The City of Roseville, an urban first ring suburb, needed to replace three deteriorating stations to meet the needs of their paid-on-call fire department. The new duty crew approach allowed the consolidation into a single facility on the existing city campus replacing an old station. The requirement to use this tight site was a significant challenge but apparatus flow with clear minimal circulation, firefighter training and parking zones, and public access were all integrated into the design, creating an aesthetic anchor to the campus.

The design focused on firefighter safety, sustainable design and long-term value. Attractive spaces, durable materials and facility amenities were used to meet the department’s goals of long-term value and attract/maintain the volunteer firefighter base.

A key sustainable feature was connecting the fire station to the city’s ice arena with a geothermal loop, transferring waste heat from the ice sheet to the fire station and providing 100% of the station’s heating requirements, a significant cost savings in this climate.

Other features were chosen for their combination of green design and firefighter value:

- Large windows providing views and daylight harvesting to reduce electricity use.
- Monitoring carbon monoxide and turning on makeup air systems only when needed.
- In-floor radiant heat providing quick-drying, comfortable apparatus bay floors.

The importance of firefighter health and safety is evident throughout the facility. Built in training features include 11 of 12 Firefighter I certifications as well as technical rescue training:

- Ground ladder training into multiple balconies and windows heights.
- High-rise training for ladder truck operations.
- Confined space; training maze, manhole access to lower level, and floor breach.
- Hose advancement up three level wet tower, over roof and down a four-story tower.
- Advanced technical training: Rope I and II rescue, repelling inside and outside.
- Simulated sprinkler riser and operating fire alarm panel props.
Critical to any fire station project today is garnering the political and public support necessary to move forward. Through extensive meetings with the Fort Washington Fire Company, neighbors, township staff, board members and CM, a design was created and embraced by all parties.

The building aesthetics have been widely acclaimed for material harmony, contextual relevance, integration into the Township Master Plan, relevant massing and expression of the dynamic professionalism of the firefighters.

Utilizing a natural pallet of brick, stone, and curved metal roofs and sympathizing with adjacent homes, this building is unmistakably modern and simultaneously classic. Functionally it is a state-of-the-art, fully-sprinklered facility that introduces new student bunkers program space, an EOC and township offices to the community.

The LEED-registered, sustainable building boasts energy efficiency, daylighting, sustainable and regional materials and vendor sourcing. The facility incorporates interior and exterior lighting management, exterior light pollution protection, LED lighting, vehicle exhaust, individual zone control, air quality monitoring, HVAC management, in-floor radiant heat with high-efficiency tankless boilers for bays and building-wide on-site emergency power.

Sheep from a local farm have made their home in the retention pond and are well-fed keeping the natural grasses at a reasonable height.

The building is carefully sited to maximize a safe response distance from a school crossing and respect an adjacent historic house owned by the township. Designed for one additional future double-deep bay, more bunks and bathrooms and future public space, the site accommodates all potential additions, more parking and required storm water management with pre-designed infrastructure that is easily installed.

Critical to the success was the fire company with hands-on participants throughout the project. The result has been broadly praised proving that design with consensus is both possible and preferable.
Over a span of nearly 80 years, the Borough of Lehighton Fire Department in Pennsylvania operated through two separate firehouses on the same street. One building is a combination police and fire station and the other solely fire department. The vision of creating one cohesive facility ultimately drove the Lehighton Fire Department to purchase the properties between their two buildings. After the department acquired all of the property necessary to fulfill its goal, H2M was retained to design a unique, 18,000-square-foot infill addition.

Two major challenges were overcome in order to successfully design the addition to the two existing buildings, one of which dates back to the 1910s, and the other to the 1930s. The first was to keep both existing buildings fully operational during the ongoing construction, which was done by retaining the existing stairwells and elevators within the design. The design team also faced the challenge of varying elevations between the two existing buildings. As a resolution, the new infill addition connects directly to the fire department building and was not connected directly to the combination police/fire station. Manipulation of the various floor levels included a 2½-inch elevation change between the existing 1910-1930 structures and the new addition. The floor levels now match the exterior street levels.

The overall design resulted in a two-story addition with five new apparatus bays, as well as bunker gear and apparatus support spaces. Careful thought was put into the addition’s exterior, which incorporated a blend of brick and fieldstone materials to match the finishes of the two existing buildings. Staff amenities include new meeting and training rooms, offices, a dispatch office, a dayroom and kitchen, and locker rooms. New egress stairwells, ramps and an ADA-compliant elevator are also included within the new infill addition.

Official Project Name: Lehighton Fire Department
Project City/State: Lehighton, PA
Date Completed: April 7, 2014
Fire Chief: Gary Frable/Steve Ebbert
Project Area (sq.ft.) 18,000
Total Cost: $3,168,308
Cost Per Square Foot: $176
Architect/Firm Name: H2M architects + engineers
Website: www.h2m.com
Minquas Fire Company
No. 2 - Station #46
DOWNINGTOWN, PA

Minquas Fire Company No. 2 - Station #46 has courageously provided volunteer and career fire and EMS services for the Chester County community for over 106 years. Having identified the need to improve services to a growing community, they sought to relocate Station #46 to a site that was formerly an abandoned municipal dump. Their commitment to the health of their community was underscored when hazardous materials and poor bearing conditions were discovered on-site and the associated cost burden was embraced as a sign of their stewardship to the community that has supported Minquas Fire Company's growth.

The linear design of the 23,000-square-foot fire and EMS station extends from the mass of the precious antique room and symbolizes the station's growth from a single engine bay. The antique room mass is intentionally dominant to emphasize the company's presence and the engaged tower gestures to the public entrance. Exterior materials and colors were selected for the quintessential association of emergency response buildings.

Administrative office space is concentrated in an eastward expansion from the antique room. Offices for leadership personnel are intentionally large to accommodate wall beds for disaster situations. Active training room and day room spaces are located immediately adjacent to the apparatus bays and convenient to the turn-out gear in such a way that response personnel are not forced to circulate through the apparatus bays. The interior of the apparatus bays is kept bright with highly reflective walls and ceilings to minimize apparatus and equipment shadows and other hazards.

Dorm rooms are located in the most private area of the station away from social spaces and buffered from the apparatus bays by service functions. A separate outside entrance to the dorm rooms is provided to promote an environment that reflects a genuine respect for personal space and independence.
Station 14 is a replacement of Pleasant Valley Fire Department’s main station. Located minutes from the Charlotte, NC, Fire Department, the fire chief and many volunteers are career firefighters for the city of Charlotte. Throughout the design and construction process, many layouts and details were executed similar to recent City of Charlotte stations in order to provide familiarity and ease of use by the volunteers.

Material choices for the exterior of the facility were chosen to blend with the residential community directly across from Station 14. Four large apparatus bays house all equipment including a ladder truck necessary for the office complexes and large industrial facilities within the coverage area. Although Pleasant Valley is currently a volunteer organization, bunk rooms were designed and incorporated, anticipating that the station will be fully manned with one or two full-time companies within the next five years. Station 14 was oriented with additional set-back from Possum Hollow Road anticipating the road width will be increased and desiring to still have full-length front aprons for equipment parking, servicing and good sight distances for response.
Savage Volunteer Fire Company, Inc. is home to a combination of 21 career personnel and 100 active volunteer members who provide daily and nightly as well as weekend coverage as duty crews.

This environmentally friendly, two-story structure, which is LEED Silver certified, includes six back-in double-length apparatus bays, individual personnel sleeping quarters, a physical fitness training room, kitchen and dining room, general use rooms, administrative offices, a large training room and a community hall, which can be used as an emergency shelter. Construction started in March 2011 and replaced the older station which was built in 1957. Despite several additions to the facility, it reached a point where renovations were no longer cost effective.

The building is heated and cooled with packaged rooftop units with electric and distribution ductwork to variable air volume boxes with hot water heating coils. Hot water is generated by a natural gas-fired boiler. An energy recovery system is utilized to capture exhaust and return air energy thru an air to heat exchanger reducing cost and capacity of delivering ventilation air to the spaces. The combination of the energy-saving measures used in the building HVAC design achieves a 23% annual energy savings and a 22% annual cost savings over the industry baseline standards.

Design utilizes dual flush water toilets, low-flow urinals, low-flow metered faucets and low-flow shower heads to achieve 38% reductions in water use over the baseline industry standards for this type of building. Onsite renewable energy generated by the roof-mounted photovoltaic cells is designed to generate 18,410 kWh/year. Occupancy sensors are used throughout the building to control the lighting fixtures. There are also energy savings fluorescent and LED lighting fixtures used throughout the building. Exterior fixtures are photo cell on and photo cell off.
Locating and designing a new fire station can be challenging when your department is situated on an island in rural Northwest Washington. Issues such as natural habitat, wetlands, cultural resources and lack of utility infrastructure create significant challenges.

The project began with a Fire Facilities Study performed by TCA which assessed the long-term viability of existing facilities to meet the community needs based on established deployment goals, facility standards, changing demographics and a transition in staffing. During this programming and planning process, GIS maps were developed which identified optimal facility locations based on time-distance criteria and staffing goals. Multiple facilities were designed as part of this effort.

Staffed with full-time firefighters, volunteers and heavily supported by a thriving ladies auxiliary, The Sirens, this station bridges the community-oriented rural nature of the island with the demands of a modern-day fire department.

Funded with both bonds and grant money, the station includes a heavily used community meeting room incorporating memorabilia from the old station and community kitchen for the Sirens, kitchen/day room area, physical training room, sleeping rooms, three double-deep bays and support space such as a bunker storage and decon room. Designed as an essential facility with fire suppression, source capture exhaust and an integrated training mezzanine for laddering, lowering and breach work, this station was a significant advancement from the old antiquated station.

With limited available land, the facility was located to strategically enhance an adjacent wetland habitat. This effort resulted in a National Wildlife Federation Certificate for the enhancement of wildlife habitat who were impressed with the facility, site and landscaping.

Taking cues from the regional vernacular, the design aesthetic in conjunction with the inclusion of donated glass work from an island artist, has been well received both from an operational and community perspective.