

Structural Technical Report 3

Lateral System Analysis and Confirmation Design



Executive Summary

This technical report is a detailed analysis of the lateral force resisting systems of Spring Run Assisted Living, which is the newest building in Willow Valley Retirement Community. By analyzing the buildings lateral systems, a critical load was identified. Also, wall rigidities, locations of shear walls, and location of bearing walls were also computed. Finally the building was analyzed for story and building drift along with the overturning moment capacity.

This 4 story building is constructed using all load bearing masonry walls and several columns. Some of these masonry walls are identified as shear resisting walls. All walls are made of 8" CMU and are reinforced.

After an analysis of wind and seismic loading, it was concluded that since the seismic load is over twice that of the wind, seismic will control. After identifying the controlling load, a spot check of a shear wall was possible to conclude that Spring Run Assisted Living was adequately designed to resist the lateral loads in question. It was also possible to conclude that the building drift is under the allowed limit set forth in ASCE 7-02 recommended limit.

Finally, an overturning moment analysis proved that the building can clearly resist an overturning moment of that which the building will experience. The moment resisting ability was nearly a factor 20 over that of the worst case scenario.