

## 3.0 – Existing Conditions

### 3.1 – Architecture

The Life Sciences and Philosophy Building at Franklin and Marshall College is a brand new steel structure at the heart of the campus in Lancaster, Pennsylvania. The building is wrapped in a brick and limestone facade, and done in a Colonial-Revival style. The north and south wings of the building are laid out nearly symmetrically, but not entirely to provide some interesting aesthetic aspects. At the east center of the building lies its central three-story interior lobby and atrium space. The first floor holds a study lounge and café area, all of which is open to the second and third floor balconies above. A grand open staircase ties all three floors together, and makes the space simple to navigate. The majority of the mechanical equipment is housed on the roof, but some is still housed in the basement, next to the electrical equipment. The roof is clad in Vermont slate, possible only by a donation from F&M alumni. The south end of the building roof holds a greenhouse used for plant study, growth, and research. Just to the west of the main lobby floor is a 120-seat state of the art lecture hall. This hall and atrium are planned for use during classes and speeches, as well as many community events. The building is also the mechanical hub of campus. Many future planned buildings will have their cooling and heating provided through the Life Sciences and Philosophy Building.

### 3.2 – Historical Requirements

Many buildings on the F&M campus are Colonial Revival style, and the desire for this building was to have it blend in with the rest of campus. Great care was given to the brickwork. All masons were required to mimic the work on the Fackenthal Science Building. Built in the late 1920's, masons were not well-trained, so the mortar beds and lines were not straight or plumb. The Life Sciences & Philosophy Building had one site Superintendent that did nothing but walk the scaffolds and inspect the brickwork. On many occasions, the work had to be re-done because the work looked too well-done and clean. One other recent addition to campus used an asphalt roof. Due to unfavorable reactions from alumni, this new building has a \$1.1Million Vermont Slate roof, similar to other long-standing buildings on campus.

### 3.3 – Building Envelope

Exterior walls are brick exterior facade, limestone panels, or pre-cast concrete panels, 1" airspace, 8" CMU back-up wall, with interior 2x4 insulated steel stud wall, gwb interior finish surface. All windows are double-hung, double pane, low-e coated, argon filled; only select windows are operable for fire escape purposes. The architecturally visible roof is a sloped slate rain diverter. The actual waterproofing surface is a flat roof with membrane and insulation. The greenhouse is aluminum framed double-pane glass with automated operable sections to provide ventilation.

### 3.4 - Construction

The building project was bid to Skanska in December 2005. Initial testing was completed, and overall design / preservation concerns were addressed. The sidewalk and parking area to the east of the site needed to be preserved throughout construction, as they were the main access routes from campus to Harrisburg Pike, and much off-campus housing. Also, many of the trees in the same area were to be preserved to keep the aesthetics of an “old” longstanding campus. Not only was this convenient to have all preserved features in the same area, but it was also a necessity. The main electrical feeders for all of F&M’s campus run underground just to the east of the site. After some months passed, the project was turned over to Turner who completed the project on time in August 2007. The re-negotiated contract between F&M and Turner was a Guaranteed Maximum Price of \$39.9Million. Construction site offices and staging were located to the north at first, but were moved to the new asphalt access path (for building loading docks later on) for the majority of construction. After substantial completion, Turner offices were set up in the basement of the central services building, south of the project.

### 3.5 – Electrical

Electrical service is provided to the building at 12.5kV from the campus distribution network. Power is provided to the unitary substation in the electrical room located at the north-west corner of the building. One main 1333kVA transformer steps this down to the 480/277 building distribution system. Most loads (lighting and power) in the building are served by two bus ducts, one North, one South. Equipment on the roof, and most basement vivarium loads (lighting and power) are served by separate feeders from the main switchgear. Each floor’s power and lighting loads are fed through 2 electrical rooms on each floor, having both high and low voltage panels, plus a step-down transformer for service. Emergency power is provided to the building by a 350 kW, 480/277V standby diesel generator on the roof. This feeds to automatic transfer switches that feed two main distribution panels on the roof. These serve pumps, major equipment, emergency lighting throughout the building and some outside, life safety equipment, and most of the vivarium, including the air handler (AHU-3) in the basement.

### 3.6 – Lighting

The vast majority of lighting in the building is 277V-fed T-8 lamps. There is some 120V incandescent lighting for accents, but not for general lighting purposes. Most classrooms, offices, and study spaces have recessed louvered parabolic troffers. Recessed wall-washer compact florescent light fixtures are used to wash chalkboards and display areas. Special function areas (Humanities Reading Room, study lounges, atrium) use a great deal of incandescent fixtures. The Humanities Reading Room has fixtures fit for a very formal space – chandeliers, recessed accents, and wall sconces. Hallways are lit primarily by recessed linear fixtures, with some can-type CFL downlights to highlight trophy cases and other areas of interest. Exterior lighting is fairly simple – lights at building entrances and walkway lighting are HID lamps and CFLs, and landscape lights are used outside the Humanities Reading Room at the south of the building shining up into trees planted in the patio. More detailed plans for additional exterior lighting have been made, but the

campus is still in the very early stages of this developmental plan, so installation will wait until more of the new buildings are finished.

### 3.7 – Structural

The building is a braced steel frame building, with composite concrete slabs flown for each floor above grade. Typical bays are 20' x 32' with W18x90 girders, and W16x26 beams. Most columns (interior) are W12x65. Flown floors are 6-1/2" composite slabs, with 2" 18-ga galvanized deck and 4-1/2" of Normal Weight Concrete. Slab on Grade areas of the first floor are 5" NWC with reinforcement. All footings are spread footings with perimeter footers and concrete walls. The rain-screening roof sections (Vermont Slate) is supported by galvanized metal deck on a structural steel skeleton, with the actual rain-proof surface as a flat roof with membrane.

### 3.8 – Supporting Systems

3.8.1 – Fire Protection – The Fire Annunciation Panel is located in the main Atrium at the first floor level, connected to local fire alarm panels on each floor, except for the basement. The main dialing panel is attached to the fire panel serving the basement, located just off the atrium in the lighting control room under the main stairs. Floors 1-3 have their fire panels located in the north electrical rooms, and all fire alarm wiring terminates there. Door hold-opens, smoke detectors, flow sensors, alarm strobes and chimes are all wired to these cabinets. Each floor is fully sprinkled, including the penthouse areas containing all mechanical equipment. The fire system sensors for the penthouse are wired to the third floor fire panel, oversized to accommodate the additional sensors and alarms.

3.8.2 – Transportation – The elevator for the building is located in the south "core" area. It is a hydraulic-powered lift from below. This lift serves all four interior floors, along with the penthouse for easy maintenance access. There are two main stair towers passing from Basement to Penthouse/Roof. These are located at the North and South ends of the building. There is a main public open stairwell located at the west side of the central atrium. This stair serves floors 1-3, and is open to the corridors on each floor, and open to the atrium space. Handrails are provided to partly separate the spaces, but open area is left to a maximum.

3.8.3 – Telecommunications – Each floor has, in addition to the electrical rooms, two telecom rooms, one north and one south, to serve every floor. These handle all telephone and data lines for the building. Service entrance to the building is located in the basement in room M058. This room is fed by panels located in the CUP and Thomas Hall for both cable and voice lines. These cable lines and fiber optic lines serve to provide network services to the building, as well as surveillance for security purposes. Servers, HUBs, and switches are located in many equipment racks in each of the telecom closets and the main service entrance room in the basement.