

PHARM CORP.

DELAWARE



STRUCTURAL

- ❖ Structural offsets create space for green roofs.
- ❖ Structural steel framing supporting light-weight concrete on 20 GA composite deck.

SUSTAINABILITY

- ❖ Green roof
- ❖ LEED energy usage requirements met.
- ❖ Economizer use for energy savings.

ARCHITECTURE

- ❖ Grand staircase connecting all four floors through main atrium. (below)
- ❖ Sawtooth ceiling, concealing linear diffusers in dining and kitchen area.
- ❖ Parking garage connecting to main building, utilizing parking garage roof for entertainment.

Mechanical

- ❖ The indoor airside system is a water-cooled, vertical self-contained VAV air conditioning unit.
- ❖ Capacities are based on 350 SF per ton for office space and 250 SF per ton for kitchen and dining.
- ❖ Air-side economizer and enthalpy-based temperature reset utilized when ambient temperature permits.

Lighting/Electrical

- ❖ Vacancy sensors located in all office spaces.
- ❖ Natural lighting and shading is utilized show the sloping curtain walls; allowing light on the East to enter with an inward sloping wall while shading the West with an outward sloping wall.

Whiting-Turner Company | CM

Granum A/I ; Mitchell | Architect

A.W. Lookup Corp. | Structural

AKF Group | MEP/FP

Mitchell Associates | Interior Designer

Metropolitan | Acoustical Consultant

Andropogon | Landscape Architect

Duffield | Civil Engineer

Roofmeadow | Green Roof Consultant

The Lighting Practice | Lighting Designer

Ryan Schulok

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Mechanical

Pennsylvania State University
Chemical and Biomedical
Building

University Park, PA



Building Statistics

- Eight Story Building
- 130 Feet Tall
- 80,000 Square Feet
- Completion Date: January 2019
- \$120 Million Dollar Approximate Cost

Project Team

Owner: Pennsylvania State University
Architect: HOK
Construction Manager: Southland
Civil Engineer: Sweetland Engineering
Landscape Architect: Forum Studio
Structural Engineer: Baker, Ingram & Associates
Mechanical Engineers: Vanderweil Engineers
Lighting Design: Lighting Design Collaborative
Vibration and Acoustic Consultants: Colin, Gordon & Associates
Cost Estimate Consultants: Crawford Consulting Services

Architecture

- Curtain glass façade
- Brick façade to reflect surrounding campus architecture
- Stone veneer sections
- Five stories cantilevered over partial floor section

Structural

- Steel framed with composite 2" deck w/ 4" lightweight concrete topping
- Braced and Moment frames throughout building
- Shear walls provide most lateral stability
- Micro-piles extend to bedrock under all spread footings and under some continuous footings

Mechanical

- Steam heat connected to existing Penn State Infrastructure
- Leed Gold with high mechanical efficiency
- Wall systems and materials provide high "R" value

Lighting

- Fluorescent high efficiency light bulbs used in labs as well as classrooms
- Use of indirect lighting to minimize bulb usage

Construction

- Foundation built over existing caissons (to be destroyed or ignored) from previous building.
- High integration of professions with focus on BIM
- Building materials used from the local region

Daniel Hirt| Structural Option
Advisor: Dr. Linda Hanagan

Cpep Website: <http://dth5125.wixsite.com/aethesis>

VILLAGE SQUARE



Building Details

Location | Mechanicsburg, Pa
Size | 207,900 SF
Height | 3 Stories Above Grade
Primary Project Team
Owner | Messiah Lifeways
Contractor | Whiting-Turner
Architect | Stewart & Connors Associates
Cost | \$38.1 M
Duration | July 20, 2015 - September 1, 2017
Delivery System | Design-Bid-Build
Unique Attributes |

- State of the Art Senior Living Facility
- 2 Enclosed Elevated Catwalks, Connected to Two Buildings Built Simultaneously.

Mechanical

- Mechanical Room, Boiler Room, Fire Pump/Command Center utilize Half of the Ground Floor
- Elevator and Electrical rooms have Split A/C Systems
- First Floor has a Return Plenum Ceiling
- 10 Roof Top ACU's and 3 HRU's
- Pool Roof has a Dehumidification Unit and a Split System Heat Pump

Architecture/Site

- "American Mission" Style Architecture
- Mix of Prairie, Arts and Crafts, Greene and Greene Style of Architecture
- Building looks like a "Village" with Four Facade Materials
- Two Pedestrian Bridges connect to Village Square; Enhanced Living and Nurse Building

Structural

- Parking Garage comprised of Reinforced Concrete Slab
- Ground level and Third level are 9-1/2" Post-Tensioned Slabs
- Second and Third level are 4"-8" Non-PT Slabs
- Prefabricated Wood Panels and Trusses are Delivered to Site
- One Level of Shoring and Two Levels of Reshoring are used for Support until Concrete Cures

Electrical

- Utility Transfer Connects to the Main Switchboard at 65,000A
- A Generator is located Outside on the Main Building Footprint
- Transformers and Panelboards are Located every Floor to Support Lighting, Receptacles, and Kitchen Appliances of each Apartment

Alexis Arthur | CM

http://aarthur93.wixsite.com/projectenvision

LMI Corporate Center



Building Statistics

Name | LMI Corporate Center
Location | Englewood, Colorado
Type | Office, Group B
Size | 140,000 sq. ft.
Height | 60 feet
Stories | 4-floors above grade
Completion | September 15, 2016
Project Delivery Method | Design-Assist

Project Team

Architect | RNL Design
General Contractor | Saunders Construction
Project Manager | JLL
Electrical/Lighting Engineer | AE Design
Mechanical Engineer | Maxson Engineering

Architecture + Construction

- Existing office space built in 1997.
- Building shape in the form of an "L" with respective south and west wings.
- Goal is to provide & conduct quality business practices.

Lighting + Electrical

- 480/277V, 3-phase, 4-wire utility distribution.
- Utilization of emergency back-up generator, three automatic-transfer switches, paralleling UPS system, and step down transformers for 208/120V loads.
- Curtain wall glazing perimeter for use of natural daylighting integration.

Mechanical

- Four existing RTU's for supply conditions.
- Utilization of VAV's, FCU's, thermal units, and exhaust fans.
- Temperature monitoring for clean and comfortable environment.

Structural

- Concrete encased steel vertical system with a pretension poured-in-place concrete slab decks.

Cole Lefever


Lighting/Electrical Option

http://cni5062.wixsite.com/colelefeverthesis

Collaborative Area

Coffee Bar/Lounge

Open Office



PennState AE Senior Thesis 2016-2017

eSTUDIO

ARCHITECTURAL ENGINEERING