

# MH Professional Engineering, PLLC



## FIRE DEPARTMENT EXPERIENCE

### NISKAYUNA FIRE STATION # 1

Niskayuna, NY

- Lead Mechanical, Electrical, and Plumbing Engineers for the expansion and renovation of the Niskayuna Fire Station #1.
- Project included 10,000 ft<sup>2</sup> apparatus bay addition with radiant floors, elevator, vehicle exhaust system, generator and sprinkler system.
- Existing portion of building was completely reconfigured into department offices, training room and bunk area.



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## FIRE DEPARTMENT EXPERIENCE

### UNION HILL FIRE DEPARTMENT

Union Hill, NY

- Lead Mechanical Engineer for the expansion and renovation of the Union Hill Fire Department.
- Project included apparatus bay vehicle exhaust, radio room addition, reconfiguration of bunk areas, and addition of air conditioning throughout building.

### KEENE FIRE DEPARTMENT

Keene, NY

- Lead Mechanical, Electrical, and Plumbing Engineers for the construction of a new 7,500 ft<sup>2</sup>, single-story facility.
- Existing fire station was destroyed by Hurricane Irene.
- New facility is in a new location and includes radiant floors, vehicle exhaust system, truck fill system, compressed air drops, emergency generator and fit-out for future kitchen/meeting room area.



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## FIRE DEPARTMENT EXPERIENCE

### NEW FIRE STATION, CITY OF BINGHAMTON

Binghamton, NY

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers for the construction of a new a 18,043 ft<sup>2</sup> full-time firehouse and 1,309 ft<sup>2</sup> accessory building.
- HVAC systems consisted of rooftop units with VAV boxes and hot water reheat coils. Condensing natural gas-fired boiler serves VAV hot water coils, unit heaters, and radiant floor system in apparatus bay. Full direct digital control system provided for all HVAC components.
- Designed carbon monoxide and nitrous oxide gas detection system with emergency exhaust and makeup air system in apparatus bay.
- Designed domestic water, compressed air, sanitary, and oil-laden waste systems to serve all firefighting equipment.
- Sprinklered throughout with NFPA 13 wet and dry systems and standpipe system for training purposes.
- Designed standby generator power for both the main building and the accessory building. Raceway system was also designed from the main building IT room to the exterior card reader for the accessory building. Access conduits and handhole system were designed for future site signage.
- Designed lighting system that included LED pendant, surface, recessed lighting and exit signs. Life safety lighting was provided via emergency lighting units. An inverter system was designed for exterior egress lighting. Designed automatic lighting controls as well as red light alert system for each bunk bedroom.
- Designed public address system in all corridors and common areas.
- Designed access control system for public exterior doors.
- Designed carbon monoxide detection throughout the entire building.
- Designed fire alarm detection system where required.
- Notification devices were provided throughout the entire building.
- Data and TV raceway system was designed per the Owner's direction.
- Designed general power throughout the entire building, including the laundry area and specialty fire gear cleaning equipment area. In the apparatus bay, ceiling fans, cord reels and overhead doors were provided with power. Two large air compressors as well as an assortment of specialty equipment were also powered as were rooftop units, air-cooled condensing units and heat recovery units.





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## FIRE DEPARTMENT EXPERIENCE

### **WILLIAM P. FAIST VOLUNTEER AMBULANCE CORPS**

Chestnut Ridge, NY

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers.
- Project included 2,860 ft<sup>2</sup> apparatus bay, approximately 6,585 ft<sup>2</sup> of office, training and meeting spaces.
- HVAC system consisted of boilers, pumping and heating hot water distribution, energy recovery ventilation systems, exhaust systems, radiant floors; and variable refrigerant volume heat pump system.
- Electrical systems included incoming service and service gear, electrical distribution system, generator back-up, fire alarm, security, A/V telephone/data systems, public address and tone alert systems.
- Plumbing systems included oil/water separator; water heater; water and sanitary systems, and natural gas distribution.
- A fire sprinkler system was provided for the building.



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## FIRE DEPARTMENT EXPERIENCE

### MONROE TOWNSHIP FIRE STATION

Monroe Township, NJ

- Lead Mechanical, Electrical, and Plumbing Engineers for the design of a state-of-the-art fire station for the Monroe Township Fire Department in New Jersey.
- This comprehensive project encompassed various elements including lighting design for interior spaces, power and receptacle layout with specialized connections for essential equipment, fire alarm and speaker systems, audio/visual setups for meeting and training rooms, and specialty electrical designs for specific areas such as the compressor room, decontamination room, and EMS area.
- The scope of work also involved the design of a municipal water service entrance to comply with local regulations, sanitary waste piping, domestic water system, and water heating system to ensure seamless operation within the facility.
- Our responsibilities extended to the design of a natural gas distribution system for HVAC and kitchen equipment, as well as an outdoor grille. The project also encompassed a fire service entrance, sprinkler system layout, ventilation system adhering to ASHRAE and building code standards, heating hot water boiler system, general exhaust systems for various areas of the building, and an air-to-air heat recovery system for apparatus bay ventilation.



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## FIRE DEPARTMENT EXPERIENCE

### **LISBON FIRE DEPARTMENT HEADQUARTERS BUILDING**

Lisbon, CT

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers for the design of a new headquarters building for the Lisbon Fire Department.
- The new headquarters building contains five double-deep apparatus bays sized to accommodate current and anticipated fire and EMS apparatus.
- To minimize the need for backing apparatus, the apparatus bays have the capability to drive-through and are equipped with vehicle exhaust recovery systems designed to improve interior air quality.
- Firefighter health is protected by providing facilities that allow for fire equipment and personnel to be decontaminated. Mechanical systems minimize the spread of toxins from fire apparatus to living quarters and public areas of the station with the use of separate pressurized mechanical zones.
- Project included LED lighting design for interior & exterior, circuiting, and control; power and receptacle layout with specialty power connections as required for powered equipment, EV charging stations, and HVAC equipment; telephone, data and cable television raceway; fire alarm system design; antenna and building grounding; generator design (400kW natural gas); electrical design of specialty spaces (i.e. compressor room, Decon Room, EMS area), speaker system for paging; and audio/visual systems for meeting/training room (dimming, ceiling projector, motorized screen, etc.).
- Municipal water was not available. Designed a full sprinkler system with the vertical fire pump and submersible jockey pump located in a separate pump house. Designed domestic water filtration, softening, and pressure tank within main building.
- Other designed systems included a natural gas distribution system for HVAC equipment and kitchen equipment; gas-fired rooftop units to provide conditioning and ventilation system to meet ASHRAE and building code standards; heating hot water boiler system for radiant floor; general exhaust systems for all areas of the building. (i.e. toilets, kitchens, truck bays, etc.); and air-to-air heat recovery system for apparatus bay ventilation.
- Tightly coordinated electrical, plumbing, and HVAC connections to all Firematic equipment to be concealed within block construction.





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## FIRE DEPARTMENT EXPERIENCE

### CITY OF ALBANY FIREHOUSE EVALUATIONS

Albany, NY

- **Engine 1 (320 Washington Avenue):** This firehouse is on the Historical Society List and was constructed in 1892.
- **Engine 7 (670 Clinton Avenue):** While not listed specifically with the Historical Society, it was constructed in 1874 and the generator location was designed as if this facility was on the Historical List.
- **Engine 9 (356 Delaware Avenue):** This firehouse is on the Historical Society List and was originally constructed in 1912.
- **Engine 11 (439 New Scotland Avenue):** While not listed specifically with the Historical Society, the firehouse was constructed in 1926 and the generator location was designed as if this facility was on the Historical List.

### Scope of Services

Provided field investigations, construction costs and recommendations for the following work at all firehouse locations:

- Sizing of new natural gas generator at each firehouse.
- Recommended size/location for new generator at each firehouse.
- Recommended size/location for new automatic transfer switch at each firehouse.
- Provided opinion of probable construction costs for each firehouse.
- Provided report describing generator size, generator location, automatic transfer switch size, and automatic transformer switch location for each firehouse.



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## FIRE DEPARTMENT EXPERIENCE

### **ROOSEVELT FIRE DEPARTMENT**

Hyde Park, NY

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers for the design of a new station for the Roosevelt Fire Department.
- Project included 10,000 ft<sup>2</sup> apparatus bay, approximately 9,000 ft<sup>2</sup> of office, training and meeting spaces.
- HVAC system consisted of new boilers, pumping and heating hot water distribution; new ventilation systems; kitchen hood exhaust system; radiant floors; general and vehicle exhaust systems.
- Electrical systems included incoming service and service gear; electrical distribution system; generator back-up; fire alarm, security, A/V and telephone/data systems; and diesel fueling station.
- Plumbing systems included grease trap; oil/water separator; water heater; water and sanitary systems, and LP gas distribution.
- A fire sprinkler system was provided for the building.





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## FIRE DEPARTMENT EXPERIENCE

### **BETHEL PARK FIRE DEPARTMENT**

Bethel Park, PA

- Lead Mechanical, Electrical, Plumbing, and Fire Protection Engineers for the design of a new 21,000 ft<sup>2</sup> station for the Bethel Park Fire Department.
- HVAC system consisted of new boilers, pumping and heating hot water distribution, new ventilation systems, kitchen hood exhaust system, radiant floors, and general and vehicle exhaust systems.
- Electrical systems included incoming service and service gear, electrical distribution system, interior generator back-up, fire alarm, security, A/V and telephone/data systems.
- Plumbing systems included grease trap; oil/water separator, water heater, water and sanitary systems, and natural gas distribution.
- A fire sprinkler system was provided for the building.
- Building lighting system was designed as all LED fixtures.



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## FIRE DEPARTMENT EXPERIENCE

### **CATSKILL FIRE DEPARTMENT ADDITION**

Catskill, NY

- Lead Mechanical, Electrical, and Plumbing Engineers for the design of a fire station addition for the Catskill Fire Department.
- New apparatus bay was added on to existing fire station. Overhead door openers and associated controls were relocated for the three relocated overhead doors. Lighting and circuiting design was completed for the new addition. General receptacles and cord reels for power were provided as well as power for new unit heaters. A new power panel was added to serve the new addition.
- Designed a gas-fired heating system and storm drain system for the fire station addition.

### **CICERO FIRE DEPARTMENT**

Cicero, NY

- Lead Mechanical, Electrical, and Plumbing Engineers for the design of a new fire station for the Cicero Fire Department.
- Project included lighting design for interior lighting and circuiting as well as power and receptacle layouts. Power for special equipment, such as kitchen equipment and HVAC equipment, was provided as well as power to air compressors and a siren. An emergency generator and automatic transfer switch sizes were designed as part of the project. An empty raceway system was provided for television and closed circuit television. Outdoor lighting controls, including a time clock and photocell, were provided.
- Designed a municipal water service entrance to meet requirements of municipality, sanitary waste piping to five feet outside building footprint, domestic water system throughout building, domestic water heating system, and natural gas distribution.
- Designed wet sprinkler system layout; ventilation system to meet ASHRAE and building code standards.
- Designed heating hot water boiler system; general exhaust systems for all areas of the building. (i.e. toilets, truck bays, etc.), radiant floor heating system, and commercial kitchen hood exhaust and make-up air system.