EXECUTIVE SUMMARY

The goal of the redesigning of the floor system was to decrease the slab thicknesses of each floor, while affecting the column and beam systems as little as possible. This was achieved by changing the existing two-way flat plate floor system to a two-way post-tensioning system. Each floor decreased by 1 to 2 inches except for the first floor and the third floor which increased by 2 inches and 1 inch respectively. This system was designed with the original column and beam layout and sizes, satisfying that part of the goal of the design. The post-tensioning floor system decreased the overall weight of the building by about 12000 kips. With this decrease in building weight the seismic base shear and overturning moment decreased by 140 kips and 20300 foot-kips respectively compared to the existing structure. Also with the decrease in building weight, the foundation system had to be looked at and analyzed to see if any changes needed to be made. It was noted that a decrease in weight wouldn't provide any need to change the existing caisson foundation system.

Changing the floor system to post-tensioning created a change in the floor system costs and construction time. A cost and schedule analysis was done for both the existing two-way flat plate and the post-tensioning system. The PT system was found to cost less but take 22 more working days to construct. It cost about $1.1 million less than the two-way system, but would cost the hotel money for not being able to be opened for those 22 plus days.

There was an area in the building that needed to be looked at acoustically. That area was the pool and fitness room area on the fourth floor. Directly below the pool and fitness areas are meeting rooms. With the current floor system in that area of a concrete slab on metal decking, it was noticed that the pool wouldn't provide an acoustical problem to the meeting room below because the water would absorb the sound. However the fitness room needed to have the floor redesigned to a floating floor so that the transmission of sound down into the meeting room would decrease.