

Executive summary

Hakuna Resort is a Savanna Desert themed hotel that includes a 217,703 square feet indoor water park as well as outdoor pool. The other side of the resort is convention centers which provides multiple meeting spaces. Divided into three distinctive spaces, the hotel is in between the indoor water park and convention space. These spaces are connected with expansion joints, therefore, can be looked at as three separate buildings.

The hotel building has total of eight stories above ground with total height of 101'-5" to the top of roof excluding the basement. With each floor having approximately 45,000 SF, the hotel portion of the resort has 395,938 SF by itself. Due to the shape of the building, which is very long and narrow, the hotel structure is further divided by another expansion joint. The scope of this thesis project is limited to the smaller hotel portion of the site which is rectangular geometry with dimensions of 66' - 8" by 236' - 6".

Taking the advantage of the repetitive and typical hotel room floor layout, the original design had chosen load bearing masonry shear wall with hollow core plank flooring system as its primary gravity and lateral system. This system is redesigned with new system called staggered truss framing system. This report contains the redesign calculation and process.

With the incorporation of the new system as structural system, architectural breadth study is also included in this report. In architectural breadth study, the rearrangement of first and second floor layout will be discussed. Also new façade design is included to help the building to be more exciting to the targeted occupants when first encountered. The material for the new façade design was kept the same as the original, exterior insulation finish system, but with different color.

With the change in structural system, the construction management data was evaluated in this report. In construction breadth study, cost and schedule differences was compared to the original design of load bearing masonry shear wall. While staggered truss system is adequate alternative structural system, it showed a significant increase in cost. However, the construction schedule is decreased slightly.

In conclusion, the staggered truss framing system is a valid alternative structural system for Hakuna Resort's hotel structure. However, while it reduces the construction schedule slightly, the cost increase is significant. Therefore, the redesign is not recommended but was a meaningful research experience.