

# MH Professional Engineering, PLLC



## UNIVERSITY PROJECT EXPERIENCE

### **SMART ENERGY BUILDING, BINGHAMTON UNIVERSITY**

Binghamton, NY

- Lead Fire Protection Engineers for the design of 114,000 ft<sup>2</sup> building on the SUNY Binghamton campus.
- The building houses the departments of chemistry and physics, including 56,000 ft<sup>2</sup> for research, 125 fume hoods and 45 faculty offices.
- The facility provides room for faculty, industry scientists and engineers to work side-by-side to create new energy technologies and maintain and expand the regional workforce.
- Features include microturbines on mechanical systems, a fuel cell to produce electricity at a reduced cost to heat and cool the building, photovoltaic panels on the roof to produce electricity, hydronic radiant heating in the floor, controlled LED lighting, individual space monitoring of chemicals to reduce air flows and energy use, and water-cooled equipment wherever possible to conserve energy.



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## UNIVERSITY PROJECT EXPERIENCE

### **DESIGN OF PHARMACY BASEMENT, BINGHAMTON UNIVERSITY**

Binghamton, NY

- Lead Electrical Engineers for the design of a 10,279 ft<sup>2</sup> shell space within the Binghamton University School of Pharmacy.
- Provided electrical design drawings for shell space removals of power, lighting and fire alarm.
- Provided electrical design including power, lighting, data, fiber and fire alarm for fit-out spaces: University Police Department, Environmental Health Services and server room for Information/Technology Service.
- Provided electric power distribution to HVAC, plumbing, fire protection, data racks, lighting, general receptacles, and specialized equipment. The building's systems were laid out in compliance with 2015 NYS Building Codes, NFPA 72, ADA, the 2014 National Electrical Code, and the 2015 IECC.
- Designed a 350kW/438kVA generator for emergency power and a shared UPS for all tenants.
- Designed power, switching and wiring to indoor lighting, associated controls, egress lighting, and exit signs.
- Designed modifications to fire alarm system layout with the appropriate interlocks to mechanical HVAC equipment for the fit-out areas. Designed VESDA detection system for server room.
- Designed data outlet locations with provisions of properly located empty raceway/cable tray/conduit to accommodate data wiring. Coordinated requirements with University ITS Department.
- Provided raceway system for security equipment, and raceway/conduit/120V power connections for security/access control systems. Coordinated requirements with University ITS Department.
- Provided power and fire alarm system support for NIST Fire Protection System



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## UNIVERSITY PROJECT EXPERIENCE

### **NEW ATHLETICS FIELD HOUSE, STATE UNIVERSITY AT BUFFALO**

Buffalo, NY

- Lead Electrical Engineers for the design of a new 92,000 ft<sup>2</sup> Athletics Field House for the State University at Buffalo.
- Investigated the existing campus power distribution system and designed incoming service for the new building.
- Provided electric power distribution to HVAC, lighting, general receptacle, and specialized equipment. The building's systems were laid out in compliance with 2016 NYS Building Codes, NFPA 72, ADA, the 2014 National Electrical Code, and ASHRAE 90.1-2013.
- Designed power, switching and wiring to indoor and exterior building-mounted and site lighting, associated controls, egress lighting, and exit signs.
- Designed fire alarm voice evacuation, aspiration detection, horn/strobe, pull station and initiating device layout with the appropriate interlocks to mechanical HVAC equipment. Also designed telephone and data outlet locations with provisions of properly located empty raceway/conduit to accommodate telephone and data wiring.
- Provided empty raceway/conduit for AV equipment, and raceway/conduit/120V power connections for security/access control systems.



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## UNIVERSITY PROJECT EXPERIENCE

### **CULKIN HALL ELEVATOR UPGRADES, SUNY OSWEGO**

Oswego, NY

- Lead Electrical Engineers for the design of replacing two elevators for SUNY Oswego.
- Provided electrical removal design drawings showing existing elevators fuses, feeders, transformers and disconnects being removed. Showed existing lighting, smoke hatch fire alarm connection and smoke detector being disconnected and re-connected for roof work associated with the elevator shafts. Showed removal work in the pits; lighting, switching, receptacle(s) and all appurtenances associated with the elevator maintenance and control.
- Provided electrical new work design drawings showing new fuses, feeders, disconnect switches for the elevators. Showed existing cab disconnect switches with extension of existing emergency power circuits. Showed new work in elevator pits; lighting, switching, receptacle(s) and kill switches.
- Provided elevator control schematic to indicate elevator recall and shunt trip devices.
- The building's systems were laid out in compliance with 2015 NYS Building Codes, NFPA 72, ADA, the 2014 National Electrical Code.



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## UNIVERSITY PROJECT EXPERIENCE

### **ENGINEERING BUILDING CRITICAL MAINTENANCE, BINGHAMTON UNIVERSITY**

Binghamton, NY

- Lead Electrical Engineers for the renovation and complete electrical service upgrade for Binghamton University's 98,500 ft<sup>2</sup> Engineering Building.
- Provided electrical removal design drawings showing existing interior and exterior lighting, power, elevator, data, fire alarm, security system being removed.
- Provided electrical new work design drawings showing new lighting, lighting controls, power distribution and panels, receptacles, data, cable tray, fire alarm and security system.
- Designed the incoming medium voltage (13.2kV/12.47kV) from the existing pad mounted switches to the two (2) medium voltage switches. One (1) switch is fed from existing feeder 401 and the other switch is fed from existing feeder 501. The campus presently has a 13.2kV system. In the future they want the capability of changing over to a 12.47kV system. A multi-tap transformer, T1, was designed to be able to give the campus that capability without having to replace this new equipment. T1 primary is 13.2kv/12.47kV multi-tap and the secondary is 480V. Transformer T2 is the primary 480V to secondary 208V service transformer.
- Designed circuiting, switching and wiring to indoor lighting, associated controls, egress lighting (interior and exterior), and exit signs.
- Designed fire alarm, horn/strobe, pull station and initiating device layout with the appropriate interlocks to mechanical HVAC equipment.
- Designed data outlet locations with provisions of properly located empty raceway/cable tray/conduit to accommodate data wiring.
- Provided empty raceway/conduit and back boxes for security equipment and raceway/conduit/120V power connections for security systems.
- Provided raceway/conduit/120V power connections for Siemens BMS System.
- Provided elevator control schematic to indicate elevator recall and shunt trip devices.
- The building's systems were laid out in compliance with 2015 NYS Building Codes, NFPA 72, ADA, the 2014 National Electrical Code.



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## UNIVERSITY PROJECT EXPERIENCE

### **CHEMISTRY AND PHYSICS LAB AND OFFICE RENOVATIONS, SUNY ALBANY**

Albany, NY

- Provided space programming and design services for roughly 2,000 ft<sup>2</sup> of office spaces and 10,000 ft<sup>2</sup> of instructional and research lab spaces in various locations on the Uptown Campus of the University at Albany. Instructional and research labs will be designed for biological, chemistry, and/or environmental engineering use.
- Programming phase included evaluation and prioritization of the program needs for life sciences, chemistry, environmental engineering, and bioengineering laboratories, class labs and offices; assessment of Chemistry and Physics Buildings' utilities and building systems to determine if they have the capacity or can be renovated with the capacity to become laboratories, class labs and/or teaching labs; and match program with available spaces and building system capacity.
- The existing, original HVAC systems were evaluated for purposes of maximizing the number of fume hoods that could be installed in the available spaces. Hired and managed a Test & Balance Contractor in order to obtain accurate information about the existing HVAC system.
- To date, several spaces have been reprogrammed. HVAC, plumbing and electrical plans have been produced and the projects are under construction.
- Additional space programming and design work is ongoing.



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## UNIVERSITY PROJECT EXPERIENCE

### **BOOKSTORE AND AC-2 REPLACEMENT, SUNY ALBANY**

Albany, NY

- Lead Mechanical, Electrical, and Fire Protection Engineers for the rehabilitation of the existing campus bookstore.
- The intent of the project was to give the existing bookstore “a facelift” to increase functionality of the space, meet the current needs of both the staff and the students, and to revitalize the bookstore finishes to complement the recently completed campus center expansion project.
- The original scope, as envisioned and budgeted, involved a “fit-out” level of renovation: New diffusers, new lighting, ceiling speakers, and the relocation of power, data, and sprinkler heads. All work was intended to be completed over the course of the summer in two phases to keep the bookstore partially open.
- The existing conditions investigations brought to light more serious infrastructure deficiencies in the space. The existing HVAC system within the space is operating in a very limited manner. The existing fire alarm system is no longer supported and device and wiring upgrades were needed to tie into the new Simplex 4100 ES. The existing BMS system connection to the space had been disconnected during a previous renovation.
- The air handling unit that serves the bookstore and a few other spaces was requested to be replaced by the campus, since all the distribution associated with the unit was going to be replaced and the unit was currently approximately 40 years old. Due to the physical location of the air handling unit, the decision was made to rebuild/rehabilitate components of the unit in place.



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## UNIVERSITY PROJECT EXPERIENCE

### MACDONOUGH HALL, SUNY PLATTSBURGH

Plattsburgh, NY

- Provided Electrical and Plumbing engineering design services for the rehabilitation of the roof at MacDonough Hall at SUNY Plattsburgh.
- Prepared electrical design sketches showing preliminary power distribution sources for snow melt systems.
- Prepared design development sketches showing locations of roof leaders for coordination.
- Designed electric power distribution to snow melt system.
- Designed snow melt system and associated controls.
- Designed storm water drainage system from building's flat roof area, including exterior piping to existing manhole structure.



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## UNIVERSITY PROJECT EXPERIENCE

### **HUNT STUDENT UNION, SUNY ONEONTA**

Oneonta, NY

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers for the renovation of the 24,000 ft<sup>2</sup> student union at SUNY Oneonta.
- Provided electrical new work design drawings showing new lighting, lighting controls, power distribution and panels, HVAC, receptacles, data, cable tray, fire alarm and security system.
- Designed power, switching and wiring to indoor lighting, associated controls, egress lighting, and exit signs.
- Designed modifications to existing system, including fire alarm, horn/strobe, pull station and initiating device layout with the appropriate interlocks to mechanical HVAC equipment.
- Designed data distribution system, including new data closet layout, cable tray drops and wiring in close coordination with campus IT department.
- Provided raceway system and back boxes for security system.
- Provided electrical design for new elevator, including elevator recall, shunt trip devices, and emergency power.
- The building's systems were laid out in compliance with 2015 NYS Building Codes, NFPA 72, ADA, and the 2014 National Electrical Code.
- Renovation of the HVAC systems included replacement of existing hot water reheat coils with variable air volume boxes and hot water reheat coils. The existing air handling units remained since they were recently replaced. Fin tube radiators and ductwork were removed throughout the project and rezoned to comply with the new space layout. All pneumatic controls were replaced with DDC controls to tie into an existing front-end system. All heating hot water piping within work area was replaced. All existing ductwork to remain was cleaned.
- Plumbing system renovations included the removal of several abandoned restrooms. Several new hand sinks were installed for breakroom/conference rooms, and a recirculation station with a thermostatic mixing valve was installed at the existing water heater.
- The project work area had a standpipe fire protection system only. A new wet sprinkler system was installed throughout.



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## UNIVERSITY PROJECT EXPERIENCE

### **PODIUM REHABILITATION, SUNY PLATTSBURGH**

Plattsburgh, NY

- Lead Mechanical, Electrical, and Plumbing Engineers for the rehabilitation of the podium walkways at SUNY Plattsburgh.
- Designed a hydronic snow melt system to accommodate 47,000 ft<sup>2</sup> of podium walkways.
- Conducted a utility source and capacity investigation for snow melt system.
- Provided equipment and pipe layouts and sizing for new mechanical rooms to support snow melt system.
- Designed the removal and reinstallation of walkway drainage systems for 47,000 ft<sup>2</sup> of raised walkway including areas of "Green Roof."
- Designed new lighting systems for 39,000 ft<sup>2</sup> of walkway.
- Designed electric heat trace system for walkway drainage.
- Designed the removal and replacement of electrical systems that interfered with the areas of the podium that required full reconstruction.

### **KELLAS HALL, SUNY POTSDAM**

Potsdam, NY

- Lead Mechanical, Electrical, and Plumbing Engineers for the design of two new toilet rooms within an existing lecture hall building.
- HVAC system consisted of the modification of an existing supply ductwork system and new dedicated exhaust system consisting of a new roof mounted exhaust fan and exhaust ductwork system.
- Plumbing systems included water and sanitary systems and modifications to the existing storm water drainage system.
- Complete electrical design included lighting, receptacles and fire alarm system upgrade.

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## UNIVERSITY PROJECT EXPERIENCE

### **DANA HALL, SUNY CANTON**

Canton, NY

- Lead Mechanical and Electrical Engineers for a feasibility study for the complete renovation of Dana Hall. The building contains a gymnasium, a former pool, locker rooms, and other support spaces, as well as offices for the university police department.
- The building programming included removing the old pool structure and gaining the floor space by infilling the pool and adding a second story to the space.
- HVAC upgrades included replacing the entire heating system, adding code compliant ventilation to all areas, and adding air conditioning to the building.
- All plumbing and fire protection systems were to be replaced.
- The electrical systems (power distribution, lighting, tel/data, security, etc.) were to be replaced, including main electrical switchgear.

### **UPGRADE COOKING LABS, MACDONALD HALL, SUNY DELHI**

Delhi, NY

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers for the upgrade of cooking laboratories, modernization of kitchen infrastructure, and the renovation of the overall area to make lab facilities fully-accessible.
- Designed completely new make-up air and ductwork system for kitchen hood replacements, including complicated control system for make-up air and hood exhaust due to building physical limitations placed on make-up air location and size.
- Designed new plumbing systems for reconfigured spaces, including new grease traps and propane distribution to appliances.
- Electrical systems included new lighting, new power distribution, replacement panels, IT/AV security and access control.
- Project has been cancelled by SUNY for the moment.

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## UNIVERSITY PROJECT EXPERIENCE

### **BEARD WELLNESS CENTER, SUNY COBLESKILL**

Cobleskill, NY

- Lead HVAC Engineers.
- Replaced electric heat and 40-year-old air handling unit, and added air conditioning to building.
- Provided roof mounted gas-fired heat/DX cooling units.
- Modified ductwork as necessary to marry up with new rooftop units.
- Structural support was required to be added to the roof for the new units.
- Provided new gas service to building to serve rooftop units, a future generator and future building addition.



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## UNIVERSITY PROJECT EXPERIENCE

### **SUB-BASEMENT LECTURE CENTER, SUNY ALBANY**

Albany, NY

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers.
- Project included the complete rehabilitation of two television studios and ancillary support areas.
- Project also included the rehabilitation of the campus water-side economizer system that serves mission critical cooling loads throughout the Podium. Failing evaporative coolers were replaced with dry coolers to move the campus toward meeting regulation changes concerning cooling towers. System was also upgraded to utilize campus chilled water loop in the summer.
- Electrical system was replaced within studios and coordinated with the needs of an audio-visual consultant.
- Campus BMS and fire alarm systems were upgraded/expanded.
- Campus Fire Alarm system was expanded for the reconfigured spaces.



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## UNIVERSITY PROJECT EXPERIENCE

### **BOUCK HALL RENOVATIONS, SUNY COBLESKILL**

Cobleskill, NY

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers for the complete renovation of a performance theater and mechanical upgrades to gymnasium.
- Gymnasium upgrades included replacement of air handling units, as well as the addition of air conditioning and the addition of a sprinkler system.
- Theater upgrades included replacement of air handling units, replacement of sprinkler system, all lighting, and theater systems.
- A chilled water system was added to the building through the addition of a chiller.
- Building Management System (BMS) in building was completely replaced and upgraded.
- Electrical systems were upgraded to support the mechanical and theatrical upgrades.
- Fire alarm system was expanded.



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## UNIVERSITY PROJECT EXPERIENCE

### **SIBLEY HALL, SUNY PLATTSBURGH**

Plattsburgh, NY

- Lead Fire Protection Engineers for the design of a new fire sprinkler system for Sibley Hall, located on the SUNY Plattsburgh campus.
- Sibley Hall was constructed in 1966 and most systems are in poor condition. The building and its major systems have reached or exceeded their useful life. This project is the first phase of a larger building-wide renovation project.

### **MEMORIAL HALL MASTERPLAN, SUNY PLATTSBURGH**

Plattsburgh, NY

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers.
- Project scope was to provide a feasibility study to increase available recreational space, improve and expand the fitness center, improve the experience for athletic recruits, and upgrade the aging original (1960s) mechanical and electrical infrastructure.
- Through review of existing building plans, on-site review/inspection of existing conditions, and interviews with building occupants and facility maintenance staff, specific mechanical and electrical problems were identified:
  - Failing switchgear and panels
  - Failing heating and ventilating units
  - Building not connected to campus high temperature water loop
  - No air conditioning
  - Humidity and temperature control issues in natatorium causing moisture problems elsewhere in building
  - Poor physical security
- The direction from the campus and SUCF was that the building had to remain open and functional during the proposed construction. As part of the study, an extensive phasing plan to replace all the mechanical and electrical systems and add sprinklers was developed.
- Although the project scope was a feasibility study only, schematic level HVAC design was completed for major mechanical systems/equipment in order to plan appropriate mechanical spaces; plan the logistics of phasing the mechanical replacement while keeping the building occupied; and in order to create estimates that reflected the likely scenario of completing the upgrades using multiple construction contracts based on funding availability.

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## UNIVERSITY PROJECT EXPERIENCE

### **ST. ANTHONY HALL, WILLIAMS COLLEGE FEASIBILITY STUDY**

Williamstown, MA

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers for a feasibility study commissioned by Williams College to determine the physical condition of St. Anthony Hall and evaluate program needs and to study options for renovation and expansion.
- St. Anthony Hall serves as the academic space, residential hall, and dining hall for Center for Development Economics students.



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## UNIVERSITY PROJECT EXPERIENCE

### **SUNY PURCHASE SITE LIGHTING**

Purchase, NY

- Design of wiring for new baseball field MUSCO 80' – 100' tall sports lighting poles.
- Two of the sports lighting poles contained LED fixtures for security lighting after hours.
- Project also entailed design of power to 1 baseball field scoreboard, 1 softball field scoreboard, 2 lacrosse shot clocks, and 1 prefabricated press box.
- Lighting and power was designed to each of the two dugouts.
- Power was designed to two new bullpens.
- The existing parking lot lighting was also expanded into a new parking lot and walkway.



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## UNIVERSITY PROJECT EXPERIENCE

### **RED DRAGON FIELD, SUNY ONEONTA**

Oneonta, NY

- Lead Electrical Engineers.
- Design of power/communications to new in-ground power/communications boxes.
- Design of power for the replacement scoreboard with integral play clock.
- Design of power for the new play clock.
- Design of relocation/interception of existing underground feeder serving existing press box.
- Design of relocation/interception of existing miscellaneous underground conduits/circuits.



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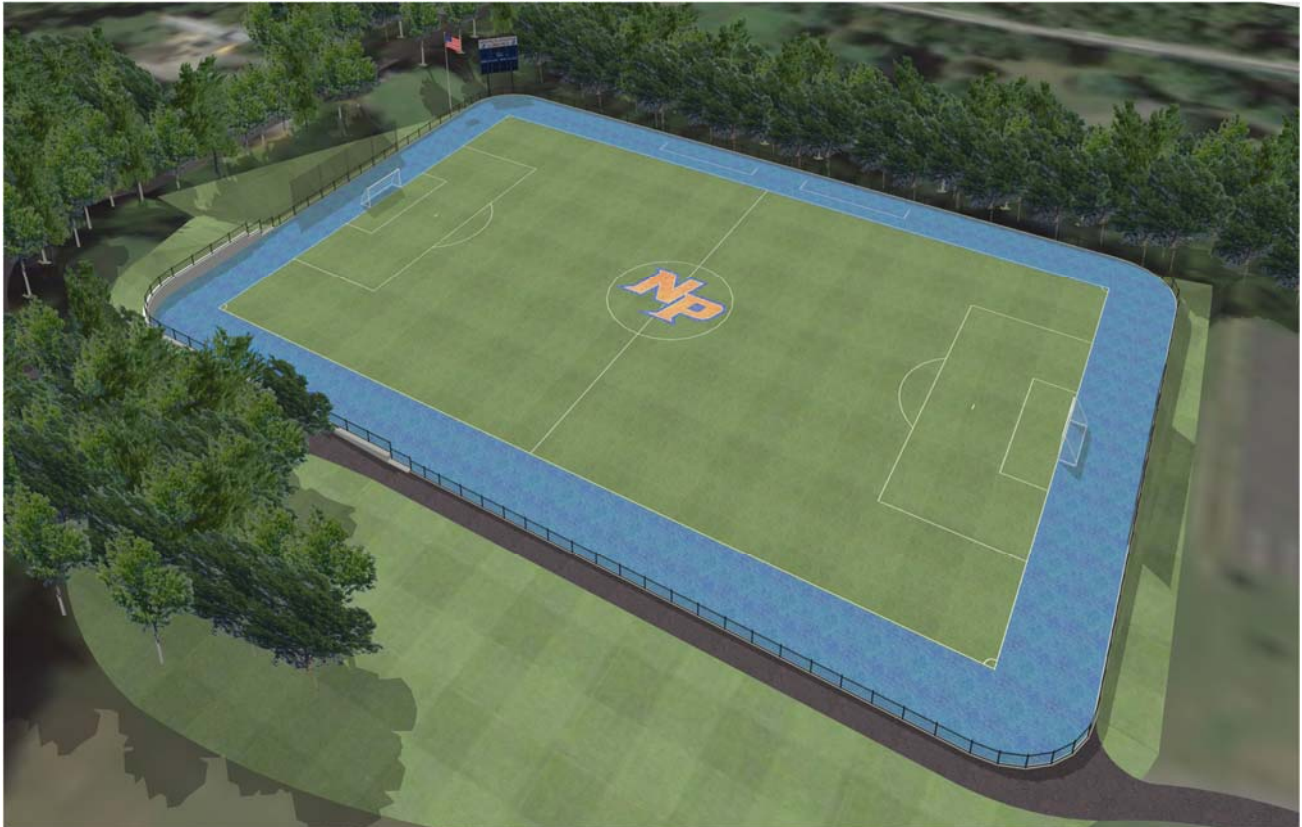


## UNIVERSITY PROJECT EXPERIENCE

### TURF SOCCER FIELD, SUNY NEW PALTZ

New Paltz, NY

- Lead Electrical Engineers.
- Designed new power and controls for new scoreboard.



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## UNIVERSITY PROJECT EXPERIENCE

### **NEW GREENHOUSE, STATE UNIVERSITY OF NEW YORK AT CORTLAND**

Cortland, NY

- Lead Electrical Engineers for the design of a new greenhouse on the SUNY Cortland campus.
- Designed power distribution, including new 150A service to greenhouse equipment (vents, shades, fans, heaters, water heater, evaporative cooling system).
- Designed general lighting for headhouse and moveable/adjustable lighting system for grow lighting.
- Designed fire alarm system, including carbon monoxide detection and notification.
- Designed greenhouse control system.



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## UNIVERSITY PROJECT EXPERIENCE

### **ICEPLEX BUILDING 105, SUNY MORRISVILLE**

Morrisville, NY

- Lead Electrical Engineers for upgrades to SUNY Morrisville Iceplex.
- Provided electrical engineering design for HVAC equipment replacement.
- Designed new LED lighting and new LED exit and egress (emergency) lighting to be installed in locker room/lobby/office area of the Iceplex.
- Provided electrical design to modify existing fire alarm system to accommodate new ceilings and HVAC equipment.



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## UNIVERSITY PROJECT EXPERIENCE

### **PARKING LOT IMPROVEMENTS, SUNY FARMINGDALE**

Farmingdale, NY

- Lead Electrical Engineers for the renovation of existing parking lots and walkways.
- Parking lot design consisted of powering the parking lot lights, running conduit and conductors from nearby building, and providing lighting contactors and circuit breakers as required.
- Powering the walkway lights included running conduit and conductors to a nearby building, providing lighting contactors and circuit breakers as required, and coordinating with campus standard blue light.

### **PARKING LOT IMPROVEMENTS, SUNY ONEONTA**

Oneonta, NY

- Lead Electrical Engineers for the parking and sidewalk improvement project for the Fine Arts Building at SUNY Oneonta.
- Designed conduit and wiring to parking lot and roadway lighting.
- Provided design of power and cabling to outdoor blue light.
- Coordinated reusing existing branch circuiting with the campus.
- Coordinated with grading and proposed stair.

### **SOFTBALL FIELD UPGRADES, SUNY FARMINGDALE**

Farmingdale, NY

- Lead Electrical Engineers for the design of a softball field as well as walkway light to the field.
- Provided services included:
  - Powering the field lighting
  - Powering the pressbox
  - Providing fiber to the pressbox
  - Walkway lighting
  - PA raceway
  - Scoreboard power
  - Flagpole lighting
  - Phones to the dugouts
  - Power and lighting in the dugout storage room
  - Receptacles to each bullpen

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## UNIVERSITY PROJECT EXPERIENCE

### **REHAB ENTRY, NOLD HALL, SUNY FARMINGDALE**

Farmingdale, NY

- Lead Electrical Engineers for the design of a new bus stop, powered signage and site lighting for SUNY Farmingdale.
- Provided electrical design drawings showing power distribution, lighting and controls.
- Investigated the existing campus power distribution system.
- Provided electric power distribution to specialized equipment.
- Provided communications and data interconnects conduit to specialized equipment.
- Provided conduit for future campus safety use, camera/radar.



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## UNIVERSITY PROJECT EXPERIENCE

### **THEATER RENOVATIONS, GOODRICH THEATER, SUNY ONEONTA**

Oneonta, NY

- Lead Electrical Engineers for the design of a new 158-point theatrical dimming rack system.
- Provided electrical design drawing showing power distribution.
- Investigated the existing campus power distribution system.
- Provided electric power distribution to specialized equipment.
- Designed the new power feeds for the dimming equipment, ER1 panel, stage winch, and raceways for all the control points.
- Provided pathways for electric J connector strips.
- Provided pathways and SJO cables for GIJBs.

