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Structural Option
Building: Vickroy Hall
Location: Duquesne University
Pittsburgh, PA 15282
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Executive Summary

The purpose of this report is to analyze and confirm the aspects of the lateral resisting system of Vickroy Hall. The loads for both wind and seismic have been recalculated and are up to the standard code (IBC 2003 and ASCE-07).

In this report, the lateral system is described in great detail including explanations on the façade, the support, and floor system. From there, hand calculations were performed for a basis from which to compare later values from a computer model on ETABS. The calculations performed in this section were that for the Main Wind Force Resisting System and the Seismic Resisting System. The Foundation Impact was analyzed as well, using the ETABS information.

Next, you will find the distribution of the lateral loading through the building. There is a load path and a distribution example. After the distribution section, the ETABS model was analyzed noting area concerns, including notes on the animation of the model and torsion.

Lastly, there are spot checks of drift and strength. Allowable code and ETABS results are present, along with sample calculations.

In summary, I believe that the lateral system does its job very well. Due to the moment frames and possibly even the aerodynamic effects of the wall surfaces, the wind does not seem to affect the building, except on a very small scale. The seismic is also controlled well by the moment connections. I do believe that there may be some unforeseen problems with the ETABS model due to inexperience. However, I think it did a passing job for allowing the analysis of Vickroy Hall.