design documents made available for the Renaissance Schaumburg Hotel and Convention Center. Simplified sketches have been included to further explain system layouts and details. Please see the appendix for other figures. This report will further detail alternate floor framing systems and the current system used in the design of the Renaissance Schaumburg Hotel and Convention Center.

