

GEISINGER GRAY'S WOODS AMBULATORY CARE CAMPUS PHASE 1  
PATTON TOWNSHIP, CENTRE COUNTY, PENNSYLVANIA

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FINAL PROPOSAL  
SENIOR THESIS  
December 18<sup>th</sup>, 2007

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CONSTRUCTION MANAGEMENT  
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## EXECUTIVE SUMMARY

This thesis proposal is intended to provide defined areas of investigation to be completed in the Spring Semester from not only the Geisinger Gray's Woods project but also from issues facing the construction industry today. Investigations will include alternative methods, value engineering, and schedule compression. After a general project overview, the three analyses will be identified: Concrete Slabs, HVAC System, and Approvals & Permitting. Following, an illustration of how time and effort for next semester for each analysis is demonstrated concluded by a summary of each breadth study.

Construction of the 64,350 SF Gray's Woods medical office building began on April 23<sup>rd</sup>, 2007 and the Owner anticipates moving in on July 22<sup>nd</sup>, 2008. Currently on schedule, the building consists of cast-in-place concrete pier footings and structural steel columns and beams. HVAC equipment includes a chiller, boiler, and rooftop units. Brick masonry, EIFS and a curtain wall system create the exterior facade of the building. Each floor is comprised of waiting areas, and check-in kiosks as well as exam rooms, nursing stations, a pharmacy, laboratories, and procedure rooms. The building is attempting LEED certification. With EwingCole as the project Architect/Engineer and Alexander Building Construction as the project's Construction Manager, Geisinger hold paramount quality, value, partnerships, and advocacy.

### Breadth Study - Structural

Second floor and roof slabs are designed using lightweight concrete on composite metal decking. Although both lightweight and normal-weight concrete can fulfill the same structural function, there is a significant cost premium for lightweight concrete. The first thesis analysis will show a comparison of the concrete slabs, a redesign of the structural steel system as well as an additional cost comparison. By altering the lightweight structural concrete slabs to normal weight concrete, the project costs will be reduced. This requires a structures breadth study.

### Breadth Study – Mechanical & Architectural

As stated previously, the HVAC system is comprised of a 400-ton cooling tower, 250-ton electric chiller, three modular rooftop air handling units, and a hot water boiler. The large boilers and chillers required resulted in a separate building on the North-West corner of the main building. The boiler/chiller building is behind the main building so the visual of the green roof is only seen by those visiting Gray's Woods and parking in the rear of the building. Having a separate building results in extra exterior facade materials as well were additional piping and ductwork to the building. The second thesis analysis will reduce project costs and alter the interior floor plans to accommodate the HVAC equipment. Furthermore, the green roof will be visible the majority of those simply passing by Gray's Woods Ambulatory Care Campus. The HVAC system analysis will require mechanical and architectural breadth studies.

The last thesis analysis will focus on the scheduling and project cost effects of the approval and permitting process involved with commercial construction projects. Owners, contractors, design professionals, municipalities, region officials and various government agencies will be surveyed to find ways to alleviated unnecessary costs and time delays due to approvals and permitting.