Executive Summary

This report consists of a detailed analysis of the lateral system in the William W. Wilkins Professional Building. To begin wind and seismic loads are determined according to ASCE-7-05. Following are strength, drift and overturning moment checks on the braced frames.

The William W. Wilkins Professional Building is a 6 story, 112,000 sq. ft. medical office building located in Columbus, Ohio. Costing approximately $7.4 Million, it is essentially an addition to the Grant Riverside hospital across the street. These buildings are connected by a pedestrian bridge from the third floor. Enclosed by brick veneer, precast concrete and spandrel glass panels the exterior is non-load bearing. The floor system is designed for composite action supported on W12 columns. Lateral framing consists of five braced frames utilizing tube steel. Two frames run North-South with the remaining three running East-West.

The center of mass of the building is only slightly off center from the center of stiffness in the Wilkins building. It was found, due to the wonderful symmetry of the frame placement that torsion effects are negligible. Load distribution consisted of, on average, 31.5% being taken by WB1-1 and WB1-7 and 36.5% being taken by WB3 for the East-West distribution. The distribution in the North-South direction was equal.

According to base shear evaluations wind in the East-West direction controls while seismic controls in the North-South direction. However, all load cases were evaluated in RISA. From the RISA analysis, it was found that, in general, all members are ok. Six floor beams were found to be overstressed. This could be due to design differences between ASD and LRFD or the inability of RISA to take into account the composite action of the beams. It was also found that inter story and total building drift were ok by ASCE-7-05. Overturning moments were also evaluated for the building. It was found that the weight of the building is more than sufficient to resist the overturning moment from wind and seismic forces.