

EXECUTIVE SUMMARY

This thesis evaluates the current Mountain State Blue Cross Blue Shield building for the addition of floor and then relocation to a high seismic region of Salt Lake City, Utah. The same type of lateral force resisting system will be maintained in order to see the effect that the seismic region has on the building. The depth study of this report includes the design of an additional floor for the building and the redesign of the lateral system for the new loads. Breadth studies investigate the necessary changes needed to be made architecturally for the new structural design to work while trying to keep the same laid out floor plan. The other breadth will look at the critical schedule impact and cost analysis of the additional floor and the new structural system.

The new gravity floor was redesigned in RAM resulting in minor changes to the columns. The new seismic loads for an additional floor were calculated and the lateral system was altered to keep the same bracing scheme for comparison to the building designed for Utah. Two braced frames were added to comply with code for the new seismic region based on height of the building. The frames needed to be changed from concentrically braced frames to special concentrically braced frames. Member sizes increased for all braced frames and typical X bracing was used in all frames in the Utah Building. Columns lines were also altered in certain locations in order to minimize the effect on the current architectural plans of the building.

The architectural breadth investigates the changes to the floor plans in order to accommodate the additional braced frames and new column locations. A couple of rooms needed rearranged and the entrance locations to certain rooms needed to be moved. Overall these changes did not affect the overall architectural scheme of the building, thus resulting in the same building in Utah as was planned.

The construction management breadth looked at the overall impact in the critical path schedule for the super structure due to the additional floor. When comparing the numbers to the original schedule an increase of 40 days would be needed in order to construct an additional floor. The cost analysis was then analyzed for the difference to add an additional floor, and the comparison to the new super structure needed in Utah. An increase of \$0.53 per square foot was for the addition of a floor, and an increase of \$1.06 per square foot was calculated in order to build the same building in Utah.