



Barshinger Life Science & Philosophy Building

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Structural Option
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Thesis Breadth Topics

1.0 The Building Program

The Barshinger Life Science and Philosophy Building will be the largest construction project in the long history of Lancaster, Pennsylvania's Franklin and Marshall College. The three-story Georgian-Colonial Revival structure will house the departments of biology, psychology, and philosophy, as well as two interdisciplinary programs in biological foundations of behavior and scientific and philosophical students of mind. At a total cost of \$45 million, the 102,000 square-foot building will include state-of-the-art classrooms and laboratories, a greenhouse, a multi-story atrium, a 125-seat lecture hall, a commons for meetings and gatherings, and a vivarium for the study of primates and rodents.

2.0 Breadth Topics

2.1 Constructability Analyses

The alternate lateral force and foundations systems will warrant constructability analyses to determine any cost or schedule savings that could result from the change. I will utilize R.S. Means 2005 catalogs to evaluate the potential of the new systems.

2.2 Vibration & Fireproofing Analysis

The structure is currently designed for composite slab on metal deck. The system is composed of 2" metal decking with 4 1/2" of normal weight concrete above the flutes for a total depth of 6 1/2". The building only requires a 1-hour fire rating and the current floor system, which has a 2-hour rating, should be open to alteration. However, any alterations will be investigated for vibration performance as well. The building will house various laboratories with potentially sensitive equipment.

3.0 Task Breakdown & Methodology

Constructability Analyses (*Task #3*)

- § Determine quantities of steel frames, concrete foundations, and excavation material from the depth analyses.
- § Calculate cost and time savings using R.S. Means 2005.

Vibration & Fireproofing Assessment (*Task #4*)

- § Redesign floor system to meet actual fire rating requirements using product catalogs.
- § Check system using RAM Steel computer software.
- § Analyze/compare vibration performance of current and redesigned floor systems through hand calculations and/or Excel spreadsheets.
- § Research vibration sensitivity of laboratory equipment and apply findings to the floor system comparison.