November 22nd, 2024

Fire Chief Gale Stelzer
West Central Fire Protection District
11321 Aboite Center Road
Fort Wayne, IN 46814

RE: West Central Fire District Station Scoping Services
Phase 1 Report

Chief Stelzer,

BW Construction, in combination with RQAW | DCCM and Schneider Geospatial, has conducted a thorough analysis of the District's two existing stations (#180 and #80) and developed a multi-faceted report that summarizes existing deficiencies and examines the need for an all new fire station. This report was produced as part of Phase 1 – Project Verification.

The District requires fire station(s) that meet current standards for safety, equipment, and living quarters. This report was conducted with this tenant in mind. The project verification process involved the following in more detail:

- Examining two existing fire stations to determine the required extents of renovations/upgrades to meet modern fire station standards.
- Producing conceptual cost estimates that support the necessary scope of renovations/upgrades to each station.
- Analyzing the appropriate general location of a new fire station within the District to optimize response times and service coverage.
- Refining a preliminary design for a new station that follows budget constraints.
- Summarizing a preliminary cost opinion for a new station.
- Recapping our team's recommendations.

We look forward to discussing this report with you. Please do not hesitate to contact us if you have any questions or comments.

Sincerely,

Jay Trauring
Director of Preconstruction
BW Construction, LLC

TABLE OF CONTENTS

RQAW | DCCM

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Table of Contents

ABOITE STATION 180

West Central Fire Protection District

Architectural and MEP Narrative

10.23.2024

Station 180 – Aboite Fire Station, 11321 Aboite Center Rd, IN 46814

Architecture

Existing Station

The Aboite Fire Station 180, constructed in 1982 in two phases, reveals numerous design and operational deficiencies that hinder its ability to function efficiently and safely. Initially, the station was built with just two apparatus bays, and a later phase added three more bays along with administrative spaces. Despite this expansion, the facility falls short of meeting modern standards. The Kitchen and Dayroom are undersized and outdated, offering insufficient storage space and only one refrigerator, limiting the staff's ability to prepare and store meals effectively—an essential need for a 24-hour operation.

More critically, the station lacks a Decontamination Room, a major safety issue for firefighters exposed to harmful substances. The Gear Storage is in the open inside the Apparatus Bay without proper separation allowing exhaust, carcinogens, and contaminants throughout the Bays and into the Living Quarters. The absence of an airlock vestibule between the Apparatus Bay and the rest of the facility further exacerbates the risk of carcinogens spreading into common areas. These design oversights pose serious health risks to the crew. Additionally, Laundry equipment for standard gear is located in the App Bay, again with no separation from exhaust fumes, creating potential contamination issues.

There are also significant concerns with the Sleeping Quarters. Four of the bunks are located in a mezzanine room above the Apparatus Bay, accessible by stairs that do not meet current building codes. The lack of a landing at the top of the stairs and uncertainty regarding egress and window compliance in the bunk area raises safety concerns. Inappropriately, a ladder from an intermediate stair landing is used to access the top of the Bunk Rooms, which has been repurposed as storage space, creating additional hazards. Additionally, an office inside the facility has been repurposed into a two-bed bunk room which detracts from the total number of offices and divides the crew up into two different detached areas of the station.

The Restrooms are a significant concern as their number does not meet code requirements to accommodate the 30-35 people who frequently use the Training Room. The Training Room’s storage closets have been repurposed to store EMS supplies highlighting a broader issue of additional space needs throughout the station.

In terms of disrepair, several areas are cause for concern including the acoustic ceiling tiles in the Apparatus Bay. Approximately one-third of the ceiling tiles are dirty, sagging, and potentially moldy, further adding to the station’s deteriorating condition. The building’s exterior is also in disrepair, with multiple locations of gutters requiring repair and the siding reaching the end of its lifespan. While the facility uses city water and sewer services, there is no fire suppression system, posing a significant risk to both the structure and its occupants. Additionally, two large fuel tanks are positioned in close proximity to emergency vehicle exits increasing the danger of a hazardous situation in the case of an accident. While there is a detached storage barn at the rear of the property for maintenance and lawn equipment, there are concerns about whether the property limits would allow for any future expansions.

In conclusion, Aboite Fire Station 181 has several critical deficiencies that must be resolved to bring the facility up to modern safety standards, enhance operational efficiency, and prioritize the well-being of its staff. Without substantial renovations, the station will remain inadequate, potentially compromising both firefighter safety and the community it serves.

Recommended Changes

To address the numerous issues at Aboite Fire Station 180, several key renovations are recommended. First, the Kitchen and Dayroom should be expanded to meet modern standards, including additional storage and a second and third refrigerator to better accommodate the needs of the staff. A dedicated Decontamination Room should be added near the Apparatus Bay to ensure proper cleaning of personnel and gear, reducing exposure to harmful contaminants. The Gear Storage must be moved out of the open Apparatus Bay into an enclosed space to protect equipment from exhaust fumes while the installation of an Air-lock Vestibule between the bay and the rest of the facility will prevent carcinogens from spreading into common areas. Approximately 5,800 sf would be needed for these new spaces as well as relocating and adjusting others.

The Sleeping Quarters should be combined and redesigned to meet current code requirements and privacy standards. This would include safer stair access, proper egress, and compliant windows if the existing space grows, or a complete relocation if the ground floor space is desired. To accommodate the Training Room's frequent use, the number of Restrooms needs to be increased to comply with code and ensure the comfort of staff and visitors. The damaged acoustic ceiling tiles in the Apparatus Bay should be replaced with more durable and cleanable tiles to improve safety and appearance. Additionally, the exterior siding and gutters require replacement and repairs. Furthermore, the property should be evaluated for potential future expansions. Finally, the fuel tanks located near the apron should either be relocated or further protected to reduce risk.

These improvements will significantly enhance the station’s safety, operational efficiency, and compliance with modern standards, ensuring a safer and more functional environment for both the firefighters and the community they serve.

It is worth noting that any renovation or addition to the station would require extensive temporary accommodations so the station can remain operational during construction. This would include, but isn’t limited to, the following: temporary sleeping quarters for the staff, a food preparation area, restrooms with showers, storage for equipment and gear, and carport shelters for apparatus and vehicles. A challenge to be considered is strategically placing these components on the site so that operations are not interrupted, and neighbors are not affected.

Plumbing

Existing Station

The restrooms are a major issue since there are inadequate numbers of fixtures to serve the occupants who utilize the training room on an everyday basis.

The lack of a fire suppression system in the building poses a significant risk to both the structure and its occupants, despite the use of city water services.

Additionally, the existing Apparatus Bay Area underground drainage system currently connects to the building's sanitary sewer and could potentially cause contamination to the city's sanitary system.

Recommended Changes

To address the issue of inadequate restroom fixtures serving the training room occupants, consider increasing the number of fixtures by installing additional plumbing fixtures. The new fixtures shall accommodate the volume of users, ensuring that there are enough fixtures available during peak times.

It would be recommended to conduct a Fire Risk Assessment to identify fire hazards and determine the most appropriate fire suppression methods tailored to the specific environment. Implementing a suitable fire suppression system, such as an automatic sprinkler system would help to enhance safety of the building and its occupants. This shall ensure it meets local building codes and fire regulations.

Incorporate a separate drainage system for the Apparatus Bay. This system should direct new floors drains and oil-waste to an oil-water separator. This oil waste system shall capture contaminants before they enter the sanitary sewer system. This device can help remove oils, sediments, and other pollutants. This system shall meet local regulations and optionally be installed at the interior or exterior of the building.

Lastly, new plumbing will be required to accommodate additional fixtures in the new rooms and to adapt to changes in architectural programming.

Mechanical

Existing Station

The existing building HVAC is provided by 2 residential style split systems for the main occupied portion of the building, a single packaged AC system serving the training room, and a mini-split AC system serving the mezzanine bunk room. The HVAC systems serving the building are currently functional; however, there is no ventilation provided to any of these systems as required by code. Additionally, these are single stage systems that are not well suited to a commercial application with continuous ventilation requirements. The training room AC system is at end of life with the residential split systems being approximately halfway through their usable life. The grilles and diffusers throughout the building are starting to deteriorate as well.

The bathroom exhaust fans in the building are in poor condition. Additionally, there is currently no range hood over the stove in the kitchen, which presents a safety and code issue.

The apparatus bay has no code required mechanical ventilation system which may be exposing occupants to harmful fumes from vehicle exhaust. This problem is compounded by the lack of air locks and outside air ventilation in the occupied spaces. The apparatus bay has multiple tube style radiant heaters that are in good working order.

Recommended Changes

Based on the age of the existing AC systems and the significant programming changes needed from an architectural standpoint, all of the existing AC systems would need to be replaced and re-designed to meet the new programming. Additional AC systems would need to be added to serve the additions to the building. In total there would be ~3 residential split AC/Furnace systems and ~2 small capacity packaged AHUs (grade mounted) to serve the renovated building (existing and new square footage). These systems would have new ductwork and grilles throughout the building. All bathroom exhaust fans should be replaced as well (3 total) and new fans added at locations of new bathrooms.

A new mechanical exhaust system is recommended for the apparatus bay. This would consist of an approximately 8,000 cfm exhaust fan on the roof tied to a gas monitoring system in the apparatus bay and an air intake louver on the wall. Additionally, new separated gear storage rooms in the apparatus bay would need to be provided with standalone exhaust by approximately (2) additional small exhaust fans.

Electrical

Existing Station

Power:

- Existing service appeared to be a 120/240V, 1Ph, 600A service.
    - The main distribution panel (MDP) is a Siemens S4 panel, dated 2001.
        - This MDP is 23 years old. Industry standard end of life is considered to be about 30 years plus or minus.
        - The main electrical room appeared as though it was also currently being used for some IT / radio equipment, as a storage room, and as a janitor's closet.
            - The current additional items within this room are impeding on the National Electrical Code (NEC) required working clearances about the electrical equipment and is currently a code issue.
    - The branch panels within this building did not appear to be provided from a common manufacturer.
        - Branch panel manufacturers that were noted: I-T-E, Westinghouse, Square D, and Siemens
            - I-T-E and Westinghouse panels are considered obsolete. Many of the components are no longer manufactured. Finding replacement parts for these panels may be difficult.
        - The panels in which a date could be located were also dated 2001.
- A new generator was being installed at this station at the time of visit.
    - The new generator was a MTU Diesel generator.
    - We were told that it was a 125kW.
    - Estimated completion for the new generator and transfer switch install is December 2024.
- The user group stated that this station had a history of lightning strike issues.
- Panels "B" and "C" are located within the same room as what appeared to be the water service.
    - This is not ideal. Ideally, Electrical rooms would be completely separate from the water room.

Lighting:

- Much of the lighting in the station is dated and could stand to be replaced.
    - The majority of the fixtures appeared to still be fluorescent lamps.

Systems:

- Station Alert System
    - This system was recently replaced and is a Mach Alert Fire Station Alerting system.
        - This is used in conjunction with Spillman software for the station monitors.
- The Fire Alarm Control Panel was a Fire-Lite MS-4 panel.

Recommended Electrical Changes

Power:

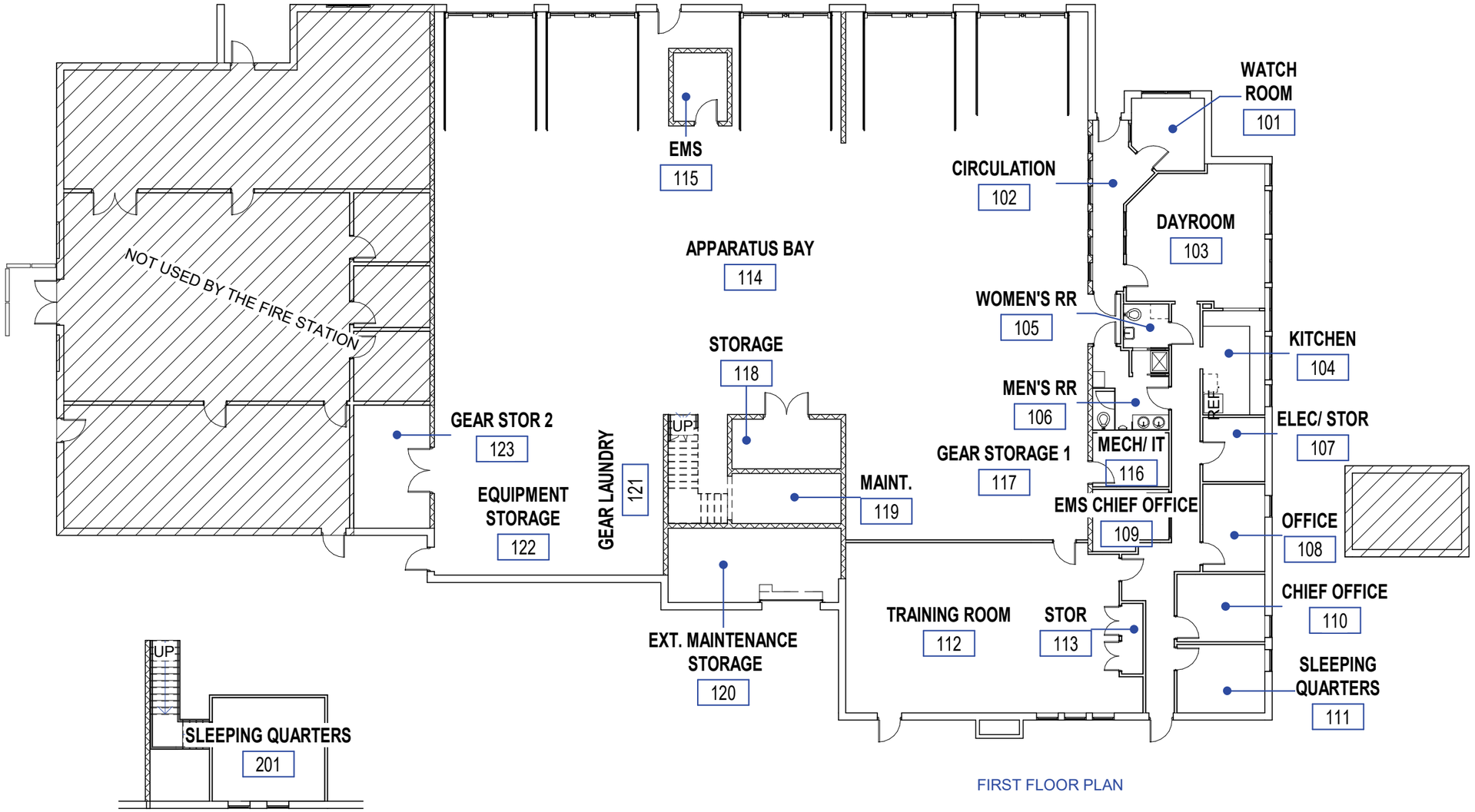
- Provide all new electrical service and distribution to the building.
    - Would need to verify with the Electric Utility if 208V, 3-Phase is available in this area.
        - If available, the estimated new service size based on renovations and additions would be approximately 208/120V, 3Ph, 1000A.
- This would include but not be limited to:
    - New and upgraded service entrance, new distribution and branch panels throughout, all new wiring and wiring devices throughout, etc.
    - NOTE: If there are some areas that end up with minimal renovation, some wiring devices may be able to be existing to remain and get reconnected to a new panel.
- Generator:
    - Given that the generator and transfer switch are currently being replaced, this equipment will be new.
        - However, given the proposed renovations and additions to the building, the generator size will need to be re-evaluated based on desired loads and may need to be replaced / increased in size.
- Consider providing a lightning protection system for this building given it's history with lightning strikes.

Lighting:

- Provide all new LED lighting and controls.

Systems:

- Station Alert System:
    - Existing to Remain
- Data:
    - Upgrade service as required.
    - Provide dedicated IT Room
    - Provide all new cabling and devices as required.
- Fire Alarm System:
    - If the existing fire alarm system is original to the building, consider replacing it with all new fire alarm system and devices.



MEZZANINE PLAN

FIRST FLOOR PLAN

ABOITE FIRE STATION 180

EXISTING FLOOR PLANS

11.22.2024

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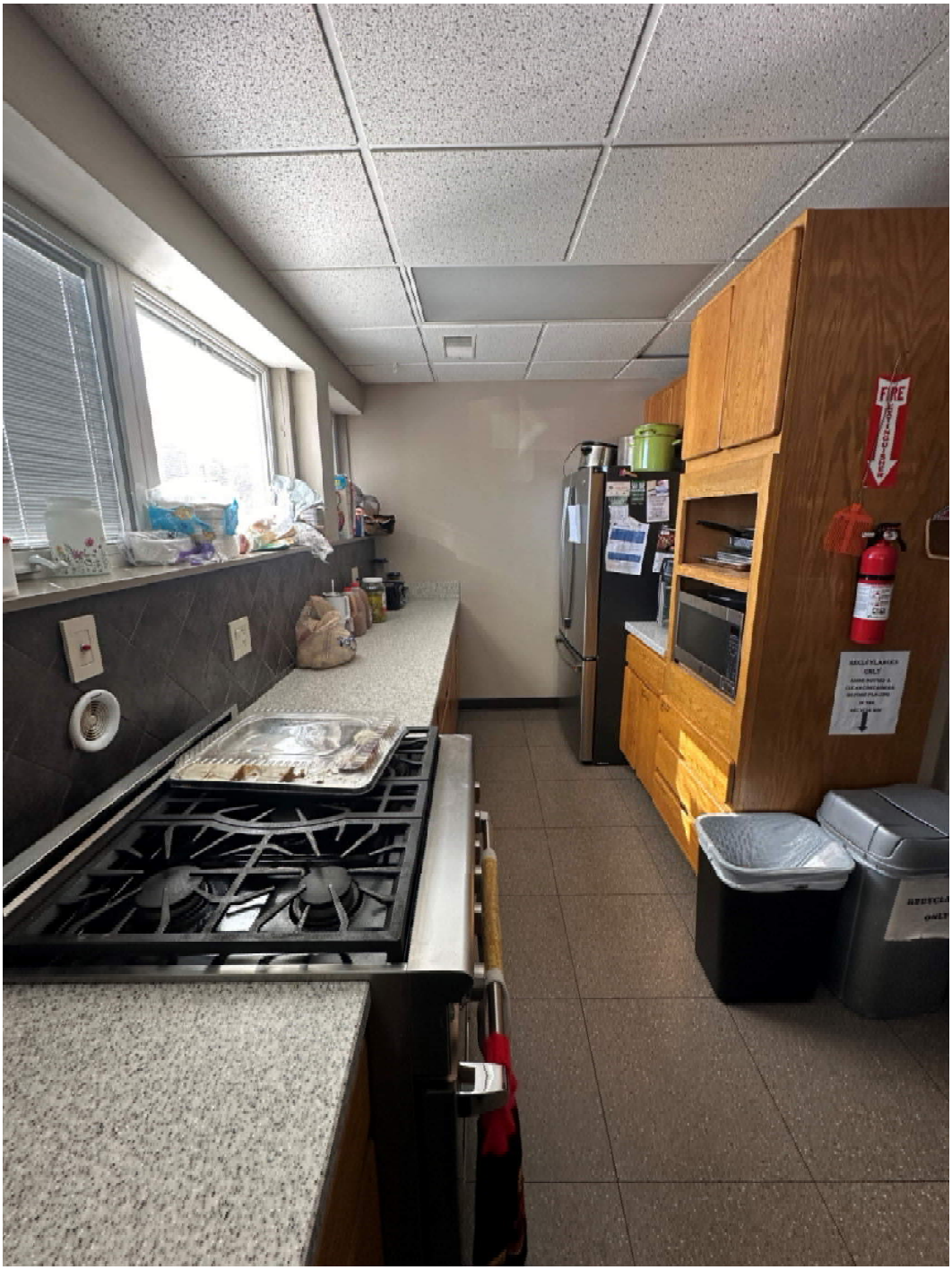
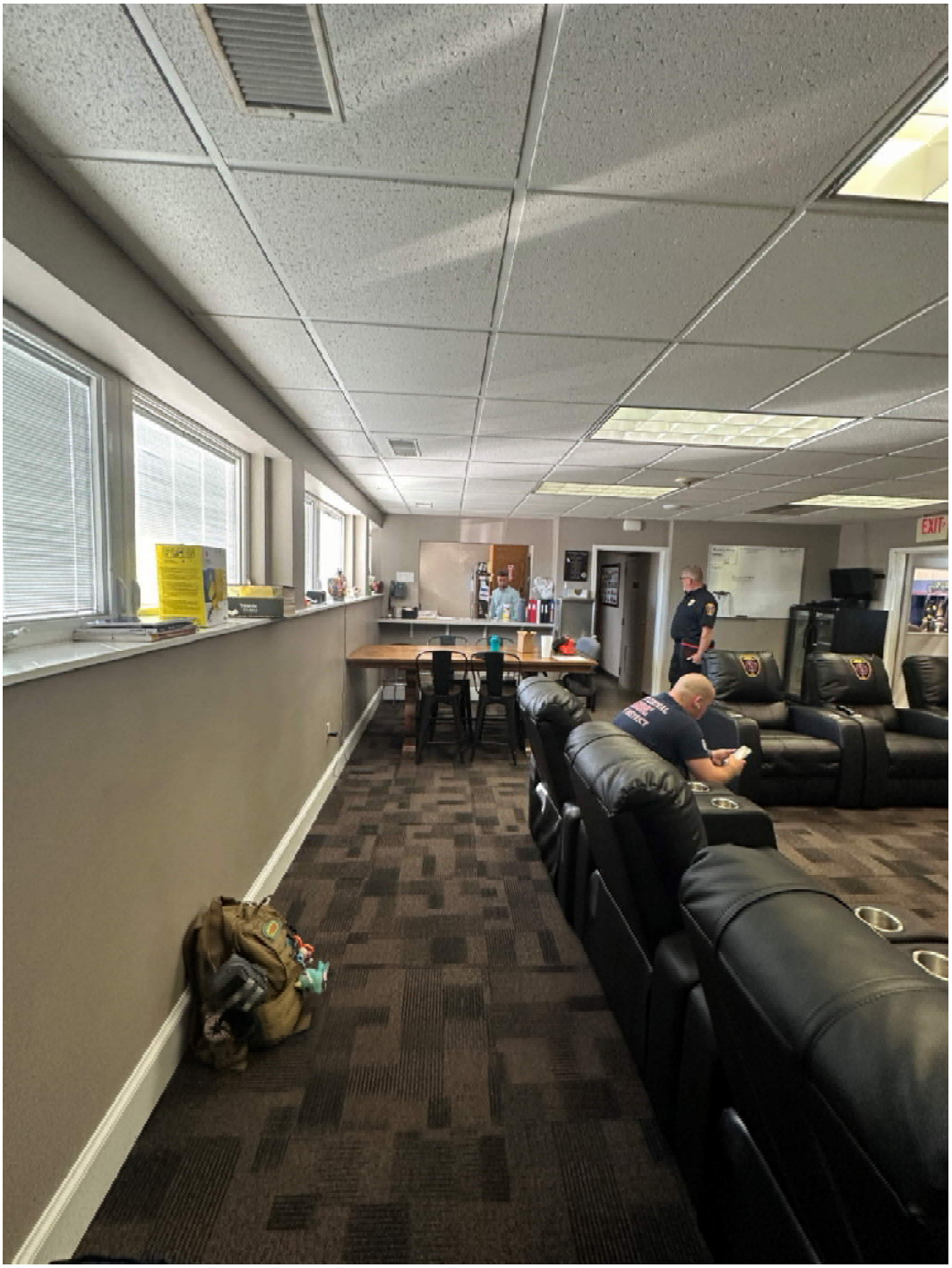
RQAW | DCCM

The Kitchen is undersized and doesn't have several essential appliances such as an exhaust hood for the range, and more than one fridge for the 3 shifts. There is very little storage in the Kitchen as well.



The Dayroom and Dining areas are undersized and below standards for today's fire stations.



There is only one shower serving the whole station. With the potential to sleep six staff, this is well below the standard for a contemporary fire station.

Gear Storage shares space in the App Bay which leaves it open to carcinogens associated with the vehicles.

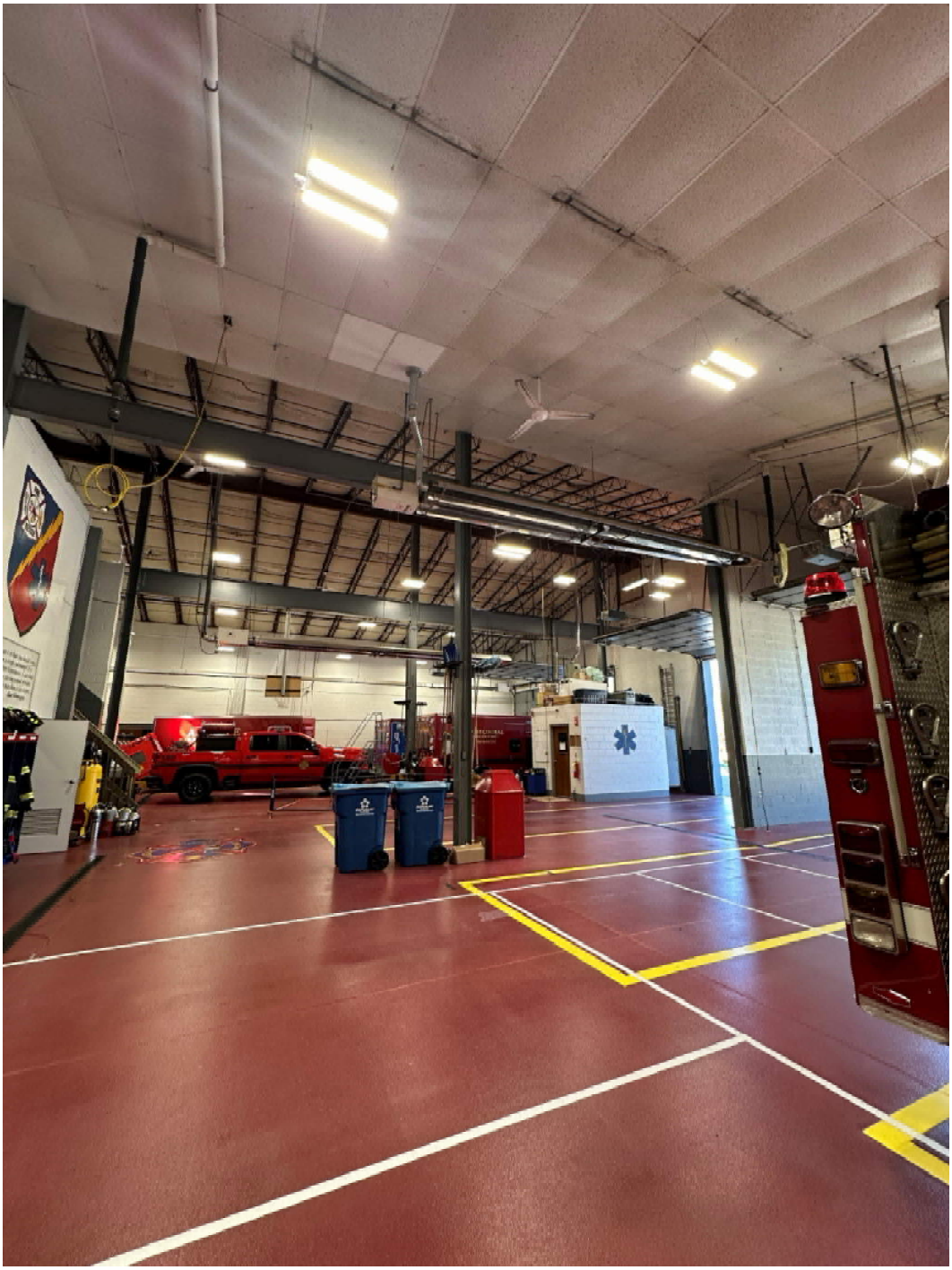
Four of the beds in the Sleeping Quarters are in a mezzanine-type space within the App Bay. Without an airlock or airtight door seals, carcinogens from vehicle exhaust can easily seep into this room. This is a serious health concern for the occupants of the station.

The Sleeping Quarters in the mezzanine can only be accessed by this set of stairs which does not meet current standards of code. There is also no landing outside the door, so it swings over the first stair treads. The windows need to be verified for meeting egress requirements as well. There is a ladder being used to access storage on top of the Bunk Room.

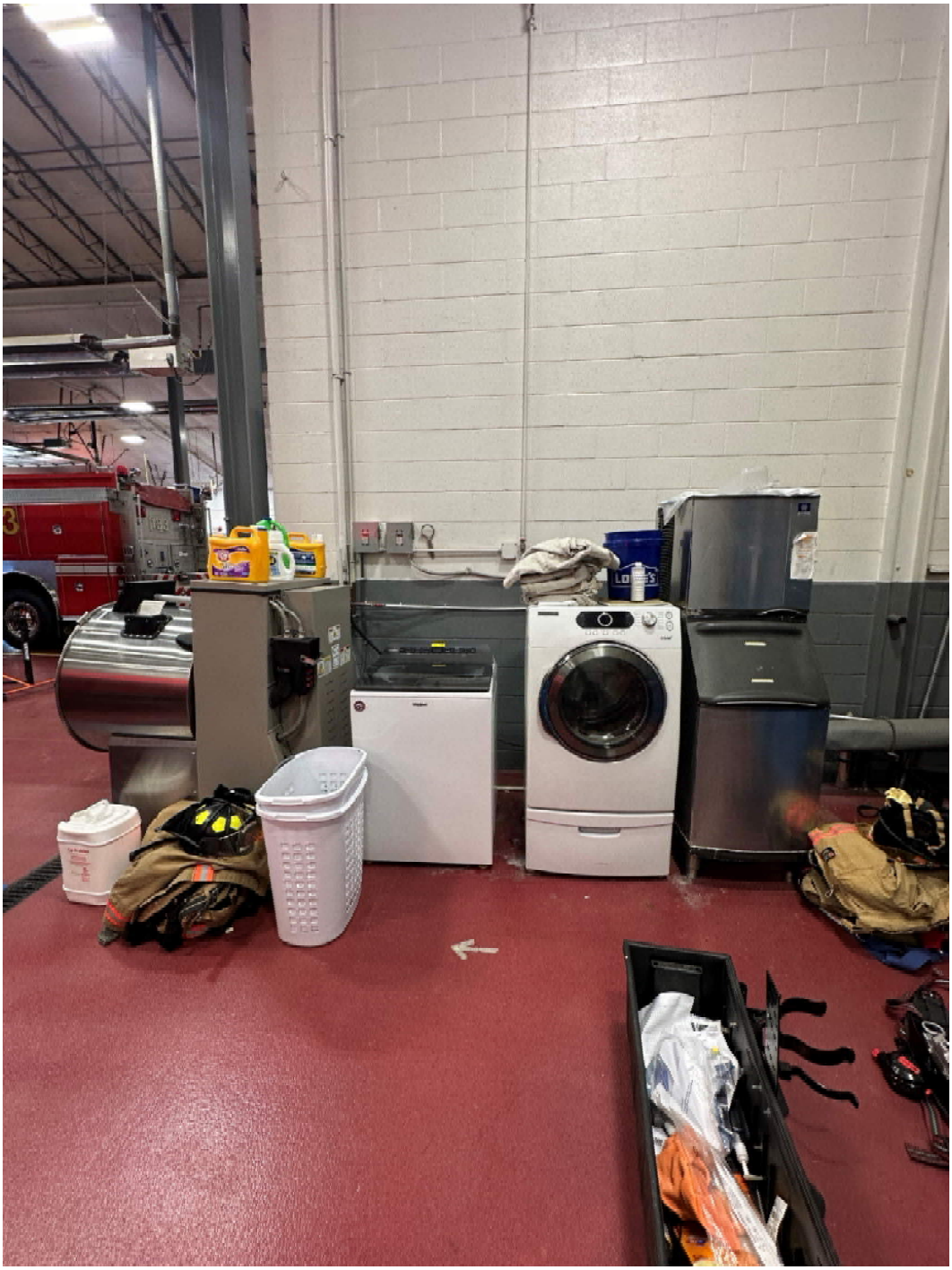
Restroom and fixture count for the station doesn't meet the requirements of the staff in the station and certainly not when the Training Room is at full capacity.

The App Bay connects to the rest of the facility without an airlock or airtight door seals. Carcinogens from vehicles and exhaust can infiltrate the rest of the adjacent rooms.

Acoustic ceiling tiles in this area of the App Bay are no longer flat and are visibly sagging in the grid. Many tiles are starting to grow mold as well.



Laundry equipment is used in the App Bay without separation from vehicle exhaust. This space is also shared with other functions, so it is cluttered and inefficient.



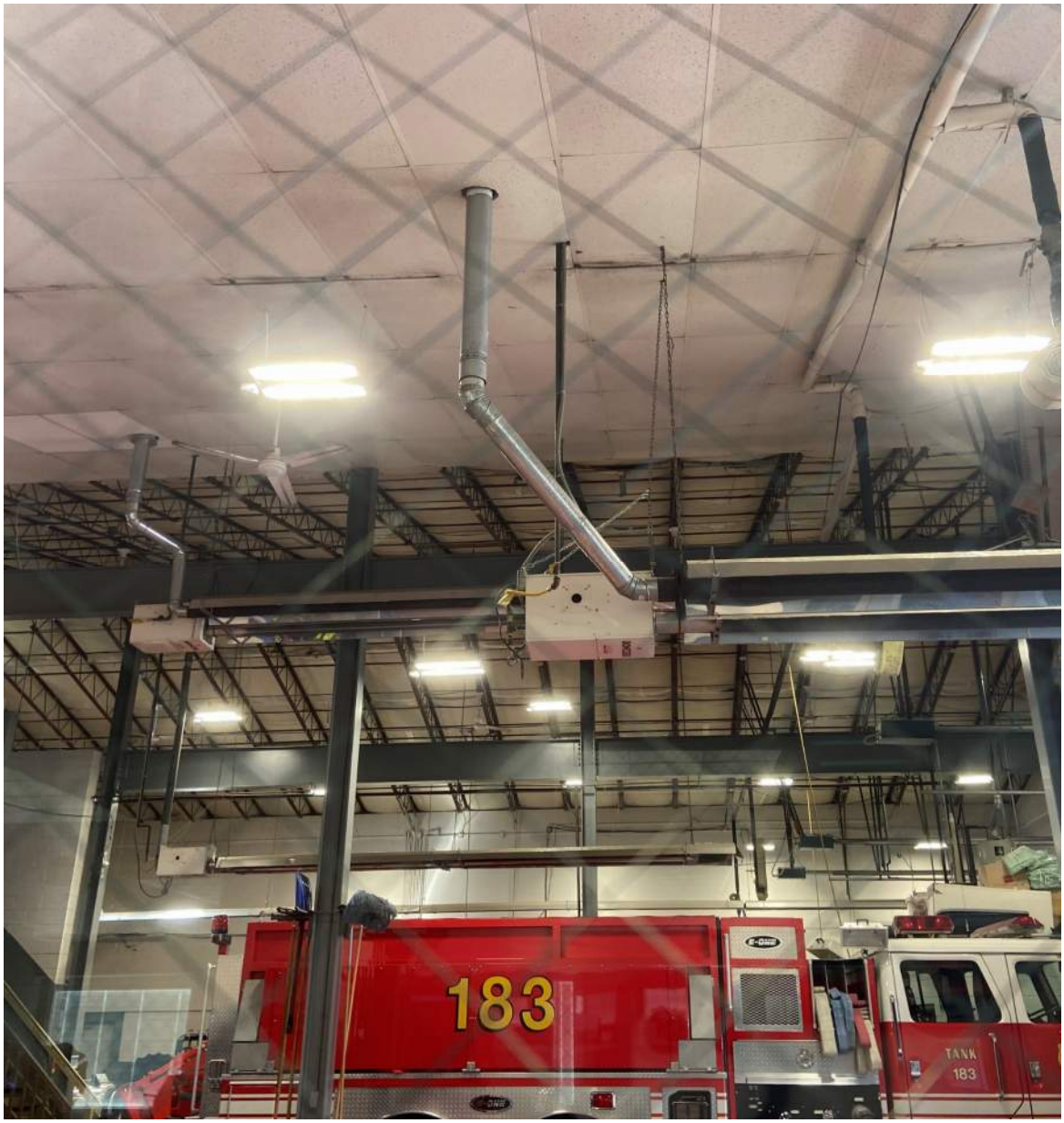
These two large fuel tanks are adjacent to the App Bay apron which sees frequent vehicle traffic. Bollards are somewhat of a deterrent for accidental impact, but ideally, these tanks would be away from the drive.

Fiberglass shower is too small and inadequate for proper use.

Additional Plumbing Concerns

1. The Apparatus Bay drains are not connected to an Oil Interceptor Tank. This tank is required my code and serves to protect the public sewer system.
2. New rooms and changes in architectural programing will require new plumbing work to serve new fixtures.

There is currently no mechanical exhaust system in the apparatus bay. This does not meet current codes and is exposing the building and mezzanine sleeping area to carcinogenic fumes from truck exhaust. At minimum, an exhaust fan system tied to a carbon monoxide system should be installed. A direct connect vehicle exhaust system or an air scrubber system would be recommended as well.



Existing AC system serving training room is at end of life. Recommend replacing with a modern 5 ton packaged AC unit. Associated ductwork appears to be original and should be replaced as well.

The outdoor air intake ducts for the main building HVAC systems have been capped and are no longer bringing in fresh air. New outdoor air intake ducts must be provided and routed through roof to meet current ventilation codes.

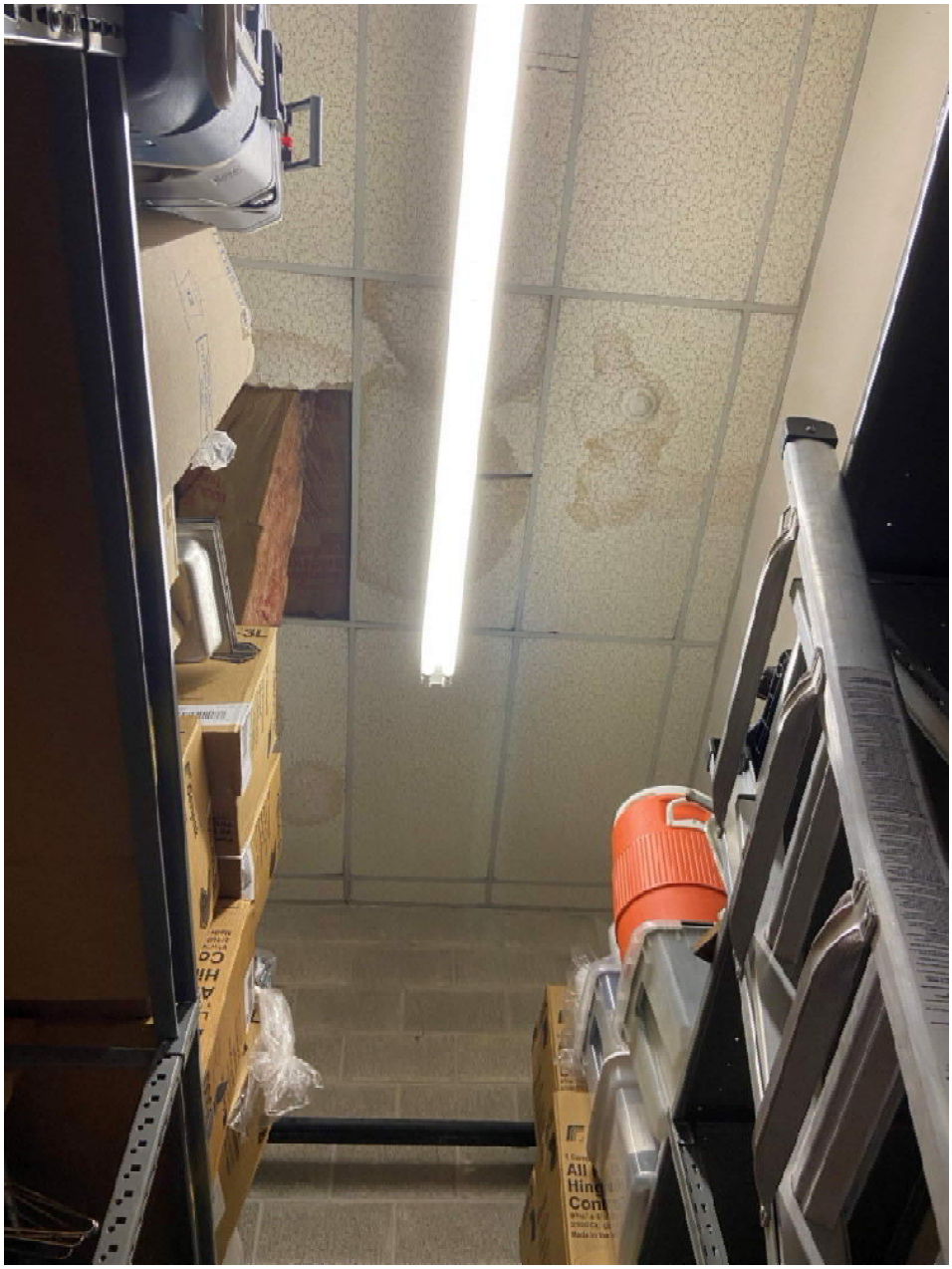
The cooling for the main building area is provided by 2 split systems / furnaces. The associated condensing units were installed in 2016 (large) and 2011 (small). The small condensing unit has approximately 5 years of life left with the larger unit having approximately 10 years of life left.

Additionally, the existing systems are single stage systems which are not well suited for the varying needs of a system delivering continuous outside air ventilation. Systems with at least 2-stages of cooling capacity are recommended for this application to prevent humidity issues.

Recommend replacing at least the small system, but replacing both as part of the project would be recommended for the longevity of the building and to allow for adequate performance once ventilation is added.

Diffusers / Grilles throughout building are beginning to rust/degrade.
Recommend replacement of all grilles and a professional duct cleaning.

Gear and turnout storage rooms do not have dedicated exhaust. To meet current code, these rooms should have dedicated exhaust tied to a fan. Additionally, if the gear storage is moved out of the apparatus bay into a separate room, new exhaust will need to be provided for that room as well.



Existing stove does not have a hood installed above it. A new range hood should be installed to meet current codes.

Apparatus bay bunk room is served by a single minisplit system with no ventilation. A new split HVAC system should be provided with outdoor air intake to meet building codes and prevent carcinogenic fumes entering the room from the apparatus bay.

Additional HVAC Concerns

1. Existing bathroom exhaust fans (2 total) are nearing end of life and should be replaced as part of any construction.
2. The lack of airlocks in the current building along with the lack of adequate mechanical ventilation (both vehicle bay exhaust and building outdoor air intake) is allowing exhaust fumes to enter the occupied portion of the building and should be remedied.
3. New rooms and program modifications to existing spaces will require HVAC modifications and potentially new exhaust fans for the new spaces.

Existing electrical service and transfer switch. NEC working clearance issues can be seen is this photo.

Existing panels “B” and “C” shown near water service. NEC working clearance issues can also be seen is this photo.

New MTU Diesel generator, installation in progress.

Summary of Safety Concerns

1. There is a lack of exhaust hood over the range in the Kitchen.
2. Gear Storage, Gear Laundry, and the Bunk Room in the mezzanine all share the Apparatus Bay without airlock separation, so staff are constantly impacted by contaminants and dangerous fumes.
3. There is no mechanical ventilation system in the App Bay.
4. There is no landing for the door at the top of the stair to reach the Bunk Room which can lead to falls or collisions.
5. Many of the ceiling tiles in the App Bay appear to be growing mold which is detrimental to air quality.

ARCOLA STATION 80

West Central Fire Protection District

Architectural and MEP Narrative

10.23.2024

Station 80 – Arcola Volunteer Station, 11329 Railroad St., Arcola, IN 46704

Architecture

Existing Station

The Arcola Volunteer Fire Station, which is owned by Arcola Inc., presents numerous architectural shortcomings that severely impact its functionality, safety, and overall efficiency. Built around 1954 and expanded in the 1980s, the facility lacks critical updates to meet modern standards for safety and operational efficiency. Notably, no existing drawings of the building are available, which required some rudimentary field verification to acquire measurements and photographs of the station. However, some of the shortcomings are unseen so it may be difficult to fully assess and plan renovations or improvements without further analysis.

The building does not include several key rooms and features that would make it far more effective. The lack of a decontamination room, which is essential for the safety and well-being of the firefighters and staff, is certainly impactful. Furthermore, Gear Storage is in the open within the Apparatus Bay, which not only exposes firefighters to carcinogens and contaminants but also leaves the gear vulnerable to damage and disorganization. There is a small, isolated Dispatch Room disconnected from the main facility, hampering communication and workflow efficiency. The lack of a dedicated gear washer and dryer forces the combining of firefighting gear with regular laundry, increasing the risk of contamination. Compounding these issues, there is no airlock vestibule or seal between the Apparatus Bay and the Living Quarters, allowing harmful and cancer-inducing exhaust, carcinogens, and contaminants to transfer freely into the Living Quarters. Multiple doors, including a large sliding door, open directly from the Apparatus Bay to areas like the Lobby, Dayroom, and Restrooms, worsening the risk of contamination and unsafe conditions.

The remainder of the facility reveals additional concerns. The building water supply is provided by a small residential capacity well system that is inadequate for a fire station. There is not enough water supply to wash down trucks or to fill a tanker. No city water is available on site to remedy this issue. The Lobby is dark, poorly lit, and experiences roof leaks, creating an unwelcoming and unsafe environment for both staff and visitors. The Mechanical Room, due to a lack of available storage, has been repurposed to hold kitchen supplies, underscoring the station’s severe space limitations. Bunk facilities are grossly inadequate, offering beds for only four people despite staff numbers ranging from 12 to 18. Personal storage is non-existent, with staff relying on rubber tubs or bins placed on the floor for their linens and belongings. This setup not only complicates organization but also presents serious egress risks during an emergency.

The station's second garage, which contains Vehicle Storage, Maintenance Areas, Fitness Equipment, Electrical Panels, and General Storage, is severely overburdened. The shared space compromises both safety and efficiency. An unused underground tank, once used for filling trucks, takes up valuable space, and pests, such as squirrels and mice, frequently enter the building, further degrading the facility. Additionally, there is no adequately designated “shelter-in-place” room for use during storms or tornado events, putting staff at further risk in extreme weather conditions.

Finally, exterior issues exacerbate these internal problems. The rear topography drains toward the building, leading to potential water damage and long-term structural issues. Access from the main roads is poor and inefficient, complicating emergency response times and creating delays that could have critical consequences in time-sensitive emergency situations.

In summary, the fire station's design and structural deficiencies severely hinder the safety and functionality of its operations. Without significant renovation or redesign, the station will continue to struggle to meet the demands placed on it, putting both firefighters and the public at risk. Even with significant renovations, the lack of adequate water supply may make it impossible to provide the amount of water a modern fire station demands.

Recommended Changes

The current building would require an extensive remodel and an addition of approximately 2,000 square feet in order to meet current and future fire department needs. The renovation project should focus on addressing safety, functionality, and space deficiencies. First, a dedicated Decontamination Room and closed Gear Storage will protect equipment and staff from contaminants, while a Gear Washer and Dryer system will prevent cross-contamination. The Apparatus Bay should receive the addition of an air-lock vestibule to block harmful fumes from the Living Quarters, and the Dispatch Room should be relocated for better communication.

Living spaces will be improved by expanding the Bunk Area to sleep six staff members, along with adding two more showers to a consolidated and succinct Locker Room. Secure lockers for personal items and linens will improve organization and egress safety. The Lobby will be revitalized with better lighting and roof repairs, and the Mechanical Room will be cleared of storage items. Instead, a large storage room will be created which can double as a shelter-in-place room to ensure safety during storms.

Reallocating functions currently in the Vehicle Storage, such as Fitness, will streamline the functionality of that space. Exterior updates include regrading to improve drainage around the building. Additionally, roof repairs, energy-efficient insulation, and updated HVAC and electrical systems will bring the building up to code and allow it to function at a bare minimum capacity.

It is worth noting that any renovation or addition to the station would require extensive temporary accommodations so the station can remain operational during construction. This would include, but isn't limited to, the following: temporary sleeping quarters for the staff, a food preparation area, restrooms with showers, storage for equipment and gear, and carport shelters for apparatus and vehicles. A challenge to be considered is strategically placing these components on the site so that operations are not interrupted, and neighbors are not affected.

Plumbing

Existing Station

The existing fire station relies on a small residential well for its water supply, which is insufficient for its needs. This limitation hinders the ability to wash down trucks and fill tankers, posing significant challenges for operations. Upgrading the water supply system is essential for enhancing safety and efficiency at the station.

Additionally, the existing Apparatus Bay Area underground drainage system currently connects to the building's sanitary sewer and could potentially cause contamination to the city's sanitary system.

The existing gas piping system located after the gas meter indicates visual rusting and corrosion on exposed exterior gas piping.

Recommended Changes

If feasible, consider deepening or expanding the existing well to increase its capacity, ensuring it meets the demands of the fire station.

Implement water storage solutions by installing large water storage tanks on-site to provide a reserve for washing trucks and filling tankers, which can be refilled, when available.

Incorporate a separate drainage system for the Apparatus Bay. This system should direct new floors drains and oil-waste to an oil-water separator. This oil waste system shall capture contaminants before they enter the sanitary sewer system. This device can help remove oils, sediments, and other pollutants. This system shall meet local regulations and optionally be installed at the interior or exterior of the building.

Replace the exterior gas piping with new primed and painted piping to prevent further corrosion and protect it from the elements.

Lastly, new plumbing will be required to accommodate additional fixtures in the new rooms and to adapt to changes in architectural programming.

Mechanical

Existing Station

The occupied portion of the building is served by a single residential style split AC system/furnace. This system is currently functional with approximately 7-10 years of life left; however, this system does not have code required outside air intake ventilation. This AC system is also a single stage system and is not well suited for a commercial application with continuous ventilation requirements. The bathroom exhaust fans are in poor condition and several bathrooms do not have exhaust fans serving them. Diffusers / Grilles throughout the building are beginning to degrade. The kitchen stove currently lacks a hood to provide adequate ventilation for the kitchen.

The apparatus bay has no code required mechanical ventilation system which may be exposing occupants to harmful fumes from vehicle exhaust. This problem is compounded by the lack of air locks and outside air ventilation in the occupied spaces. Additionally, heating in the apparatus bay is provided by (2) small unit heaters that do not have spare heating capacity for additional loads.

The existing old building wing that is being used as equipment storage is served by a single heating only furnace. This furnace is at the end of its life. Additionally, this wing has no functional ventilation systems.

Recommended Changes

The existing split AC system would be replaced with a slightly higher capacity multi-stage system to be able to handle some of the added square footage as well as to be able to provide continuous ventilation to the building. New grilles would be provided for all areas served by this system. All bathroom exhaust fans would be replaced (4 total). A new hood would be provided over the stove to provide adequate ventilation to the kitchen.

The new fitness room would be provided with its own standalone split AC/furnace system with a fresh air intake.

The old heating-only furnace serving the existing equipment storage area would be replaced by an ~7 ton packaged AHU mounted on grade outside to provide heating and cooling to the new living quarters replacing the existing program. This system would have all new ductwork and diffusers.

A new mechanical exhaust system is recommended for the apparatus bay. This would consist of an approximately 5,000 cfm exhaust fan on the roof tied to a gas monitoring system in the apparatus bay and an air intake louver on the wall. Additionally, new separated gear storage rooms in the apparatus bay would need to be provided with standalone exhaust by approximately (2) additional small exhaust fans. An additional gas unit heater would be added in the space to handle the added load of the apparatus bay exhaust system.

Electrical

Existing Station

Power:

- Existing service appeared to be a 120/240V, 1Ph, 200A service.
    - All three sections of this building appeared to be fed via this existing service.
    - This equipment is dated, and considered to be at or near end of life.
- Generator:
    - 120/240V, 1Ph, 25kW
    - User group stated that there are issues with the generator and transfer switch.
    - It was mentioned that it starts and stops a couple times during it's weekly test.
    - It was mentioned that it has to be manually started in the event of a power outage.
    - The generator and transfer switch are not large enough to support the entire building and are considered to be at or near end of life.
- The station is currently unable to use the SCBA compressor due to breakers tripping every time it is started up. The station also does not currently own the SCBA compressor. It was stated that the compressor is owned by Arcola Inc.
- The users noted that their current bunk room does not have enough receptacles.

Lighting:

- Much of the lighting in the station is dated and could stand to be replaced.
    - Some areas had been upgraded to LED's but several fixtures appeared to still be fluorescent lamps.
- Light levels in the newer of the two apparatus bays appeared to be on the low side.

Systems:

- Station Alert System
    - This system was recently replaced and is a Mach Alert Fire Station Alerting system.
        - This is used in conjunction with Spillman software for the station monitors.
        - The current PC used for the Spillman system is located within the Bunk Room because they do not have a dedicated office space for this equipment.

Recommended Electrical Changes

Power:

- Provide all new electrical service and distribution to the building.
    - Would need to verify with the Electric Utility if 208V, 3-Phase is available in this area.
        - If available, the estimated new service size based on renovations and additions would be approximately 208/120V, 3Ph, 600A - 800A.
- This would include but not be limited to:

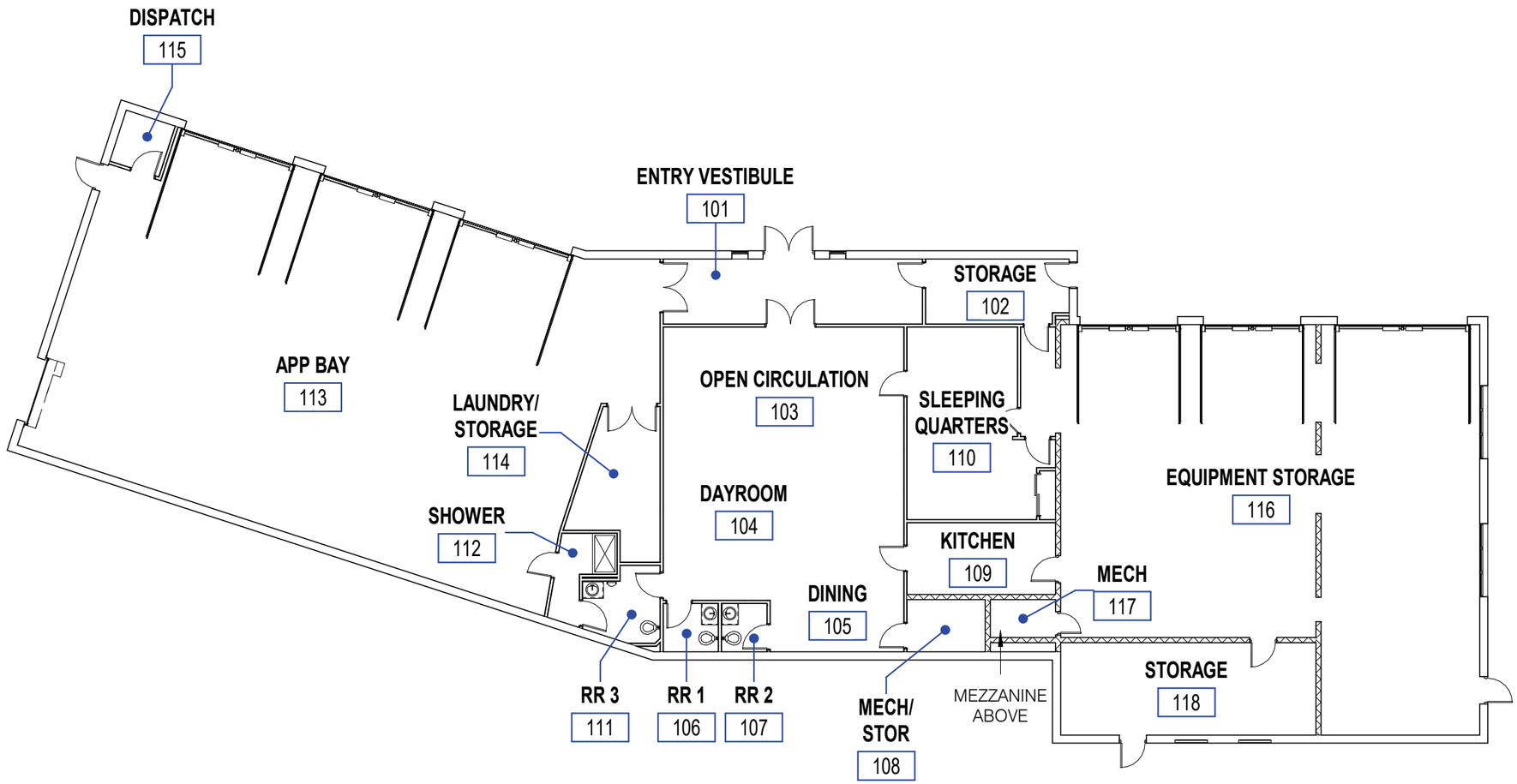
    - New and upgraded service entrance, new distribution and branch panels throughout, all new wiring and wiring devices throughout, etc.
- Provide new Generator and Automatic Transfer Switch(es) as well as all new emergency power distribution as required.
    - The exact generator size would be determined based on the loads that are intended to be backed up.

Lighting:

- Provide all new LED lighting and controls.

Systems:

- Station Alert System:
    - Existing to Remain
- Data:
    - Upgrade service as required.
    - Provide dedicated IT Room
    - Provide all new cabling and devices as required.
- Fire Alarm System:
    - Provide all new fire alarm system and devices.



ARCOLA VOLUNTEER FIRE STATION 80

EXISTING FLOOR PLAN

11.22.2024

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RQAW | DCCM

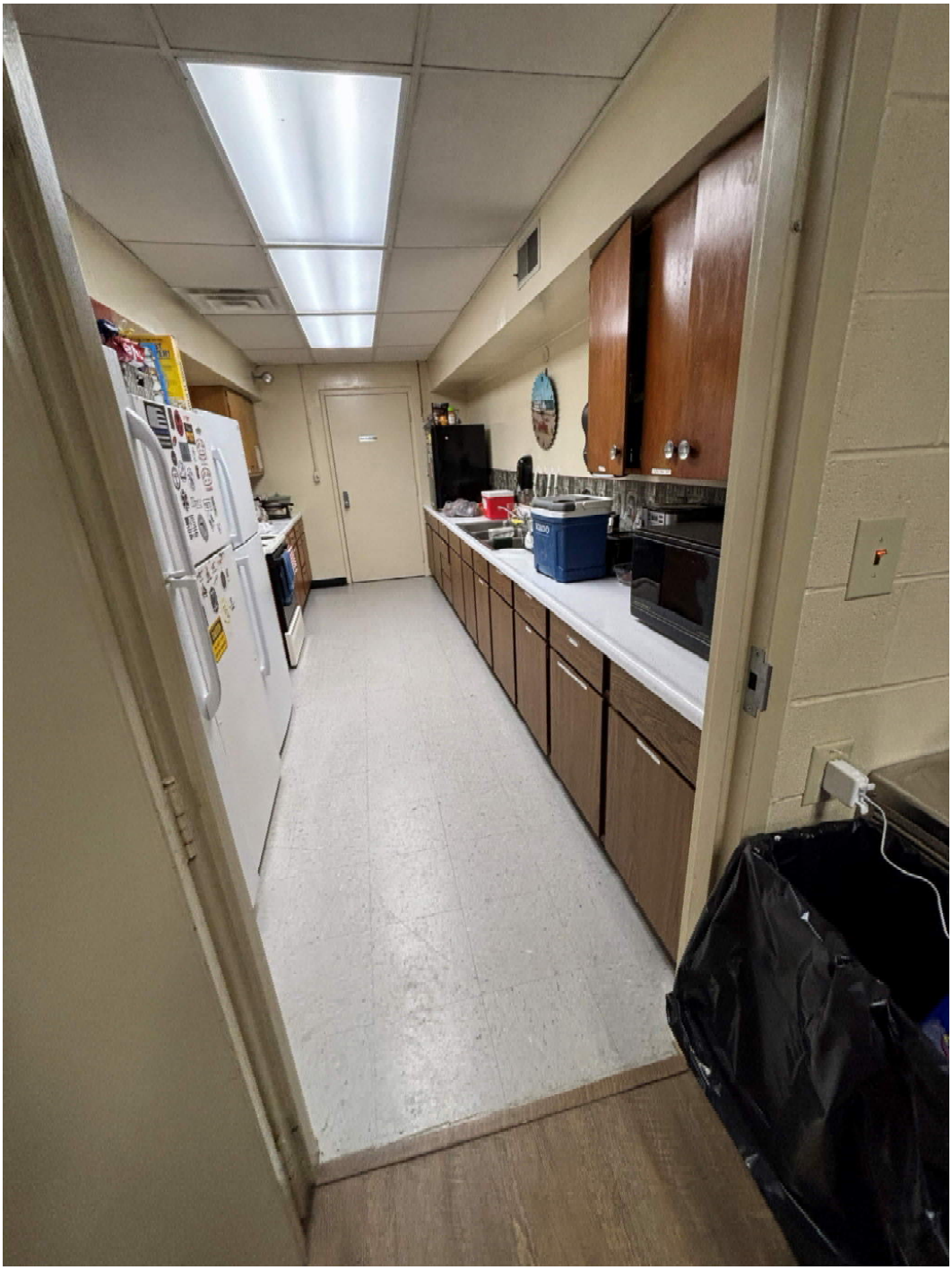
The Sleeping Quarters and other living spaces are directly adjacent to the App Bay and Vehicle Garage. Without an airlock or airtight door seals, carcinogens from vehicle exhaust can easily seep into these rooms. This is a serious health concern for the occupants of the station.

There is only one shower in the station, and it was built in a corner of the App Bay meaning little if any treatment was done to surfaces for humidity. Fixtures and equipment were installed makeshift. A station this size needs more than one shower and the factor of humidity should be addressed.

The engines must be backed into the App Bay, and the overlap between the gear prep area and the engines is inefficient and conflicting. Should a driver reverse too far, there's a potential to injure someone or damage equipment. Clear floor markings should also be present.

The station only has the capacity for 4 beds despite there being more than 12 staff operating at the facility. This space also does not have lockers for personal items, so rubber tubs are being used which can inhibit egress.

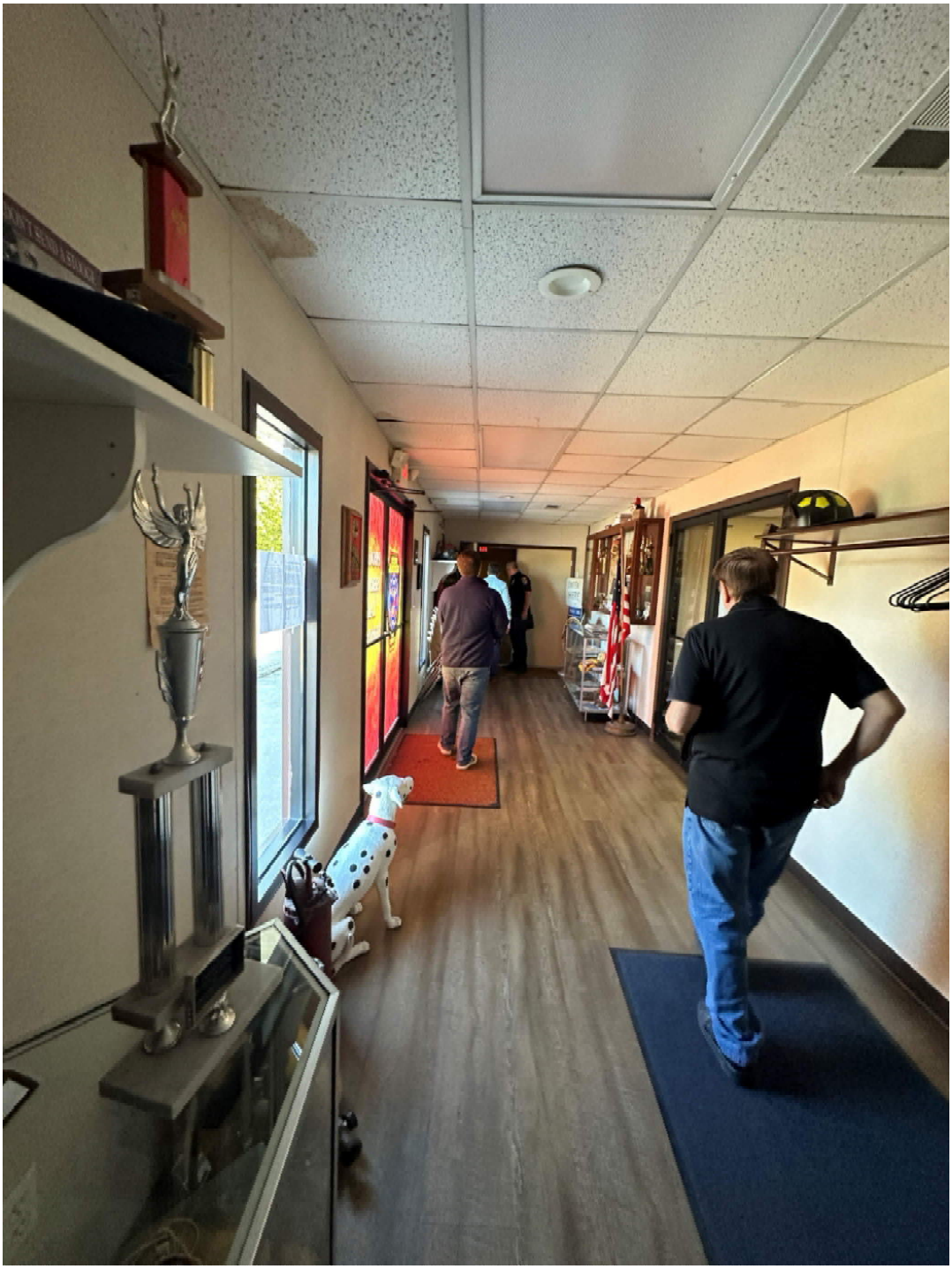
The Kitchen is very narrow, typically only allowing for one person to occupy and cook in the space at a time. Fridge doors swing into the path of travel interrupting this flow even more. There is also a concern for carcinogens from the garage entering the Kitchen and other nearby spaces.



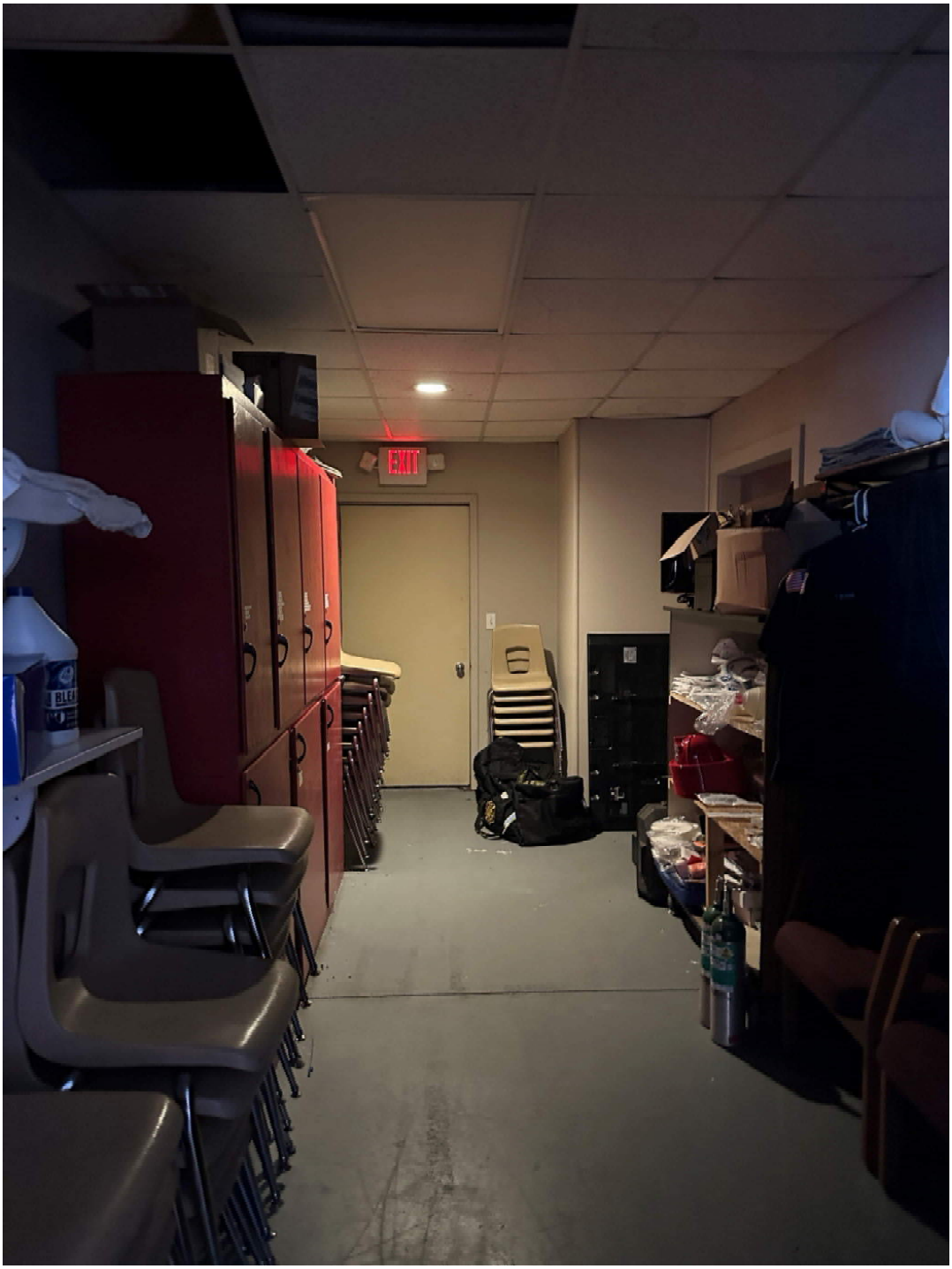
The Dispatch Room is undersized and in the corner of the App Bay detached from the rest of the facility. It is not very efficient in size or layout, and it lacks a window to the outside or into the App Bay.

There is only one washer and dryer in the station. Gear should be cleaned in a separate gear washer and extractor so there isn't contamination with normal laundry. Residential units are not technically capable of properly cleaning firefighter's gear.

The Lobby Vestibule is not well lit and has experienced several roof leaks. The other doors in this space access other parts of the station but are not lockable currently.



The storage room next to the Lobby Vestibule contains medication and supplies but is not secured in any way, and is very poorly lit. There is no lockable storage solution available for drugs or medications in the station.



Due to lack of space and storage space, the Mechanical Room has now become a storage room and even includes kitchen supplies which is not ideal. This space has become overcrowded as well.

There is no separation or distinction between spaces in the secondary garage. Fitness, storage, electric panels, vehicle storage, and maintenance all overlap in this space which make it quite cluttered and inefficient.

There is no clear delineation between the road and the App Bay apron. The positioning of the station on the site, and near the roads, is also far from ideal for access to main roads for efficient travel and response times.

Laundry facilities are inadequate and does not meet the needs of the station. No provision for operation of a Uniform / Gear wash area.

Domestic cold water is supplied by a well system. The well-head is located inside the building. Entire building is served by one three-quarter inch water line, which is severely undersized for proper service. Water pressure is also low and limits water usage.

Water service from the well system is in poor condition. A piping water leak was observed. Water equipment (pump and expansion tank) is in poor condition.

Domestic gas-fired water heater drain , now discharges into a bucket.
Code requires a floor drain.

Additional Plumbing Issues of Concern

1. The Apparatus Bay floor has only one drain in the middle of the floor. This promotes wet / dirty floor conditions and a maintenance issue.

2. The Cascade breathing air system doesn't work. Entire system needs to be refurbished.

3. The Apparatus Bay floor drain does not connect to a code-required Oil Interceptor Tank. This is to protect the public sewer system.

4. No exterior wall faucets are installed. These faucets are used to wash stoops, pavements and sidewalks for exterior of building maintenance.

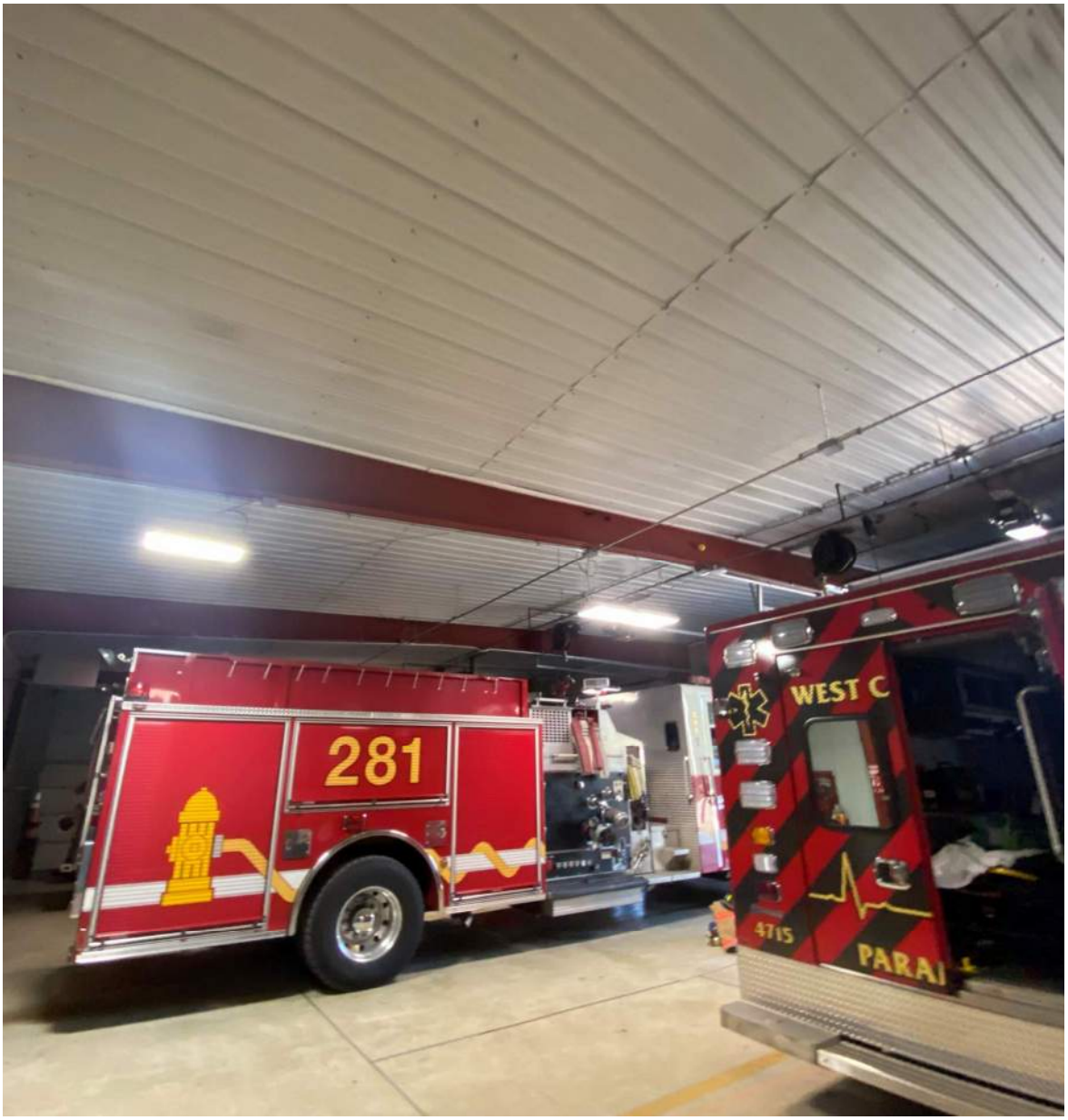
5. It is possible that some floor drains in this building discharge directly into the nearby creek.

6. The building main sanitary sewer line connects to a sanitary manhole located in the street. There appears to be no sewer cleanout access for the sewer line.

7. New rooms and changes in architectural programing will require new plumbing work to serve new fixtures.

There is currently no mechanical exhaust system in the apparatus bay. This does not meet current codes and is exposing the building and mezzanine sleeping area to carcinogenic fumes from truck exhaust. At minimum, an exhaust fan system tied to a carbon monoxide system should be installed. A direct connect vehicle exhaust system or an air scrubber system would be recommended as well.

The existing unit heaters do not have sufficient capacity to handle the additional ventilation and will need to be upsized for this load (2 total)



Grilles and diffusers are worn throughout building. Recommend replacing all diffusers and performing a duct cleaning.

Dryer exhaust duct is tied to a general exhaust fan duct and has a birdscreen on the building termination vent that is clogging with lint. Dryer duct should be reinstalled as a standalone duct system without a screen at the termination.

Ceiling exhaust fans in bathrooms are at end of life. Additionally, several bathrooms do not have code required exhaust. Recommend installing new exhaust fans for all bathrooms (4 total)

Existing main building HVAC has no ventilation intake. A new outdoor air intake must be installed to meet current codes.

Existing main building HVAC installed in 2015. Equipment has approximately 7-10 years of life left. Equipment is single stage equipment which is not well suited for systems supplying continuous outside air ventilation. A system with at least 2 stages of cooling is recommended for this use to prevent humidity issues. Recommend replacement of system to allow for adequate performance with ventilation and to refresh the lifespan of the systems to match other renovation work.

Old half of building served by a single heating only furnace. The furnace is at end of life and should be replaced. This half of the building also has no ventilation and will require exhaust systems and unit heaters if intended to be used as a vehicle bay. If intended to be used as living space/storage a new split AC system should be provided.

Existing stove does not have a hood installed above it. A new range hood should be installed to meet current codes.

Additional HVAC Concerns

1. The lack of airlocks in the current building along with the lack of adequate mechanical ventilation (both vehicle bay exhaust and building outdoor air intake) is allowing exhaust fumes to enter the occupied portion of the building and should be remedied.
2. New rooms and program modifications to existing spaces will require HVAC modifications and potentially new exhaust fans for the new spaces.

Existing electrical service and transfer switch.

Existing generator.

Existing SCBA compressor that trips breaker whenever turned on. Also, is not owned by the fire station, is owned by Arcola Inc.

Existing PC used for the Spillman software that resides within Bunk Room because there is no dedicated office.

Summary of Safety Concerns

1. Carcinogens and exhaust from vehicles can easily breach all living areas.
2. Lack of clear paths of egress for the staff in the Sleeping Quarters to the App Bay.
3. Gear and prepping area in the App Bay overlaps with vehicle paths.
4. Range lacks exhaust hood and Kitchen has lack of proper ventilation.
5. Apparatus Bay has no proper ventilation allowing dangerous fumes to remain inside at all times.
6. There is contamination of all clothing items that are washed in the machine used for gear.