

Executive Summary

The UPMC Hamot Women's Hospital is a 5 story, 92 foot tall, healthcare facility located on the bay of Lake Erie. The steel framing system supports the lightweight concrete composite floor system and the lateral loads from wind and seismic forces are resisted by moment connected steel frames in the E-W plan direction and both a moment connected steel frame and a braced frame in the N-S plan direction.

This thesis proposal is intended to outline a course of learning for the Spring 2012 semester. This will be done through several investigations, with the depth concentration of the work being related to the buildings structure and then two breadth topics will investigate how that structure affects other components of the building.

The UPMC Hamot Women's Hospital was initially built as a two story structure, but was designed for a future two floors to be added. The hospital later decided that the additional 2 floors would not be sufficient, that they would require an additional 3 floors. From a structural point of view this posed a problem due to increased load accumulation as the structure approached the ground floor. Thus the decision was made to remove the current building, down to the first floor. The remaining elements were then reinforced, including beams, columns, and foundations.

The structural depth for this thesis was split into three distinct investigations. An investigation on the new building code with a comparison to the previous edition and how it affects the structural weight and performance was done and proved that the loads did increase; although this primarily came from a change in occupancy category. An investigation into the possibility of effectively utilizing braced frames rather than moment frames will be completed. Finally, an investigation into a complete building redesign was done to determine if selective deconstruction of the building was the correct decision to be made by the construction team.

As these elements were completed two breadth studies were undertaken. An architectural breadth was done, which analyzed the impact on the architecture that the braced frame system has on the building. This analysis yielded several concerns, not just on the views that would be potentially ruined by the framing members, but also raised several health concerns for the patients of the hospital. A construction management breadth was also done to analyze the impact of not using the existing structure and grid to build from. This analysis showed that the contractors decision to use selective deconstruction rather than implosion was likely comparable when analyzing cost, this decision and the impacts on the construction schedule and the subsequent impact on the potential revenue from completing the building earlier yielded a drastic improvement in cost-schedule analysis, thus the analysis shows that the building should have been imploded and started again from scratch.