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George Read Hall – The University of Delaware
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Thesis Proposal
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Executive Summary:

George Read Hall is a five story dormitory on the University of Delaware's campus. emcompassing 129,000 square feet, it is the largest of three new buildings being constructed to replace the existing complex.

The floor system of George Read Hall is a Hambro composite system of 14" deep open web steel joists and a $2^{3}/_{4}$" concrete slab. The floor system is supported by 16 gauge, 50 ksi cold formed metal stud bearing walls. The lateral resisting system is comprised of x-braced shear walls. These shear walls are metal stud walls with 50 ksi metal straps.

In Technical Assignment #2, it was determined that alternate floor systems should be considered for use in this type of building. The most likely of those alternate systems to be used is precast hollow core planks. It was also previously determined that the existing lateral force resisting system is not adequately designed to resist the newly calculated seismic forces. Thus, an alternate system will be designed using reinforced masonry shear walls. However, strength is only one criteria of an engineer's design.

Another important aspect of the design is economy. In order to find the most economical overall building system, this proposal will examine an alternate bearing wall system, shear wall system, and floor system. The wall system being investigated is a load bearing masonry wall. Supplementing the masonry bearing wall will be reinforced masonry shear walls. These masonry walls will be designed in accordance with ASTM standard C90 and all other appropriate ASTM standards. As mentioned above, precast hollow core planks will be examined as a new floor system. The CRSI manual will be used as a design aid for the hollow core planks.

In order to determine if the new system is more economical, a cost analysis will be done on the original and alternate systems. The comparison will be done between the original light gauge metal stud bearing wall system and the newly designed masonry wall system. A comparison will also be done between the shear wall systems and floor systems.