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Technical Report 1 – Structural Systems

Executive Summary

This report is an analysis of the existing structural systems in The Hershey Academic Support Center found in Hershey, PA. The Hershey Academic Support Center is part of the Hershey Medical Center complex and is owned by The Pennsylvania State University. Constructed from March 1999 to August 2000, The Penn State Geisinger Health System was designed as the primary occupant, but was dissolved before the building was occupied. Currently the building is used for auxiliary purposes of the Hershey Medical Center and accommodates 680 people. The building itself can be considered in two sections, an East and a West wing. The wings are structurally identical with the only difference between them found in the center section. The building footprint encompasses a total area of 150,000 square feet. The total height of the building over 5 stories is measured as 56'-0" with the height to top of the roof including the Mechanical Penthouse being 69'-0". The building consists of a conventional structural steel system with composite beam floor framing and a precast concrete and glass facade. Moment connections placed on the columns as well as braced steel frames provide additional support to resist the wind and lateral loads throughout the building. The basic structural systems are similar to those found in more recent buildings built in the Hershey Medical Center complex.

The code basis for this building is BOCA 1996, but to keep the entire set of calculations standard with the current structural technology, ASCE 7-02 was used to calculate Wind and Seismic forces. When performing my spot check analysis, I found that the calculated members were slightly different than the proposed members in the design. For the gravity loading, the beams and girders I calculated were slightly larger than in the original design which is most likely due to the code difference (ASD to LRFD) and the ¾" camber found on the beams. For the lateral loading, I calculated the braced frames to take the entire load, but in reality there are moment connections in place to help better distribute it. Also, the change in design code can be attributed for part of the difference.