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## Building Overview

### **Building Statistics:**

#### Building Name:

Ann and Richard Barshinger Life Sciences and Philosophy Building

#### Location and Site:

Franklin and Marshall College, Lancaster, PA  
(main access from Race Avenue)

#### Building Occupants:

- Department of Biology;
- Department of Philosophy;
- Department of Psychology;
- Biological Foundations of Behavior Interdisciplinary Program;
- Scientific and Philosophical Studies of Mind Interdisciplinary Program

Size: 104,000 sq. ft.

Number of Stories Above Grade: 3

Total Levels: 4

#### Project Team:

Owner: Franklin and Marshall College

Owner's Representative: Kevin Orris, VP of Administration

Construction Manager: Turner Construction Company

Architect: Einhorn Yaffee Prescott Architecture & Engineering, P.C.

Structural Engineer: Einhorn Yaffee Prescott

MEP Engineer: Einhorn Yaffee Prescott

Interior Design and Planning: Einhorn Yaffee Prescott

Civil Engineering: Derck + Edson Associates

Landscape Architecture: Halvorson Design Partnership

#### Dates of Construction:

December 2005 - August 2007

#### Project Cost:

Guaranteed Maximum Price was \$39 million (Actual Cost - \$38 million)

#### Project Delivery Method:

Design-Bid-Build, GMP



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### Architecture (Design/Function):

This building was designed in the Georgian Revival style. The core of the building is perfectly symmetrical. The front door is centered with a complex entablature and modern columns pronouncing it. Two-story glass windows and pilasters also emphasize this as the main entrance. Windows are in symmetrical rows, and aligned both horizontally and vertically. Breaking this symmetry is the far west end of the building. This area, which contains greenhouses and a lounge, is more modern in styling because of extensive glass area, but still has much of the same character of the rest of the facade. Inside, the building revolves around a central three-story atrium with an open staircase and balcony-style corridors. The philosophy and psychology departments are housed on either end of the first floor. The philosophy department is adjacent to one of the feature areas of the buildings: the Humanities Common Room and Gardens, which the university wants to use as a meeting room and study area. Immediately in back of the atrium (and viewable from the front door) is a 120-seat lecture hall that the university wants to use for professional speakers and seminars. The second and third floors are devoted mostly to lab space and functions of the biology department. The main corridor on each floor resembles a “V” shape, with the vertex at the atrium/main staircase. The interior has a relatively open plan, and clear glass walls in many spaces further enhance this open plan.

### Major National Model Codes:

- 2003 IBC with 2004 Supplement
- 2003 IFC
- 2003 NFPA
- 2003 IMC
- 2003 IPC
- 2002 NEC
- ASHRAE 90.1

### Zoning: Lancaster City

### Historical Requirements:

In order to maintain a consistent architecture throughout the campus, Franklin & Marshall College required the architects to match key facade elements (not the least of which was the brick laying technique) of the surrounding buildings.



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### Building Envelope:

The roofing is a Vermont slate, chosen and entirely paid for by a single donor to match the character of the surrounding buildings. The majority of the facade is brick, but laid in and tooled in a manner more typical of the surrounding buildings. The architect and college wanted the brick imperfections, thicker mortars, and less crisp lines that most modern brick structures don't have. The majority of the glass of the facade is a 1 inch insulating glass unit, with heat-strengthened glass for the skylights and an even more transparent glass over the greenhouse areas.

### **System Descriptions:**

#### Structural:

The main structural system for the building is a steel frame supporting composite concrete slabs. The typical beam size is W16X26, which distribute the floor loads to girders (typically sized at W18X90). Steel columns are typically W12X65, and are spaced around 20' feet apart between girders and 32' apart between beams. The floors are a 6 ½ composite concrete slab, consisting of 4 ½" normal weight concrete on 2" 18-gage galvanized metal decking. The foundation system is comprised of a 2-6" foundation wall with spread footings. A 5" concrete slab-on grade finishes the basement system. The Vermont slate shingles on the exterior of the roof are supported by galvanized metal decking on structural steel.

#### Construction:

Construction on the building started in December of 2005. Originally bid and awarded to Skanska, the project was re-awarded to Turner Construction while the building was under construction. The project was bid at a Guaranteed Maximum Price of \$39 million. The building was completed and turned over to Franklin & Marshall in August 2007.

Many key elements of the site had to be preserved during demolition, namely the east sidewalk (which connected the campus to the city) and most of the trees. The east side of the site was virtually untouched during demolition, as a large amount of the campus relies on power lines running underground here. A new asphalt driveway was poured to connect the basement loading dock on the west end of the building to an existing parking lot and Race Avenue. Construction staging was originally on the north end of the site, but later in construction was moved to this driveway.



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Lighting:

The majority of the lighting in the building runs on 277V (the notable exception being the incandescent lighting, which runs on 120V). Typical classroom, lab, and office spaces use recessed linear fluorescent fixtures with louvers for shielding. In most of these spaces, recessed compact fluorescent wallwashers are used to highlight a chalkboard wall. Most circulation spaces use a layout of recessed round compact fluorescent and linear fluorescent downlights. Specialty spaces use more incandescent lighting, with the humanities common room using incandescent lighting exclusively (in the form of chandeliers, matching wall sconces, and recessed accent lighting). The atrium uses a track system with halogen lighting and cold cathode lighting mounted in a ceiling cove. More extensive exterior lighting is planned for the future, but currently consisted of lighting on the main entrances, existing walkway lightings, and uplights highlighting the beds in the gardens on the south side of the building.

Electrical:

The main power for the Life Sciences & Philosophy comes from the main switchgear for Franklin & Marshall College. Power is run from existing lines in the front of the building to a basement substation at the northwest corner of the building. The 12.47KV service voltage is transformed down to 480Y/277V secondary service. Power is then distributed to various basement panels, 2 bus ducts, and the penthouse level. Each bus ducts serves one half of the building (north or south), and there are 2 electrical rooms on each floor (again, one on the north side of the building, the other servicing the south side). Most of the lighting runs on 277V. There are transformers converting the voltage down to 208Y/120 V service in each electrical room, on the penthouse level, and the main mechanical room. The 208Y/120 service is used for receptacle loads, incandescent lighting, and much of the heating for the space. The main emergency power system for the building is a 300KW diesel powered generator. Power is distributed from the generator at 480Y/277V. 2 main lines run from the generator: one at 400A and one at 100A. 2 4-pole automatic transfer switches are mounted in the penthouse to power the emergency panels, rated at 400A and 100A respectively. The main emergency panels are also located in the penthouse level, which then distribute power to basement emergency panels. Emergency power also passed through a transformer (converting to 208Y/120V service), and is distributed to emergency panels in the south electrical room of each floor.



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Mechanical:

Three air handling units serve the building. Two AHUs with supply air rated at 50,000 CFM each serve the majority of the building, while one rated at 15,000 CFM serves exclusively the vivarium. The system uses a glycol energy recovery loop that exchanges energy between the exhaust air and the outdoor air. This in effect reduces the temperature difference the rest of the heating/cooling system must make up before supplying the air to the spaces. Next to the building is the existing Central Utility Plant, which is being expanded as part of this project. The CUP contains a 550-ton centrifugal chiller for the Life Sciences Building, as well as the fuel oil pump for the building. A 550-ton cooling tower is located on the roof of the main building. Domestic water service is located in the basement. While low-pressure steam service comes from a boiler on the roof, the medium-pressure steam service comes from a central campus facility.

Fire Protection:

The main fire alarm control panel is located in the basement, and is linked to fire alarm terminal cabinets on each floor. Those terminal cabinets are linked to smoke and heat detectors throughout the floor, as well as strobe and speaker circuits and magnetic door holders. The third floor terminal cabinet also services the penthouse/roof level, where smoke exhaust is monitored and controlled. The building is fully equipped with a sprinkler system.

Transportation:

There are three main stairwells in the space. The main staircase is an open staircase in the atrium, services the first, second, and third floors of the building. The other two staircases are enclosed, and are located on the north and south ends of the building, respectively. These two staircases service all floors and the roof of the building. In addition, there is a small open staircase on the south side of the building connecting the basement to the first floor. One elevator, located in the center of the building but away from any major entrances, serves all floors and the penthouse/roof.

Telecommunications:

The main telecommunications lines are run into Room M058 in the central part of the basement. From this room, telecommunications lines are run into two smaller telecomm/data rooms on each floor (one on the north end, one on the south end). Telecommunications services include telephone, closed circuit surveillance, data communications, door access/control, and cable TV. Wireless internet service was also provided by F&M College.