Loudoun County
VIRGINIA
WHERE TRADITION MEETS INNOVATION

Philomont Fire Station

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Philomont Volunteer Fire Department

Company 8

Organized in 1956

September 2020

Corporation History

- PVFD Incorporated in May 1956
- A 501.(C).(3) Non-Profit Corporation
- “Mission”/Purpose: “To aid in the preservation of life and property”, by maintaining, in Philomont, Virginia, a fire department building, grounds, and apparatus with trained, efficient, and dedicated volunteer emergency responders for the community of Philomont and surrounding areas.
- The corporation is governed by a seven-member Board of Directors of which three are community leaders. The seven member Board has primary responsibility for the departments mission and managing the Corporation.

Station History

- The Philomont Fire Station is located at 36560 Jeb Stuart Rd.
- The original building was constructed in 1956 and consisted of two-stories with two emergency vehicle response bays.
- In 1975 the station was expanded with the addition of a third emergency vehicle response bay and second floor meeting hall.
- The station was originally constructed to garage apparatus and personal protective equipment to support from home response for the volunteer members that lived and worked in the area.

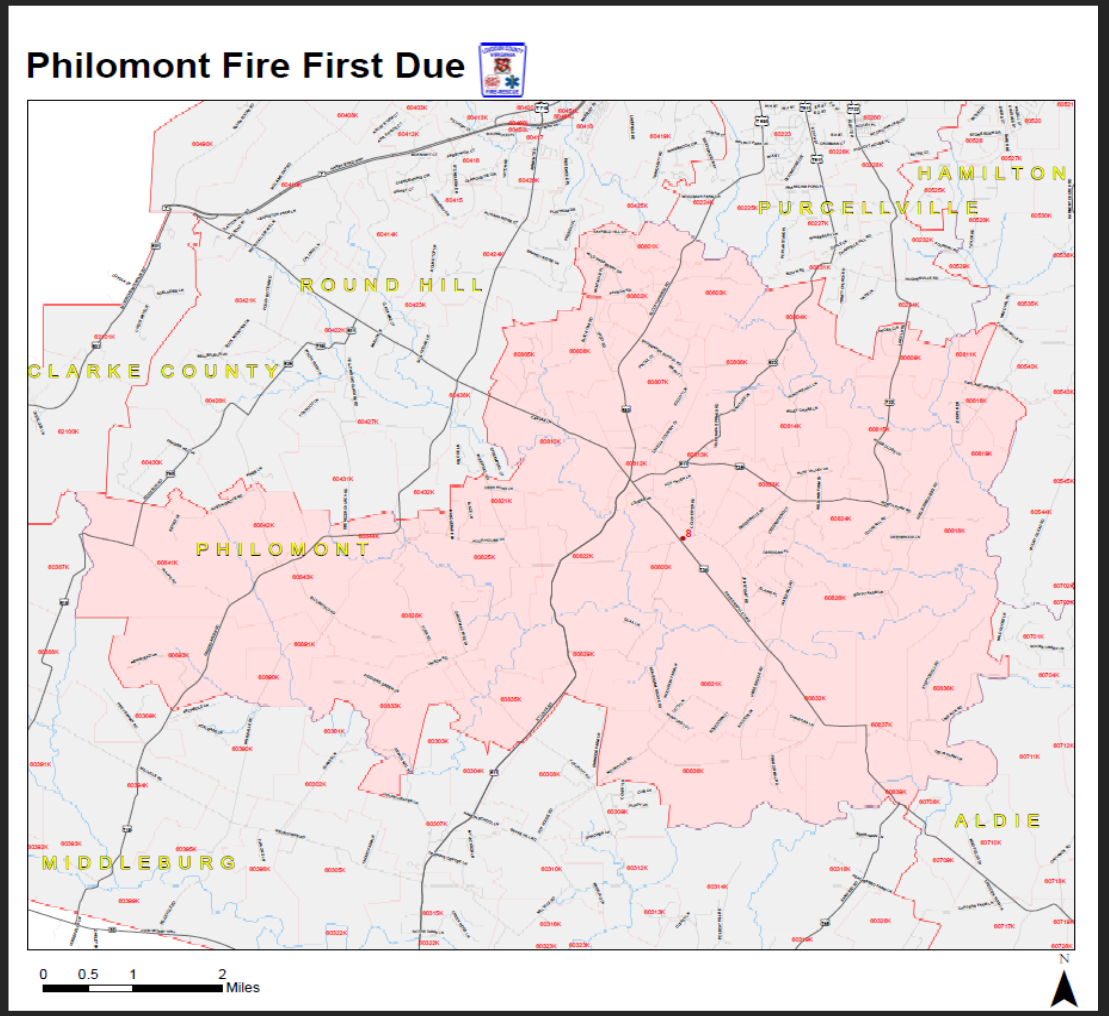
Station History

- The station was expanded again in 1994 with the addition a four-bay addition to the east side of the station.
- The two-story station is 5,488 square feet and is situated on a 2.64 acre parcel.

Response Statistics for the 2015 - 2020 Calendar Years

- Fire responses: 823
- EMS responses: 887
- Other calls for service: 92
- Total = 1802 Calls for Service = 1.012 calls per day.
- 2020 YTD Fire responses: 142
- 2020 YTD EMS Responses: 126

(PVFD First Due area highlighted in pink.
45.8 square miles)



Apparatus and Resources

- (Paramedic) Fire Engine – Currently staffed by three (3) personnel. Future goal is increase the minimum staffing of fire engines to four (4) personnel.
- Tanker – Currently staffed by one (1) person. During inclement weather events staffing is increased to two (2) personnel to enhance personnel safety.
- Brush Unit – No dedicated staffing, cross-staffed by personnel assigned to the fire engine. During inclement weather and significant wildland fire incidents, the unit may be staffed with 1-2 personnel*.

Apparatus and Resources

- Mobile Air Unit – No dedicated staffing, cross-staffed by personnel assigned to the fire engine and/or tanker. This is a specialty unit that provides spare breathing apparatus and the ability to refill breathing air cylinders on the scene of significant structural fire events. The Mobile Air Unit is responsible for responding anywhere within the County and/or to answer mutual aid calls for assistance from neighboring jurisdictions*.

Apparatus and Resources

- Command Unit – SUV type unit, no dedicated staffing. Staffed with one (1) person when a command level officer from the Philomont Volunteer Fire Department is available*.
- Service Unit – SUV type vehicle, no dedicated staffing*.
- * These apparatus are staffed with operational volunteers as needed and when available.
- EMS Ambulance – Although no dedicated EMS ambulance is assigned to Philomont, one may be placed in service in the Philomont community in the near future.

Station Staffing History

- In 2007, the Philomont Volunteer Fire Department requested the Loudoun County Fire and Rescue assign personnel to the station twelve (12) hour shifts from 6:00 AM to 6:00 PM daily and in 2009 the Philomont Volunteer Fire Department requested the staffing be increased to twenty-four (24) hour shifts.
- The current staffing model provided by Loudoun County Fire and Rescue consists of a daily minimum staffing of four (4) personnel comprised of four (4) shifts with a total of sixteen (16) employees assigned to the station.

Station Volunteer Staffing

- Presently there are 13 active volunteer members; 11 Administrative and 2 Operational members.
- Career staff serve as the primary first responders with operational members (when available) assisting in responding in the Brush, Mobile Air Unit, and Special EMS Response vehicle depending on the dispatch requirements.

Current Facility Challenges

Basis for Station Evaluation

- The current Philomont station has been evaluated against county and national standards to assess its current and future needs.
- The following slides enumerate where the current station facility is deficient in both function and in size.

Current Facility Challenges

- The building has served the citizens of Philomont and the surrounding communities for the past 65 years and is nearing the end of its serviceable life.

- The original station and subsequent additions were not constructed or designed to accommodate twenty-four (24) hour occupancy and operations; thus the station lacks many of the programmatic space requirements needed to support staff from safely and efficiently *living and working* in the building.

Current Major Station Deficiencies

- Inadequate sleeping quarters for both women and men
- Inadequate locker/shower room facilities for both women and men
- Inadequate administrative office areas
- Inadequate exercise space
- Dangerous ingress/egress for emergency response vehicles
- Lack of dedicated support areas for equipment and running gear storage

Current Station Deficiencies [continued]

- Inadequately sized emergency vehicle response bays
- Lack of any fire protection system
- Lacks many modern building and life safety code and NFPA requirements found in current fire and rescue facilities.
- Lacks health and safety features to reduce firefighter's exposure to cancer causing chemicals and pollutants
- Inability to expand services and to accommodate additional staffing in current building footprint
- Does not meet current ADA regulations

Inability to Expand Building Footprint to Accommodate Facility Shortcomings

- Shower and sleeping areas
- Longer Bays
- Needed storage areas
- Offices
- Zoned area partitions

Inadequate Sleeping Quarters

- The current station was never designed to accommodate sleeping quarters for 24-hour occupancy. As a result existing square footage located on the second floor of the station was modified resulting in two sleeping rooms. Common bunk rooms have been configured with five (5) beds and a second sleeping room with two (2) additional beds.
- The common style sleeping room does not provide privacy to staff and depending on staff levels, may present a co-ed sleeping arrangement which is not supported and/or endorsed by the Department.

Inadequate Sleeping Quarters

- While the current staffing level of the station is four (4) personnel, any future expansion of services such as an ambulance requiring additional staff on-duty would be limited by the number of beds available. Additionally, during inclement weather events, it is not uncommon for staffing levels to be increased.
- Currently the firefighters have to descend a long stairwell to get to the apparatus. This is particularly challenging at night when waking suddenly.
- The goal is to provide the most direct path from sleeping rooms to the apparatus bay to ensure timely response times are met.

NFPA standards address ergonomic design and safety to improve turn-out times for emergency incidents.

- The picture on this slide depicts the steep, narrow stairwell that personnel descend when responding to emergency incidents from sleeping and kitchen/dining areas of the station.

Inadequate Shower Rooms

- There are only two (2), small/residential, unisex bathrooms with a shower upstairs in the living area. This delay caused by staff having to wait their turn can decrease shift productivity and increase the time it takes to transition from activities such as physical training.
- Additionally, the upstairs bathroom is in public view of the community/training hall and is shared with members of the public.
- There are two more restrooms downstairs without showers.

Inadequate Shower Rooms

- We must provide staff the earliest opportunity to shower within an hour of being exposed to potential carcinogenic chemicals and pollutants preventing the potential of cross-contaminating the residential/green zones of the station.
- There are no showers provided in the hot zone* of the station.
- Two (2) showers adjacent to the apparatus bays are needed.

** The zone concept will be explained later in the presentation*

Inadequate Showers/Locker Rooms

- A standard dedicated men's locker room would provide staff with four (4) private shower stalls, ample lockers for keeping personal items secure and adequate space and privacy.
- A standard dedicated women's locker room would provide staff with two (2) private shower stalls, ample lockers for keeping personal items secure and adequate space and privacy.

Inadequate Lockers

- The current station was never designed to accommodate dedicated locker and shower rooms for men and women assigned to the station. Lockers have been configured in a co-ed arrangement located in a hallway on the second floor.
- This arrangement does not afford staff any privacy for changing. Staff are required to grab their personal/uniform items and go to a restroom in order to change.
- Typically, uniform changes happen for the entire staff simultaneously (shift change, incident return, bedtime, etc.)

Locker/Shower Rooms

Inadequate Administrative Areas

- The current station was not designed to accommodate administrative offices and dedicated training areas needed to support assigned staff.
- An existing office was converted and is shared by all assigned staff. While this arrangement provides for four (4) computer workstations, the space is small, cramped and does not provide privacy needed when addressing employee coaching/counseling or studying.
- There is no dedicated training room. The community hall located on the second floor serves as the training room, meeting room and dining room.

Inadequate Administrative Office Area

Inadequate Administrative Area

- There is limited storage space available for training aids, manuals and station supplies.
- There is no ability to provide additional administrative areas in the event that service is expanded requiring additional daily staffing.
- The volunteers no longer have an office for administrative activities/storage. Volunteer file cabinets are presented housed in apparatus bay areas.

Inadequate Administrative Area

- Current station design standards suggest the following for administrative areas that would provide privacy when needed but also maximize staff productivity:
  - Station Commander office
  - Duty Officer office
  - Volunteer office
  - Watch Office with 4-5 workstations
  - Training room/study
- Currently the station only has a watch office

Inadequate Exercise Space

- The current station was never designed to provide staff with exercise space. As a result, an unused apparatus bay was repurposed to meet this need.
- This places the exercise space in a space shared with apparatus that is not serviced by a vehicle exhaust capture system or adequate ventilation thus exposing staff to carcinogens and other pollutants.

Lack of Dedicated Apparatus Response Ingress/Egress and Staff/Visitor Parking

- The station's entrance from Jeb Stuart Road serves as the primary egress path for emergency response and is shared with the Philomont Community Center (child daycare) and a recycling center.
- Parking for station staff and visitors is also shared with the Philomont Community Center.
- Current station design standards require a dedicated entrance for emergency response vehicles and a separate staff and visitor entrance to ensure unimpeded response of apparatus and to reduce the potential of injuries and accidents with pedestrians and civilian traffic.

Station Emergency Vehicle Response Route

Lack of Support Areas for Equipment and Gear Storage

- The station lacks dedicated support and storage areas for personal protective gear, equipment, shop space, supplies, and decontamination areas.
- Currently, firefighter/EMT's personal protective gear and equipment is stored in the apparatus bay. This exposes personal protective gear and spare equipment to vehicle exhaust and the degrading effects of prolonged exposure to sunlight.
- Limited space forces supplies to be placed in inappropriate areas throughout the station

Support Areas for Equipment and Gear Storage

Lack of Support Areas for Laundry and Shop

- The current station features a single support area adjacent to the apparatus bay that serves as the shop, breathing apparatus compressor room, Westnet alerting, miscellaneous storage, and laundry room.
- Washers and dryers used for personnel uniforms and linens are located next to the apparatus bay and exposed in the hot zone of the fire station.

Inadequate Sized Apparatus Bays

- The four (4) apparatus bays that face the Philomont Community Center are half-depth and have minimal door opening size. They have insufficient depth requiring specifically designed apparatus.
- The three (3) apparatus bays that front Jeb Stuart Road are not big enough to accommodate emergency vehicles any bigger than brush truck (pick-up truck) or an SUV.

Inadequate Sized Apparatus Bays

- All apparatus bays require station apparatus to back-in which increases the potential for backing accidents that result in preventable property damage to the building and apparatus and costly repairs and the potential for personal injury.
- When apparatus are in the station, the reduced size of the apparatus bays and lack of additional support spaces results in tight/cramped circulation around apparatus increasing the risk of trips, slips and falls to personnel.

Lack of a Building Fire Protection System

- The station is not protected by a building sprinkler system or monitored fire alarm system.
- While not a requirement when the building was constructed, a building fire alarm and sprinkler system not only enhances the safety of the System's most valuable assets but it also models the message in the System's advocacy for more stringent building codes to save lives and reduce property loss.

Lack of Modern Building Code and Life Safety Features

- A building condition evaluation was completed in 2018 and noted significant improvements were needed in order to address life safety issues within the building:
  - The small bunk room lacks an egress window.
  - The lack of fire-rated door on one of the two means of egress from the residential and living space areas on the second floor.

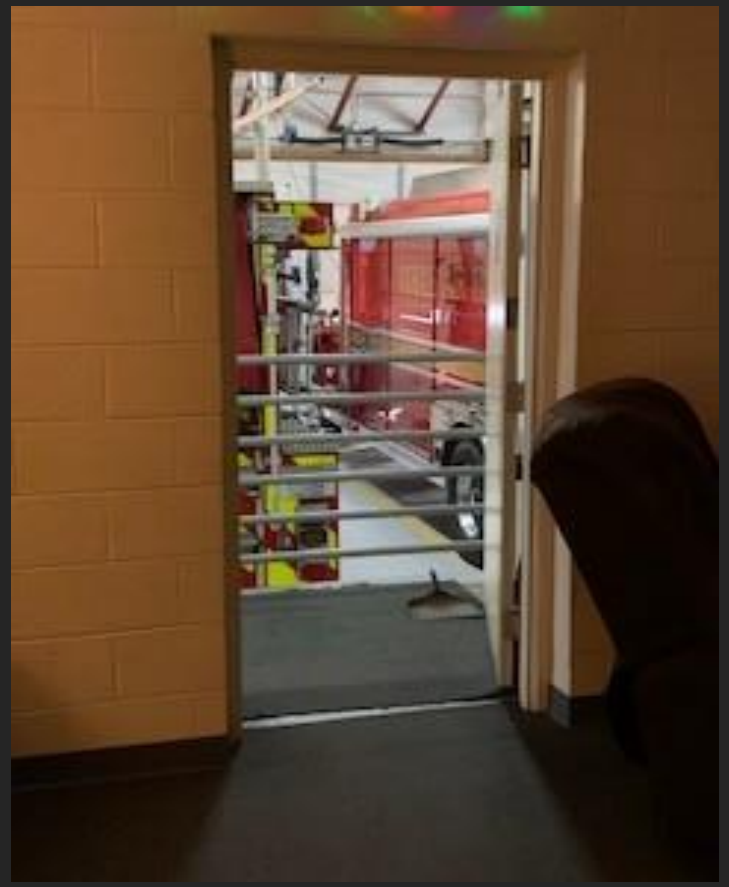
Lack of Health and Safety Measures to Reduce Firefighter Cancer Risk

- The current station does not provide a zoned design approach to enhance firefighter safety and reduce exposure to carcinogenic chemicals and pollutants.
- Personal protective gear is stored in the apparatus bay and is not properly confined and ventilated.
- There are no transition zones between the apparatus bays/support areas and the residential and living areas of the station to reduce cross-contamination.
- The three (3) apparatus bays that front Jeb Stuart Road, do not provide any type of vehicle exhaust capture system.

Lack of Health and Safety Measures to Reduce Firefighter Cancer Risk

- The Philomont fire station was designed prior to our current understanding of the risks of cancer in the workplace.
- The apparatus bay hot zones are adjacent to the living areas
- The exercise room is located in the hot zone
- The washer and dryer used for personal uniforms and linens is located in the hot zone.

Lack of Transition Zones



Inability to Expand Services

- In the future, if the community's intent is to locate an EMS Transport Unit (an ambulance) at the Philomont Fire Station, this would add a total of six (6) more personnel assigned to the station and increase the station's daily minimum staff level to six (6). The current station is not capable of providing the administrative and residential/living areas to support additional staff.
- While the daily minimum staffing is currently four (4) personnel, it is possible that in the next 50 years daily staffing would require the station to accommodate additional personnel.

Building Does Not Meet ADA Standards

- A building condition evaluation completed in 2018 noted there is no ADA accessible restroom/shower provided.
- There is no elevator to the second floor
- Any renovation of the existing building would require meeting ADA requirements

Station Design Program

Loudoun County Fire and Rescue Station Design Program:

- The County has adopted a set of fire station standards based on national standards to protect employee safety and health.
- Station design, construction and maintenance should reflect environmentally sustainable practices and technologies when possible.
- Stations are built with a life expectancy of at least 50 years.
- New stations must meet ADA and NFPA standards.

Building Zone Approach

- To mitigate the risk of exposing firefighters to work induced carcinogens, National Standards recommend a zoned station design approach.

The Hidden Danger… Firefighters and Cancer

- Firefighting is a dangerous activity. Over the past 25 years much has been learned about the risk of cancer to firefighters and the inherent risk to firefighters.
- While there is always the risk of serious physical injury, studies over the last decade have revealed that firefighters are at a higher risk in developing cancer than the general population.
- Our fire stations must address and mitigate contamination incurred on the emergency scene.

The Hidden Danger… Firefighters and Cancer

- Cancer causing agents are encountered during a firefighter's response to incidents, *particularly those that produce smoke or the by-products of combustion.*
- However, just as concerning, firefighters are exposed everyday to diesel particulate when working in and around fire apparatus at the station.
- Diesel exhaust contains over 40 contaminates, 15 of which are classified as carcinogenic.
- The Philomont Fire Station has outdated technology used to capture or filter Diesel Exhaust as compared to other stations.

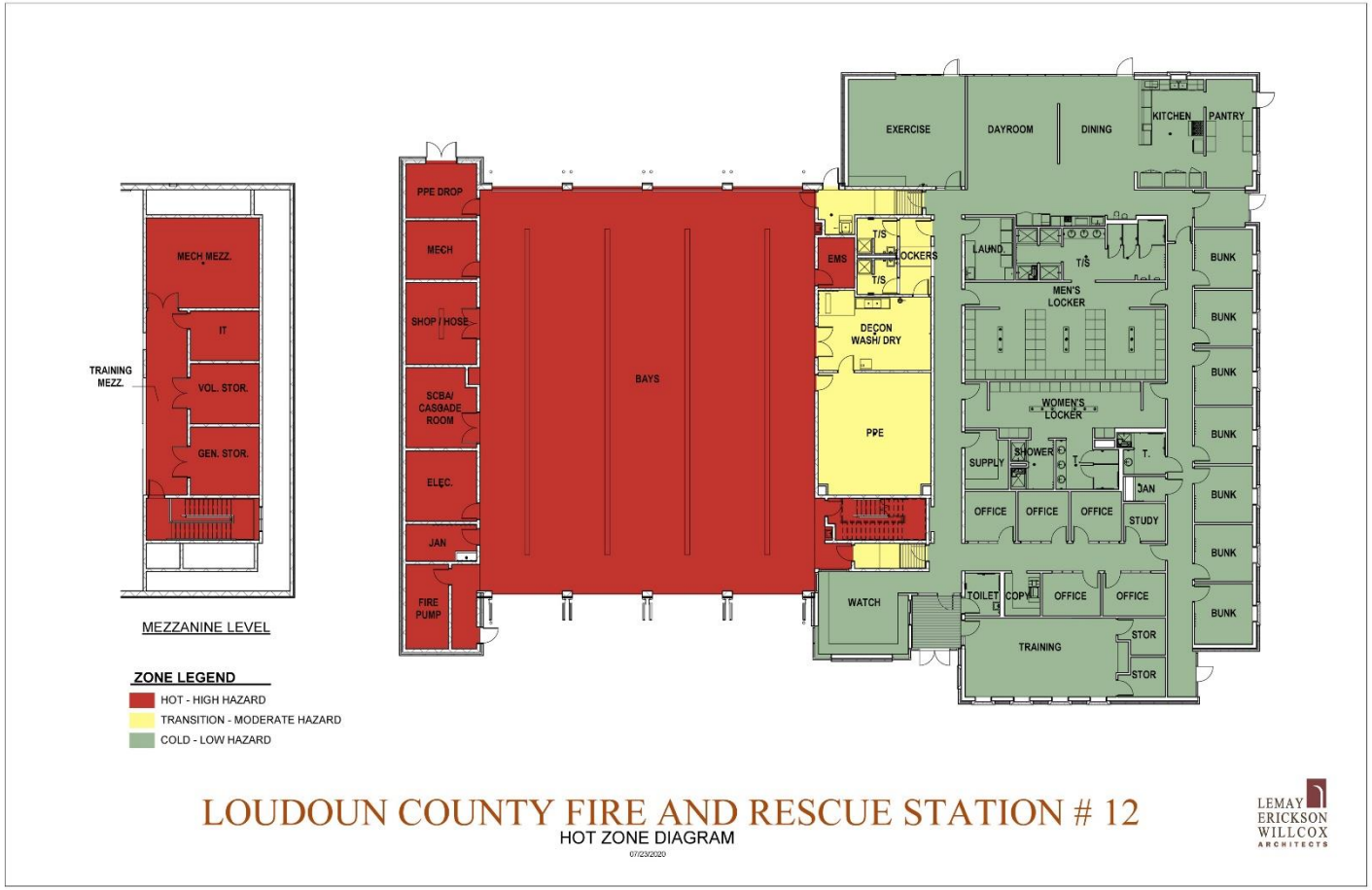
The Goal of Zoned Station Design

- Contain the contaminants (hot zone)
- Separate occupants from the contaminants (cold zone)
- Control and limit cross-contamination (transition zone)
- Enhanced personal, station and equipment decontamination (hot and transition zones)

The Hot Zone Locations in the Fire Station

- Apparatus bays
- Personal protective gear rooms
- Apparatus and equipment decontamination rooms
- Shop and storage rooms that open into the apparatus bay

Typical Zoned Design



The Cold Zone Locations in the Fire Station

- The living and/or residential side of the station
- Kitchen and dining rooms
- Sleeping rooms/dorms
- Exercise room
- Locker rooms
- Administrative offices
- Meeting/Training Rooms

Transition Zones

- Personnel decontamination rooms equipped to provide firefighters with ability to shower and drop contaminated clothing before entering the cold zone.
- Transition points are limited to the main response corridors that connect the cold zones to the warm zones of the station and typically feature double-door vestibules incorporating airlock technology.

Station Design

Loudoun County Fire and Rescue Station Design Program

- Our Facilities Team works with architect and engineering firms to develop a space program for each station that achieves programmatic needs and supports the System's mission.
- Station design and construction must meet National Fire Protection Association (NFPA), Americans with Disabilities Act, Virginia Fire and Building Codes, and Occupational Safety and Health Administration (OSHA) guidelines and regulations.

Loudoun County Fire and Rescue Station Design Program

- The renovation or replacement of the Philomont Fire Station is classified as a Rural Fire Station and presents some additional design challenges.
- Site requirements need to be carefully assessed due to the lack of municipal infrastructure as it pertains to well water and septic systems and septic and zoning requirements.
- While site requirements typically require at least five (5) buildable acres, rural stations can often require larger parcels to meet zoning and programmatic needs.

Community Environmental Esthetics

- Building exterior facades are selected to fit in the surrounding uses and neighborhood characteristics.
- Single story designs
- Landscape screening along neighbor property lines as needed
- Noise and light intrusion minimized
- Solar energy collection included in design

Typical Rural Station Design

Apparatus Bay and Support Spaces

- The apparatus bay garages the emergency response vehicles and provide direct access to the adjacent roadways for unimpeded egress to emergencies.
- The base design standard provides four (4) oversized, drive through bays to ensure adequate and clear circulation, reduce the need for backing large apparatus and to provide flexibility to expand services due to future growth.

Apparatus Bay and Support Spaces

- Support spaces include:
  - A shop for completing tool and equipment maintenance
  - Self-contained breathing apparatus compressor room
  - A room for storage of personal protective gear that has a dedicated ventilation system
  - Apparatus and equipment decontamination room
  - Personnel decontamination room
  - Dedicated equipment storage

Administration and Training

- Administrative spaces include:
  - Public entrance/lobby
  - ADA public restroom
  - Staff/Watch office – desks for all personnel
  - Station Commander office
  - Shift Officer office
  - Volunteer administration/operations office
  - Training/meeting room
  - Storage room

Residential and Living Areas

- The residential and living areas represent one of the most important areas in the fire station and facilitates 24-hour occupancy. Spaces in these areas include:
  - Kitchen and dining room
  - Men and women locker/shower rooms
  - Sleeping rooms (bunk rooms)
  - Exercise room
  - Laundry and janitorial supply room
  - Day room for staff to study and relax

Other Support Areas

- These areas typically are provided to support building systems and include:
  - Mechanical room
  - Electrical room
  - Sprinkler room
  - Communications room (IT closet)
  - Generator pad
  - Dumpster enclosure
  - Outside storage building (shed)

Station Renovation or Replacement

Renovation or Replacement of the Current Station

- In an effort to maintain and enhance service to the community and to ensure that staff has a safe, functional and user-friendly facility to support the mission of the Loudoun County Combined Fire and Rescue System, renovation or replacement of the current fire station is warranted.
- In Fiscal Year 2017 the Philomont Volunteer Fire Department communicated the need for a new fire station and submitted a request for funding consideration and inclusion into the Loudoun County Capital Improvement Plan.

Renovation or Replacement of the Current Station

- Due to the age, condition and inefficiencies of the current station, a renovation and/or expansion effort would likely prove to be cost prohibitive and immensely disruptive to current station operations, the General Store, Philomont Community Center, and users of the Community Recycling Center.
- A feasibility study is being conducted by DTCI to analyze the options of complete renovation, or teardown and rebuild on the current 2.64 acre site. Significant site and building modifications will be needed for the current fire station location to align with fire and rescue programmatic needs.

Renovation or Replacement of the Current Station

- The Zoning Ordinance does not allow for a fire station by right, so any renovation, expansion and/or teardown and rebuild would trigger a legislative process requiring, at minimum a zoning modification and special exception to comply with all zoning requirements.
- With a parcel size of only 2.64 acres, any required setbacks, lot size restrictions, floor area ratio will reduce the buildable acreage needed to construct a fire station that would meet programmatic needs.

Renovation or Replacement of the Current Station

- The Philomont Community Center does not have dedicated parking and currently utilizes the fire station parking lot for customer/visitor parking. Any renovation, expansion or rebuild effort on the current site would have a substantial and potentially negative impact on the Community Center's operation.
- There is currently a Community Recycling Center located within the fire station parcel. Any renovation, expansion or rebuild effort may require the recycling center to be relocated to another location.

Renovation or Replacement of the Current Station

- An evaluation of the current well and septic will need to occur to ensure it could supply the additional capacity required to support future daily staffing levels.
- A cell tower resides on the current site. Any renovation, expansion or rebuild would affect the agreement between the cell providers and Philomont Volunteer Fire Department. It is unlikely that this cell site could be retained on the current site. The Philomont Volunteer Fire Department has expressed their desire to retain the lease agreement for the cell tower providing much needed cellular coverage to the area.

Renovation or Replacement of the Current Station

- Any renovation, expansion or rebuild effort would require temporary facilities for staff and apparatus to ensure continuity of operations. Staff and apparatus would need to be relocated as the current site would be unable to support both construction activities and temporary facilities.

Renovation or Replacement of the Current Station

- The Loudoun County FY2021-2026 Capital Improvement Plan proposes the replacement of the Philomont Fire Station.
- $21.6 million has been allocated for the design and construction of the new station.
- Funding for design is scheduled for FY2022 and construction will be available the following fiscal year.

Renovation or Replacement of the Current Station

- The current parcel proposed for development of the new fire station is located at 37180 Snickersville Turnpike, commonly referred to as the Horse Show Grounds and is currently owned by the Philomont Volunteer Fire Department.
- The parcel is approximately 7.03 acres.
- The parcel already houses a dry hydrant pond critical for water suppression requirements and the grounds used for training purposes. The parcel is also ideally suited as a medical service landing zone for critically injured patients.

Renovation or Replacement of the Current Station

- The parcel is located within the optimal search area that keeps the station centrally located to the Philomont community and maintains current response time benchmarks.

Renovation or Replacement of the Current Station

- The parcel is no longer used for Horse Show events and it has long been the intent of the Philomont Volunteer Fire Department that this parcel would be used to support the mission of the fire department and be the future location of a new replacement station.
- Further, the Philomont Volunteer Fire Department has discussed maintaining and repurposing the current building to fulfill other needs of the community. The Board of Directors are engaged with Loudoun County PRCS regarding possible use of the old station as a Community or Recreational Center.

Next Steps

- While a preliminary site suitability review has been completed, a due diligence study of the Horse Show Grounds parcel needs to be performed in order to confirm that the property can accommodate the fire station and to ensure the project can enter the design phase of the project without delay in FY2022.