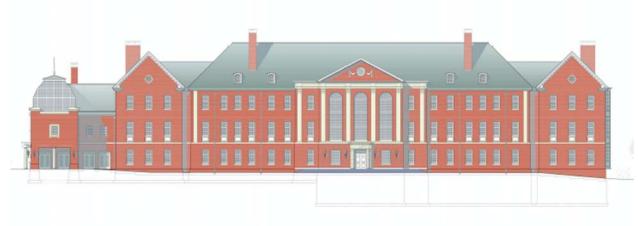
# Final Thesis Report:

# An Analysis of Alternative Lighting & Electrical System Solutions



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

> Jason Weaver Lighting Advisor: Dr. Mistrick Electrical Advisor: Prof. Dannerth Lighting/Electrical Option 04/09/2008

## 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



PENNSTATE

Jason Weaver Lighting/Electrical Option

CPEP Website: http://www.engr.psu.edu/ae/thesis/portfolios/2008/jpw202/



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