



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 Lecture Hall Acoustic Assessment

For the second breadth topic, I will analyze the acoustic design of the large lecture hall on the ground floor of the building. It appears that the designers took specific care in designing the shape and acoustics of the space, and I want to evaluate how well they did. I was lead to this space by a peculiar aspect of the structure. The superstructure incorporates a Vierendeel truss into the exterior to span over the lecture hall the juts out of the west side of the building on the ground floor.

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.

Lecture Hall Acoustic Assessment (*Task #4*)

- § Determine volume and wall areas for lecture hall.
- § Calculate the reverberation time for the space using product information.
- § Evaluate the ceiling reflection capability.