

Final Thesis Report:
An Analysis of Alternative
Lighting & Electrical System Solutions



ANN AND RICHARD BARSHINGER LIFE SCIENCES & PHILOSOPHY BUILDING
FRANKLIN & MARSHALL COLLEGE
LANCASTER, PA

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Lighting/Electrical Option
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ANN AND RICHARD BARSHINGER LIFE SCIENCES & PHILOSOPHY BUILDING

Project Team:

Franklin and Marshall College

Owner: Franklin and Marshall College

Construction Manager: Turner Construction Company

Architect: Einhorn Yaffee Prescott Architecture & Engineering

Structural Engineer: Einhorn Yaffee Prescott

MEP Engineer: Einhorn Yaffee Prescott

Project Data:

Size: 104,000 sq. ft.

Floors Above Grade: 3

Total Floors: 4

Project Cost: GMP of \$39 million

Bid Method: Design-Bid-Build

Dates of Construction:

December 2005 - August 2007

Architecture:

- Georgian Revival Style
- Brick façade, tooled to match existing buildings
- Modern 3-story atrium acts as core of building
- Basement Vivarium for visual research

Mechanical:

- Two roof-mounted Air Handling Units with capacity up to 50,000 cfm of supply air
- Central Utility Plant immediately adjacent to main building contains chiller for this building
- Basement contains domestic water heater service
- Medium-pressure steam service from main campus service facility

Structural:

- Steel framing supporting 6 ½" composite concrete slab
- 5" concrete slab-on-grade
- 2'6" foundation wall with spread footings
- Roof is Vermont slate shingles supported by galvanized metal decking on structural steel

Electrical:

- 15 KV service from Franklin & Marshall main switchgear for entire campus
- 12.47 KV servicing substation transformed down to 480Y/277V secondary service voltage
- Step down transformers to 208Y/120V for receptacles and incandescent loads
- 350 KW diesel generator for emergency power generation

Lighting:

- Majority of lighting operates at 277V
- Recessed, louvered linear fluorescent luminaires for classrooms, labs, and offices
- Recessed compact fluorescent downlights for corridors and circulation spaces
- Daylight sensor photocell in atrium, dimming systems in common room and lecture hall



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CPEP Website:

<http://www.engr.psu.edu/ae/thesis/portfolios/2008/jpw202/>



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