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Structural Option
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Hershey Academic
Support Center
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Thesis Proposal

Executive Summary

The Hershey Academic Support Center is a 5 story building that encompasses a total area of 150,000 square feet. The floor system is a conventional structural steel system with composite beam floor framing and a precast concrete and glass facade. The main lateral system for this building is varying partially restrained moment connections located at almost every column. These connections extend to all 5 floors of the buildings and brace the building in both the N-S and the E-W conditions. The three types of connections used are top & bottom angles, top & bottom plates, and top angles & bottom plates.

My proposal for the Hershey Academic Support Center is to redesign the current lateral system in an effort to save on overall project costs. From the earlier Technical Assignments, it seemed as though the lateral system was over designed slightly and that the number of moment connections could be reduced for each story frame. Even more so than the reduction of total moment connections, I believe that a cross braced framing system would be possible for the building and that it would be the most cost efficient option. This cross bracing would be used in areas that did not obstruct people such as elevator shafts or on the interior of walls as well as in critical sections of the structure. If necessary, some moment connections might be utilized if the cross bracing cannot provide adequate lateral resistance on its own.

Because my building was constructed using the method of "Type 2 with Wind," the floor system will also need to be changed with the lateral system. The floor system type of structural steel with composite beam floor framing will remain the same. The change in the current floor system will be in the members because they were designed using the moments created by the wind force, so when the lateral system changes, the beam, girder, and column sizes will have to change accordingly as well.