EXECUTIVE SUMMARY

The project discussed in this thesis is the Frederick Memorial Hospital Project 2000, Phase IV Additions and Renovations. Frederick Memorial Hospital is a private not for profit 298 bed hospital located in Frederick Maryland. Phase IV is the complete renovation of the G wing of the hospital. The existing interior courtyard of the G wing, previously a garden, will be infilled to create more usable square footage for each floor in the wing. The building envelope is brick façade. The existing façade is to remain and the new façade is placed in front of the existing exterior wall. A unique feature of the project is the fact that the wing is connected and integral with the rest of the hospital which still be functioning through construction. The construction and renovation of the G wing is a $10.2 Million, 85,000 SF project taking 10 months.

The existing design for the courtyard within the G wing is for a cast-in-place concrete structure. The design being proposed within this thesis is a structural steel with slab on metal deck system. All beams, columns, and footers to support the columns are design. The new steel system does have several implications to the design and construction of the hospital. The steel system results in a floor thickness 8" greater than the existing design. However, the steel system eliminates the need for columns within the courtyard infill, instead placing them on the exterior of the floor plan. The steel system is less expensive than the cast-in-place system due in part to less labor hours, as well as general conditions time saved. The implications to the schedule are all positive, as the steel system takes less time to construct than the cast-in-place system.

The existing façade design for Frederick Memorial Hospital calls for a brick veneer wall to be placed in front of the old façade. This thesis proposes the use of precast masonry and concrete panels instead. The heat and moisture transfer properties of these panels are analyzed in the German program WUFI and via a U value analysis. The precast panels are shown to provide the same level of moisture and heat resistance as a brick veneer wall. There are several implications of using the precast panels. The panels weigh twice as much as the brick veneer system. As a result the existing foundation will have to be upsized. The precast panels must be erected with a crane; as a result there is a significant impact upon the site planning. In addition, the precast panels are much more

expensive than a brick veneer. Because brick veneer wall construction is very slow, the precast panels can be installed much faster comparatively. The schedule is positively impacted, allowing for less general conditions time and for the building to be dried in faster.

Careful care has to be made during construction and renovation at hospital facilities with respect to infection control. Bacteria and microorganisms introduced during construction pose a serious risk to those with lowered immune systems. There are several infection control guidelines published; two of which by the CDC and the Healthcare Infection Control Practices Advisory Committee, and the American Institute of Architects. Both guidelines strongly suggest the implementation of an infection control risk assessment, which is a process of looking at various project factors and determining what needs to be done to control infection during the life of the project. In this thesis an infection control risk assessment will be performed for Frederick Memorial Hospital. From the ICRA and other literature, suggestions for infection control on FMH will be recommended. Implications of these recommendations will be discussed, as well as a comparison between what is currently being done and what is being suggested.

At the 2005 PACE Roundtable a recurring theme within the healthcare discussions was the impact of the healthcare owners upon the contractors. Industry members lamented the fact that "owner" usually consists of some combination of the board of directors, head nurses, facilities management, maintenance, and head doctors, just to name a few. The thesis research will address this problem. To collect data, surveys were sent out to various general contractors and construction managers asking them a variety of questions. The survey consisted of questions about the four typical entities of an owner: president, chief financial officer, end user, and operator. Additional questions regarding the complex nature of the relationships between the entities and how this can affect the contractor are asked as well. The outcome of the research was that each owner entity is complex and must be dealt with differently. Some methods of dealing with the different entities are to build a solid relationship with the owner at the beginning of the project, get the owner groups involved early on, and foster a sense of honesty among all project participants. In the end, the burden is on the contractor to make sure that the owner is handled properly.