VILLAGE MANAGER'S OFFICE

70 East Main Street
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At the Heart of Community

AGENDA ITEM 8B

MEMORANDUM

Date: August 13, 2020

To: Mayor Tom Poynton
Village Board of Trustees

From: Ray Keller, Village Manager RK

Re: Resolution declaring the Village Board's commitment to use increased non-home rule sales tax revenue, if approved by referendum, to fund building improvements at the Paulus Park Barn, Fire Station #1, and municipal infrastructure

Issue: Consideration of this resolution is contingent upon the Village Board's approval of Resolution 2020-08-049, to proceed with a referendum question to increase the Village's non-home rule sales tax rate from 0.5% to 1.0%. Adoption of this resolution would declare the Board's intent to prioritize the use of the increased revenue for improvements to the Paulus Park barn and Fire Station #1, and subsequently for municipal infrastructure investments.

Analysis: Recent assessments completed by BKV Architects for the Village identified deficiencies at the Paulus Park barn building and at Fire Station #1, prompting the need to prioritize reinvestment in those two facilities. The fire at the Paulus Park barn in November 2019 accelerated recognition of these needs, which were confirmed through a public participation process facilitated for the Village by EO Sullivan. The needs assessments are attached as exhibits to the draft resolution.

The outreach process found that Village residents favored investment in a one-story expansion to the Paulus Park barn and a new Fire Station #1 to address the needs identified in the assessment studies. The two facility improvements are estimated to cost $15.9 million, necessitating consideration of an appropriate revenue source to fund them. The outreach process indicated that residents greatly favored an increase in the Village's non-home rule sales tax, from 0.5% to 1.0%, to fund the improvements instead of relying on a property tax increase.

If approved, the sales tax increase is projected to generate at least $1.5 million annually, beginning in July 2021. These additional funds could then be used for direct (cash) investment, debt financing, or a combination of funding approaches. After prioritizing the investment in the park and fire buildings, the Village would be allowed to use the increased funds for other municipal infrastructure projects, particularly those identified in the Community Investment Plan.

The wording of the referendum question is set by statute, without an opportunity to declare the Village Board's intent for the use the increased revenue. Adoption of the proposed resolution would memorialize the Board's intent to apply the increased funding, if approved by referendum, to improvements to the Paulus Park barn and Fire Station #1. Thereafter, available funding would be invested in the Village's infrastructure projects.

Recommendation: A motion to approve a Resolution Declaring the Village Board's commitment to use increased non-home rule sales tax revenue, if approved by referendum, for fund building improvements at the Paulus Park Barn, Fire Station #1, and municipal infrastructure.

w/ attachments:

- Resolution
- Parks Building Study
- Fire Station Study

VILLAGE OF LAKE ZURICH

RESOLUTION NO. 2020-08-050

A RESOLUTION DECLARING THE VILLAGE BOARD'S COMMITMENT TO USE INCREASED NON-HOME RULE SALES TAX REVENUE, IF APPROVED BY REFERENDUM ON NOVEMBER 3, 2020, TO FUND BUILDING IMPROVEMENTS AT THE PAULUS PARK BARN, FIRE STATION #1, AND MUNICIPAL INFRASTRUCTURE INVESTMENT

WHEREAS, the Village of Lake Zurich (the "Village") has an award-winning 20-year Community Investment Plan that details long-range planning on infrastructure investment; and

WHEREAS, the Village prioritizes objectives that are necessary to fulfill the Strategic Goals of *Fiscal Sustainability* and *Infrastructure Investment*; and

WHEREAS, the Village presently owns and maintains $130 million in capital assets, including roads, water mains, sanitary and storm sewers, buildings, equipment and other infrastructure; and

WHEREAS, the 2019 update to the Community Investment Plan identified near-future facility needs for the continued operation of its parks and recreation programs and its fire/EMS department services, as memorialized in the needs assessment reports prepared for the Village by BKV Architects and hereto attached as Exhibits A and B, respectively; and

WHEREAS, a structure fire at the Paulus Park Barn occurred in November 2019, accelerating the need for reinvestment in this parks and recreation facility that was built in 1958; and

WHEREAS, Fire Station #1 was built in 1981 for a volunteer fire department, which is now deficient to adequately support a full-time professional fire/EMS department serving Lake Zurich, which has more than doubled in population and in emergency call volume since the station's construction; and

WHEREAS, the Village has levied a local 0.5% Non-Home Rule Sales Tax since voters authorized such a tax in 2010, which presently generates approximately $2 million annually in dedicated revenue for infrastructure investment within the Village; and

WHEREAS, the Non-Home Rule Sales Tax revenue each year is dedicated to the annual road resurfacing program and related infrastructure projects that include public water supply mains, sanitary sewer mains, stormwater management, and sidewalk improvements; and

WHEREAS, approximately 50% of the Non-Home Rule Sales Tax is generated by non-residents of Lake Zurich; and

WHEREAS, pursuant to 65 ILCS 5/8-11-1.1 of the Illinois Municipal Code, as a non-home rule municipality, the Village is authorized to impose or increase a local sales tax to no greater than 1%, if approved by the voters of the Village.

NOW, THEREFORE, BE IT RESOLVED by the President and Board of Trustees of the Village of Lake Zurich, Lake County, Illinois, that if the Village of Lake Zurich's non-home rule sales tax rate increase from 0.5% to 1.0% is approved by referendum on November 3, 2020, the Village Board commits to using the increased revenue first and foremost to fund building improvements to the Paulus Park Barn and Fire Station #1, and thereafter commits to funding other municipal infrastructure improvements.

ADOPTED this _____ day of August, 2020, pursuant to a roll call vote as follows:

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED by me this _____ day of August, 2020.

_____
Village President

_____
Village Clerk

BKV GROUP

ARCHITECTURE INTERIOR DESIGN LANDSCAPE ARCHITECTURE ENGINEERING

December 2, 2019

Mr. Kyle Kordell, Assistant to the Village Manager | Deputy Village Clerk
Village of Lake Zurich
70 E. Main Street
Lake Zurich, IL 60047

RE: Facility Condition Assessment
Village Board Status Update

Dear Mr. Kordell:

The following is a summary of field work conducted on 11/4/2019 and 11/5/2019 regarding the Facility Condition Assessment and Functional Analysis of Fire Station #1, Buffalo Creek Dance / Childcare Facility, and the Chalet at Paulus Park.

Please feel free to contact us at your convenience should you have any questions about this summary.

Sincerely,

BKV Group, Inc.

Henry Pittner, AIA
Associate Partner

Fire Station #1

All existing major building systems in the facilities are no longer performing appropriately including the site, exterior envelope, interior finishes, mechanical / electrical systems, energy efficiency and ADA accessibility. Functionally, the building configuration is obsolete, not healthy for fire fighters, and lacks the general spaces that are required.

The following key points highlight the deficiencies on the condition, system narratives, and functional analysis of the spaces.

Facility Condition Assessment

- General

1. Site drainage issues
2. At all dormer locations, there does not appear to be flashing between the panel siding and the roof
3. Exterior Masonry units failing (wrong product for Climate Zone 5)
4. Bricks at the base of the vestibule wall and adjacent to the apparatus apron are spalling badly due to exposure to de-icing salts
5. Mortar joints at the window sills are failing
6. There does not appear to be flashing and/or weeps above the windows at the brick
7. Surface water flows down the exterior stair and floods the basement
8. There are no bollards on site to protect the building from
9. The dampproofing at the top of the foundation wall is deteriorating
10. Pipes have repeatedly burst, flooding the lower level
11. Exterior Hose Bib piping has been cut off and terminated on the inside of the building due to bursts
12. There is no public lobby, reducing the welcoming aspect of a Fire Station and lessening the building security
13. The offices are not all one the same level
14. There is no elevator to get to the offices on the lower level
15. Three of the offices do not have natural light
16. All interior flooring materials are nearing or past their useful life expectancy
17. There is no conference room
18. Station office is too small and there is a step, making it not handicapped accessible
19. The dormitory is too small
20. Showering facilities are inadequate per today's standards
21. Kitchen is small with failing appliances
22. Kitchen does not meet ADA standards

23. Corner of Dayroom is sinking
24. The women's locker room is across the apparatus bays from the living spaces (but recently used as Janitors Closet)
25. The shift commander's suite is not large enough for both the office and sleeping
26. There is insufficient space for hose storage
27. Training room is not sized properly
28. Lack of storage for gear
29. Materials for the training tower have deteriorated to the point where it is no longer used as an active fire burning training tower

- Energy Efficiency

1. The building does not have any insulation in the exterior walls or foundation walls, leading the dayroom, admin office, and chief's office to be cold in the winter and hot in the summer. Although this is reportedly better since the windows were replaced, space heaters are still required. The effective R-value of the exterior wall is less than 1. Modern energy codes require an effective R-value of 11.1.
2. Dehumidification necessary in some rooms. The residential-style mechanical systems are not capable of regulating the humidity of the outside air.
3. The condensing units are aging. The newest technology can achieve 21.00 SEER for four-ton units, saving hundreds of dollars per year in electricity. Modern units are also about half as loud.
4. The existing water heater is 80% efficient. The newest technology can achieve efficiencies upwards of 95%, saving around $100 per year in natural gas.

- Power Distribution

1. Building Fire Station #1 normal power is supplied to Main Switchboard with service disconnect located in the main electrical room via the utility transformer, which in turn feeds all equipment, devices, and luminaires via panelboards.
2. Main Switchboard is a 120/208V, 3 phase, 4 wire switchboard with 400A main disconnect manufactured by Cutler Hammer.
3. Main Switchboard does not have adequate workspace clearance above the equipment per NEC (NEC 110.26). Mechanical ductwork and piping are present within 6 feet above the switchboard.
4. The following panelboards are provided to feed power to all lighting, power devices, and equipment to serve the facility:
    i. Panelboard LPA is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel LPA is a type PB panel with 30 pole breakers manufactured by Cutler Hammer.
    ii. Panelboard LPB is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel LPB is a type PB panel with 24 pole breakers manufactured by Cutler Hammer.
    iii. Panelboard LPC is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel LPC is a type PB panel with 30 pole breakers manufactured by Cutler Hammer.

iv. Panelboard LPD is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel LPD is a type PB panel with 30 pole breakers manufactured by Cutler Hammer.

v. Panelboard EMA-1 is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel EMA-1 is a type PB panel with 30 pole breakers manufactured by Cutler Hammer.

vi. Panelboard EMB is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel EMB is a type PB panel with 24 pole breakers manufactured by Cutler Hammer.

5. Panelboard LPA located in the furnace room in the basement do not have adequate workspace clearance required by NEC. A sewage ejector and associated piping is located in front of the panel.
6. The electrical system, except the generator and the associated ATS, are originally installed in 1981, and some of the distribution equipment have been discontinued. It is recommended to replace all distribution equipment.
7. Circuit breakers have tripped in multiple occasion per user comments.
8. Ground rod is not properly terminated.
9. Lack of receptacles in the control room.

- Emergency Power Distribution
  1. Emergency power is supplied by a 3 phase, 4 wire , 208/120V, exterior natural gas generator. Emergency power is supplied to Main Switchboard via an automatic transfer switch (ATS), which in turn feeds all panelboards and load in the facility. The building is entirely backed up by the generator.
  2. Generator control panel and transfer switch are located in the Main electrical room.
- Lighting
  1. Energy inefficient fluorescent recessed and pendant fixtures are used for interior luminaires.
  2. Interior lighting in the bays consists of surface-mounted four-foot and eight-foot strip fluorescent fixtures.
  3. Mixed of LED fixtures, and energy inefficient fluorescent and HID fixtures are used in some exterior wall mounted luminaires.
  4. Typical on/off snap switches are provided in this building. Wall mounted occupancy sensor is provided in most admin offices.
  5. Flood lights for memorial sign are luminaires with HID bulbs. The support of the fixtures are not properly angled due to erosion.
  6. Several exit signs are in poor condition.
- Systems, Safety, and Security
  1. Cypher lock is provided at multiple exterior doors for access.

2. Typical horn/strobe and pull station are provided in the building. FACP is located in the Main Electrical room.
3. Main telecom punch down block and network system is installed in a closet located in the basement. Patch panels and servers are located in one of the office closet located on the main level.
4. Fire station dispatch system is located in the main electrical room.

Functional Analysis

- Health and Safety Issues

1. There is no pressurized barrier zone (decontamination vestibule) between the living/office areas the apparatus bays, so contaminants and diesel particulates can easily get into the "clean" portions of the building. This exposes everyone who enters the station to carcinogenic chemicals. This is especially concerning at the Captain's suite and Dormitory where contaminants can get into mattresses and bedding.
2. There is no Janitor Closet in the clean areas, so mops and broom are all stored in the Apparatus Bays where they can become contaminated and spread toxins to the clean portions of the station. This exposes everyone who enters the station to carcinogenic chemicals. We recommend separating cleaning equipment between the clean areas and dirty areas and creating a janitor closet within the clean area of the station.
3. The decontamination space is too small, is not enclosed, and is insufficiently equipped. This prevents the staff from effectively cleaning equipment, leading to increased exposure to carcinogenic and toxic chemicals.
4. Several rooms in the station have carpeting, which can trap fireground contaminants and has been shown to harbor MRSA and other dangerous bacteria. Especially since the Department runs medical calls, we recommend removal of all carpeting and replacement with hard surface flooring that can be regularly bleached. Small rugs near the bunks are acceptable as long as they are laundered frequently.
5. The residential laundry equipment is located adjacent to the extractor across the apparatus bays from the living quarters and therefore exposed to contaminants. We recommend providing a second set of laundry equipment within the clean areas of the station.
6. There is a freezer and a refrigerator in the Apparatus Bays where they can easily be contaminated. We recommend relocating to a clean area.
7. The continuous exhaust system in the Apparatus Bays does not pull air from the lower levels of the space, only the upper levels. We recommend extending the continuous exhaust system to within 12" of the floor at the corners of the Apparatus Bays.
8. The Shift Commander's living space is located across the apparatus bay from the bulk of the living and office spaces, forcing them to walk through contaminated space every time they must interact with other staff.
9. The women's restroom and shower room is located across the apparatus bay from the bulk of the living and office spaces, forcing them to walk through contaminated space every time they must use the facilities.
10. There is insufficient space for storage of hoses, extra turnout gear, paper products, etc.

These items are then stored in the apparatus bay or closets within the apparatus bay where they are exposed to fireground toxins and diesel particulates.

11. There is insufficient maneuvering clearance between the apparatus and the south wall of the apparatus bay. Hose storage, the Decontamination counter, storage cabinets, movable stairs to the mezzanine area, etc. are stored along the wall, obstructing otherwise adequate space. This lack of clearance creates a risk of injury due to moving apparatus. These proximities increase the risk that a firefighter will be injured by moving apparatus, whether it is backing into the station or whether it is responding while firefighters are alongside. We typically recommend that our clients move all equipment stored along the side of the apparatus bays to another location. In this instance, there is no alternative location without building a significant addition.
12. The apparatus doors are not compliant with UL325 because they do not have a photoeye within 6" of the floor. UL325 is the modern standard for safe operation of overhead sectional doors. We recommend adding additional sensors to the doors.)
13. The Station Office is raised one step above the corridor level, creating a trip hazard.
14. The entrance to the shower area requires stepping over a curb, creating a trip hazard.
15. The mop storage area does not slope to the drain provided so the water runs across the Apparatus Bay floor, creating a risk of slips and falls.
16. The stairs to the basement do not meet current standards for handrails and the guardrail protecting them is of insufficient height. The stairs are constructed of ceramic tile, which has necessitated a retrofit of adhesive grit tape.
17. The fitness room cannot be easily observed by passerby, creating a risk that a firefighter in trouble would not be discovered in a timely manner.
18. The fitness room does not have enough clear floor area to support current physical conditioning techniques, like CrossFit, that target the exact muscle groups and motions that firefighters, as occupational athletes, are required to perform in their jobs. This causes them to take weights from the fitness room up to the apparatus bay where they have more space but where they are exposed to fireground toxins and diesel exhaust particulates.
19. In a communal sleeping room, firefighters are more likely to be kept awake by someone snoring, by someone getting up to use the restroom, by reading lights, etc. The short-term dangers of sleep deprivation include inability to concentrate, reduced critical thinking skills, increased rates of automobile accidents, increased rates of mistakes on calls such as dropping a patient (see recent $40M lawsuit) or administering improper medications, increased sink days or injury claims, reduced respect for authority, and impaired decision making. The long-term dangers of sleep deprivation include increased rates of diabetes, cancer, heart disease, and mental health issues.
20. In a communal sleeping room, firefighters are more likely to be exposed to communicable diseases by the other firefighters. A virus can be easily transmitted to an entire shift.
21. There is no safe means of egress from the Shift Commander's suite, since access to the exterior needs to pass through the Apparatus Bays. We recommend adding a door directly to the exterior.
22. There is a large amount of storage in the mechanical spaces, increasing the risk of fire.

- Functionality Issues

1. The apparatus doors are ~2' narrower than current best practices and are spaced closer together than current best practices. This leads to unsafe proximity between apparatus and can restrict the size of apparatus that can fit in the facility without significant risk of damage.
2. There is no dedicated space for turnout gear lockers that can segregate them from the remainder of the building. This is a violation of NFPA 1851, which require facilities for effectively drying PPE, well-ventilated PPE storage areas, and prohibits stored PPE from being exposed to natural light and diesel exhaust fumes.
3. The station is non-compliant with NFPA 1581. It lacks appropriate handwashing facilities for decontamination before entering the living areas. The Decontamination space is not physically separated from the remainder of the building and is too small to disinfect larger EMS equipment and does not provide the sprayers, multiple basins, stainless steel counters, and drying racks needed to function appropriately.
4. There is no dedicated storage space for EMS supplies.
5. There is insufficient space for mops, brooms, mop buckets, and floor scrubbers.
6. The training tower is physically connected to the building although there are no openings between the tower and the building proper. This has caused the Department to stop using the training tower for live burn training.
7. The offices are not all one the same level. Two are in the basement and the Prevention Bureau is off site. This causes operational inefficiencies and time lost in transportation.
8. Three of the offices do not have natural light or views to the exterior, and one of the offices opens directly into the dormitory room instead of the administration corridor.
9. The Chief's office is too small to contain a small conference space with four chairs.
10. The station office is too small and improperly laid out to contain four workstations, the bookcases, the computer equipment, and all the maps and bulletin boards and clipboard racks required.
11. There is no conference room.
12. There is no lobby for the public for display of public safety literature, department history, trophies and awards, or for holding a discussion with a firefighter, and consequently there is no security preventing visitors from wandering into the Chief's office or the fire station.
13. There is no quiet space to take blood pressure or talk to a citizen who comes to the station with a medical concern, causing HIPPA compliance issues.
14. There is no copy room / work room or space for office supply storage.
15. The dormitory is too small, has absolutely no privacy, lacks storage space for personal belongings, has no nightstands for clocks, lamps, or phone chargers, and has insufficient electrical outlets.
16. The women's locker room is across the apparatus bays from the living spaces, creating an unequal work environment.
17. The men's locker room has insufficient lockers to accommodate the number of firefighters assigned to the station along with the administration personnel. The lockers are of

insufficient size to accommodate the uniforms, station wear, personal clothing, boots, towels and robes, and toiletries of a typical firefighter. In addition, the locker room aisles are too tight to accommodate more than one person at a time. We recommend providing personal storage space of at least 2'x2'x6' for each firefighter assigned to the station.

18. The gang shower in the men's room does not meet today's standards of privacy. We recommend adding partitions and curtains.
19. The lavatories in the men's room do not have pop up drain stoppers and are too closely spaced for two people to do any grooming simultaneously.
20. A single refrigerator cannot hold three shifts of food for a firehouse of this size, so an extra refrigerator and a chest freezer were added to the apparatus bay.
21. Split-faced CMU is not an appropriate backsplash material in the kitchen, where it has accumulated 37 years of cooking grease.
22. The dishwasher, when open, blocks the entry into the kitchen.
23. The shift commander's suite is not large enough for both the office and sleeping functions, has insufficient locker space.
24. The Fitness Room does not have sufficient ceiling height for many fitness activities.
25. The floor tile on the first floor is difficult to clean due to the width and frequency of the grout joints. We recommend replacement.
26. The ceiling fans in the Dayroom and Dormitory are mounted too low which can lead to impacts with occupants. We recommend investigating raising the ceiling height above 8'.
27. The training room is not of a size and shape conducive to the training events held there. There is no storage room for extra chairs and tables or for training materials, so these are arrayed along the walls of the space. The existing furniture is in poor condition. The training room is too small and improperly equipped to accommodate modern fire training functions. This may lead to problems complying with NFPA 1720.
28. The light switches for the basement are located inside one of the offices.
29. There is insufficient storage space both in the contaminated zone and in the clean zone.

Buffalo Creek Dance / Childcare Facility

Extensive repair is required for on-site parking and exterior envelope with moderate remodeling for interior finishes, facility-wide accessibility and energy efficiency. Mechanical systems are in good working condition but are at the end of their life expectancy. Electrical Systems are in good working condition. Functionally the building is not set up properly for a dance studio or a childcare facility in configuration and size of the spaces.

The following key points highlight the deficiencies on the condition, system narratives, and functional analysis of the spaces.

Facility Condition Assessment

Building A

- Exterior
  1. Site curbs are in poor condition with several of them cracked and missing large chunks
  2. Site does not have proper drainage, as there was standing water in areas with no site slope
  3. Site vegetation appears to have a type of fungus growth on it, which will slowly kill the vegetation
  4. Exterior asphalt pavement has large areas of cracking and spalling
  5. Exterior brick pavers are failing and cracking with many pavers missing leaving a void in the sidewalk
  6. There is a step at the main entry door, due to the exterior slab sinking which has caused the entry to be inaccessible
  7. The downspouts are in poor condition
  8. Window screens are in poor condition, with many of them failing
  9. Window lintels do not have weeps and flashing is failing
  10. Window Lintels are rusting due to the lack of weeps and failing flashing
  11. There is a large stair stepping crack at one of the building corners
  12. The exterior brick faces are failing and falling off due to paint trapping moisture in wall
  13. Any existing weeps vents or ropes were painted over, rendering them useless
  14. Exterior building paint is cracking and failing in areas
  15. Failing fence posts at exterior children's play area
  16. Exposed flex gas line in exterior children's play area
  17. Base flashing between masonry units and foundation wall is failing
  18. The roofing system and building flashing appear to be past their useful life expectance
- Interior
  1. The interior layout of this building has been altered to fit the needs of the current functions, however the wall patches and infills were poorly done and a large portion of the interior floor tiles have cracked

2. Lavatory fixtures are in poor condition and nearing the end of their life expectancy
3. There are several large exterior wall building cracks that are clearly visible from the interior spaces
4. The interior paint on some of the overhead ducts is failing
5. Copy room functions are accessed through an existing teaching space
6. The building lacks storage for all the functions it serves

- Fire Protection

1. There is a combined fire/domestic water service that feeds this building. The fire system appears to be receiving routine maintenance and inspections as evidenced by the tags on the fire sprinkler assemblies. The fire and domestic lines are both protected by RPZs.
2. The sprinklers are primarily overhead exposed ceiling mount type.

- Plumbing

1. There is a floor drain the center of the mechanical room. The condensate drains from the furnaces are piped over to this drain. The furnaces are high efficiency and produce acidic condensate, this has corroded the floor drain and the floor around the drain. The condensate drains are not equipped with condensate neutralization kits. In addition, the pipes that run along the floor create a trip hazard.
2. There is an electrical outlet directly above the mop sink with water pipes routed right next to it, this could create an electrical issue if that piping leaks.
3. There does not appear to be a recirculating hot water pump in this building. The hot water in the maintenance room was hot quickly but takes longer to get hot the further you get from the mechanical room. See image H.3. The sink in the far classroom took 43 seconds to get hot water. A recirculating hot water line would reduce this wait time significantly.
4. The plumbing in the bathroom is in good working order. Hardwired sensor-activated faucets are installed, Faucets are also equipped with thermostatic mixing valves.
5. The plumbing vents that poke up through the roof do not currently meet code, typically 12" or 18" minimum.
6. The high roof of the building slopes to gutters that drain to the parking lot. The lower roof in the front of the building is flat and is drained by internal roof drains. I could not locate overflow drain system on the flat roof although there appears to be an active downspout on the South side of the building. The existing plans that we were provided did not show the roof drainage system. See image H.6. There is some evidence of ponding on the flat roof that could lead to more roof leaks in the future if not addressed.
7. The hot water piping is not currently insulated which does not meet energy code.
8. here is a combined fire/domestic water service that feeds this building. The domestic water supply line appears to be in good working order and is protected by an RPZ.
9. There is a bulge in the tile floor that appears to be concealing a plumbing cleanout. This violates the plumbing code, all cleanouts should be accessible.

- HVAC

1. The building is primarily served by a series of 4 furnaces that are located in a centrally located mechanical room. There are several auxiliary heat sources in the perimeter areas that supplement the furnaces. The furnaces are currently operational but are reaching the end of their usable life.
2. The split system air conditioners/condensers operate with R-22 refrigerant. R-22 is no longer legally able to be manufactured, so finding replacement refrigerant and parts is going to be an ongoing challenge moving forward and will only get more difficult and expensive. Similar new systems operate with R-410a refrigerant.
3. The furnaces are provided with fresh outdoor air for ventilation via a louver on the exterior wall of the mechanical room. This louver is not equipped with a motorized damper. Also, the duct is not insulated. Both of these items do not meet current energy code. See image I.3.
4. The mechanical room is being used for general building storage. Much of the mechanical equipment is obstructed by the items being stored.
5. The furnaces have side returns, and the furnace filter is cut into the return air duct. The filter opening is not well sealed and there is significant duct leakage through that opening. In addition, the filter does not fit the duct appropriately and sticks out. See image I.5. There are signs that routine filter maintenance is being performed, I saw loose filters in the room and a list of filter replacement dates near the equipment.
6. The insulation on the refrigerant lines is failing, torn or in need of repair.
7. I was unable to detect any exhaust airflow in the bathrooms. It did not appear that the exhaust fans on the roof were operating at the time of our visit although the fans did not appear to visibly broken. In fact, none of the roof mounted fans appeared to be running during our visit which was in the middle of a typical workday.
8. The dance studio in the back of the building has two separate thermostats and appears to be set up as 2 zones. It appears these are controlling the twinned set of furnaces in the mechanical room. The twinned furnaces would ideally be operated identically off of only 1 thermostat to avoid short cycling of the furnaces/condensers. If the supply and return ducts were routed separately then this configuration would work properly but as built it is not ideal. The existing plans that we saw onsite showed some rooftop units in lieu of furnaces, so it was difficult to determine if this was the original design or a field modification. See image I.8.a. There are several flat areas on the roof that may have been rooftop unit curbs in a previous design that have been filled in. The condensing units on the newer furnaces are mounted on one such cap. See image I.8.b. The condenser coil and coil guards appear to be rusting significantly. This could lead to refrigerant leaks and additional issues in the future if not addressed.
9. There are a total of 4 furnaces that heat and cool this building. 2 of those furnaces are newer and 2 are older. The newer ones appear to be manufactured in 1994, the older ones appear to be original to the building. All four are operating on R-22 refrigerant. 2 of the condensers are mounted up on the roof and 2 are on grade. The 2 condensers on grade are mounted directly to the concrete curb and not elevated. This will let snow build up on the units during the winter months and can cause issues with the equipment long term.
10. Programmable thermostats are installed to control the furnaces.

- Power Distribution

1. Building A electrical system contains normal power provided from a utility owned, pad mounted transformer.
2. Power is supplied to a Main Switchboard with service disconnect located in the main electrical room, which in turn feeds all equipment, devices, and luminaires via step down transformer and panelboards.
3. Main Switchboard is a 1200 amps, 480V, 3 phase , 5-section switchboard with 1200A main disconnect manufactured by Jemison Electric. Switchboard does not meet the 3'6" required workspace clearance. In addition, two egress doors shall be provided at both end of equipment rated 1200A or more and over 6 feet wide, unless double the required workspace is provided. (NEC 110.26).
4. Main electrical room egress door is missing panic hardware and swinging in the wrong direction. (NEC 110.26).
5. An integral, 37.5KVA, 480V to 240V, single phase, step down transformer and associated 42 pole downstream panelboard are provided at the 5th section of the Main Switchboard.
6. The integral 42 pole panelboard is a 120/240V, single phase panelboard with main circuit breaker. The integral panelboard in turn feeds a 120/240V, 30 pole, single phase, main lug only panelboard located in adjacent room.
7. Abandoned feeder conductors are left inside the Main Switchboard.
8. Switchboard is oversized and obsolete. Replacement parts are not readily available.
9. 30 pole panelboard is located in one of the classroom. Panelboard does not meet the required workspace clearance. (NEC 110.26)

- Lighting
  1. Building A interior lighting system contains recessed mounted and pendant mounted luminaires with energy inefficient fluorescent fixtures.
  2. Bugeye with integral battery pack and exit signs are provided for emergency egress lights.
  3. Typical on/off snap switches are provided for utility room and Dance Room. Occupancy/vacancy sensors are provided in most classroom and restroom.
  4. Exterior lighting system contains LED wall pack and pole lights with photosensor, and time control system located in the main electrical room.
- Systems, Safety, and Security
  1. Telecom equipment and punch down blocks and associated extension cords are located adjacent to the Main Switchboard and improperly placed on electrical panel.
  2. The Fire Alarm Control Panel (FACP) are located above the door in one of the classrooms.
  3. Typical horn/strobe and pull station are provided throughout the building.

<u>Buffalo Creek Building B</u>

- Exterior

1. Site curbs are in poor condition with several of them cracked and missing large chunks of concrete
2. Site does not have proper drainage, as there was standing water in areas with no site slope
3. The exterior trash enclosure is in poor condition with missing slates and other damage due to lack of protection bollards
4. Site vegetation appears to have a type of fungus growth on it, which will slowly kill the vegetation
5. Exterior asphalt pavement has large areas of cracking and spalling
6. Exterior concrete sidewalks have large cracks within them
7. There are several small cracks in the foundation walls and two very large vertical cracks
8. The exterior brick faces are failing and falling off due to paint trapping moisture in wall
9. The roofing system and bldg. flashing appear to be past their useful life expectance

- Interior
  1. The bldg. lacks storage for all the functions it serves
  2. There are several large straight and stair stepping exterior wall bldg. cracks that are clearly visible from the interior spaces
  3. There appears to be a roof leak, as several interior ceiling tiles have water spotting on them
  4. Interior hollow metal doors and frames are rusting through at the bases
- Power Distribution
  1. Building B electrical system is fed from the Main Switchboard located in Building A. The electrical system contains two panelboard and a step-down transformer
  2. The main panelboard PP is a 480V, 3 phase panel with a 100A main circuit breaker located in the mechanical room. Panelboard PP feeds a 480V-120/208V step down transformer located in the ceiling space of the same room, which in turn feeds panelboard LP located adjacent to panelboard PP. Panel LP is a 120/208V, 3 phase with a 100A main circuit breaker. Both panelboards PP and LP are manufactured by Siemens.
  3. Existing panelboard PP does not have adequate work clearance per NEC (NEC 110.26)
  4. Existing panelboard LP does not have adequate work clearance per NEC (NEC 110.26)
- Lighting
  1. Building B interior lighting system contains recessed mounted and pendant mounted luminaires with energy inefficient fluorescent fixtures.
  2. Bugeye with integral battery pack and exit signs are provided for emergency egress lights.
  3. Typical on/off snap switches are provided for utility room and Dance Room.
  4. Exterior lighting system contains LED wall pack and pole lights with photosensor, and time control system located in the main electrical room.

- Systems, Safety, and Security

  1. Typical horn/strobe and pull station are provided in the building and tie back to the FACP located in Building A.

Functional Analysis

- Dance Studio – Building A

  1. Entrance. The facility does not have sufficient queuing and waiting space for parents and children attend a dance class. With the fast turn-around times of the classes (5-minutes), you need to be able to queue the next class coming in and accommodate the existing class coming out. The quantity of people can be between 24-40 depending on how many kids come in with their parent.
  2. Security. The facility does not have a security system, parents bring their child to the dance studio directly.
  3. Dance Studio A. Dance Studio A is inadequate in size and configuration. The area per dancer requirement is 100 SF / Dancer. Studio A is approximately 1,030 SF, so a small class of 10 would be appropriate. The larger class sizes have up to 25 dancers in the room, requiring 2,500 SF. For each dancer, it is also required to have 5-feet of barre length. Acoustics need to be improved and a permanent sound system is required. Space for student's shoes are required since a lot of the dance work is bare foot. The floor surface is wood and is sprung – appropriate for some dance forms, but not for bare foot work – a Marley floor surface would be recommended as a multi-purpose floor surface.
  4. Parent Viewing Room. The parent viewing room is inadequate in size (260 SF) and can only accommodate 12-15 people including children. A separate passive play area for siblings is required along with restrooms that are immediately in the room, limiting the wandering of siblings within the facility.
  5. Storage. Storage is inadequate in the facility for equipment and costumes (160 SF). There is a two-bay storage area off-site to accommodate all the equipment.
  6. Dance Office. There is no dance office in the facility, one is required to attend to daily business of the Director and to provide a space for the staff to store personal effects.

- Dance Studio – Building B

  1. Entrance. The facility does not have sufficient queuing and waiting space for parents and children attend a dance class, they come from the outside directly into the dance studio.
  2. Security. The facility does not have a security system, parents bring their child to the dance studio directly.
  3. Dance Studio B. Dance Studio B is inadequate in size and configuration. The area per dancer requirement is 100 SF / Dancer. Studio B is approximately 1,360 SF, but with access from the outside directly into the studio, the functional dance area is approximate 900 SF – limiting capacity to 9 dancers. Acoustics need to be improved and a permanent sound system is required. Space for student's shoes are required since a lot of the dance work is bare foot. The floor surface is a Marley floor surface appropriate as a multi-purpose floor surface.
  4. Parent Viewing Room. There is no parent viewing room, everyone sits around the perimeter

of the studio. Restroom facilities comes off of the studio, ideally should be separated.

5. Storage. Storage is inadequate in the facility for equipment and costumes (160 SF). There is a two-bay storage area off-site to accommodate all the equipment.

- Childcare – Building A

1. Entrance. This facility does not have sufficient queuing and waiting space for parents and children while dropping off their children.
2. Security. There is a reception desk that is staffed for security; however, modern childcare facilities have a secure lobby for entry and egress to the facility.
3. Classrooms. Sizes are not sufficient for the up to 12 children per classroom. Current facility has three rooms that vary in size (376 SF, 544 SF, and 309 SF), functional capacity of the three existing classrooms is 5, 7 and 4.
4. Restrooms. There are two shared restrooms in the facility that serve all of Building A – the fixtures are standard height and size. There is one restroom that has child size fixtures. Childcare classrooms require two single user restrooms for 12 children per the Illinois Plumbing Code, with appropriate height and size fixtures for children.
5. Staff Support Spaces. There are two staff support / storage rooms that are only accessible through one of the classrooms. A new facility would require a teacher workroom and supply storage rooms that are accessible from the corridor.
6. Large Motor Area. This facility uses the Dance Studio in Building A for any large motor activities, the space is adequate for the needs.
7. Outside Park / Equipment Area. The outside area is appropriately fenced and has appropriate cushioning at apparatus. Access to the space would be more functionally appropriate if the pathway to the outdoor space only had access from the building versus having to go outside of the building, on the sidewalk adjacent the parking lot.

The Chalet at Paulus Park

Extensive repair is required for interior slab / foundation, outside deck and railing system are failing, exterior envelope repairs, with moderate remodeling for interior finishes, facility-wide accessibility and energy efficiency. Mechanical and Electrical Systems are in good working condition. There are not many functional uses for the facility due to the lack of access to parking and the single space configuration of the building.

The following key points highlight the deficiencies on the condition, system narratives, and functional analysis of the spaces.

Facility Condition Assessment

- Exterior
  1. The path to the bldg. entrance is discontinuous near the main entry
  2. The bldg. slab is sinking significantly to the north causing gaps and misalignments of the bldg. posts on the footings
  3. There are several areas of missing roof shingles
  4. There are gaps in the exterior wall material allowing daylight into the building
  5. The exterior deck and railing systems are in poor condition and should be replaced
  6. The exterior windows were in poor condition
  7. There are rotted and missing trim boards on the exterior of the building
  8. There is no ramp system for access to the entry door
  9. There is no entry vestibule
- Interior
  1. The interior slab has recently been lifted, but it has sank again since that work was performed
  2. The main entry and back entry door thresholds were in poor condition
  3. The interior floor tiles are in poor condition with many of them cracked
  4. The mechanical ducting system runs under the building and appears to be extremely dirty
  5. The kitchen space is not handicapped assessible
  6. The kitchen appliances, faucet and sink all appear to be in poor condition
  7. The restrooms are not handicapped assessible
  8. The bldg. mechanical room is accessed directly off of the main space and could be a disturbance depending on the event taking place

Functional Analysis

1. General. The facility is appropriate for summer day camp gathering and shelter during inclement weather with a large indoor space and large outside deck space. Access to the facility is a long distance from the parking area, limiting the use of the facility for other programming opportunities.

2. Restrooms. The restroom capacity is too small for use as a day camp shelter.
3. Kitchen. The kitchen space is small and does not have appropriate appliances to serve as a day camp center.

- Power Distribution
  1. Building Chalet electrical system contains one panelboard. Utility meter is located on the building exterior wall. Power is supplied to all equipment, devices and luminaires via this panelboard.
  2. The panelboard is a 120/240V, 1 phase panel with a 200A main circuit breaker located in the utility room. Panelboard is a load center type panel with 40 pole breakers manufactured by Square D. Existing panelboard does not have adequate work clearance per NEC (NEC 110.26).
  3. Exterior receptacle (wet location) do not have enclosure that is weatherproof when outlets are being utilized. (NEC 406.9).
- Lighting
  1. Building Chalet interior lighting system contains recessed mounted and surface mounted luminaires with energy inefficient fluorescent and LED fixtures.
  2. Bugeye with integral battery pack and exit signs are provided for emergency egress lights.
  3. Interior lighting control consists of line voltage toggle switches and sensors in the restroom and storage room.
  4. Exterior lighting system contains wall pack with LED and incandescent light source. Time control system for exterior lights are provided adjacent to the panelboard.
- Systems, Safety, and Security
  1. Telecom incoming service and punch down block is located in an enclosure located on the exterior wall.
  2. Typical horn/strobe and pull station are provided in the building. The FACP is located in the utility room adjacent to the panelboard.

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Lake Zurich Fire Station #1 Study

Lake Zurich, Illinois

April 24, 2020

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Acknowledgements

BKV Group would like to thank the Lake Zurich Fire Department project team for their time during the preparation of this study.

Fire Chief John Malcolm
Deputy Chief John Kelly
Deputy Chief Dave Pilgard

Ray Keller, Village Manager
Mike Brown, Public Works Director
Michael Duebner, Innovation Director
Kyle Kordell, Assistant to Village Manager

Facility Condition Assessment

The purpose of this section of the Study is to document the condition of Fire Station #1. This information provides the necessary data to enable the Department to make informed decisions regarding how to best address any repairs, upgrades and/or replacements. There are two components to the Assessment:

An on-site *Physical Condition Assessment* of the building was performed to determine maintenance issues, safety and code concerns, building systems and finishes that have exceeded their useful life, and to review how current conditions affect building system operations and energy costs.

A *Functional Assessment* was performed through visual observations and discussions with key staff. It determined how existing building conditions are affecting staff operations and the ability to serve the community. The Functional Assessment also examined how present operations and workflows compare to current recommended best practices in the industry.

The assessments are intended to provide an indication of the capital maintenance requirements, potential code and regulatory required upgrades, and other building conditions which should be considered as part of the facility's general upkeep as well as part of any building project. This study does not address areas of the building that are concealed behind walls or locked doors.

A building element or system listed as being in "good" condition should be interpreted to mean that it is in the first part of its anticipated useful life or that it is aging but has been maintained exceptionally well such that its useful life is extended beyond normal expectations. With the exception of motor-driven equipment and finishes exposed to hard wear, "good" systems and elements are not expected to need replacement for 15 or more years.

A building element or system listed as being in "fair" condition should be interpreted to mean that it is in the middle part of its anticipated useful life. "Fair" systems and elements are not expected to need replacement for at least 5 years.

A building element or system listed as being in "poor" condition should be interpreted to mean that it is in the last part of its anticipated useful life and that the need for replacement is imminent.

The facility assessments were conducted on November 5, 2019 by the following individuals:

- Craig Carter, AIA
  Associate Partner, BKV Group
- Brian Reising, AIA
  Senior Project Architect, BKV Group
- Wellesly Lynn, PE
  Electrical Engineer, BKV Group
- Alex Sawka, PE
  Mechanical Engineer, BKV Group

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Fire Station #1 Assessment

A. Building Description

1. Past and Current Use
    1. The Fire Station was purpose built in 1980. In addition to serving as a fire station the building serves as Fire Headquarters with administrative offices and a training room.
2. Location
    1. The address is 321 S. Buesching Road in Lake Zurich, Illinois.
    2. The building is located in the central portion of Lake Zurich and the center of the area protected by the Department.
3. Size
    1. It is a single-story structure with a partial basement below the offices, bunk room, and locker rooms. The first floor is ~9,360 square feet and the basement is ~2,450 square feet, for a total of 11,810 square feet
    2. The parcel is approximately 1.0 acres measuring 150' x 290'
4. Orientation
    1. The apparatus bays face due east and are located on the southern portion of the property. Apparatus support spaces are south of the bays and offices and living spaces are north of the bays.

B. Site

1. Topography
    1. The site slopes from the surrounding roadways down to the building, shedding water towards the building. A small grassy area at the northwest corner collects some rainwater although it is largely flat. There is a retaining wall along the south property line and the adjacent parcel is two to three feet lower.
    2. The building finished floor elevation is significantly below the level of both S. Buesching Rd. and Chancery Ln.
    3. South of the fire station is a rec center operated by Ela Township.
2. Storm Water Drainage

1. The main roof section is broken up by several gables, which route water to the north or south, where water is collected by gutters, which run to downspouts and down into underground standpipes or into piping at grade. Those that are run underground are assumed to be connected to the city storm sewer system, as there are no signs of them daylighting at grade on the property. The other downspouts are connected to corrugated piping, which is routed across grade to nearby storm sewer inlets.
2. On the north side of the building, it was stated by staff that surface storm water sheet flows south toward the building and down the external staircase. This quickly overtakes the capacity of the drain at the base of the stairs, causing the rising water to enter under the lower lever door that is at the base of that external stair. It was stated by staff, that several attempts have been made to remediate this water infiltration, but due to fact that the building is set lower than the adjacent grade, water infiltration almost seems impossible to stop.

3. Paving and concrete
    1. The staff paved parking area is in fair condition.
    2. At the time of this assessment, the asphalt in S. Buesching Rd. at the response/return apron is in good to fair condition with just minor cracking adjacent to the concrete street curb and gutter.
    3. The concrete response apron is in fair condition with minor cracking and spalling. We estimate replacement will be critical within 5 years.
    4. The concrete at the rear approach of the apparatus bay is in fair condition. The entire surface is spalling and there are several cracks throughout the slab. We estimate replacement will be critical within 5 years.
    5. The concrete curbs and gutters are in generally good condition with some areas showing superficial scrapes and abrasions.
    6. The concrete entry on the north side is in fair condition, with some spalling adjacent to the entry door. We suggest repairing this in the very near future to eliminate the possibility of an accident and further damage.
    7. The concrete at the sliding glass door entry on the west side of the building is in fair condition with minor cracking at the base of the nearby column, directly in front of the doorway. We suggest replacement to be critical within 2 years.
    8. The concrete at the rear apparatus bay pedestrian entrance is in good condition.
    9. The concrete public sidewalks are in generally good condition.
4. Landscaping and Site Elements
    1. Plantings and landscaping appeared to be well kept at the time of the facility assessment.
    2. The flagpole is in good condition.
    3. Around the base of the flagpole there is a low masonry block wall, that appears to be in good condition at the time of this assessment.
    4. While the pads that the condensing units are located on are in good condition, these condensing units are located along the front of the building and unprotected from the public sidewalk. It is our recommendation that the condensing units are moved away from the public sidewalk at the very least and protected if possible.
    5. The building back-up generator and concrete pad appear to be in good condition. Although its location is screened from the public, the generator is not in an enclosure or protected from vehicular or pedestrian damage. We recommend adding protection around the generator to be critical.

6. There is not a dedicated sidewalk from the staff parking area to the staff entrance. Instead, the edge of the rear approach apron acts as the walkway for the staff. This portion of the concrete pad is in poor condition. The concrete has spalled and cracked at the joints creating large gaps and cracks. We suggest replacement will be critical within 2 years.
7. There is a large amount of training/building materials that are stacked up against the south face of the building which could be dangerous and a hazard to the public, since the pile of material is not screened from the public. We suggest moving or screening this material from the public at the very least be critical.
8. There is a low partition wall on the north side of the building that separates the exterior staircase to the lower level from the landscaping bed. The top of the wall is not sloped and shows no evidence of flashing beneath the stone cap. The cap should be removed, flashing installed, and the cap replaced with a slight slope to shed water toward the landscaping bed.
9. The brick screen wall at the dumpster exhibits symptoms of moisture intrusion and differential settlement. The stone cap should be removed, protected with through wall flashing, and replaced, using sealant in lieu of mortar at the vertical joints. The entire wall should be tuckpointed.

5. Water service entrance was not observed. Plans show this coming from the west property line.
6. There is an electrical transformer on the south side of the building. It is assumed that the electrical service is routed underground from a pole along S. Buesching Rd. Furthermore, it is assumed that from there, the service has been routed into the building via underground conduit on the south side building.
    1. The building backup generator appears to be newer and in good condition.
7. The Natural Gas meter is located near the southeast corner of the building.
8. Sanitary Sewer Utility was not observed. Plans show this leaving the site towards the west.
9. Storm Sewer inlets are located around the site. Plans show this tied into a municipal system at the southwest corner of the parcel.
10. Cable television comes underground to the east side of the building and is routed into the building through the foundation wall. We recommend ensuring that the thru-wall hole has the proper sealant installed to reduce water and insect migration into the building.
11. There are several antennas mounted to the upper portion of the building. The exact services coming into those antennas are unknown.

C. Structural Frame

1. The foundation appears to be in fair to poor condition as there is concrete spalling and settling cracks found throughout the foundation. This is difficult to fix, but to avoid it getting worse we recommend carefully managing water around the perimeter of the building and within the brick walls.
2. The slab-on-grade, where visible, appears to be in generally good condition with minor cracking, spalling and superficial staining.
3. Portions of the first floor is concrete over corrugated metal deck over steel joists.
4. The exterior bearing walls are running-bond split face concrete masonry with clay masonry units on the lower portion of the building and an exterior plaster system and wood timber type cladding system on the upper portion of the building.
    1. In the dayroom, it was observed that the interior split face CMU has shifted and has large vertical crack from differential settlement.

2. Adjacent to several windows, there were horizontal cracks in the joints of the split face block as well from differential settlement. This is likely due to the lack of control joints in the masonry.
3. The interior spit face CMU also showed signs of efflorescence.

5. The original roof structure is steel joists supporting a low sloped roof system. However, there has been a wood truss framed asphalt shingle roof system built overtop of the existing low slope roof. The low slope roof system over the office areas was not observed from the underside, but the exposed bar joists in the apparatus bays appeared to be in good condition. We were able to observe the wood truss system by accessing the roof of the low slope roof through an existing roof scuttle. The wood truss system appeared to be in good condition.

D. Exterior Enclosure

1. Exterior Walls
    1. The exterior bearing walls are clay masonry units and are generally in poor condition. It was stated by the staff that the exterior masonry units and mortar installed were not meant for this climate zone. Most of the bricks throughout the entire exterior have failed causing the bricks to crack or faces of the bricks have spalled. There is also signs of efflorescence in the exterior masonry, caused by water getting into the cavity through the damaged areas and trying to get back out.
        (1) It was observed that several areas have already been tuckpointed due to failure of mortar joints.
        (2) In other areas, the mortar joints of the exterior masonry units have cracked and are missing. This was observed throughout the entire perimeter of the building.
        (3) The face brick at the base of the vestibule wall and adjacent to the apparatus apron are spalling badly due to exposure to de-icing salts. These will need to be replaced and sealed to limit future damage to the wall.
        (4) We recommend recladding with a material designed for this climate.
        (5) Although it was not verified by observation, it was stated by the staff, that there appears to be little to no exterior wall insulation. Staff stated that the gusts of wind can be felt coming through the wall on windy days and that the perimeter offices are very cold in the winter months. We recommend adding insulation to the recladding project suggested above.
    2. At the east elevation, the pilasters between the apparatus doors have been furred out and covered with stucco and wood trim. This is likely due to a failure of the original brick cladding. The interior CMU at these locations shows signs of water infiltration. We recommend scraping and repainting this area and monitoring for any new damage.
    3. The damp-proofing at the top of the foundation wall is deteriorating from exposure to the elements.
    4. The wood at the roof trim, the shutters, and on the gable ends is exhibiting signs of exposure to the elements. The wood should be refreshed with a new exterior grade paint. In some cases, individual pieces will need to be replaced.
    5. The wood trim at the base of the entry door sidelight is deteriorating due to contact with the ground. It should be replaced by aluminum storefront framing for long term durability.
    6. There is already evidence of corrosion at the steel lintels, indicating a failure of the flashing and/or lack of ventilation in the wall cavity. It would be costly to install this

flashing, so the lintels should be scraped clean of rust, coated with a rust-inhibiting paint, and monitored on a regular basis.

7. The prefinished metal parapet cap flashing at the training tower has been dented and scratched and is beginning to rust. The sealant joints are failing and should be replaced.
8. The rock ballast on the east portion of the training tower roof has shifted away from the perimeter, exposing the built-up roof material beneath. The roofing has degraded to the point of failure and should be replaced as soon as possible.
9. There is no evidence of through-wall flashing at the base of the exterior. There is no evidence of ventilation at the top of the brick. Brick walls are known to accumulate water through vapor pressure, wind-driven rain, and surface tension effects through small cracks that form between the bricks and the mortar. It would be cost-prohibitive to add this flashing, but the base of these walls should be monitored both inside and outside for the effects of water retention.
10. Above the main entry Vestibule and above the Battalion Chief's Suite, there is no kick-out flashing where the roof slopes along a vertical wall. This flashing piece is used to prevent water from overshooting the gutter and running down the face of the wall. We recommend adding this flashing.
11. The sealant in the control joints appears to be in fair condition. It is recommended that the condition of the sealant is monitored and replaced when it shows signs of failure.

2. Windows and Doors
    1. The hinges at the doors from the apparatus bay appear to have been recently replaced and are in good condition.
    2. The apparatus doors, springs, and tracks appear to be in good condition.
        (1) The weatherstripping and bottom seals at the apparatus doors also appeared to be in good condition. It is recommended that the condition of the seals is monitored and replaced when they show signs of failure.
        (2) The metal at the jamb of the overhead doors are in good condition as it was recently painted.
        (3) The masonry columns at the jamb of the overhead doors are in fair condition, as a few of the lower column sections have already been tuckpointed due to the deterioration of the joints and face brick from de-icing salts and harsh weather. The remaining jamb sections appear to be in fair condition with minor cracking and spalling of the face brick.
        (4) The metal overhead door headers are in good condition. The paint appears to be in fair condition. We suggest scraping, sanding and repainting them in the next 5 years, to extend their useful life.
    3. The windows appear to be in excellent condition aside from some fading of the finish color. The sealant at the window perimeter appears to have been recently replaced. As previously mentioned by staff, they could feel drafts come through the windows on windy days. We recommend inspecting the gaskets on the sash and they should be replaced if torn or missing.
    4. The brick at the training tower sills is highly degraded and should be removed and replaced.
    5. The west facing sliding glass door that leads into the kitchen / dining room area appears to be in fair to poor condition. Like the wood trim at the base of the Vestibule, the wood trim has begun to deteriorate due to its proximity to the ground and de-icing

salts. It should be replaced by aluminum storefront framing for long term durability. We estimate replacement will be critical within 5 years.

3. Roof
    1. The roof shingles have been recently replaced and are in excellent condition.
    2. At locations where the roof funnels down to a very narrow valley between dormers/gables and where the roof slopes directly into the face of a wall, water has run down the face of the brick, causing deterioration. Each of these conditions should have a conductor head and downspout added, or a larger conductor head installed if one already exists.

E. Interior Elements

1. Flooring
    1. The floor tile and tile wall base in the corridors is in fair condition.
    2. The carpet in the offices is in generally fair condition.
        (1) The carpet in the Management Assistant's office was damaged by a water leak and should be replaced.
    3. The carpet in the dayroom corridor is in poor condition.
    4. The floor tile in the Locker Room is worn and is anticipated to need replacement in 5 to 10 years. The wall base in the Locker Room is worn from repeated mopping.
    5. The floor tiles in the Kitchen are showing signs of wear and should be replaced.
    6. The carpet in the training room is in fair condition.
    7. The wood-look vinyl flooring in the basement is in good condition.
    8. The athletic flooring in the physical conditioning room is in good condition.
    9. The resinous flooring in the apparatus bays is in poor condition.
        (1) There are cracks
        (2) There are damaged areas near the doors
        (3) At the trench drains, the flooring is chipping because the steel angles are beginning to rust. We recommend This may eventually cause the trench drains to fail and need to be fully replaced, therefore, we recommend removing the grates, sanding, scrapping or sandblasting the in-place steel angles, adding the necessary horizontal support angles to strengthen the existing steel angles and painting all of the steel with a rust-inhibiting paint, to extend the use.
    10. The epoxy flooring at the apparatus support spaces is new and is in good condition.
    11. The tile flooring in the shift commander's shower is reported to be slippery when wet and should be replaced.
    12. The rubber wall base throughout the building is in poor condition and should be replaced to protect the base of walls from damage.
    13. The basement mechanical room floor and wall base should be repainted.
2. Walls
    1. The interior gypsum board walls are in generally good condition.
        (1) Where the basement leak damaged the gypsum board, sections were removed to enable drying.
        (2) The wall of the office built out of the dormitory space is not sealed to the exterior wall. We recommend sealant for acoustical privacy.
        (3) A section of gypsum board in the dayroom was removed to access a hose bibb fixture.
        (4) A crack in the drywall occurs above the door between the dormitory are and the Locker Room. This is an aesthetic issue only.

(5) The door closer at the entry into the Locker Room hits the adjacent drywall. We recommend a door stop.
(6) The wall of the shift commander's restroom is not sealed to the exterior wall. We recommend sealant.

2. The split-faced CMU wall between the apparatus bay and the dormitory is in good condition.
3. The split-faced CMU wall between the Men's Locker Room and the Apparatus Bay is not an appropriate material for a restroom setting. We recommend covering with thick-set tile.
4. The wall tile in the public restroom is in good condition.
5. The wall tile in the Men's Locker Room is in good condition.
6. The wall tile in the Women's shower is in good condition.
7. The wall tile in the Shift Commander's shower is in fair condition.
8. The interior CMU partitions are in generally good condition.
9. The lower level restroom does not have a durable surface adjacent to and behind the toilet and urinal as required by code.
10. The coating on the foundation walls at the lower level is in generally good condition.
    (1) The foundation wall in the Training Captain's office shows signs of past water infiltration.

3. Ceilings
    1. The gypsum board ceilings are in generally good condition.
        (1) Mechanical diffusers in the shower room are showing signs of rust and should be replaced.
    2. The suspended grid and acoustical ceiling tiles throughout the building are discolored, sagging, or damaged in places, including the training room which is a very public-facing space. This is an aesthetic issue only, but we recommend replacement to ensure staff is subliminally motivated to care for the building (broken window effect) and that the public can be proud of the facility.
4. Doors
    1. The wood doors and hollow metal frames are in generally good condition with some scrapes and dings, especially around the handles and locks.
        (1) The finish on the door levers is wearing off. This is an aesthetic issue only.
        (2) The sliding closet door in DC Kelly's office is in poor condition with major scrapes across it. We recommend sanding and refinishing.
        (3) The swing door into DC Kelly's office is a residential grade door. We recommend replacing with a commercial grade solid core door that would give him the acoustic privacy his job demands.
        (4) The sliding closet door in the dormitory space is in poor condition with major scrapes across it. We recommend sanding and refinishing.
        (5) The door into the Men's Locker Room is worn and delaminating and should be replaced.
        (6) The door into the Shift Commander's Suite is worn and delaminating and should be replaced.
        (7) The hardware at the doors into the Men's Locker Room show signs of corrosion. We recommend replacing with non-ferrous hardware.
    2. The hollow metal doors in the Apparatus Bays are scratched and the base of the frames are beginning to rust. They should be scraped clean of rust and coated with a rust-inhibiting paint. We recommend protecting with armor plating.

(1) The door between the apparatus bay and the dormitory space rubs against the frame. We recommend rebalancing.

3. The lintel above the inner vestibule door shows signs of rust and there is efflorescence at the brick, indicating water behind the brick trying to get out. This likely caused by water infiltrating the exterior brick wall above this space. That portion of the wall is blocked from view by the roof pitch, but it occurs directly below one of the conductor heads that overflows in a heavy rain. It is likely that the volume of water spilling over the conductor head is overwhelming the flashing and getting into the wall cavity.

5. Casework
    1. The worksurface in the Watch Room/ Station Office is in past it's expected service life with chips and delamination throughout.
    2. The kitchen cabinets have reached the end of their service life with failing hardware and significant surface wear.
    3. The plastic laminate countertop in the kitchen is chipping and should be replaced with a more durable surface.
    4. The casework in the training room is in good condition.
    5. The vanity in the Men's Locker Room is in good condition.
    6. The vanity in the lower level restroom is in good condition.
    7. The vanity in the Shift Commander's Suite is in good condition.
6. Equipment
    1. Appliances
        (1) The Electrolux refrigerator (no freezer) appears to be in good condition.
        (2) The Frigidaire gas five-burner range appears to be in good condition.
        (3) The Frigidaire microwave/ range hood appears to be in good condition.
        (4) The Maytag dishwasher shows some surface staining.
        (5) The washing machine appears to be in good condition.
        (6) The dryer appears to be in good condition. The exterior louver is clogged with lint. We recommend installing a lint trap in an easily accessible location between the dryer and the exterior.
    2. Standard Equipment
        (1) The drawbar-type apparatus door operators appear to be in good condition.
        (2) The toilet partitions in the Men's restroom are starting to rust. To extend the lifespan we recommend scraping off any loose rust or paint and repainting.
        (3) The toilet partitions in the Women's restroom are scratched and dented. To extend the lifespan we recommend scraping off any loose rust or paint and repainting.
        (4) The lockers in the Men's restroom are in good condition for their age.
        (5) The lockers in the Shift Commander's suite are in good condition for their age.
        (6) The turnout gear lockers are in good condition.
    3. Specialty Equipment
        (1) The Milnor Gear Guardian 6 washer/extractor appears to be in good condition.
        (2) The Speed Queen drying cabinet vents directly to the exterior and appears to be in good condition.
        (3) The 60 gallon Chicago Pneumatic air compressor appears to be in good condition.
        (4) The SCBA compressor and fill station appear to be in good con
        (5) The station alerting system appears to be in good condition.

F. Vertical Transportation

1. There is no elevator in the building.
2. The stairs from the lobby to the training room are in fair condition with wear on the handrails and lots of wear on the adhered slip resistance.
3. The exterior stairs leading to the lower level fitness area are in good condition.

G. Fire Protection

1. There is a combined fire water and domestic water service for the building, located in the apparatus bay.
2. Separate fire department connections are provided for both the main fire station and the training tower.
3. The escutcheons at the sprinkler system in the Men's Locker Room are rusted.

H. Plumbing

1. In talking with the Chief at the beginning of our assessment, they told us about a pipe break that they had in the basement roughly a week before our visit. They said this was the second time they've had a pipe break in the last 6 months. There were floor mounted fans in the basement to help dehumidify the area. See image H.1.a. The staff thought it was the hot water return line that had burst, see image H.1.b. Several areas had to have drywall cut out and were in the process of being replaced, see images H.1.c. and H.1.d.
2. There was a roof addition around 1990. At this time the flat roof was covered up with a pitched roof. The flat roof is still visible from the attic/mezzanine level. That area has been used for storage of old files.
3. The pitched roof had electric heat coils added to it to alleviate ice dams. In addition, the downspouts are also equipped with electric heaters. Downspouts drain into storm catch basins scattered around the perimeter.
4. There is an area well that provides access to the basement level from the exterior. The area well is provided with a drain at the bottom of it to allow storm water to drain out. Storms strong enough to blow leaves off trees clog this drain and cause water to back up into the physical conditioning room. We recommend enclosing this stair.
5. One of the downspouts at the back of the building drains directly onto the landscaping near the parking lot. This could be contributing to some of the flooding issues that they have had onsite.
6. Roof gutters are undersized and water runs down the face of the wall to the basement foundation wall, where some infiltrates in causing humidity issues. There was mold abated in the basement and there have been 2 portable dehumidifiers in the basement in the summer to help with the humidity levels.
7. There have been issues with the apparatus apron trench drains rusting and failing in the past. It was most recently repaired approximately 2 years ago.
8. The emergency shower is inside the women's shower room.
9. The parking lot has a history of flooding because the site drainage will not be able to keep up.
10. There is currently a drafting pit on the rear apron of the fire station that is roughly 15' deep. This device holds large amounts of water to be used for training.
11. The lavatories are not equipped with thermostatic mixing valves per code.
12. There is no water connection for the coffee maker.
13. There is a combined domestic and fire water system that serves the building. The assembly is located exposed within the apparatus bay. There are taps off of the line that

feed the primary domestic water, the fire water, and the hose reels. Each are protected with their own RPZ valve.

14. The water heater is a State Sandblaster model SBT100-75-NE1 (75 kBtu, 100-gallon tank, 80% efficient) installed in 1996. There is corrosion present on the water heater access port. We recommend getting a plumbing contractor onsite immediately to address the corrosion and either repair or replace the water heater.
15. There is a hot water circulation pump.
16. Several sections of the domestic hot water piping were not insulated.
17. Sump pit and ejector pit are located in the basement mechanical room.
18. The hose bib on the covered patio had to be fixed from the inside of the dayroom.

I. HVAC

1. The living quarters are served by multiple residential style furnaces with Carrier split air conditioning systems. These air conditioners appear to have been replaced around 2011. The units are controlled by simple wall-mounted thermostats. Two of the furnaces in the basement mechanical room have been equipped with humidifiers that appear original to the installation. The furnaces do not have integral filters, they are installed loosely in the return ductwork path. This does not create a good seal and leads to air bypassing the filter.
    1. Intake and relief louvers are located in an areawell on the east side and on the north side of the building adjacent to the entry vestibule. The louver is mounted too close to grade, allowing snow buildup against the louver that blocks airflow. This could also contribute to leaks.
    2. There are currently space heaters located in the several of the private offices to help with the individual room heating. The administrator's office is cold-year round and has a space heater running 24/7/365.
    3. The office constructed by taking space out of the dormitory room does not have supply air.
    4. Residential-style furnaces with constant air volume and single-point temperature sensing are not capable of providing the level of comfort expected in a modern work environment, nor of properly conditioning a large facility operating 24/7/365 with several different use types and multiple building exposures. In addition, these systems are not robust enough to provide the level of resiliency appropriate for a fire station. If built today, this station would have a central air handler with fan powered variable air volume boxes and reheat to allow temperature regulation on a use-by-use and exposure-by-exposure basis and backup operability. This is not a feasible retrofit due to space constraints in the mechanical room and above the ceilings. A more expensive alternate that provides equivalent controllability, comfort, and resiliency and takes up less space is a variable refrigerant flow system with a ventilation air system serving it. We recommend replacing the three furnaces north of the apparatus bays with a VRF system.
2. The exhaust fan in the public restroom is operational and appears to be functioning normally.
3. The exhaust fan in the men's locker room is making a loud noise and needs to be rebalanced or replaced.
4. The women's' locker room did not have any exhaust fans running.
5. Exhaust fans were retrofitted into the basement training and fitness rooms in an attempt to eliminate the overheating issues caused by larger gatherings. This helps to remove heat but draws air from other parts of the building, potentially putting the living spaces at

negative pressure to the apparatus bays and drawing contaminants in, or at negative pressure to the exterior and exacerbating infiltration and humidity issues. These fans are operational but are running very loudly. These should be rebalanced or replaced.

6. At the time of our visit, cardboard boxes were being stored in the entry vestibule, blocking the electric resistance heater. This is a fire hazard and those boxes should be moved to a proper storage area.
7. The Plymovent system in the apparatus bay is roughly 20 years old. Some preventative maintenance has been done on it over the years and it is still operational.
8. The apparatus bays are heated by unit heaters.
9. There is a thru the wall PTAC in the Women's Shower Room. This is a band-aid solution to a temperature control issue.
10. The shift commander's bunk room has a thru-the-wall packaged air conditioner. The flashing does not pitch appropriately towards the exterior and mold has been a problem in the past. The permanent filter on that PTAC unit is dirty and needs to be cleaned.
11. The hose tower is provided with heating only via a gas fired unit heater.
12. In the office adjacent to the public restroom, there is a grille low on the wall that seems to be tied into the bath exhaust fan from the public restroom. Noise transmission through that duct into the office has been an issue.
13. There was a humidifier set up in the bunk room to help with occupant comfort.
14. The dryer exhaust termination on the side of the building is built up with dryer lint. This needs to be cleaned to prevent issues with the laundry equipment. See image I.15.
15. Several old pieces of HVAC equipment remain up in the attic but are disconnected due to the pitched roof being added previously.
16. The apparatus bays are exhausted via a fan on the original roof ducted to a dormer louver.
17. A Carrier furnace supplies heat to the apparatus support spaces.

J. Power Distribution

1. Normal power is supplied to Main Switchboard with service disconnect located in the Main Electrical Room via the utility transformer, which in turn feeds all equipment, devices, and luminaires via panelboards.
2. Main Switchboard is a 120/208V, 3 phase, 4 wire switchboard with 400A main disconnect manufactured by Cutler Hammer.
    1. Main Switchboard does not have adequate workspace clearance above the equipment per NEC (NEC 110.26). Mechanical ductwork and piping are present within 6 feet above the switchboard.
3. The following panelboards are provided to feed power to all lighting, power devices, and equipment to serve the facility:
    1. Panelboard LPA is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel LPA is a type PB panel with 30 pole breakers manufactured by Cutler Hammer. It is located in the basement mechanical room. It does not have adequate workspace clearance required by NEC. A sewage ejector and associated piping is located in front of the panel. We recommend relocation.
    2. Panelboard LPB is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel LPB is a type PB panel with 24 pole breakers manufactured by Cutler Hammer. It is located in the office corridor.
    3. Panelboard LPC is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel LPC is a type PB panel with 30 pole breakers manufactured by Cutler Hammer. It is located in the Main Electrical Room.

4. Panelboard LPD is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel LPD is a type PB panel with 30 pole breakers manufactured by Cutler Hammer. It is located in the Main Electrical Room.
5. Panelboard EMA-1 is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel EMA-1 is a type PB panel with 30 pole breakers manufactured by Cutler Hammer. It is located in the office corridor.
6. Panelboard EMB is a 100A, 120/208V, 3 phase, 4 wire panelboard with main lug only (MLO). Panel EMB is a type PB panel with 24 pole breakers manufactured by Cutler Hammer. It is located in the Main Electrical Room.

4. The electrical systems, except the generator and the associated ATS, are original to the building and installed in 1981 – much of the distribution equipment has been discontinued and is now considered "vintage." If a failure occurs, it is unlikely that the parts to fix it will be found in-stock locally, resulting in an extended outage. This is a low-frequency high-risk event due to the fact that continuous fully-functional operation is critical to the health of the community. Gordon Graham, who invented modern risk-management in Public Safety, calls for extra attention to be devoted to identifying and taking steps to mitigate this type of risk. Therefore, it is recommended to replace all distribution equipment. A full replacement can be accomplished with a hot cutover or with planned outages of short duration that can be prepared for by the building occupants.
5. A 400 A service is insufficient to power a modern three-bay fire station. Staff reports that circuit breakers have tripped on multiple occasion, indicating too much equipment has been added to the existing circuits. If built today, this station would have an 800 A service with a 150 kVa generator backing up the entire facility. We recommend enlarging the service when the main distribution equipment is replaced. This will provide sufficient power to the existing lighting, equipment, and outlets and provide flexibility for future power needs.
6. Ground rod for the heat tracing near the public entrance is not properly terminated.
7. There are power strips through the building, indicating insufficient outlets for modern use. The CMU walls hinder efforts to add more power and most of the panels are maxed out from adding the heat trace to prevent ice dams on the roof.

K. Emergency Power Distribution

1. Emergency power is supplied by an 80 kVA, 3 phase, 4 wire, 208/120V, exterior natural gas generator manufactured by Generac. Emergency power is supplied to Main Switchboard via an automatic transfer switch (ATS), which in turn feeds all panelboards and load in the facility. The building is entirely backed up by the generator.
2. Generator control panel and transfer switch are located in the Main Electrical Room.

L. Lighting

1. Energy inefficient fluorescent recessed and pendant fixtures are used for interior luminaires.
2. Interior lighting in the bays consists of surface-mounted four-foot and eight-foot strip fluorescent fixtures.
3. Exterior wall mounted are a mix of LED fixtures, and energy inefficient fluorescent and HID fixtures.
4. Typical on/off snap switches are provided in this building. Wall mounted occupancy sensors are provided in most offices.

5. Flood lights for memorial sign are luminaires with HID bulbs. The support of the fixtures are not properly angled due to erosion.
6. Several exit signs are in poor condition. We recommend replacement.

M. Systems, Safety, and Security

1. Cypher locks are provided at multiple exterior doors for access.
2. Typical horn/strobe and pull station are provided in the building. FACP is located in the Main Electrical room with an annunciator panel in the office area.
3. Telecom punch down blocks and network system are installed in closets inside the EMS Coordinators office in the basement. Patch panels and servers are located in a closet one of the Deputy Chiefs' offices on the main level.
4. Fire station dispatch system is located in the main electrical room.

N. Building Code Issues

1. There is insufficient landing depth at the bottom of the stairs, and the door swinging onto the landing does not leave half of the landing width outside of the swing.
2. The guardrail protecting the stair opening is not tall enough.
3. At the bottom of the exterior exit stair, the door swinging onto the landing does not leave half of the landing width outside of the swing.
4. The exterior egress stair only has a handrail on one side.
5. There is no safe means of egress from the Shift Commander's suite, since access to the exterior needs to pass through the Apparatus Bays. We recommend adding a door directly to the exterior.
6. The exterior electrical outlets have covers that do not protect against rain when something is plugged in. We recommend replacement or retrofit.
7. No drinking fountains were noted in the building – the Illinois Plumbing Code requires at least one.
8. The office constructed by taking space out of the dormitory room does not have supply air and therefore no fresh air ventilation.
9. Panelboard LPA in the basement mechanical room does not have adequate workspace clearance required by NEC. A sewage ejector and associated piping is located in front of the panel. We recommend relocation.
10. The second means of egress from the basement training room goes through the physical conditioning room before reaching the exit door. Exiting through another functional space is not allowed by the Code.

O. Accessibility Code Issues

Note: The original American's with Disabilities Act of 1990 went into effect on January 26, 1992. Projects designed for first occupancy after that date were required to comply. Governmental units were required to adapt their buildings regardless of their age or to ensure comparable access to similar services was provided to their constituents. The Illinois Accessibility Code was enacted in 1985.

1. Approach
    1. There are no truncated dome detectable warnings where the public sidewalk crosses the apparatus aprons. We recommend adding.
    2. There are no truncated dome detectable warnings at the curb ramps between the front apron and the flagpole sidewalk. We recommend adding.

3. There are no truncated dome detectable warnings where the public sidewalk crosses the street. We recommend adding.
4. There are no truncated dome detectable warnings where concrete patios and building egress doors abut the rear apron. We recommend adding.
5. There are no truncated dome detectable warnings between the front entry and the accessible parking access aisle. We recommend adding.
6. There is no sidewalk connection between the public way and the main entrance to the building. We recommend adding.
7. The emergency phone is located too high for someone in a wheelchair.
8. The main entry doors do not have 10" of solid panel at the base of the door.
9. There is insufficient space between the two doors comprising the main entry vestibule.

2. Access to Spaces
    1. Many doors in the building are too narrow, including the door between the Administration Corridor and the Dormitory, both doors into the Men's Locker Room, the door into the Women's Locker Room the door to the basement Unisex Restroom, and the doors of the Shift Commander's suite.
    2. Many doors in the building lack required pull clearances, including the door between the Administration Corridor and the Dormitory, the door between the Shift Commander's Suite and the Apparatus Bays, and the door between the Apparatus Bays and the Dormitory.
    3. Many doors have hardware that does not meet accessibility guidelines, including the first floor and basement Unisex Restrooms, the doors from the Apparatus Bays back into the living quarters, and the door between the stairs and the Training Room.
    4. The transaction window between the Office Manager and the "lobby" space is higher than accessibility standards permit.
    5. The handrails at both the interior and exterior stairs do not meet ADA requirements.
    6. The basement of the station, and therefore the fitness room, the training room, and two offices, cannot be reached by someone in a wheelchair. An elevator would need to be added or the basement level can only be used for storage and mechanical equipment.
    7. The kitchen is not designed to be accessible. For instance, the counter heights, sink depth, knee spaces, and reach ranges are non-compliant.
    8. Access to the Patio through the sliding glass door is not accessible.
    9. There is a small step at the egress door at the southeast corner of the apparatus bay.
3. Access to Restrooms
    1. The single user toilet room is not compliant with the current version of the ADA, although it was largely compliant with the version in use when it was renovated. Under the older version, the supply and waste piping would need to be insulated. To meet the current version of the ADA would require expanding the room and relocating the plumbing fixtures.
    2. The locker rooms lack accessible lockers, accessible toilets, an accessible urinal, accessible showers, accessible lavatories, and sufficient width of doors and aisles. To meet accessibility codes would require a complete remodel of the space and would result in fewer fixtures and fewer lockers.
    3. The basement Unisex Restroom was not designed to be accessible. To meet the current version of the ADA would require omitting the urinal, replacing the lavatory, enlarging the door, and installing grab bars and an elevated toilet seat.

P. Energy Efficiency

1. The building does not have any insulation in the exterior walls. The effective R-value of the exterior wall is therefore less than 1. Modern energy codes require an effective R-value of 11.1, meaning that the existing walls let 10x more heat to pass through them than is permitted. During our meeting the staff mentioned that occasionally ice/frost will form on the exposed exterior block walls. Periods of extreme cold or extreme heat are likely to increase in frequency and severity, and critical facilities such as a fire station cannot suffer the loss of productivity the occurs when reasonable occupant comfort cannot be provided. We recommend insulating the exterior walls to meet or exceed current standards.
2. Dehumidification is necessary in some rooms. This indicates the presence of air gaps between interior and exterior that is allowing humid air to infiltrate.
3. Space heaters are necessary in some rooms. The residential-style mechanical systems are not capable of supplying different rooms with different amounts of air depending on occupancy and function.
4. Where batt roof insulation can be observed, it is separating from the plywood decking, getting compressed by piping and conduits, and having the kraft paper or foil ripped and torn. This creates thermal bridges and allows moist air from the attic space to infiltrate and condense inside the batts.
5. There is no evidence of insulation at the interior or exterior face of the basement foundation walls.
6. The condensing units are SEER 13 and operate with a single-stage compressor. The newest technology can achieve 22.00 SEER for four-ton units, saving hundreds of dollars per year in electricity. Modern units are also about half as loud.
7. The existing water heater is 80% efficient. The newest technology can achieve efficiencies upwards of 95%, saving around $100 per year in natural gas. There may be a long-term payback for the installation of a solar hot water system and the architecture would permit a simple installation of such a system. (see figure I.7)
8. The insulation on some domestic hot water piping is missing or falling off.
9. The furnaces in the basement had filters that were not well sealed. There was a lot of air leakage around the filters into the space, causing the fans to work harder to move enough air to condition the space.
10. Some thermostats are not programmable.
11. Efficiency of the lighting system could be improved by retrofitting all fluorescent fixtures with LED lamps and adding occupancy, vacancy, and daylight sensors to appropriate spaces.
12. The exterior hollow metal doors and frames are not thermally broken and insulated, so they act as a conduit for heat to escape the space.
13. The apparatus door weatherstripping does not seal properly to prevent air infiltration.
14. Residential appliances are not Energy Star rated. Energy Star appliances use less electricity than non-rated appliances.

Q. Health and Safety Issues

1. The overhead doors do not meet the provisions of UL325, the standard for safe operation of motorized doors and gates. This standard requires photoeyes within 6" of the floor running horizontal to be able to detect a person lying across the door threshold. The

apparatus doors have photoeyes angled upwards to capture the front bumper of the apparatus. We recommend adding a second set of photoeyes.

2. There is insufficient maneuvering clearance between the apparatus and the south wall of the apparatus bay. Hose storage, the Decontamination counter, storage cabinets, movable stairs to the mezzanine area, etc. are located along the wall, obstructing otherwise adequate space. These proximities increase the risk that a firefighter will be injured by moving apparatus.
3. The turnout gear is not protected from natural UV light. This is a violation of NFPA standards.
4. The turnout gear is stored in the apparatus bays and is exposed to diesel exhaust. This is a violation of NFPA standards.
5. The continuous exhaust system in the Apparatus Bays does not pull air from the low levels of the space, only the high zones. We recommend extending ductwork from the fan to within 12" of the floor at the corners of the Apparatus Bays to capture products of combustion that are heavier than air.
6. There is poor separation between the "clean" areas of the station and the areas that are expected to have fireground toxins and diesel particulates suspended in the air. Each of these issues exposes everyone who enters the station to carcinogenic chemicals.
    1. There is no pressurized barrier zone (decontamination vestibule) between the living/office areas and the apparatus bays, so contaminants and diesel particulates can easily get into the "clean" portions of the building. This exposes everyone who enters the station to carcinogenic chemicals.
    2. The shift commander's office and sleeping space is located across the apparatus bay from the bulk of the living and office spaces, forcing them to walk through contaminated space every time they must interact with other staff.
    3. The women's restroom and shower room is located across the apparatus bay from the bulk of the living and office spaces, forcing them to walk through contaminated space every time they must use the facilities.
    4. There is no Janitor Closet in the clean areas, so mops and broom are all stored in the Apparatus Bays where they can become contaminated, exposing everyone who enters the station to carcinogenic chemicals. We recommend separating cleaning equipment between the clean areas and dirty areas and creating a janitor closet within the clean area of the station.
    5. The residential laundry equipment is located adjacent to the extractor across the apparatus bays from the living quarters and therefore exposed to contaminants. We recommend separate laundry machines for the clean areas of the station.
    6. There is insufficient space for storage of hoses, spare SCBA units, extra turnout gear, paper products, etc. These items are then stored in the apparatus bay where they are exposed to fireground toxins and diesel particulates.
    7. There is an ice bin, refrigerator, and chest freezer in the Apparatus Bays where the contents can easily be contaminated. We recommend relocating to a clean area.
    8. There is a conference table in the apparatus bay.
7. The Dormitory has no blackout shades and does not provide a quiet and dark place for staff to sleep. In a communal sleeping room, firefighters are more likely to be kept awake by someone snoring, by someone getting up to use the restroom, by reading lights, etc. The short-term dangers of sleep deprivation include inability to concentrate, reduced critical thinking skills, increased rates of automobile accidents, increased rates of mistakes on calls such as dropping a patient (see recent $4M lawsuit) or administering

improper medications, increased sick days or injury claims, reduced respect for authority, and impaired decision making. The long-term dangers of sleep deprivation include increased rates of diabetes, cancer, heart disease, and mental health issues.

8. In a communal sleeping room, firefighters are more likely to be exposed to communicable diseases by the other firefighters. A virus can be easily transmitted to an entire shift.
9. The decontamination area for the cleaning of small tools and personal protective equipment after a call is too small and improperly equipped. This prevents the staff from effectively cleaning equipment, leading to increased exposure to carcinogenic and toxic chemicals.
10. There is no sink for handwashing before entering clean areas of the station.
11. There is carpet in the bunk rooms adjacent to the apparatus bays. Carpet has been shown to harbor MRSA, which can easily be transferred to staff's shoes, exposing their families. In addition, the carpet will trap and contain diesel particulates and fireground contaminants. Especially since the Department runs medical calls, we recommend removal of all carpeting and replacement with hard surface flooring that can be regularly bleached. Small rugs near the bunks are acceptable as long as they are laundered frequently.
12. The Station Office is raised one step above the corridor level, creating a trip hazard.
13. The entrance to the shower area requires stepping over a curb, creating a trip hazard.
14. The stairs to the basement do not meet current standards for handrails and the guardrail protecting them is of insufficient height. The stairs are constructed of ceramic tile, which gets slippery when training occurs on a rainy or snowy day and has necessitated a retrofit of adhesive grit tape.
15. The fitness room cannot be easily observed by passerby, creating a risk that a firefighter in trouble would not be discovered in a timely manner.
16. The physical conditioning room does not have enough clear floor area to accommodate the exercises that are recommended for firefighters to maintain the endurance, strength, and flexibility necessary to resist the cardiac issues and occupational injury issues inherent to their jobs. This causes them to take weights from the fitness room up to the apparatus bay where they have more space but where they are exposed to fireground toxins and diesel exhaust particulates.
17. There is no safe means of egress from the Shift Commander's suite, since access to the exterior needs to pass through the Apparatus Bays. We recommend adding a door directly to the exterior.
18. There is a large amount of storage in the mechanical spaces, increasing the risk of fire.
19. The office constructed by taking space out of the dormitory room does not have supply air.
20. Exhaust fans were retrofitted into the basement training and fitness rooms in an attempt to eliminate the overheating issues caused by more occupants than the HVAC system can handle. This helps to remove heat but draws air from other parts of the building, potentially putting the living spaces at negative pressure to the apparatus bays and drawing contaminants in, or at negative pressure to the exterior and exacerbating infiltration and humidity issues. These fans are operational but are running very loudly. These should be rebalanced or replaced.
21. The tile in the shift commander's shower is slippery when wet.

R. Functionality Issues

1. The roof shape is complicated and channels the water and snow into so many narrow gaps and perpendicular walls that it requires a tremendous about of heat tracing and the amount of water coming down the downspout scours the adjacent ground.
2. The conductor heads at the roof are insufficient in size to capture the rainwater funneled into such narrow gaps that they scour the ground or overflow. This results in large volumes of water flowing down the face of the foundation. One connection between the downspout and the storm sewer was changed to an additional area drain in an attempt to capture some of the water, but water occasionally backs up enough to flow down the interior wall of the Training Captains office.
3. The finished floor of the apparatus bays is below the street level on S. Buesching Rd., necessitating a storm water collection trench in the center of the response apron, which is prone to backup and clogging.
4. There are no curbs on site, which has allowed water to sheet flow off the pavement and undermine the edges of asphalt.
5. The offices are not all one the same level. Two are in the basement and the Prevention Bureau is off site. This causes operational inefficiencies and time lost in transportation.
6. Three of the offices do not have natural light or views to the exterior, and one of the offices opens directly into the dormitory room instead of the administration corridor.
7. The Chief's office is too small to contain a small conference space with four chairs.
8. The station office is too small and improperly laid out to contain four workstations, the bookcases, the computer equipment, and all the maps and bulletin boards and clipboard racks required.
9. There is no conference room for the administrative team to meet as a group.
10. There is no lobby for the public for display of public safety literature, department history, trophies and awards, or for holding a discussion with a firefighter, and consequently there is no security preventing visitors from wandering into the Chief's office or the fire station.
11. There is no quiet space to take blood pressure or talk to a citizen who comes to the station with a medical concern, causing HIPPA compliance issues.
12. There is no copy room / work room or space for office supply storage.
13. There is no space for a coffee maker or small sink in the administration area.
14. The station is non-compliant with NFPA 1851, which requires facilities for effectively drying PPE, well-ventilated PPE storage areas, and prohibits stored PPE from being exposed to natural light and diesel exhaust fumes.
15. The station lacks testing assemblies for the required annual checks of various equipment - hose and nozzles per NFPA 1962, ladders per NFPA 1932, power rescue tools per NFPA 1936, apparatus mounted pumps per NFPA 1901, and SCBA fit testing per NFPA 1852 and 29 CFR 1910.134. Alternately, these services can be performed by a third-party.
16. The station is non-compliant with NFPA 1581. It lacks appropriate handwashing facilities for decontamination before entering the living areas. There are no dedicated and physically separated decontamination spaces for the cleaning of PPE, portable equipment, and other clothing.
17. There are no bollards protecting the building from backing apparatus.
18. The apparatus door width of 12' and the overall center-to-center dimension of 14'-0" results in insufficient space between apparatus.
19. The apparatus doors are not designed for heavy use with 100,000 cycle springs and 3" tracks, leading to more frequent failures.

20. There is no indicator light that tells the apparatus driver when the overhead door has cleared the light bar, increasing the likelihood that the top of the apparatus will hit the bottom panel of the door.
21. The dormitory is too small, has absolutely no privacy, lacks storage space for personal belongings, has no nightstands for clocks, lamps, or phone chargers, and has insufficient electrical outlets.
22. The women's locker room is across the apparatus bays from the living spaces, creating an unequal work environment.
23. The men's locker room has insufficient lockers to accommodate the number of firefighters assigned to the station along with the administration personnel. The lockers are of insufficient size to accommodate the uniforms, station wear, personal clothing, boots, towels and robes, and toiletries of a typical firefighter. In addition, the locker room aisles are too tight to accommodate more than one person at a time. We recommend providing personal storage space of at least 2'x2'x6' for each firefighter assigned to the station.
24. The gang shower in the men's room does not meet today's standards of privacy. We recommend adding partitions and curtains.
25. The lavatories in the men's room do not have pop up drain stoppers and are too closely spaced for two people to do any grooming simultaneously.
26. A single refrigerator cannot hold three shifts of food for a firehouse of this size, so an extra refrigerator and a chest freezer were added to the apparatus bay.
27. Split-faced CMU is not an appropriate backsplash material in the kitchen, where it has accumulated decades of cooking grease.
28. The dishwasher, when open, blocks the entry into the kitchen.
29. The shift commander's suite is not large enough for both the office and sleeping functions, has insufficient locker space.
30. The Fitness Room does not have sufficient ceiling height for many fitness activities.
31. The floor tile on the first floor is difficult to clean due to the width and frequency of the grout joints. We recommend replacement.
32. The ceiling fans in the Dayroom and Dormitory are mounted too low which can lead to impacts with occupants. We recommend investigating raising the ceiling height above 8'.
33. There is no dedicated storage space for EMS supplies.
34. There is insufficient space for mops, brooms, mop buckets, and floor scrubbers.
35. The light switches for the basement are located inside one of the offices.
36. There is insufficient storage space both in the contaminated zone and in the clean zone.
37. The training room is not of a size and shape conducive to the training events held there. There is no storage room for extra chairs and tables or for training materials, so these are arrayed along the walls of the space. The existing furniture is in poor condition. The training room is too small and improperly equipped to accommodate modern fire training functions. This may lead to problems complying with NFPA 1720.
38. There are insufficient electrical outlets in the building to accommodate modern electronics, as indicated by the number of power strips throughout the station.
39. The only restrooms capable of accommodating the capacity of the lower level training room during a short break are on the first floor and are only for men.
40. For staff in the lower level offices to access the remainder of the facility, they must pass through the training room.

41. The training tower is physically connected to the building although there are no openings between the tower and the building proper. This has caused the Department to stop using the training tower for live burn training.
42. There is no disposal at the kitchen sink.

A. Building Description

Figure A.1.1

Figure A.2

B. Site

Figure B.1.1a

Figure B.1.1b

Figure B.1.2b

Figure B.1.2a

Figure B.1.3

Figure B.2.1a

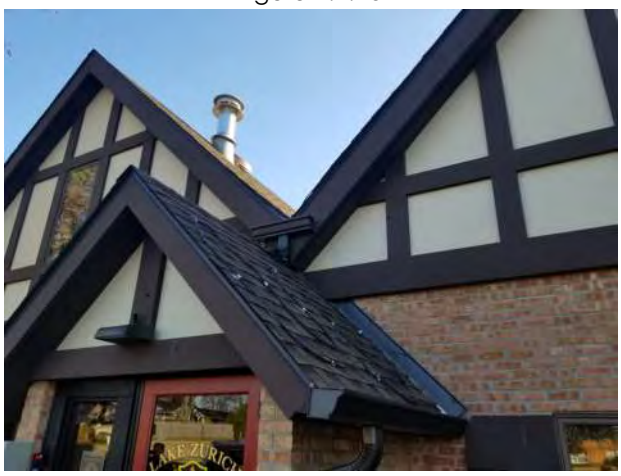


Figure B.2.1b

Figure B.2.1c

Figure B.2.1d

Figure B.3.1

Figure B.3.2

Figure B.3.3

Figure B.3.4a

Figure B.3.4b

Figure B.3.5

Figure B.3.6

Figure B.3.7

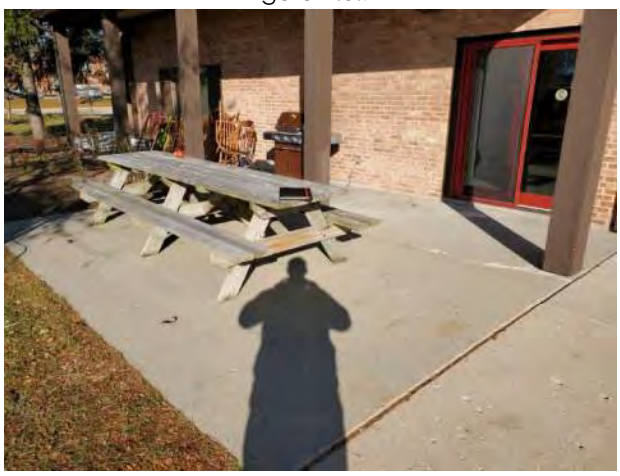


Figure B.3.8

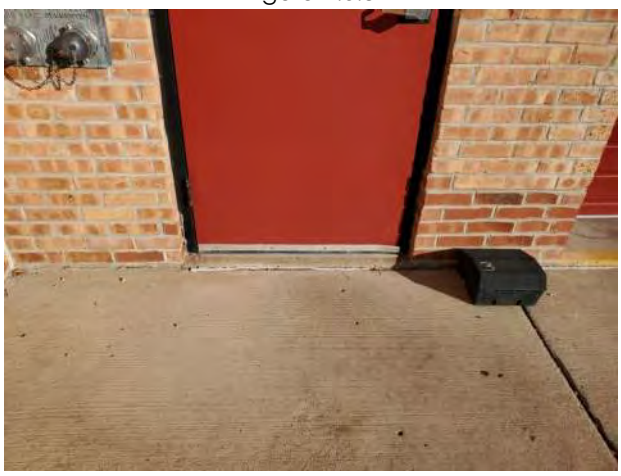


Figure B.3.9

Figure B.4.1a

Figure B.4.1b

Figure B.4.1c

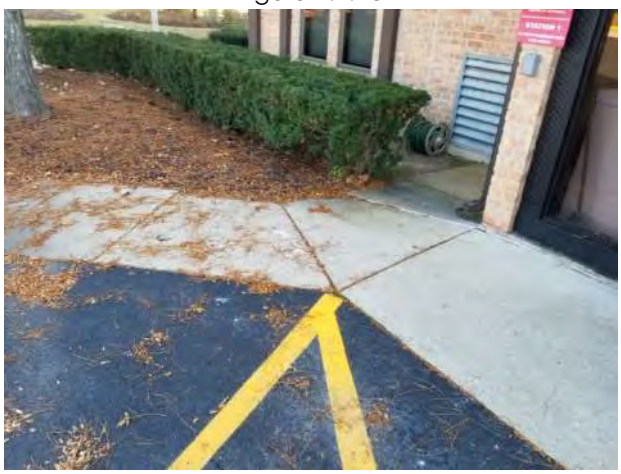


Figure B.4.2

Figure B.4.3

Figure B.4.4

Figure B.4.5

Figure B.4.6

Figure B.4.7a

Figure B.4.7b

Figure B.4.7c

Figure B.4.8a

Figure B.4.8b

Figure B.4.9a

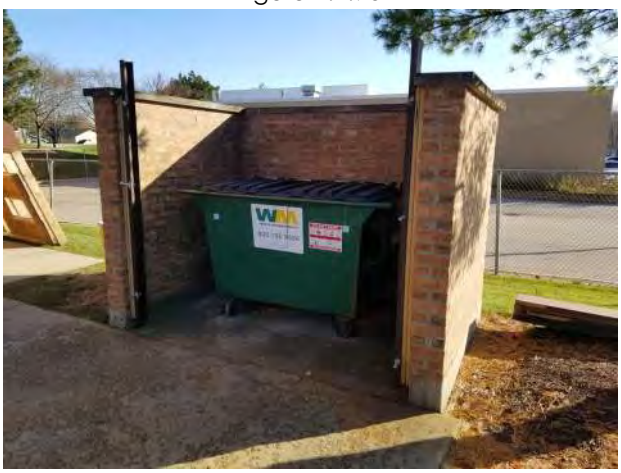


Figure B.4.9b

Figure B.6

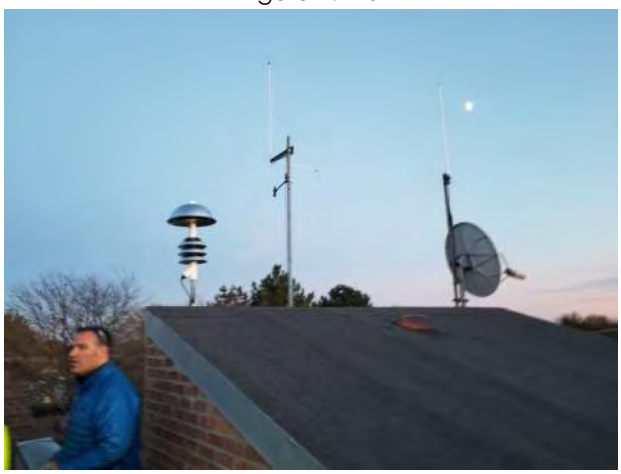
Figure B.7

Figure B.10a

Figure B.10b

Figure B.11a

Figure B.11b



C. Structural Frame

Figure C.1a

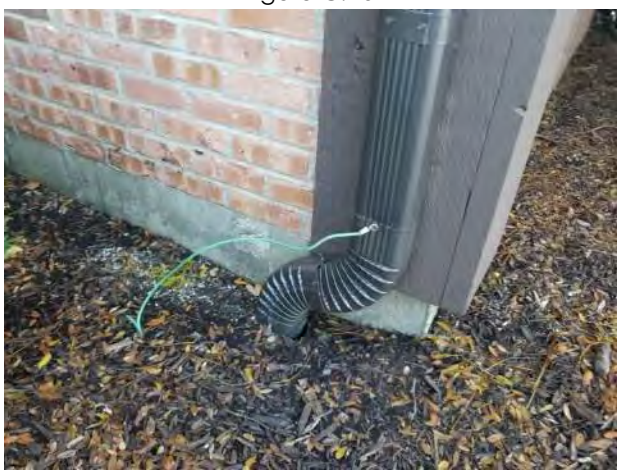


Figure C.1b

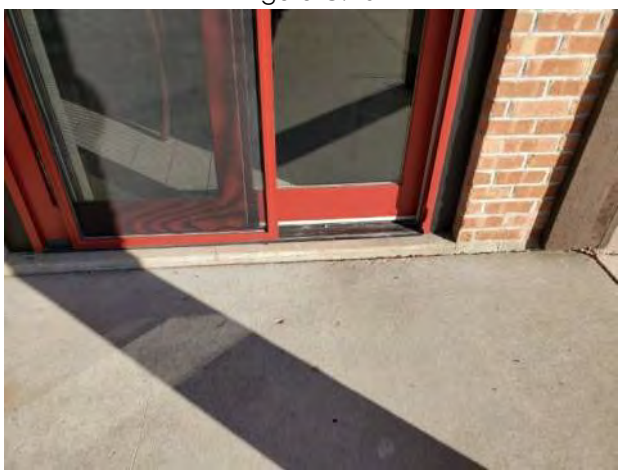


Figure C.1c

Figure C.1d

Figure C.2a

Figure C.2b

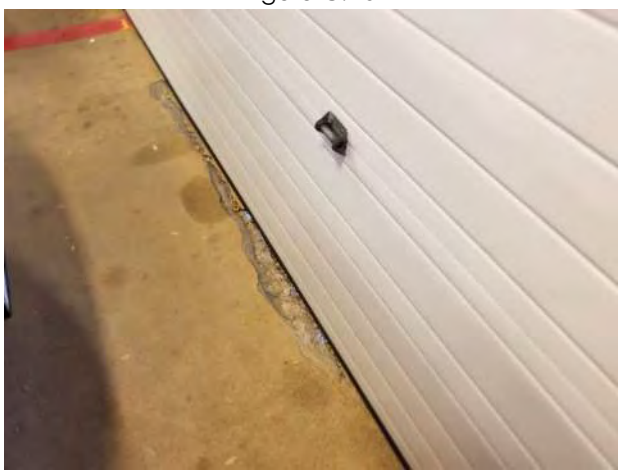


Figure C.2c

Figure C.2d

Figure C.3

Figure C.4a

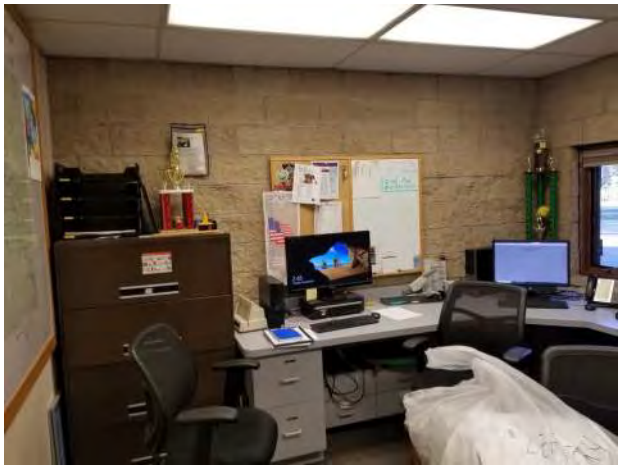


Figure C.4b

Figure C.4c

Figure C.4.1a

Figure C.4.1b

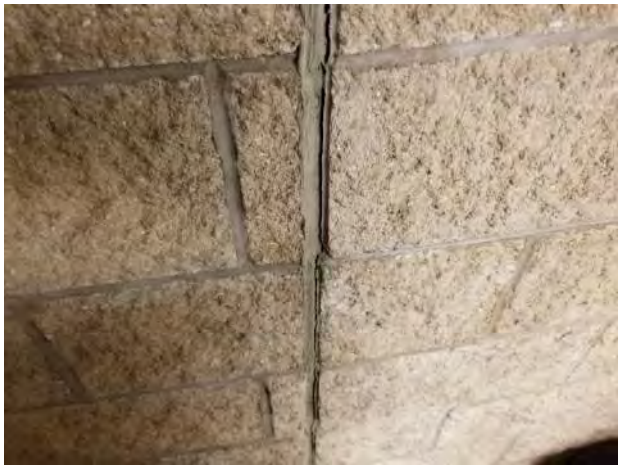


Figure C.4.2a

Figure C.4.2b

Figure C.4.3a

Figure C.4.3b

Figure C.5a

Figure C.5b

Figure C.5c

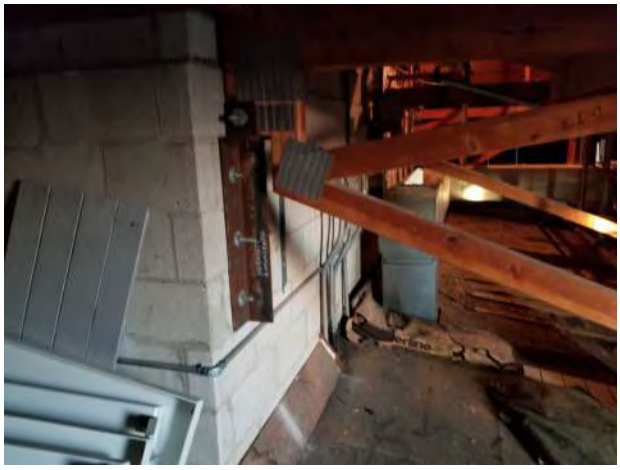


Figure C.5d

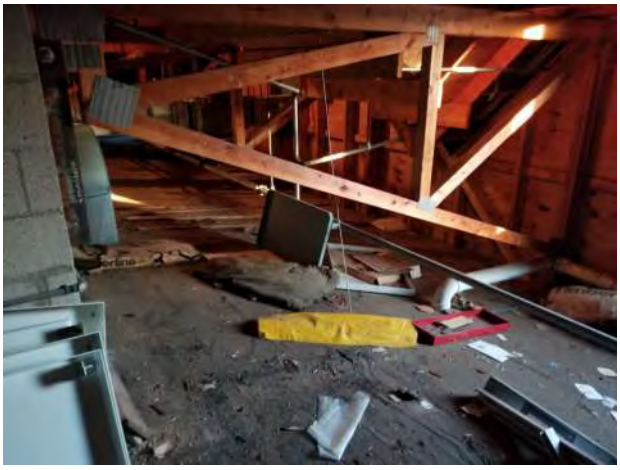


Figure C.5e

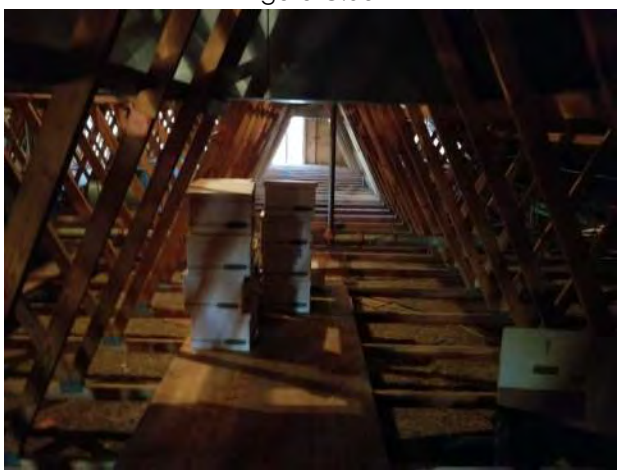


Figure C.5f

D. Exterior Enclosure

Figure D.1.1a

Figure D.1.1b

Figure D.1.1.1a

Figure D.1.1.1b

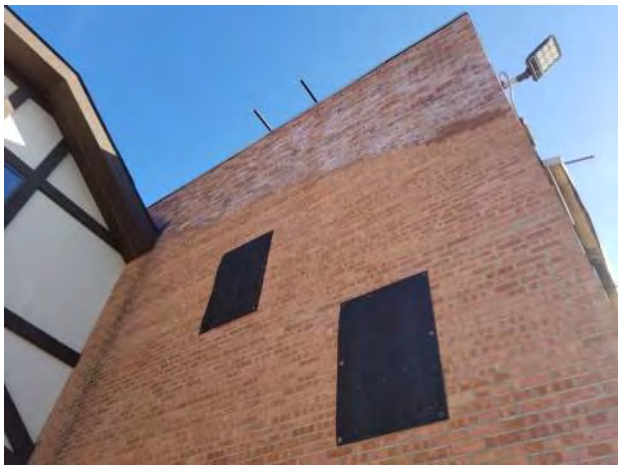


Figure D.1.1.1c

Figure D.1.1.2

Figure D.1.1.3

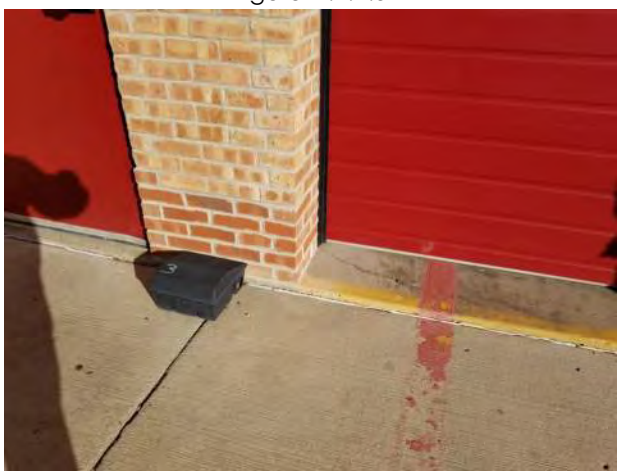


Figure D.1.2a

Figure D.1.2b

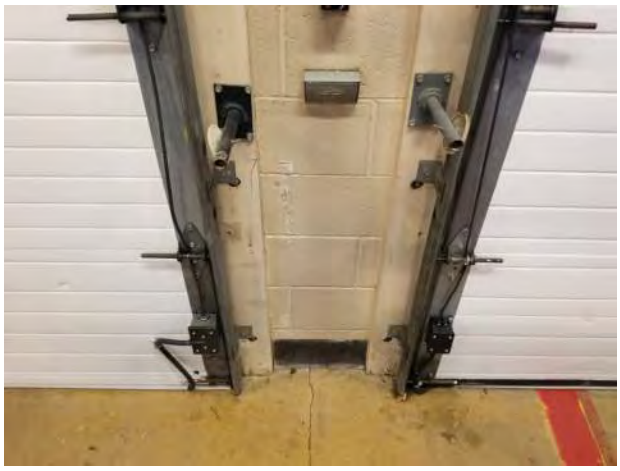


Figure D.1.2c

Figure D.1.2d

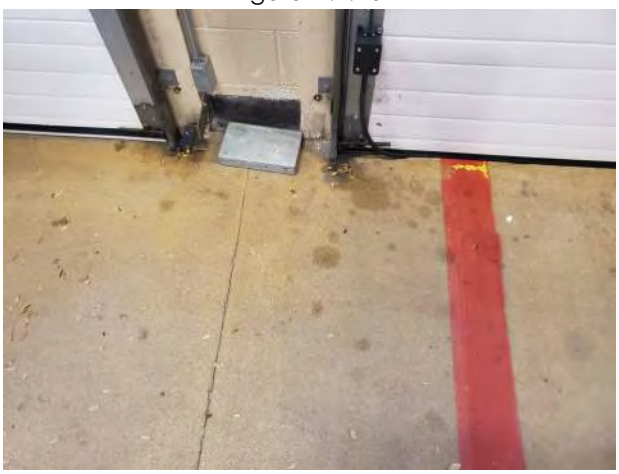


Figure D.1.3

Figure D.1.4a

Figure D.1.4b

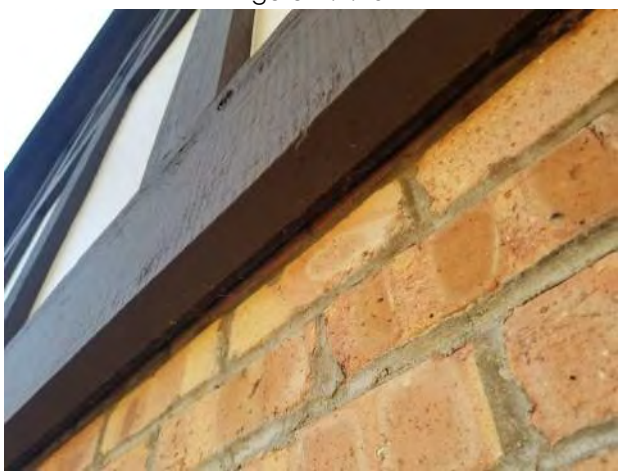


Figure D.1.5

Figure D.1.6a

Figure D.1.6b

Figure D.1.6c

Figure D.1.7a

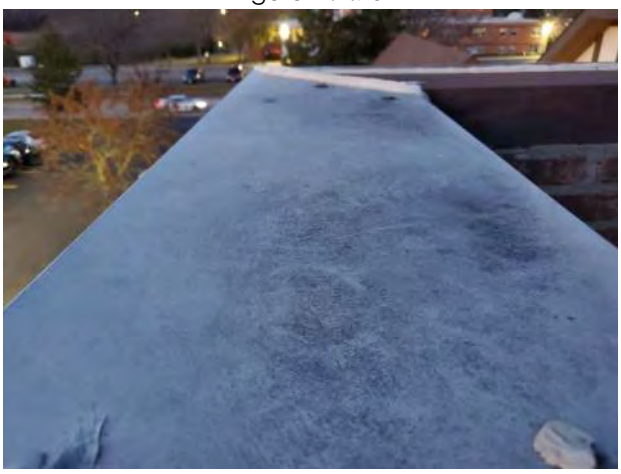


Figure D.1.7b

Figure D.1.8

Figure D.1.9a

Figure D.1.9b

Figure D.1.9c

Figure D.1.10

Figure D.2.2.1a

Figure D.2.2.1b

Figure D.2.2.2

Figure D.2.2.3a

Figure D.2.2.3b

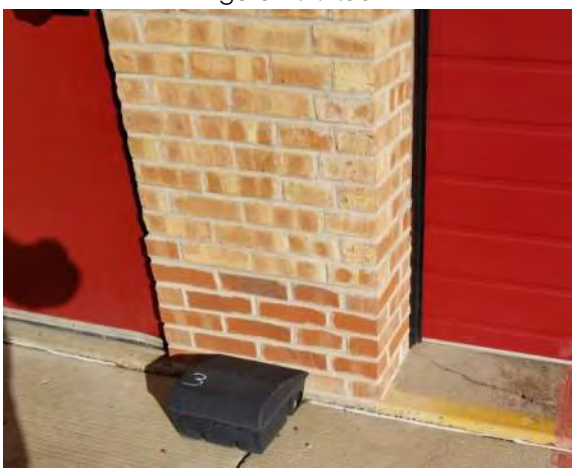


Figure D.2.2.3c

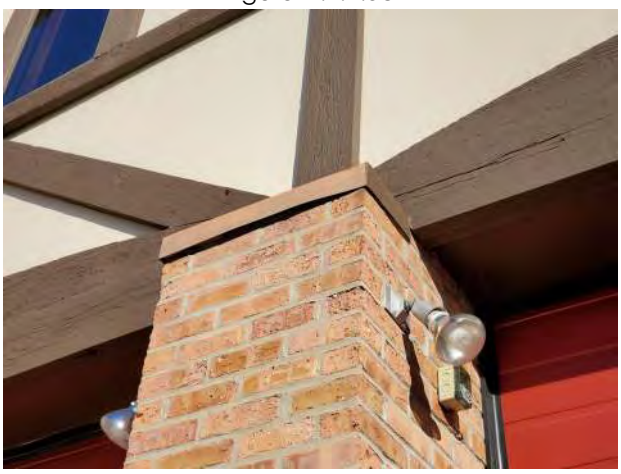


Figure D.2.2.3d

Figure D.2.2.4

Figure D.2.3a

Figure D.2.3b

Figure D.2.4

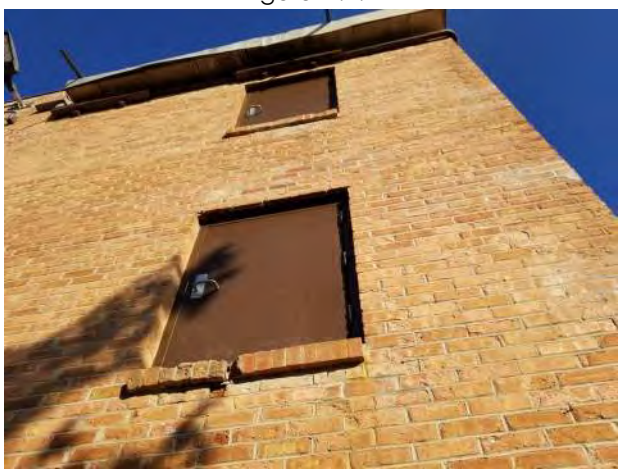


Figure D.2.5a

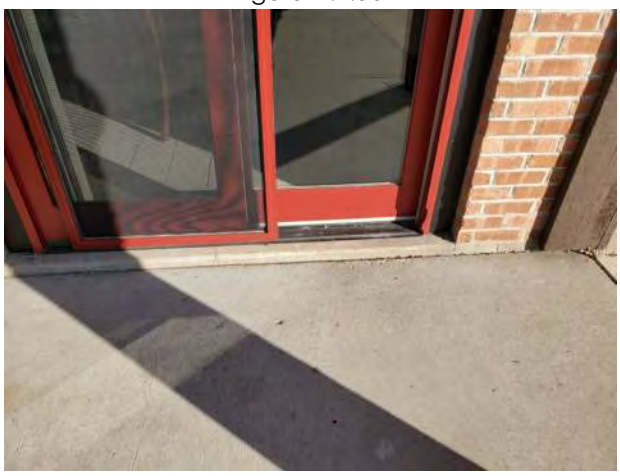


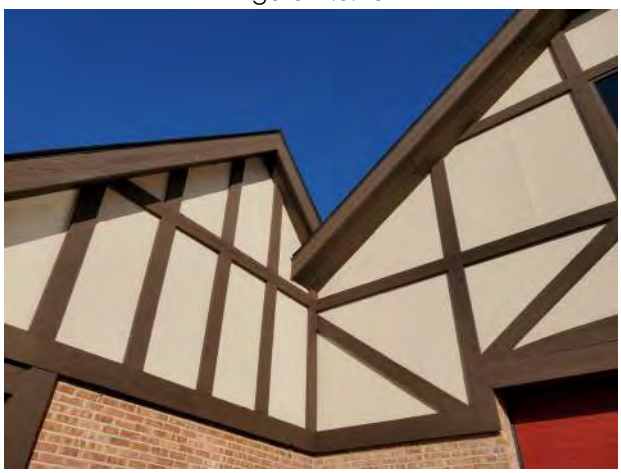
Figure D.2.5b

Figure D.3.1

Figure D.3.2a

Figure D.3.2b

Figure D.3.2c



E. Interior Elements

Figure E.1.1

Figure E.1.2

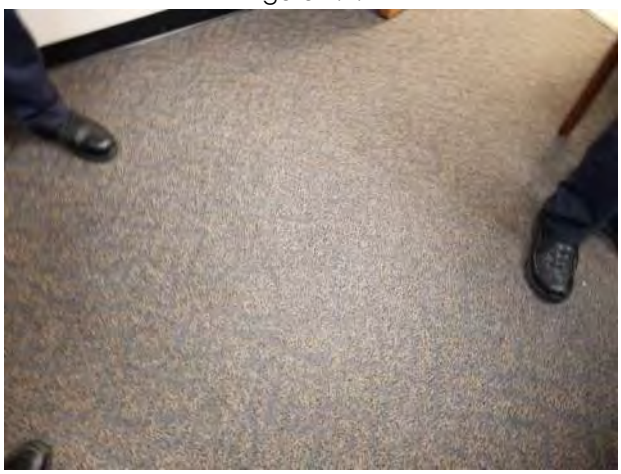


Figure E.1.2.13

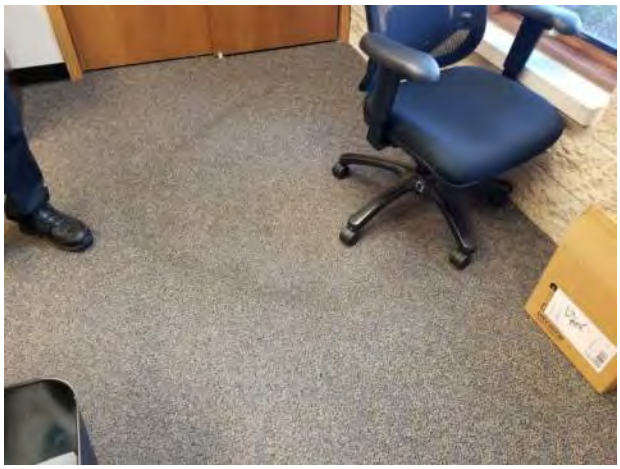


Figure E.1.34

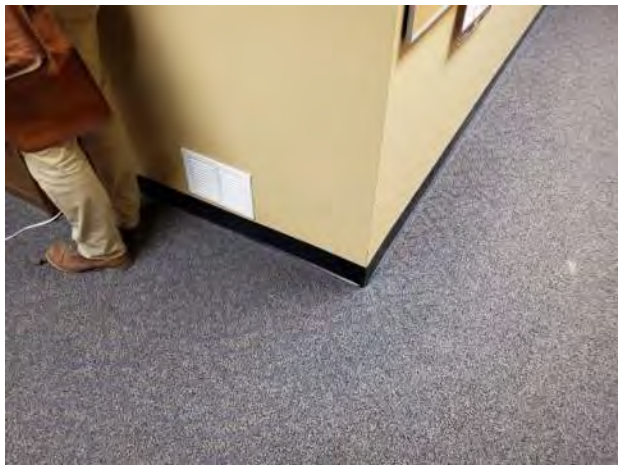


Figure E.1.4a

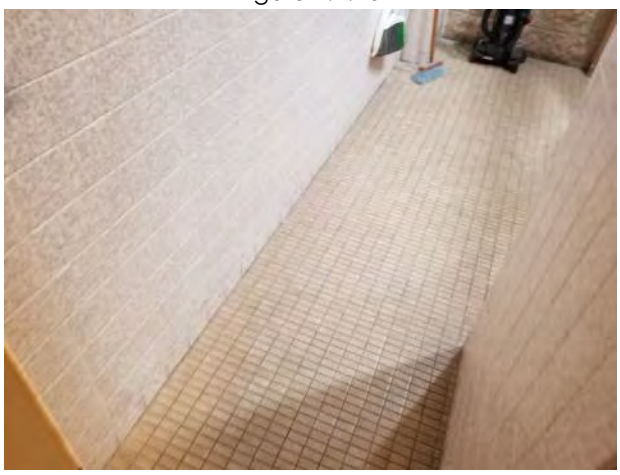


Figure E.1.4b

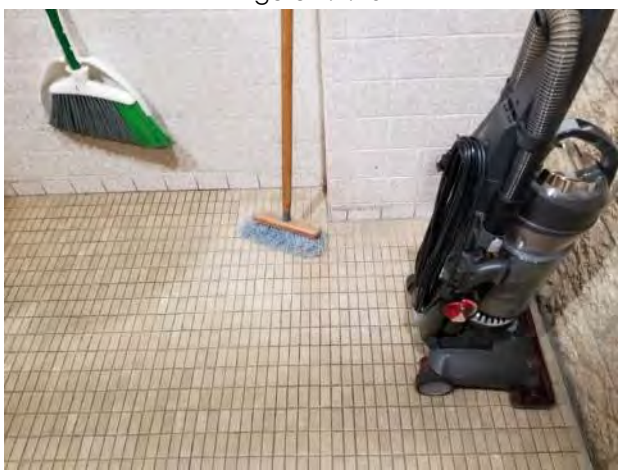


Figure E.1.5a

Figure E.1.5b

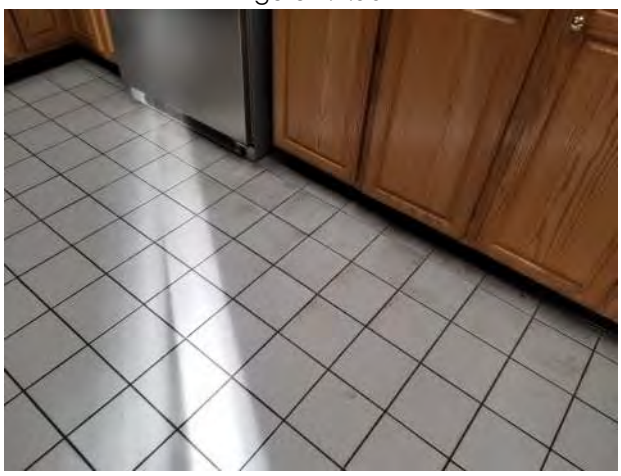


Figure E.1.6

Figure E.1.7

Figure E.1.8

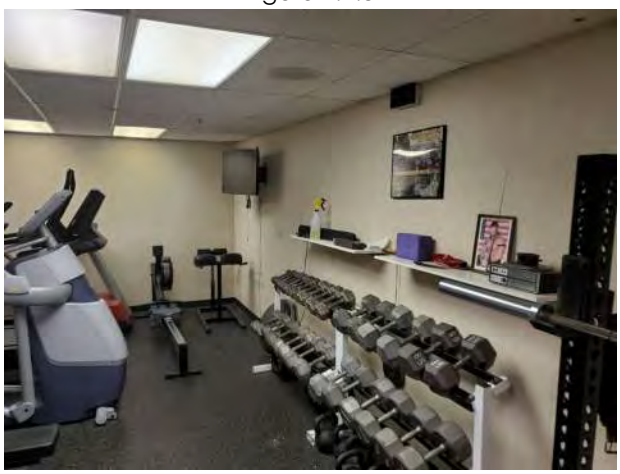


Figure E.1.9

Figure E.1.9.15

Figure E.2.1.9.2

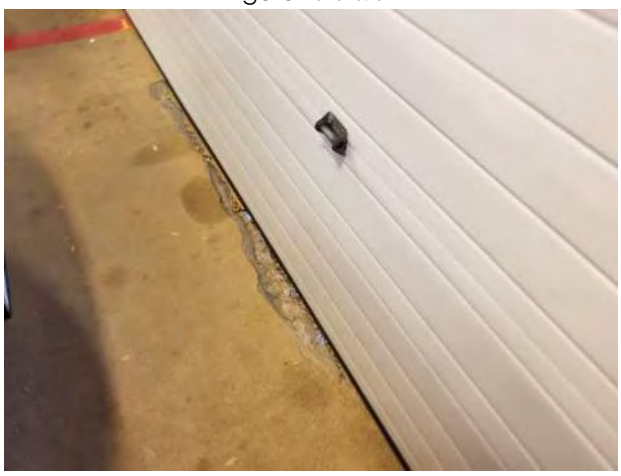


Figure E.1.9.3a

Figure E.1.9.3b

Figure E.1.10a

Figure E.1.10b

Figure E.1.11

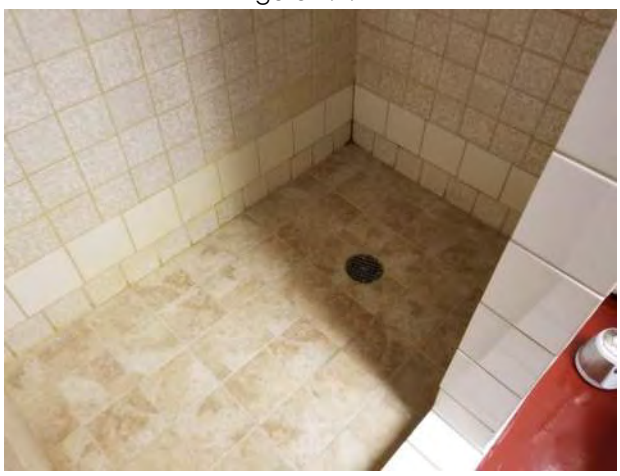


Figure E.1.12a

Figure E.1.12b

Figure E.1.12c

Figure E.2.1.1b1a

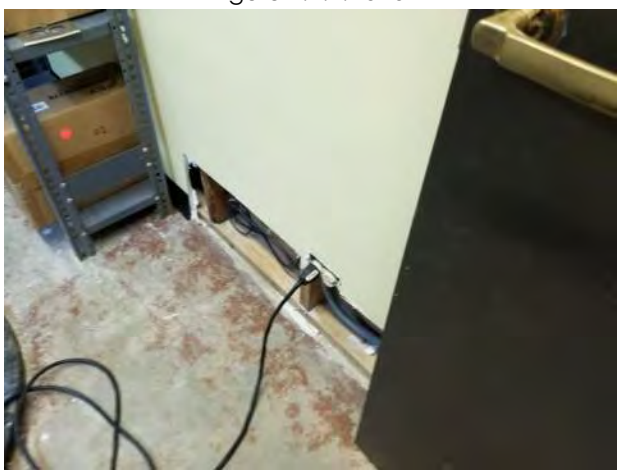


Figure E.2.1.21b

Figure E.2.1.3

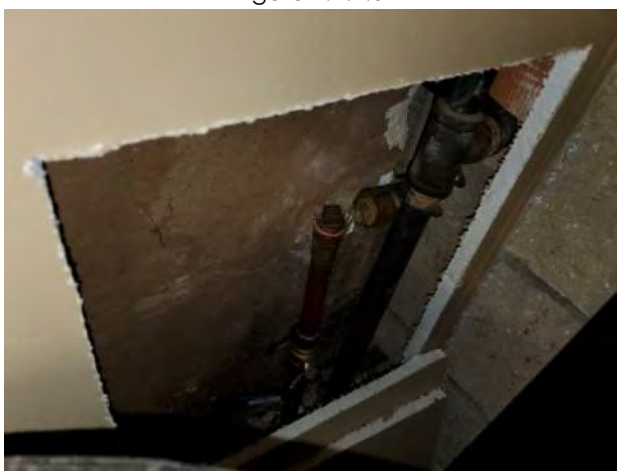


Figure E.2.1.4

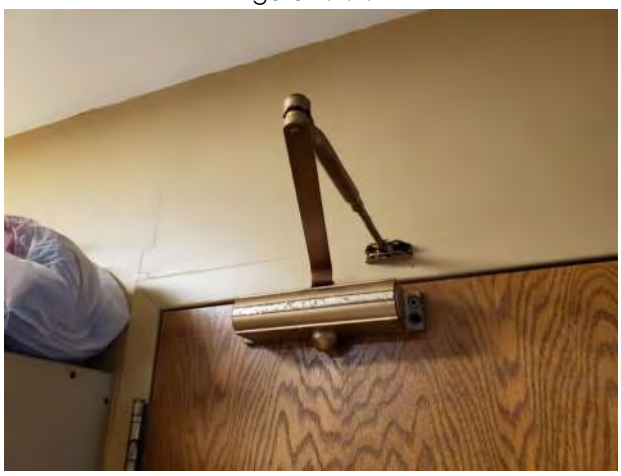
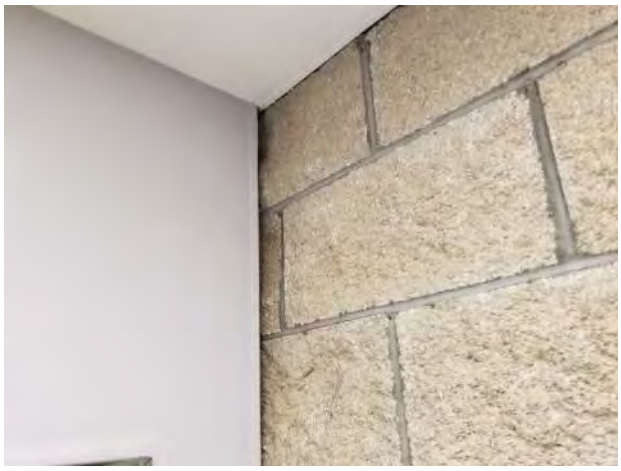


Figure E.2.1.5

Figure E.2.1.6



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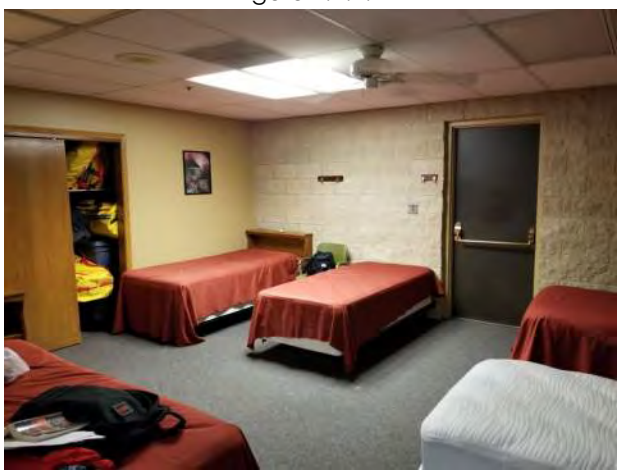


Figure E.2.3.1.1a

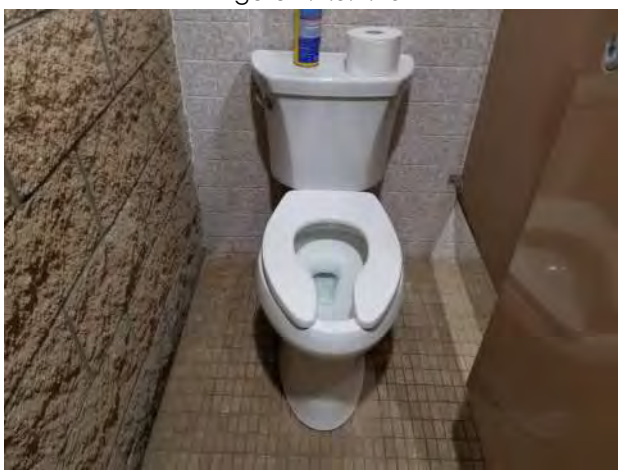


Figure E.2.4

Figure E.2.5

Figure E.2.6

Figure E.2.7

Figure E.2.8

Figure E.2.9a

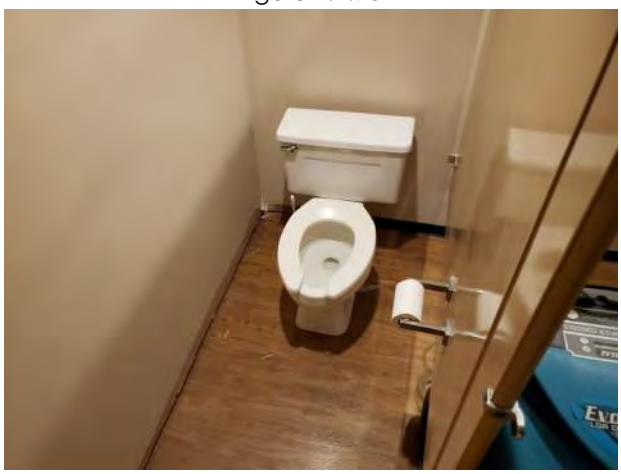


Figure E.3.1.11b

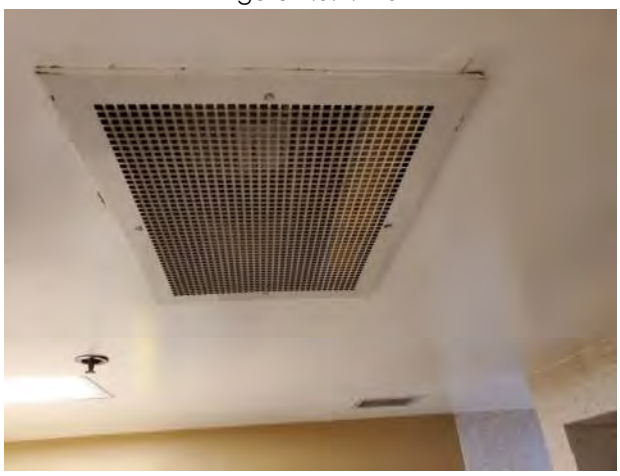


Figure E.3.2a1.2

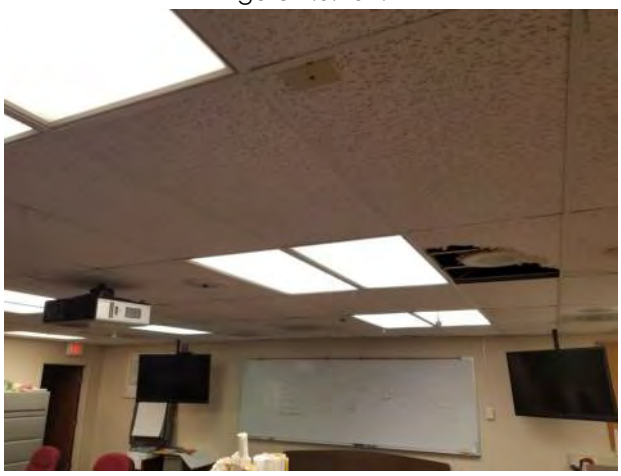


Figure E.3.2b

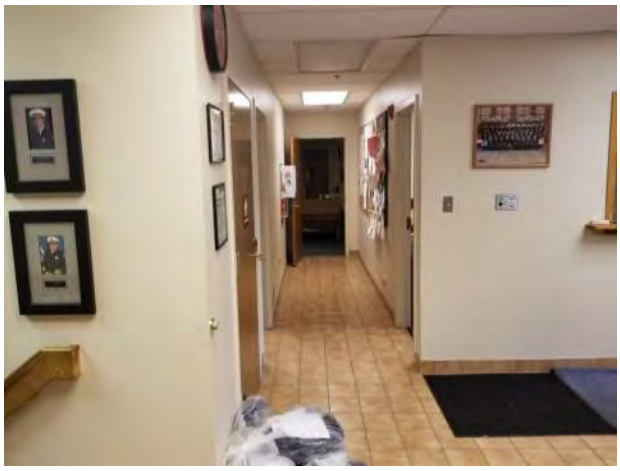


Figure E.3.2c

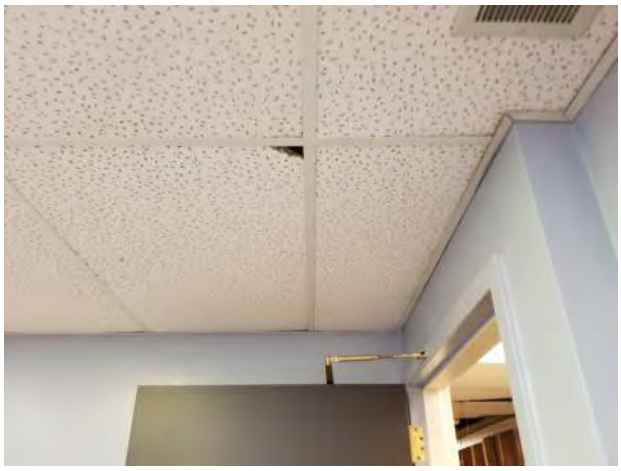


Figure E.3.2d

Figure E.3.2e

Figure E.4.11a

Figure E.4.1.11b

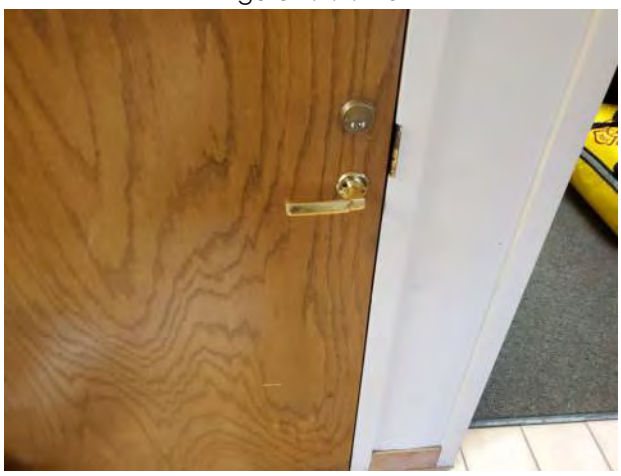


Figure E.4.1.2

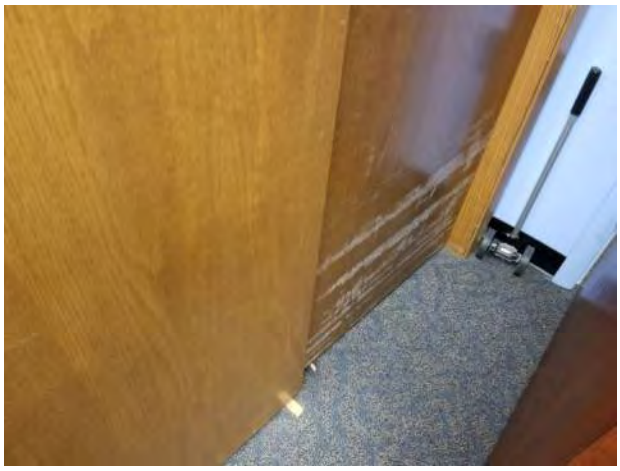


Figure E.4.1.3

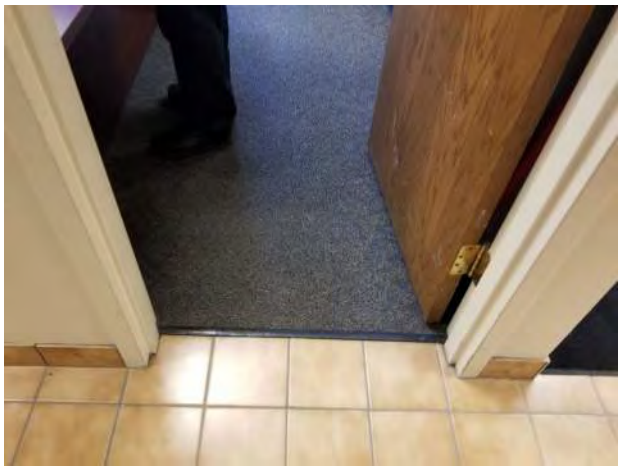


Figure E.4.1.6

Figure E.4.1.7

Figure E.4.2

Figure E.4.2.1

Figure E.4.3a

Figure E.4.3b

Figure E.4.3c

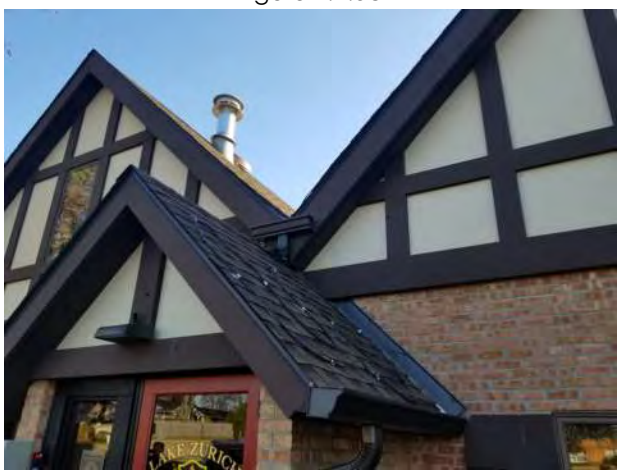


Figure E.5.1a

Figure E.5.1b

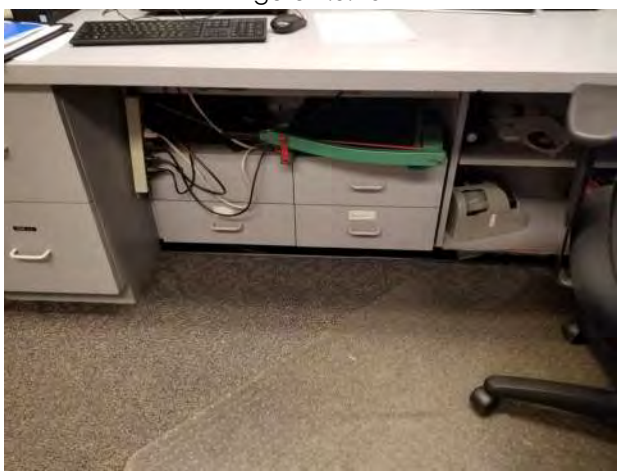


Figure E.5.2a

Figure E.5.2b

Figure E.5.3a

Figure E.5.3b

Figure E.5.4a

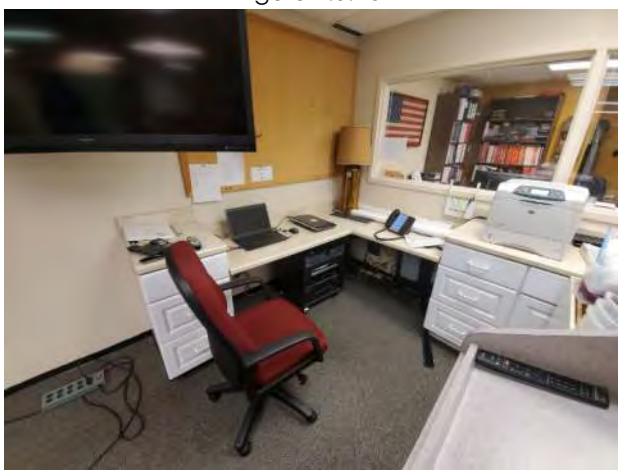


Figure E.5.4b

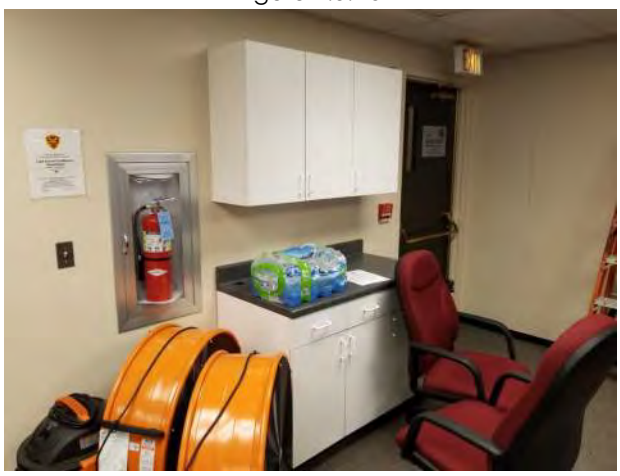


Figure E.5.5

Figure E.6.1.1

Figure E.6.1.2

Figure E.6.1.3

Figure E.6.1.4

Figure E.6.1.5

Figure E.6.1.6a

Figure E.6.1.6b

Figure E.6.2.1a

Figure E.6.2.1b

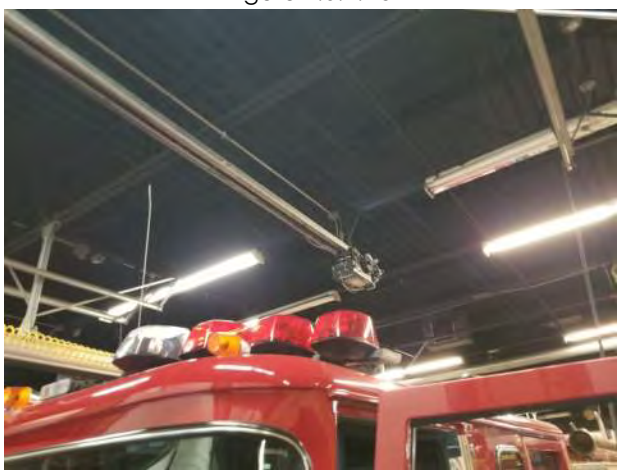


Figure E.6.2.1c

Figure E.6.2.1d

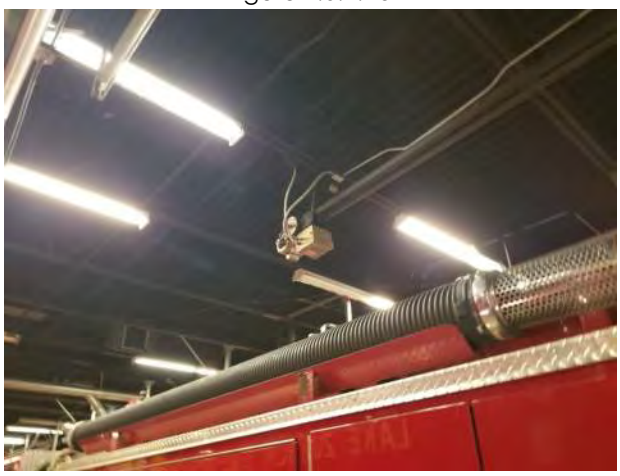


Figure E.6.2.2a

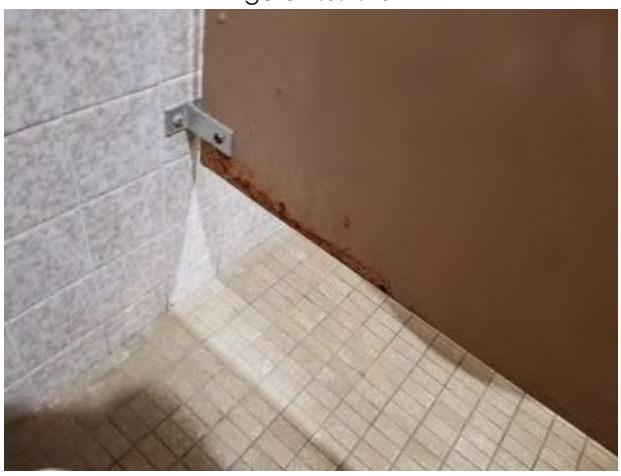


Figure E.6.2.2b

Figure E.6.2.3

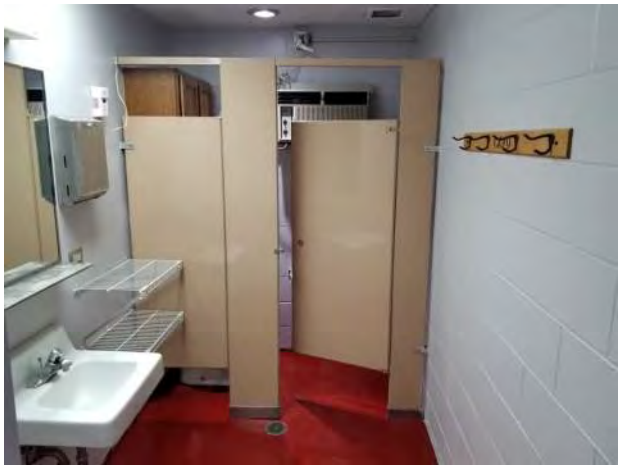


Figure E.6.2.4

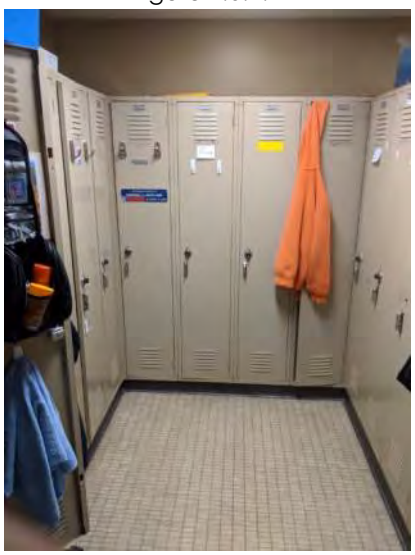


Figure E.6.2.5

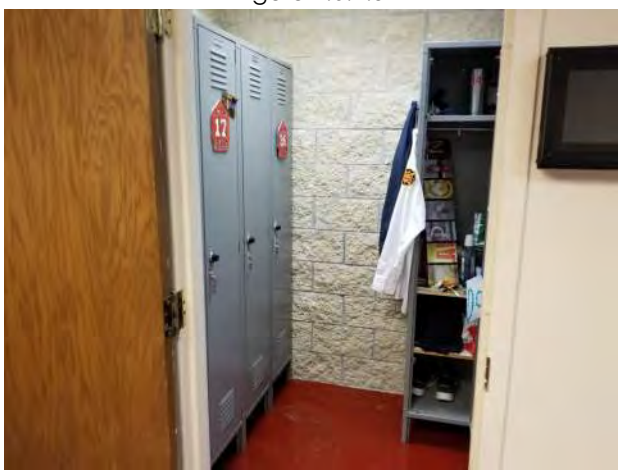


Figure E.6.2.6a

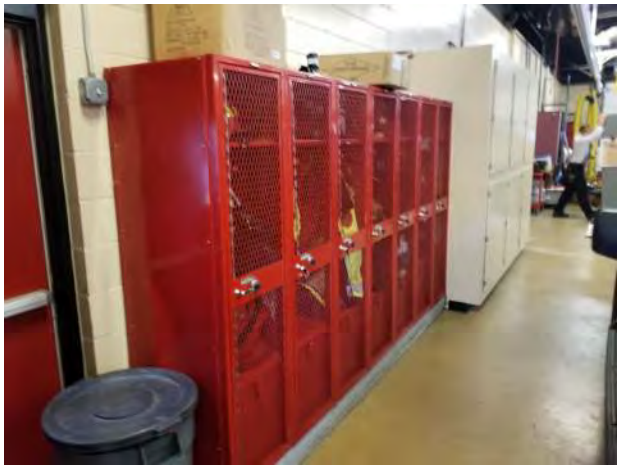


Figure E.6.2.6b

Figure E.6.3.1a

Figure E.6.3.1b

Figure E.6.3.1c

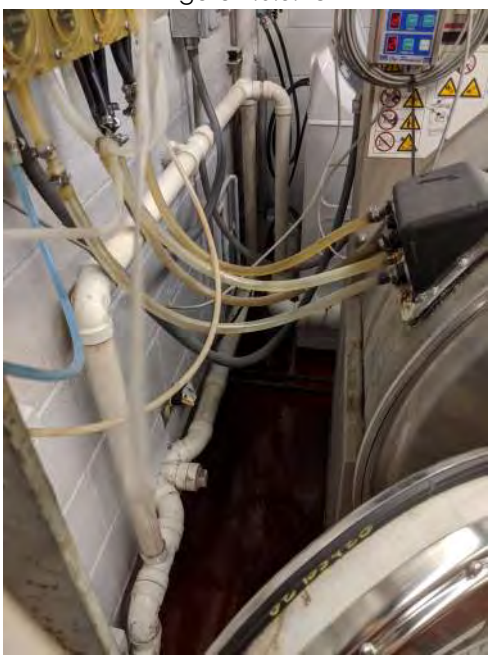


Figure E.6.3.2a

Figure E.6.3.2b

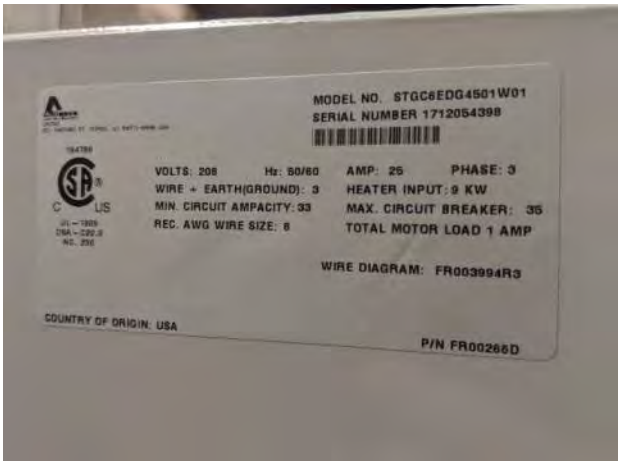


Figure E.6.3.2c

Figure E.6.3.3a

Figure E.6.3.3b

Figure E.6.3.3c

Figure E.6.3.4a

Figure E.6.3.4b

Figure E.6.3.4c

Figure E.6.3.5a

Figure E.6.3.5b

Figure E.6.3.5c

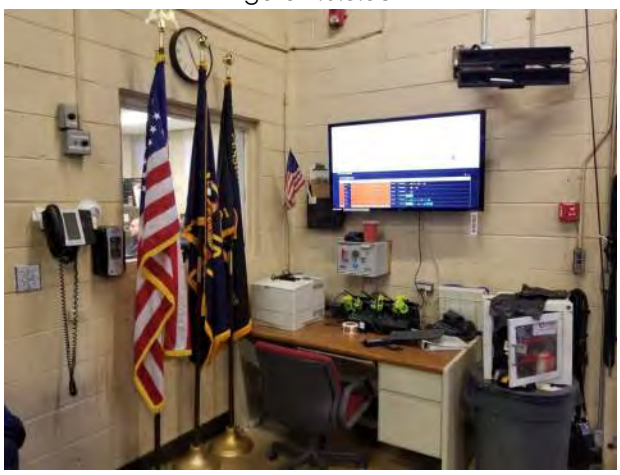


Figure E.6.3.5d

F. Vertical Transportation

Figure F.2a

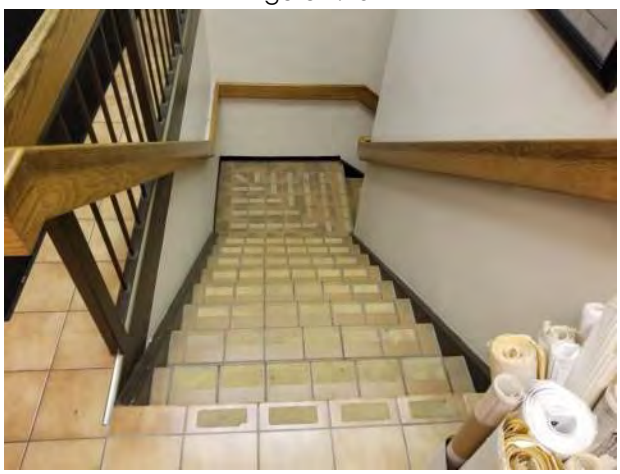


Figure F.2b

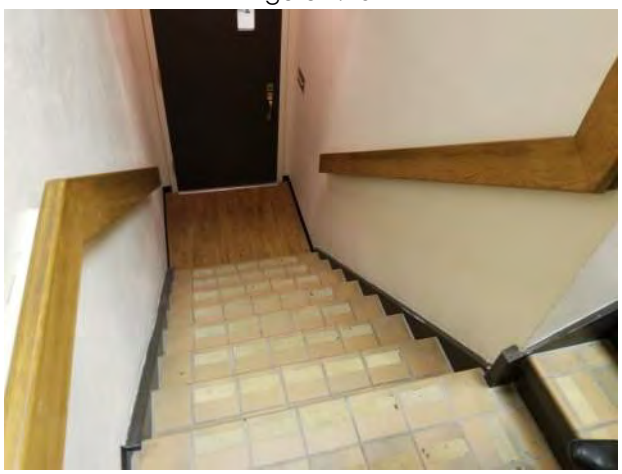
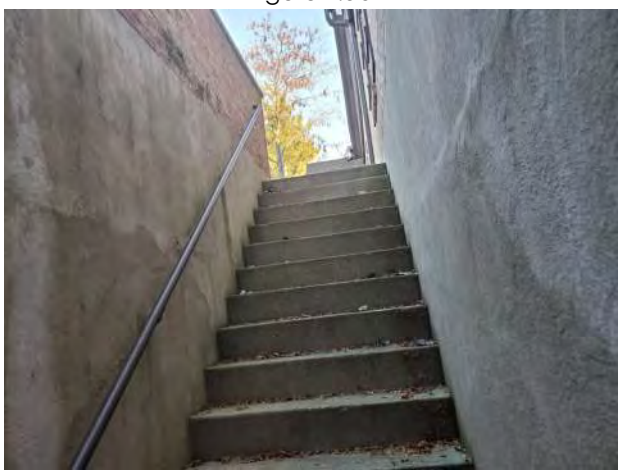


Figure F.3a

Figure F.3b

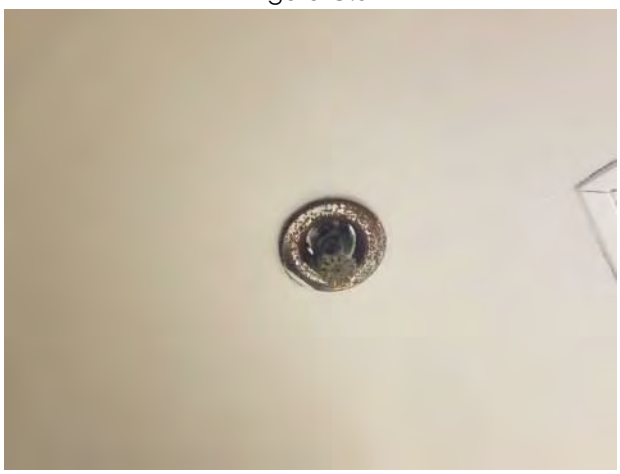


G. Fire Protection

Figure G.1

Figure G.2

Figure G.3



H. Plumbing

Figure H.1a

Figure H.1b

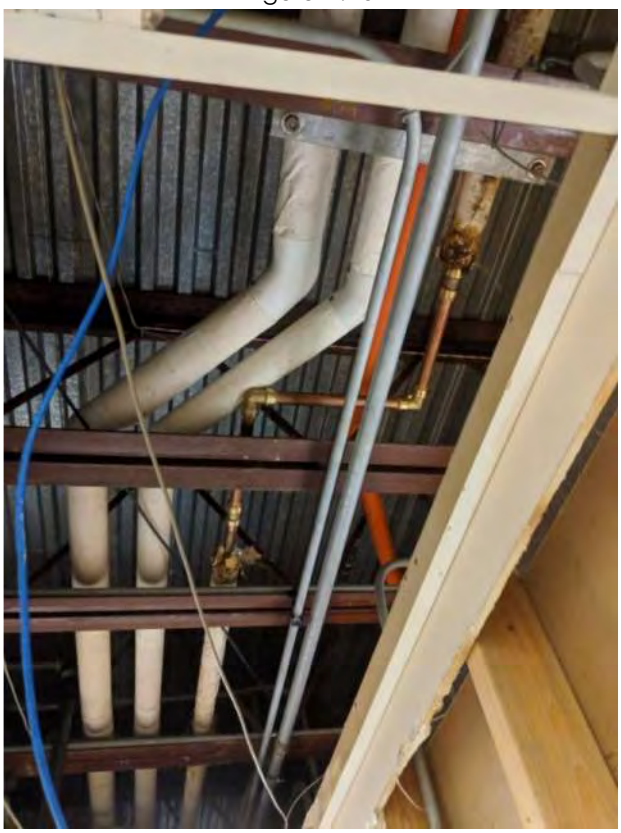


Figure H.1.c

Figure H.1.d

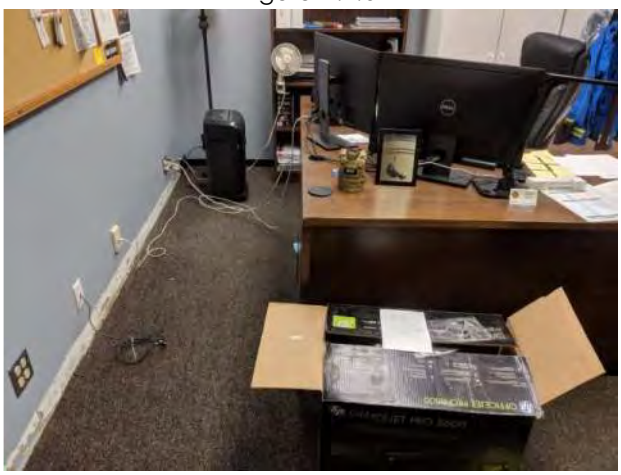


Figure H.2

Figure H.3a

Figure H.3b

Figure H.4

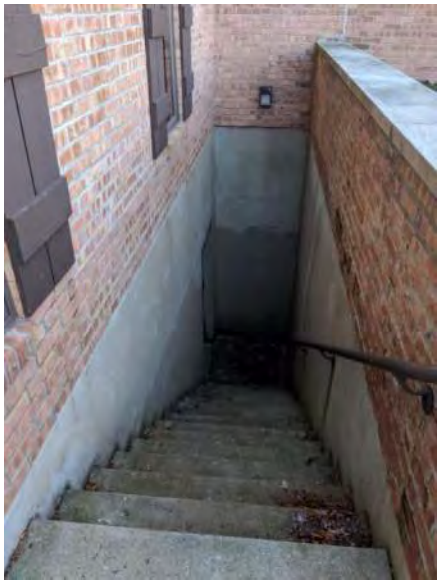


Figure H.5

Figure H.6

Figure H.7

Figure H.8

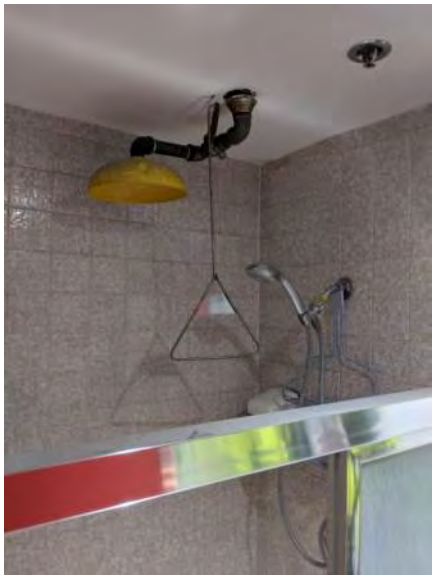


Figure H.10a

Figure H.10b

Figure H.11

Figure H.12

Figure H.13

Figure H.14a

Figure H.14b

Figure H.14c

Figure H.16

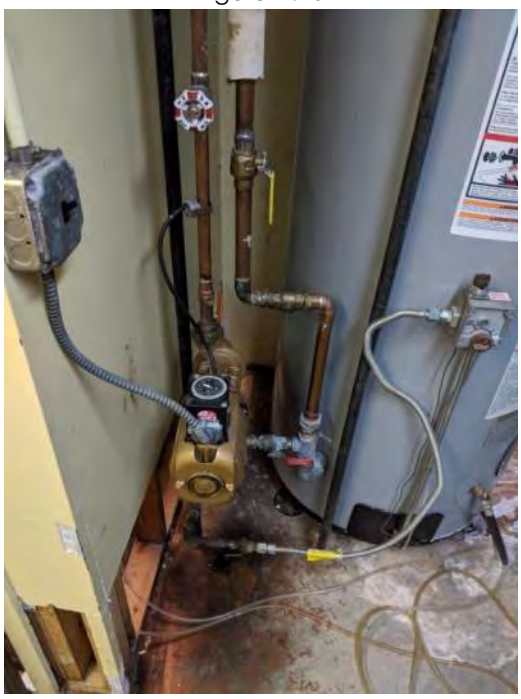


Figure H.17

Figure H.18

I. HVAC

Figure I.1a

Figure I.1b

Figure I.1c

Figure I.1d

Figure I.1e

Figure I.1f

Figure I.1g

Figure I.1h

Figure I.1i

Figure I.1j

Figure I.1k

Figure I.1l

Figure I.1m

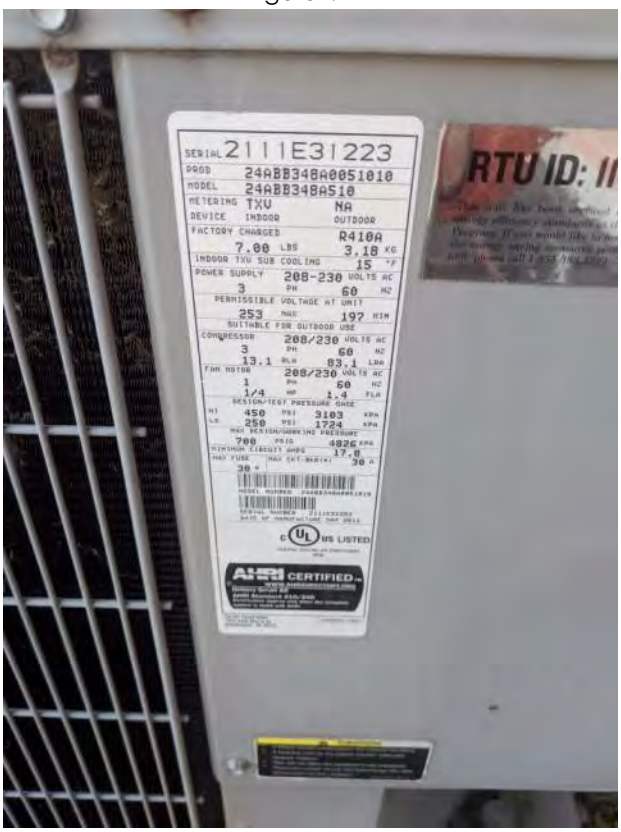


Figure I.1n

Figure I.1o

Figure I.1p

Figure I.1.1a

Figure I.1.1b

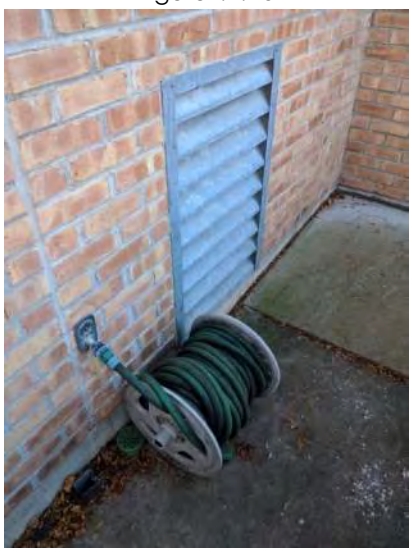


Figure I.1.2

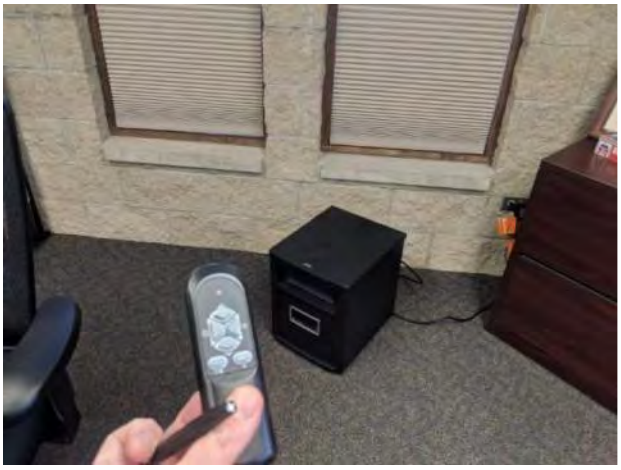


Figure I.1.3

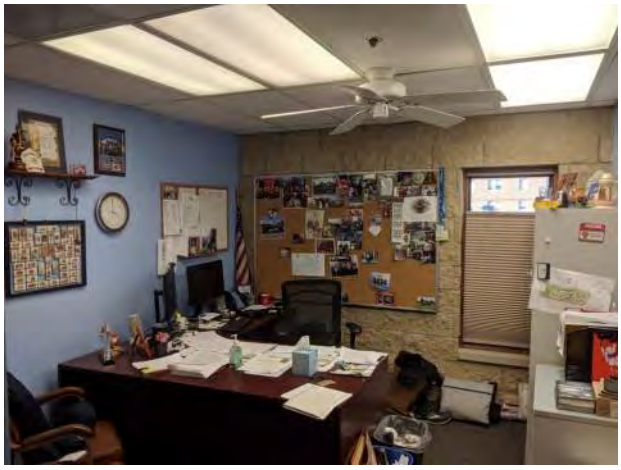


Figure I.2

Figure I.3

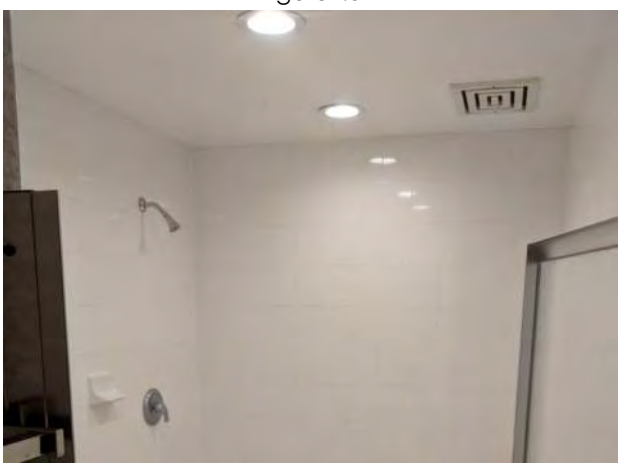


Figure I.5.a

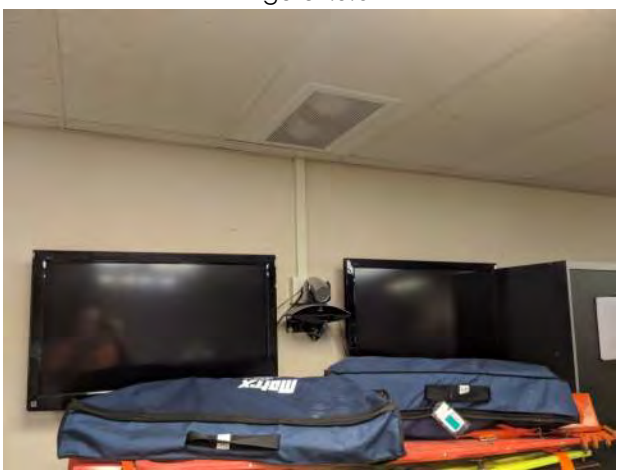


Figure I.5b

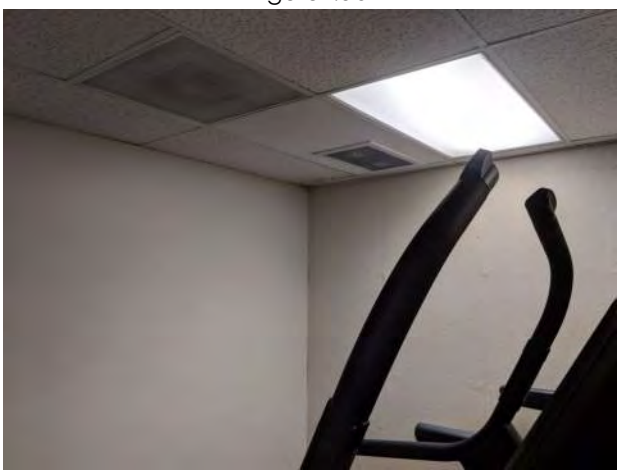


Figure I.6

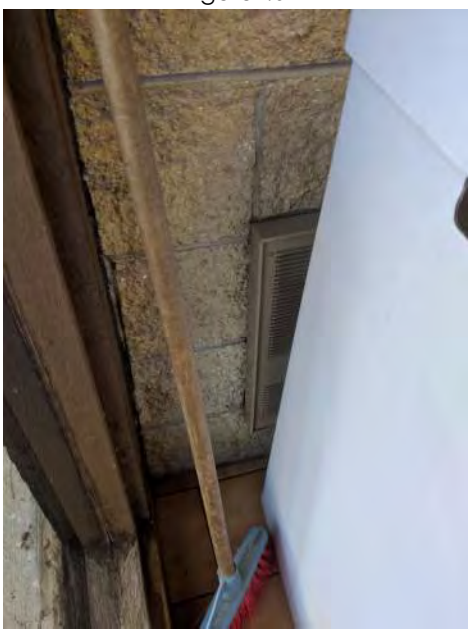


Figure I.7a

Figure I.7b

Figure I.7c

Figure I.8a

Figure I.8b

Figure I.8c

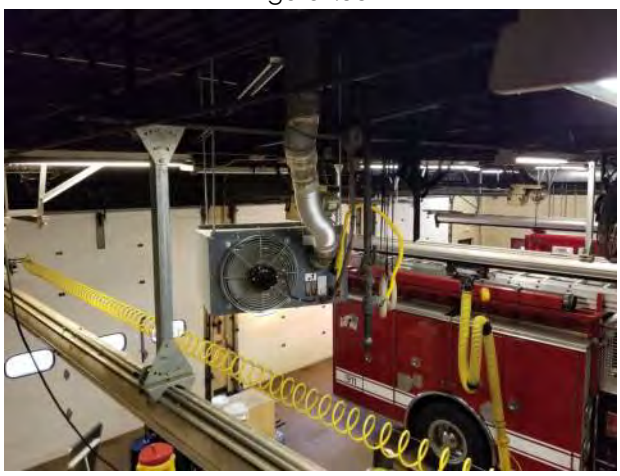


Figure I.17

Figure I.10a

Figure I.10b

Figure I.10c

Figure I.11

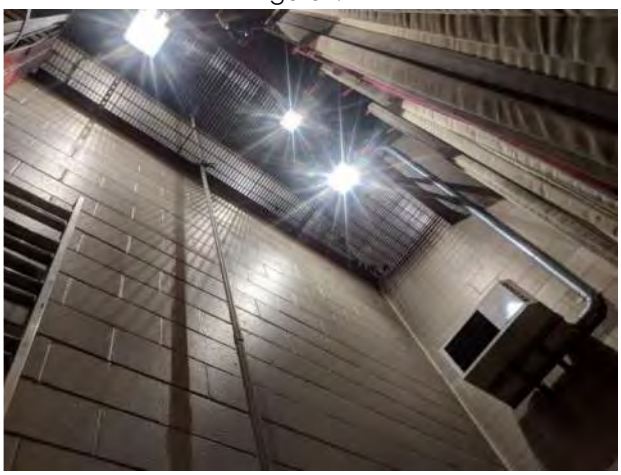


Figure I.12

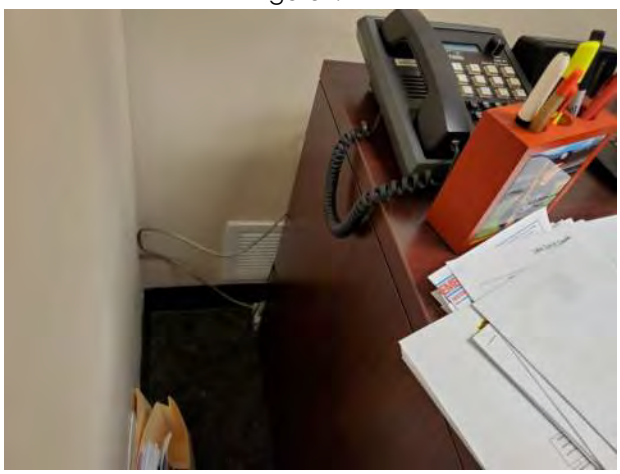


Figure I.13

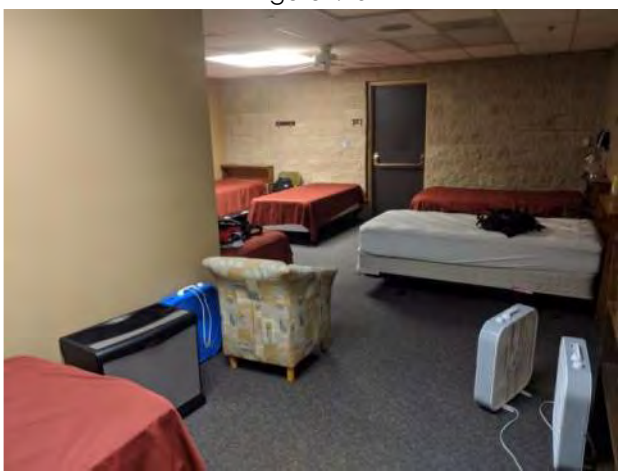


Figure I.14

Figure I.15

Figure I.16a

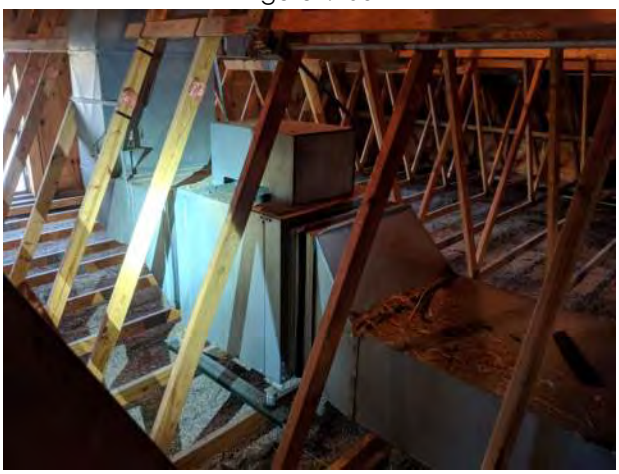


Figure I.16b

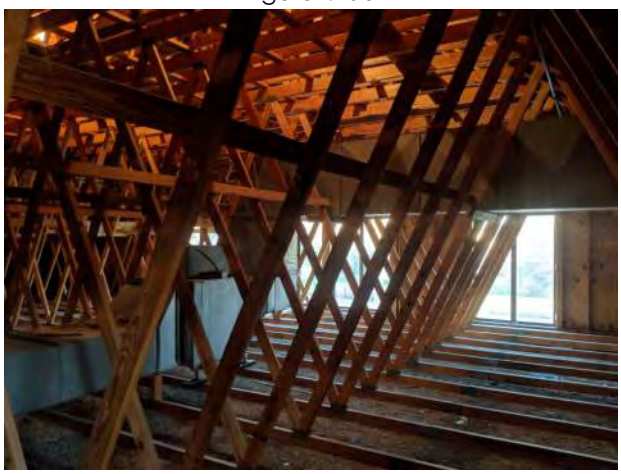
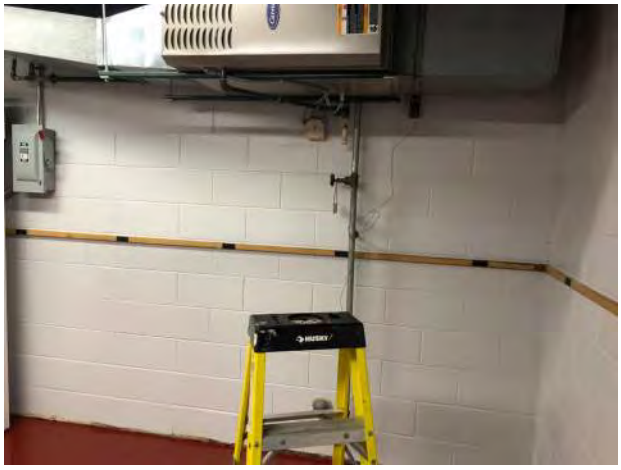


Figure I.16c

Figure I.17



J. Power Distribution

Figure J.1a

Figure J.1b

Figure J.2

Figure J.2.1

Figure J.3.1a

Figure J.3.1b

Figure J.3.1c

Figure J.3.2a

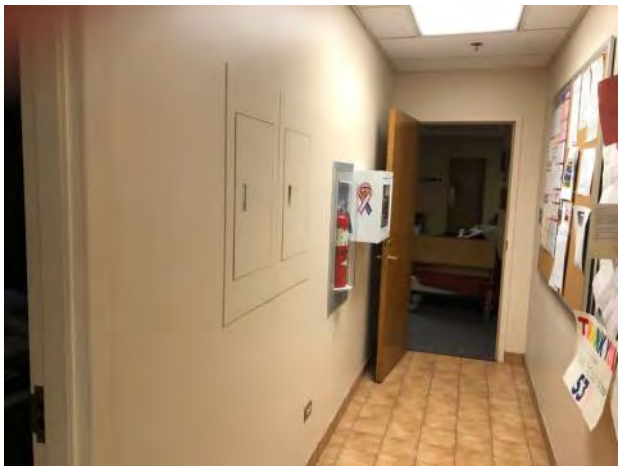


Figure J.3.2b

Figure J.3.2c

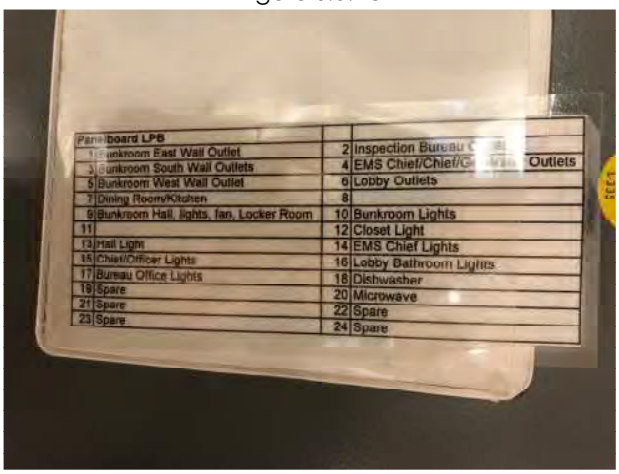


Figure J.3.3a

Figure J.3.3b

Figure J.3.3c

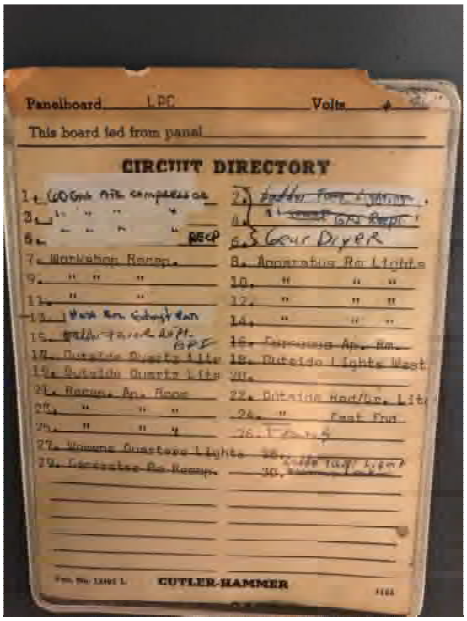


Figure J.3.4a

Figure J.3.4b

Figure J.3.5a

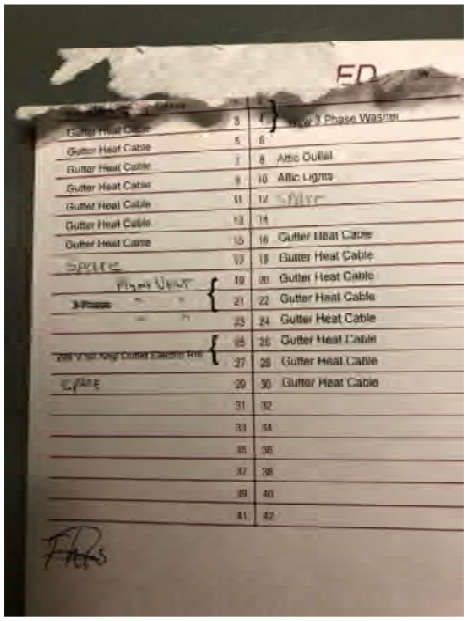


Figure J.3.5a

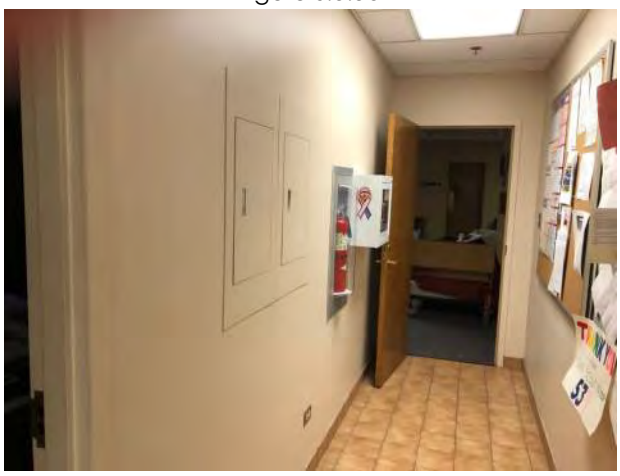


Figure J.3.5b

Figure J.3.5c

Figure J.3.6a

Figure J.3.6b

Figure J.3.6c

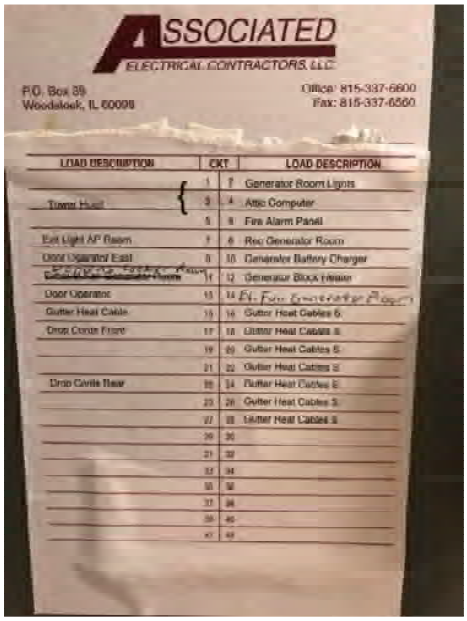


Figure J.6

Figure J.7

K. Emergency Power Distribution

Figure K.1

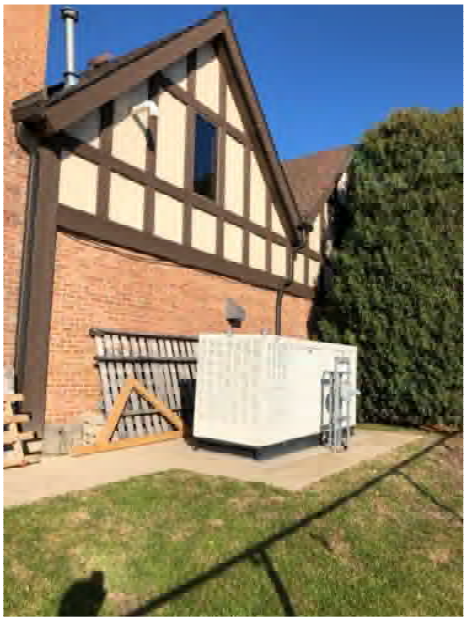


Figure K.2

L. Lighting

Figure L.1

Figure L.2

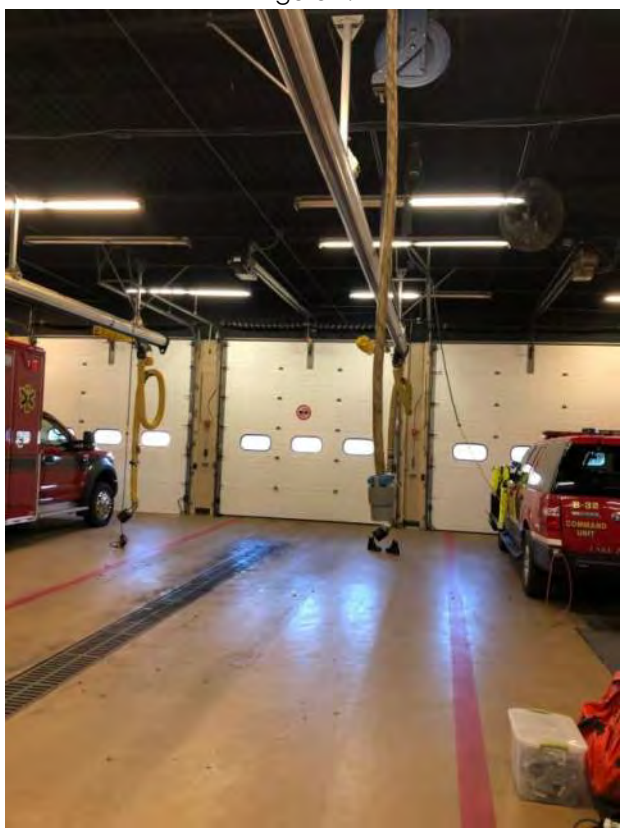


Figure L.3a

Figure L.3b

Figure L.3c

Figure L.4

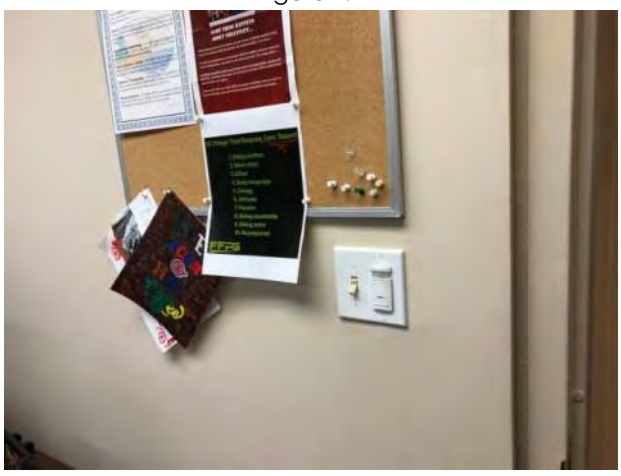


Figure L.5

Figure L.6

M. Systems, Safety, and Security

Figure M.1

Figure M.2a

Figure M.2b

Figure M.2c

Figure M.3a

Figure M.3b

Figure M.3c

Figure M.3d

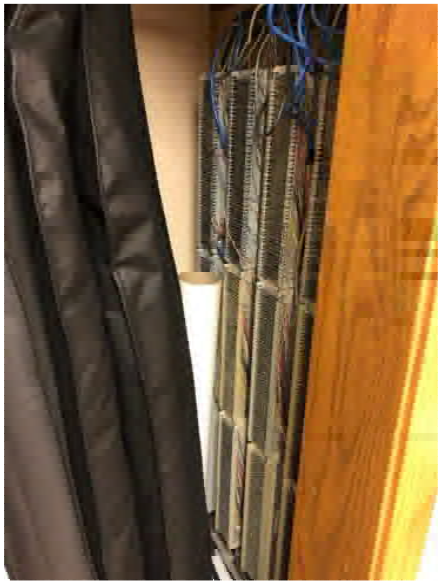


Figure M.4

N. Building Code Issues

Figure N.1

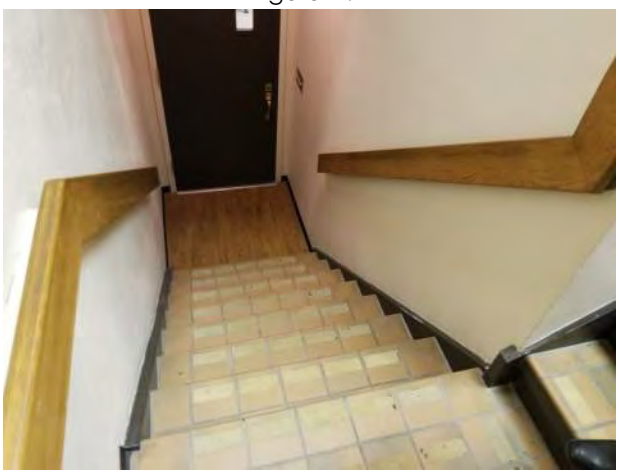
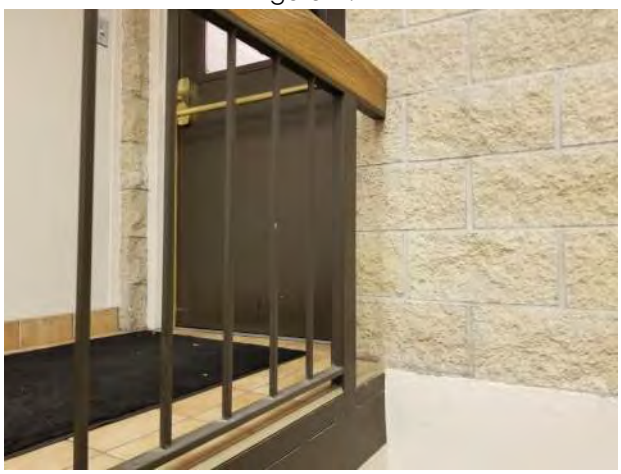


Figure N.2



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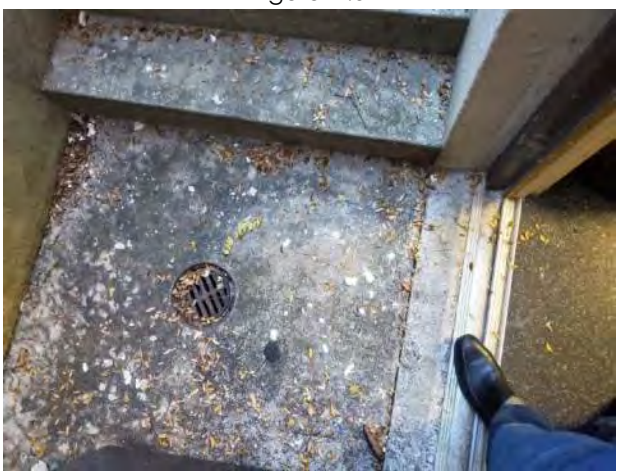

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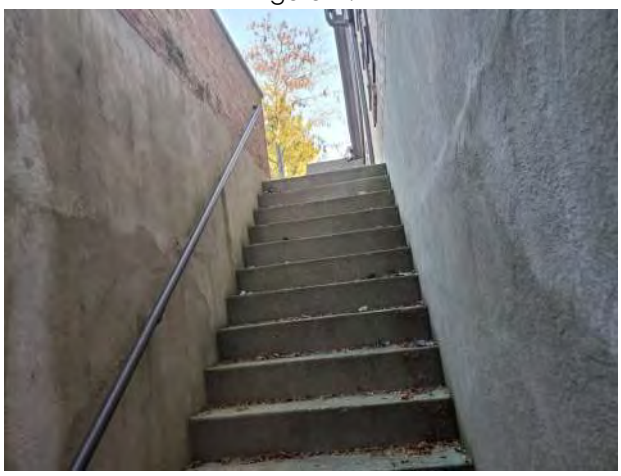

Figure N.5

Figure N.6

Figure N.8

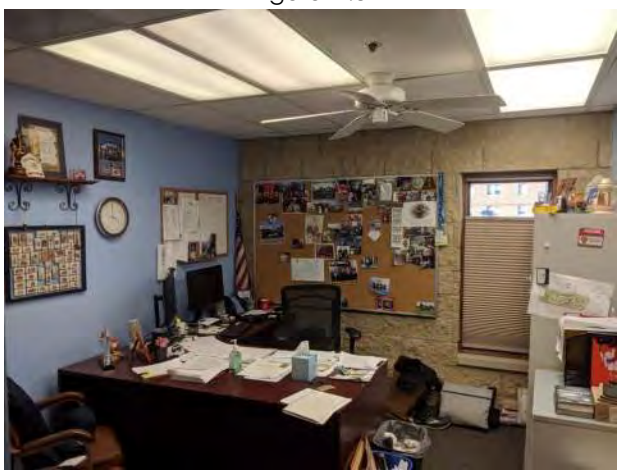

Figure N.9

Figure N.10

O. Accessibility Code Issues

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Figure O.1.1b

Figure O.1.2

Figure O.1.3

Figure O.1.4

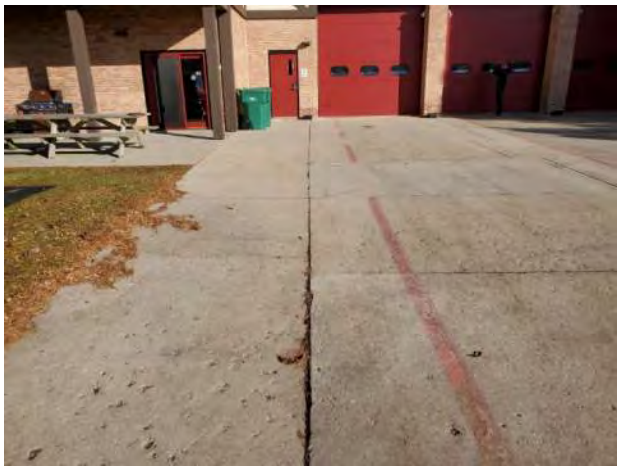

Figure O.1.5

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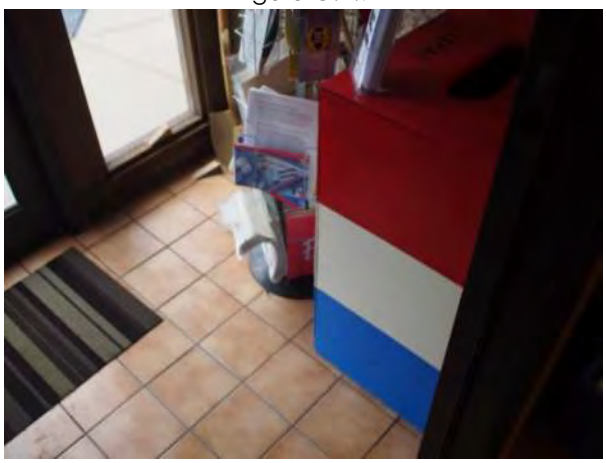
Figure O.1.7

Figure O.1.9



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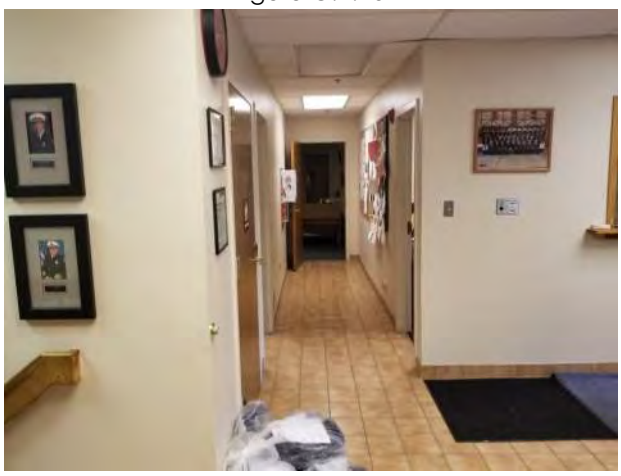

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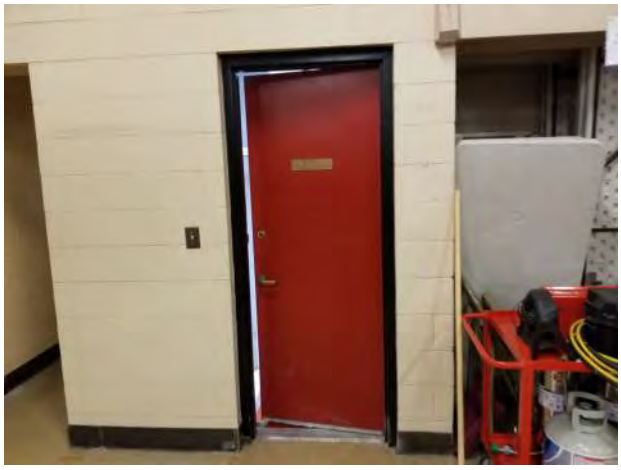

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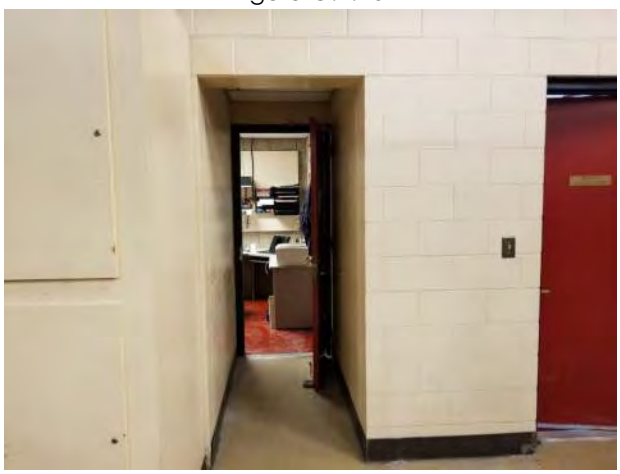

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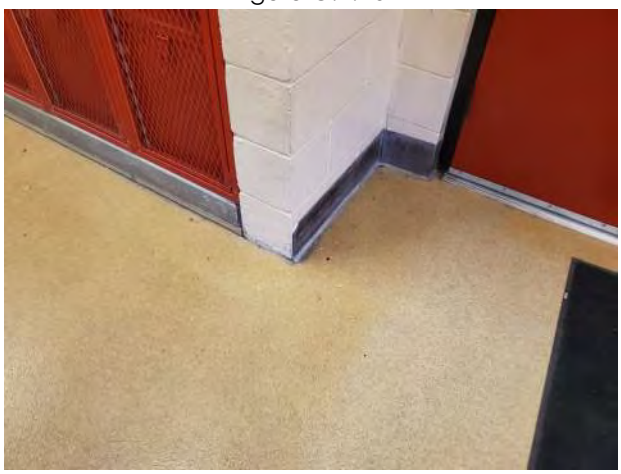

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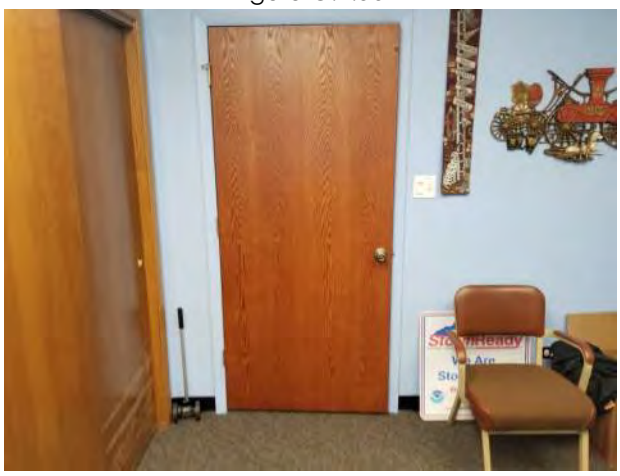

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Figure O.2.4

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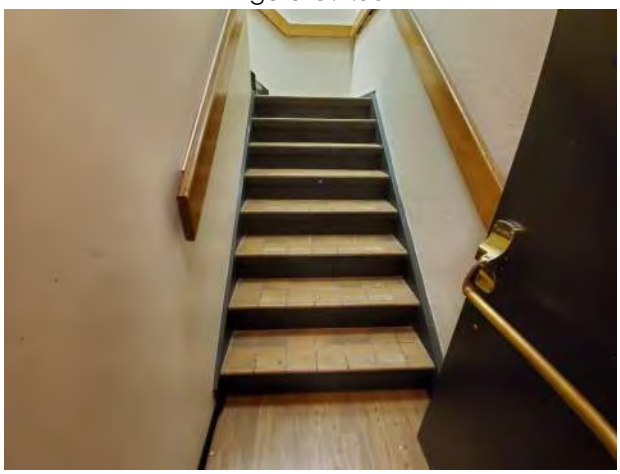

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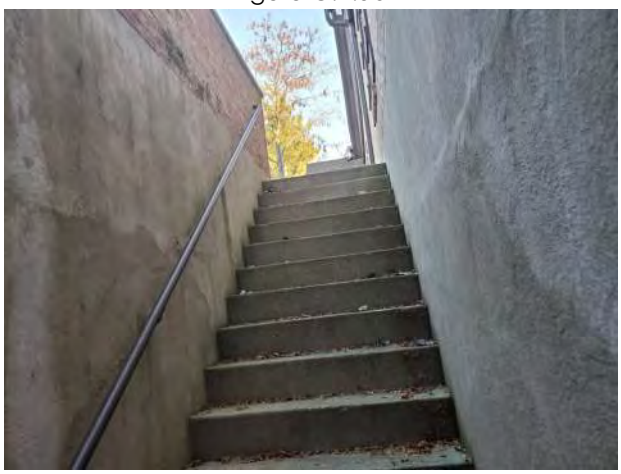

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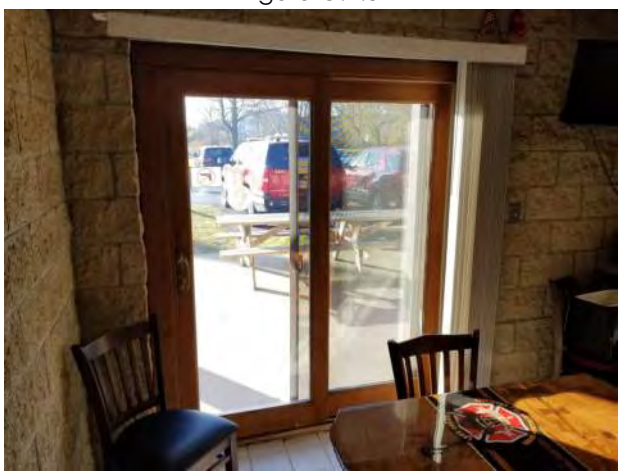

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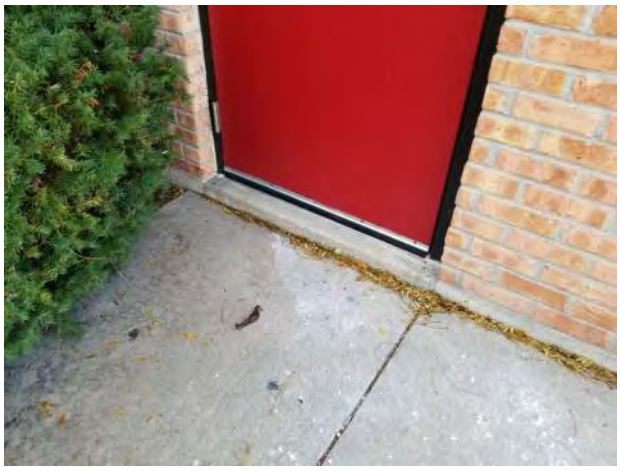


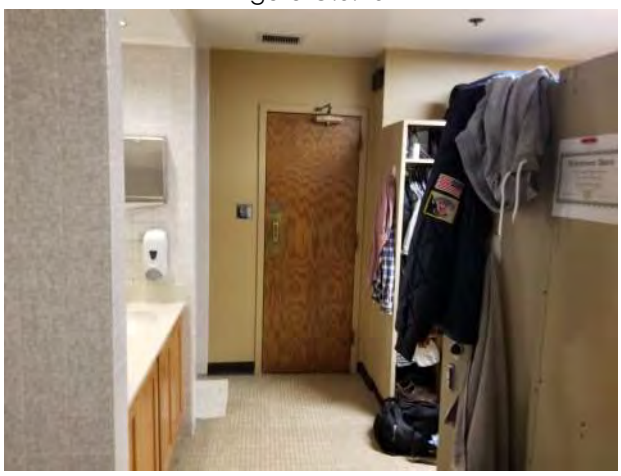
Figure O.3.1

Figure O.3.2a

Figure O.3.2b

Figure O.3.2c

Figure O.3.2d



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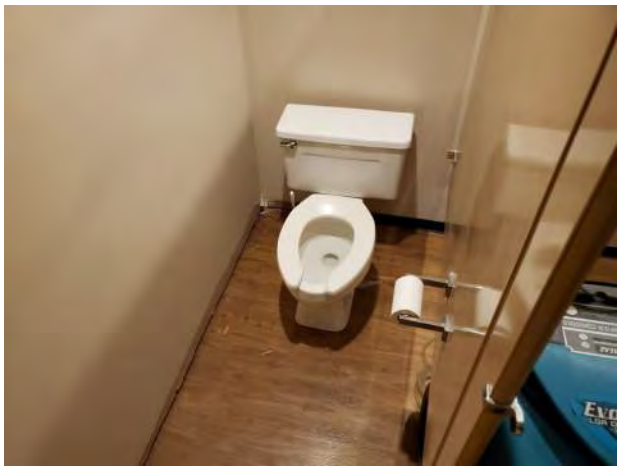

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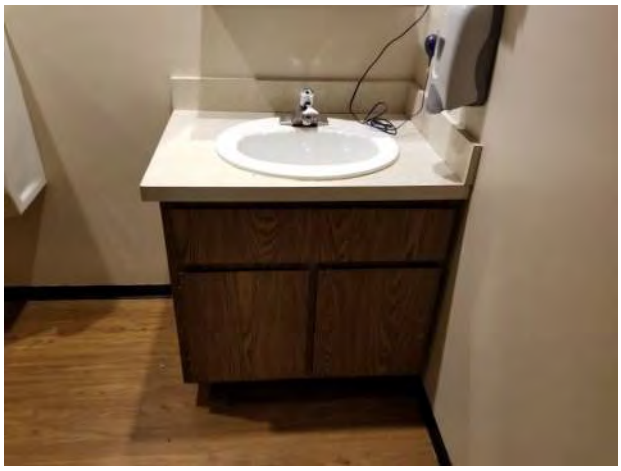

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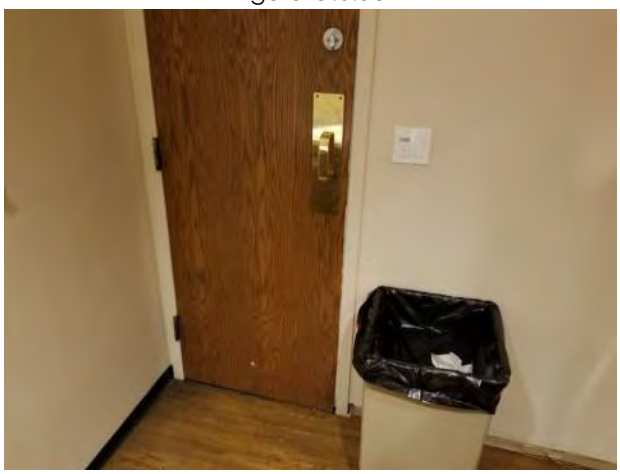

P. Energy Efficiency

Figure P.1

Figure P.2

Figure P.3

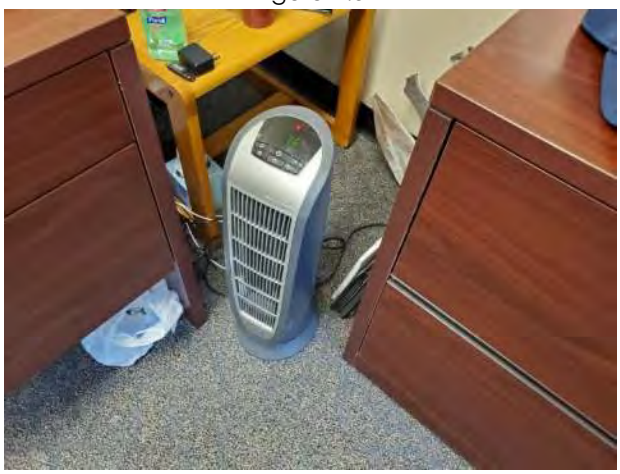

Figure P.4

Figure P.6

Figure P.7

Figure P.9

Figure P.10

Figure P.12

Figure P.13

Figure P.14

Q. Health and Safety Issues

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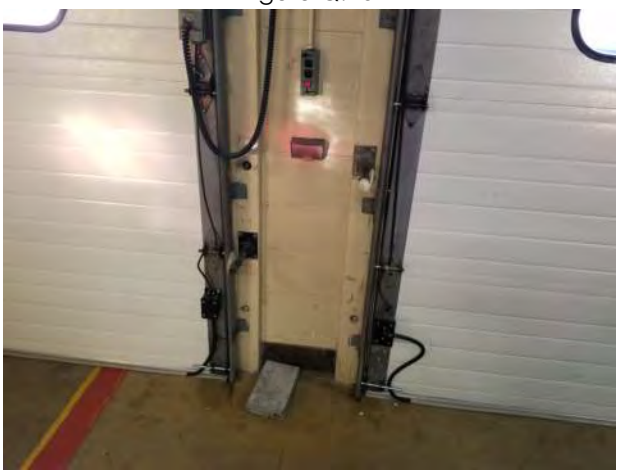

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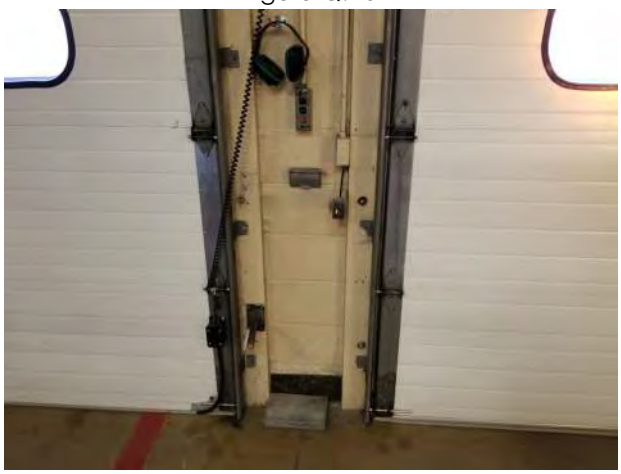
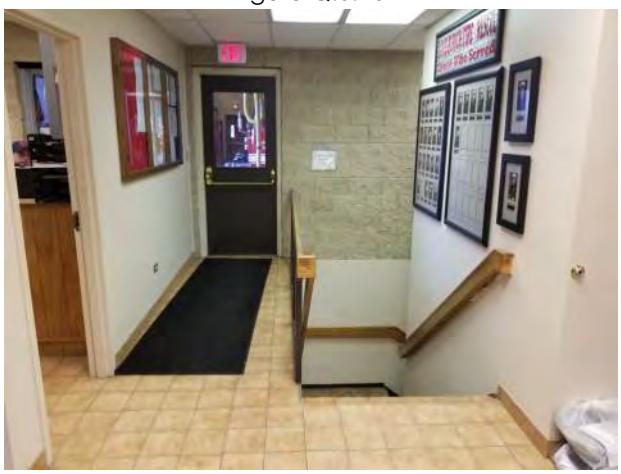


Figure Q.2

Figure Q.3

Figure Q.5

Figure Q.6.1a



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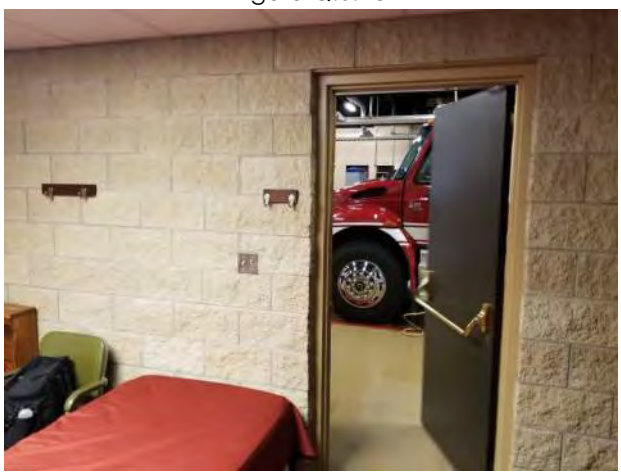

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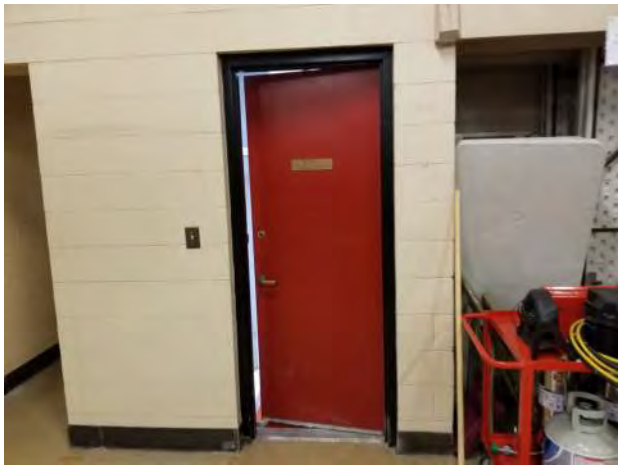

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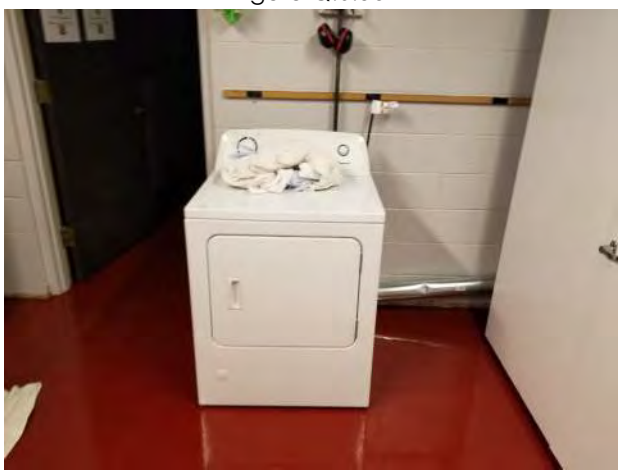
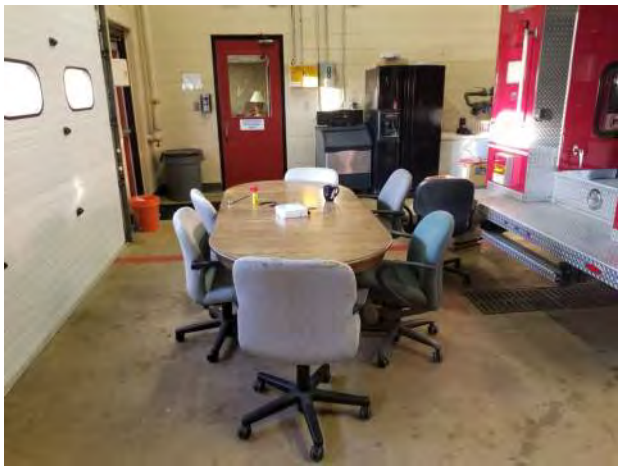


Figure Q.6.5b

Figure Q.6.6

Figure Q.6.7

Figure Q.6.8



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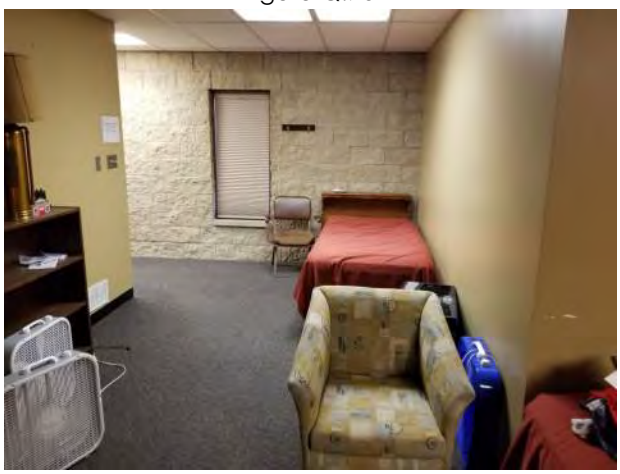

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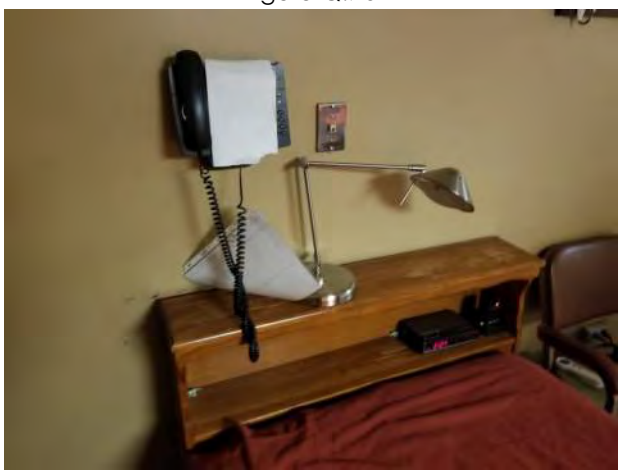

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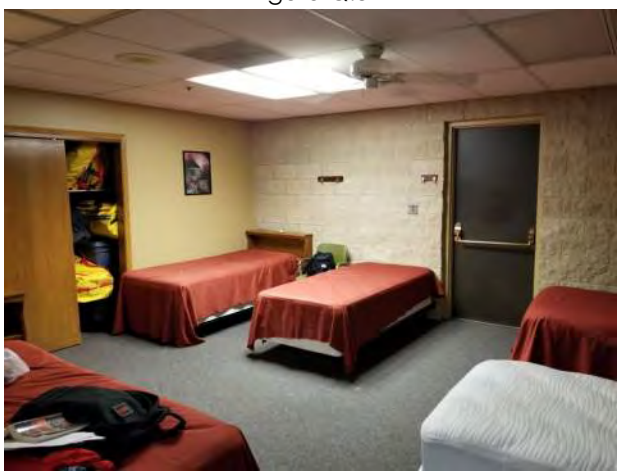
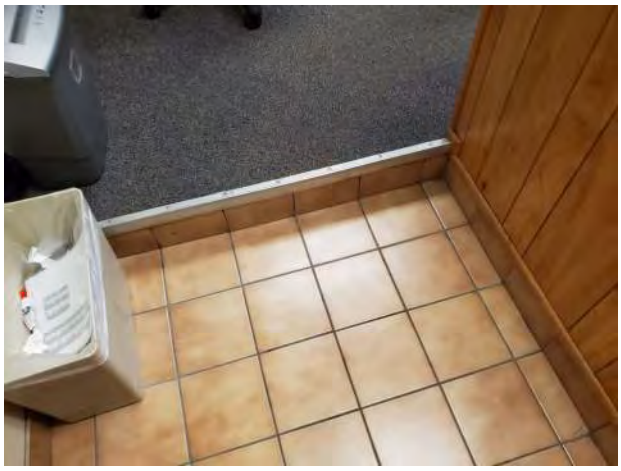


Figure Q.9

Figure Q.11

Figure Q.12



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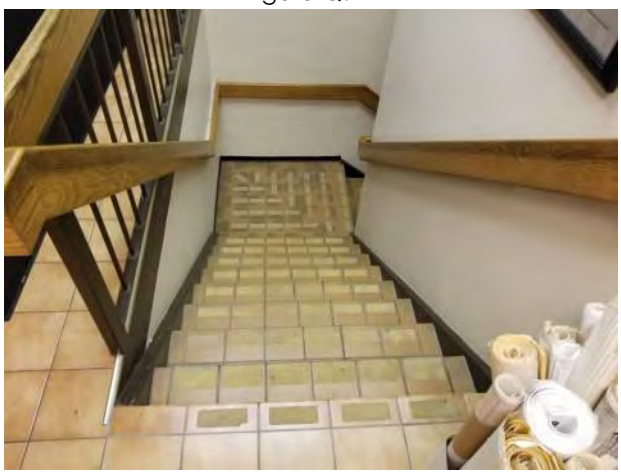

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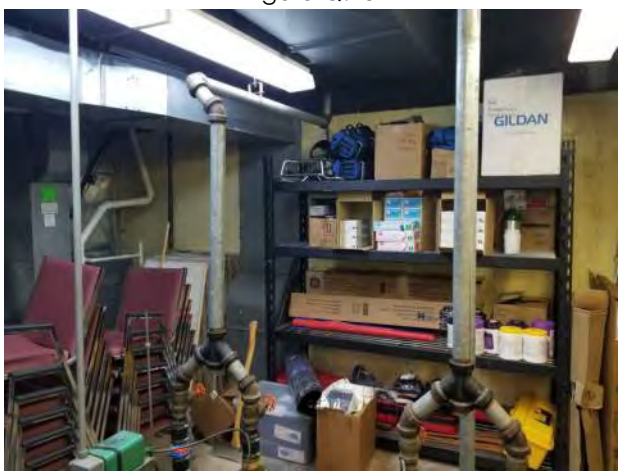

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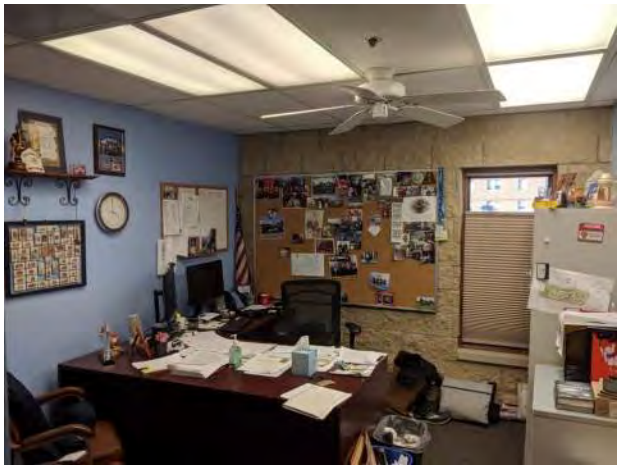
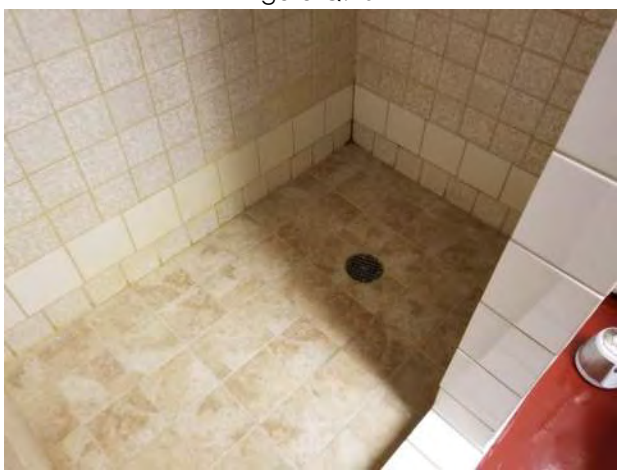


Figure Q.20

Figure Q.10



R. Functionality Issues

Figure R.1a

Figure R.1b

Figure R.1c

Figure R.1d

Figure R.2a

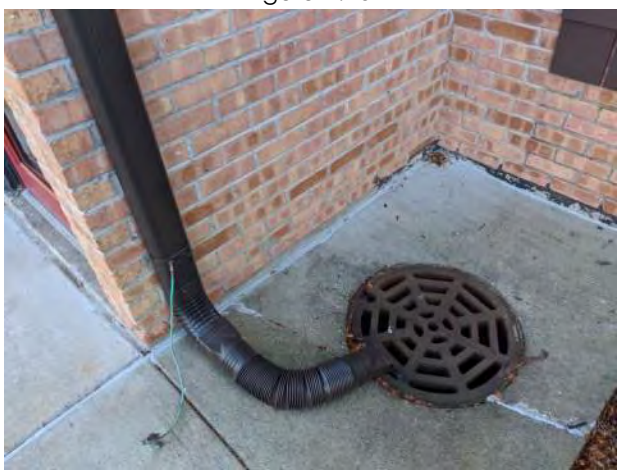


Figure R.2b

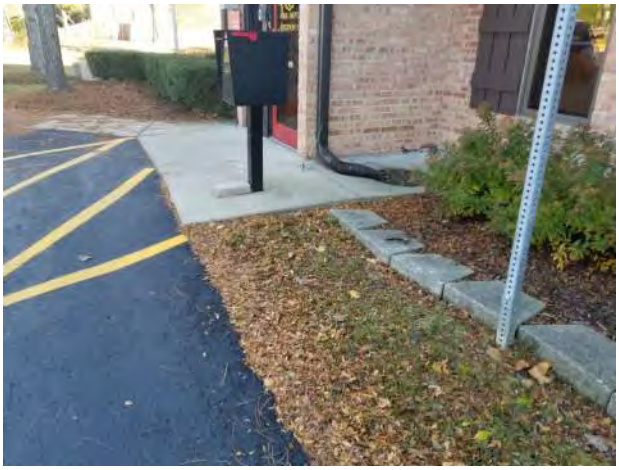
Figure R.2c

Figure R.2d

Figure R.3a

Figure R.3b

Figure R.4



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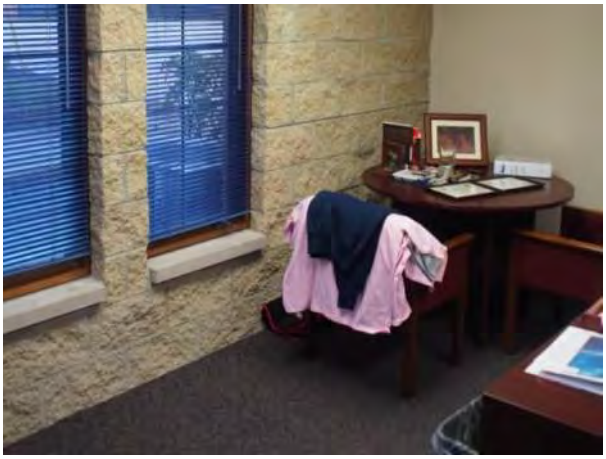

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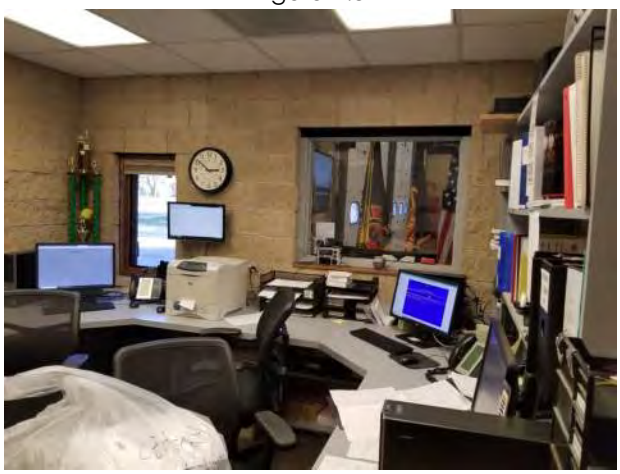

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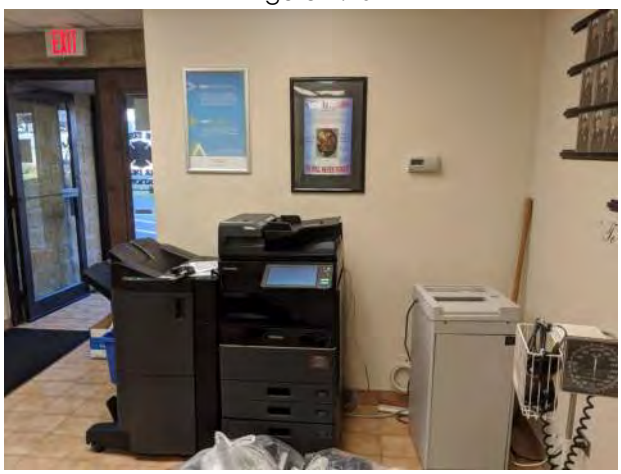

Figure R.11

Figure R.12

Figure R.14

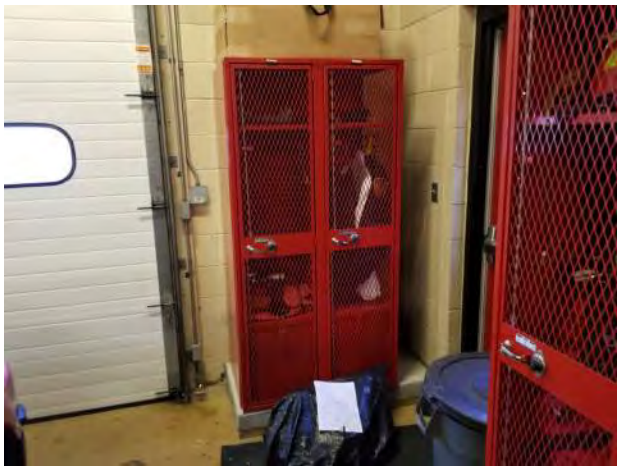

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Figure R.17

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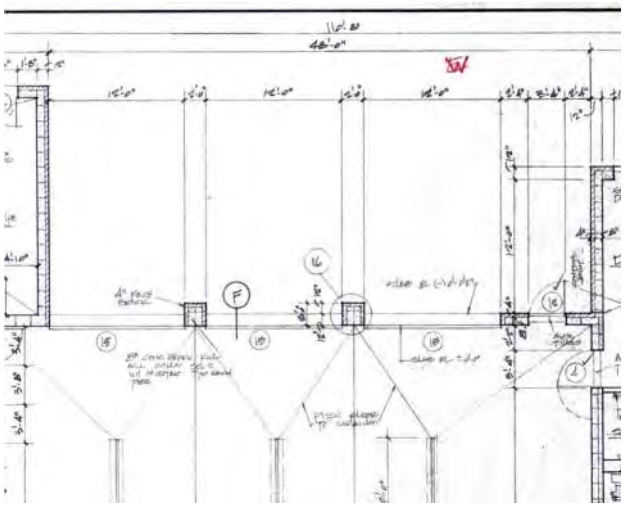
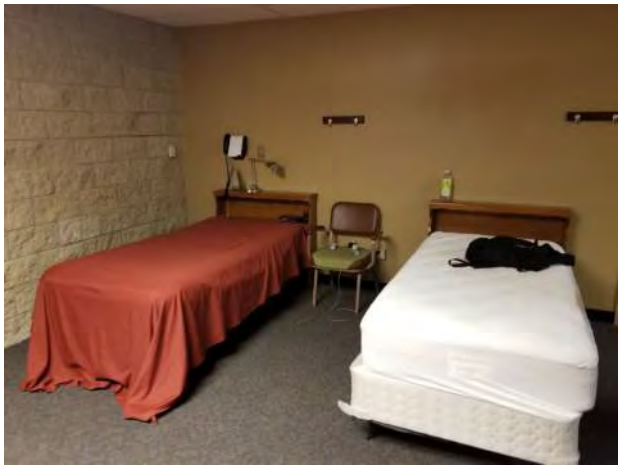


Figure R.19

Figure R.20

Figure R.21a

Figure R.21b



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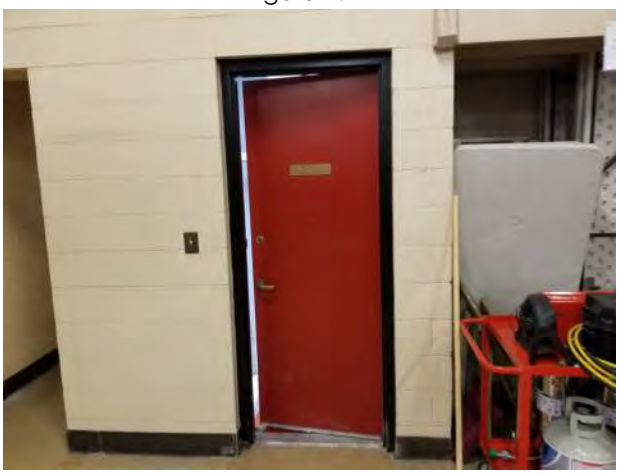

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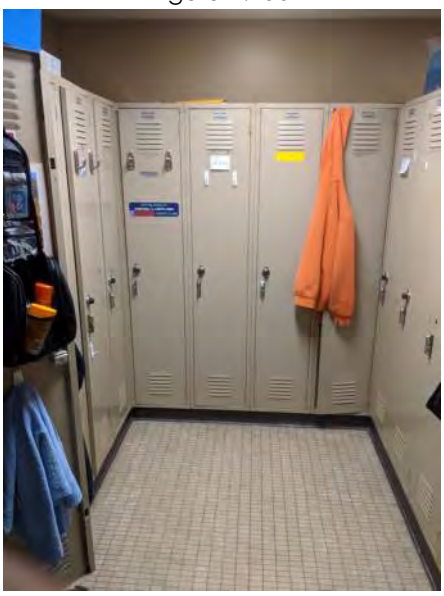

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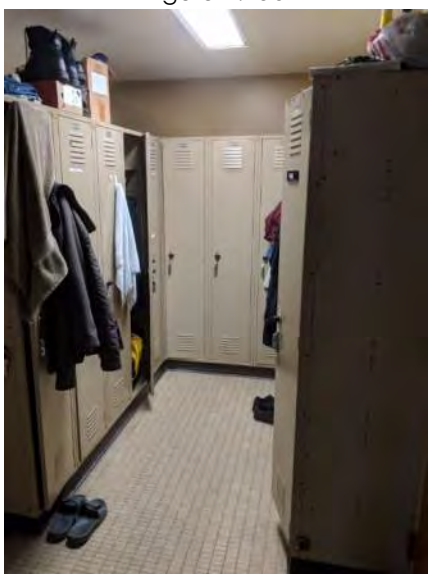


Figure R.24

Figure R.25

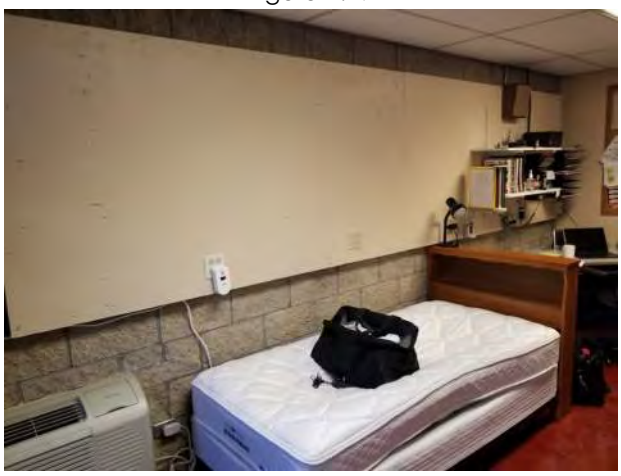
Figure R.26a

Figure R.26b

Figure R.27

Figure R.28

Figure R.29



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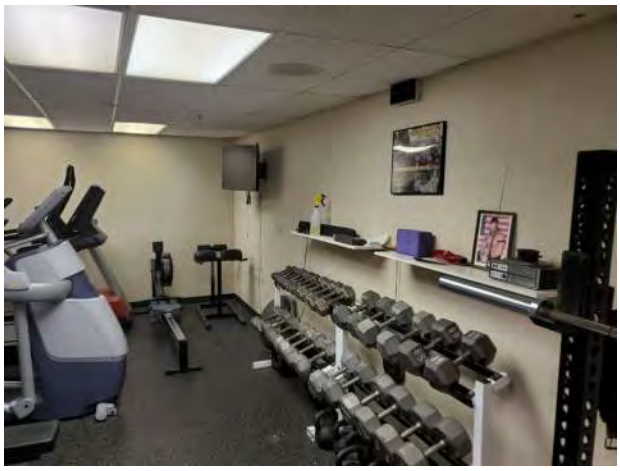

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Figure R.32

Figure R.35

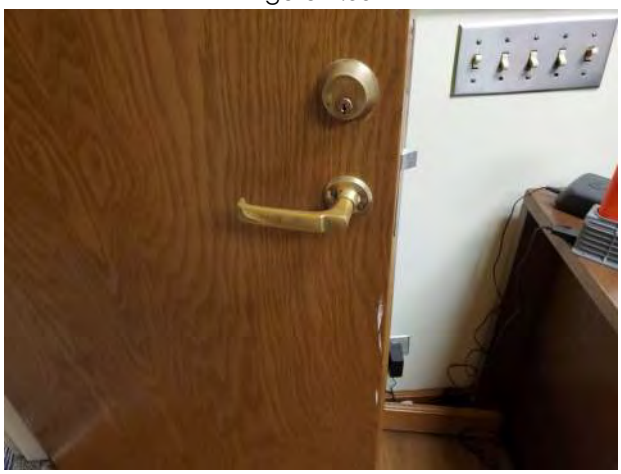

Figure R.37a

Figure R.37b

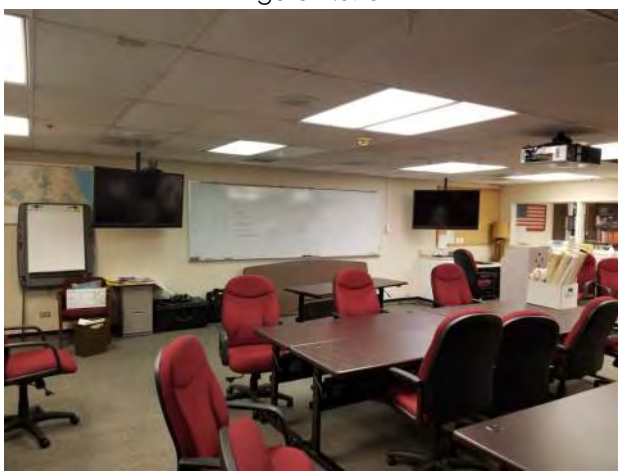

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Figure R.40

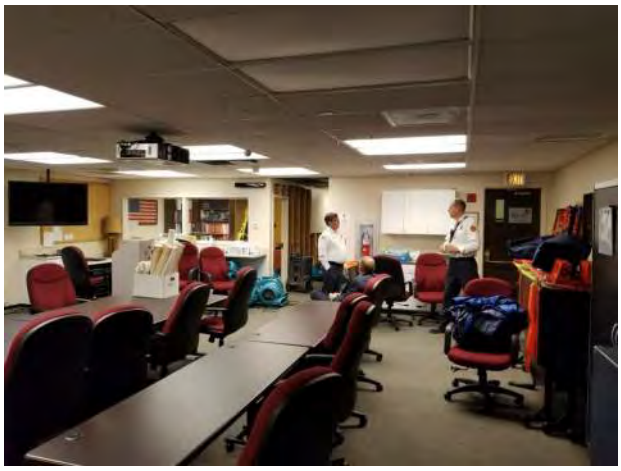


Figure R.41

Figure R.42

Capital Improvement Estimates

Using conceptual estimating techniques, BKV Group estimated the construction cost for each issue or set of issues identified in the Facility Assessment, breaking them into Urgent, Short Term Medium Term, and Long Term recommendations. This estimate does not resolve all of the issues identified in the Assessment, especially those that would require major renovation or building additions.

Urgent	recommend completion within one year
Short Term	recommend completion in one to five years
Medium Term	recommend completion in five to ten years
Long Term	recommend completion in more than ten years in the future

The following preliminary capital improvement estimates represent BKV Group's judgment as a design professional and are intended to allow for order-of-magnitude planning of capital expenditures. Actual costs should be expected to vary from these numbers based upon the exact solution chosen to address each issue; the availability of labor, materials, or equipment; the Contractor's methods of determining bid prices; and the competitive bidding, market, or negotiating conditions. The estimates should be confirmed at the time of planned implementation.

Construction costs increase significantly over time and are especially sensitive to changes in the economy. Reports suggest construction escalation could be as high as 6% per year, compounded, at the time of writing. This escalation should be factored into any capital planning.

Any plan to group repairs into a larger project would save Fire Department staff from needing to solicit separate bids, negotiate with many different vendors, and oversee the work. If this approach is taken we recommend adding to the budget 10% for contingency and 7% for the contractor's general requirements (i.e. supervision, insurance, bonding, trash hauling, etc.).

Item	**Estimated Construction Cost*** *as of April 2020*	**Recommended Time Period** *Urgent*	*Short Term*	*Medium Term*	*Long Term*
Replace concrete at top of exterior stair to drain away from building and fix entry issues, ~200 sf.	$ 15,000		X		
Replace apparatus aprons, ~6,000 sf.	$ 60,000		X		
Fence-in mechanical yard at front of building, 30 lf.	$ 3,000			X	
Fence in generator area and training/staff parking area, ~575 lf.	$ 15,000			X	
Tuckpoint low wall by exterior stair (~130 sf), adding flashing below cap stone.	$ 6,000		X		
Repair or replace dumpster enclosure walls.	$ 5,000		X		
Tuckpoint cracks in the CMU bearing walls.	$ 2,000		X		
Remove and replace exterior brick, adding air barrier and insulation and using brick manufactured for freeze-thaw conditions. Extend foundation to support wider cavity. Replace flashing and lintels. ~ 5,000 sf.	$ 450,000		X		

Item	Estimated Construction Cost* as of April 2020	Recommended Time Period			
		Urgent	*Short Term*	*Medium Term*	*Long Term*
Paint exterior wood trim and replace boards as needed.	$ 5,000		X		
Repair metal coping at training tower, add kickout flashing at gutters, install larger conductor heads.	$ 10,000	X			
Replace exterior sealants at joints, opening perimeters, wall base conditions, etc.	$ 5,000			X	
Scrape and repaint all six apparatus door lintels.	$ 5,000		X		
Replace the sliding glass door in the dining area.	$ 5,000		X		
Replace flooring at first floor office/living spaces including stairs, ~3,300 sf.	$ 16,500			X	
Replace epoxy floors at apparatus bay, ~4,300 sf. and repair trench drain support angles	$ 65,000		X		
Replace carpet at lower level training room, ~900 sf.	$ 4,500		X		
Replace rubber base throughout building.	$ 3,000		X		
Replace interior sealants.	$ 2,500		X		
Cover split-faced CMU with thick-set tile at Kitchen backsplash, toilet stall.	$ 3,200		X		
Add tile wall protection at lower level restroom, ~60 sf.	$ 2,000		X		
Replace diffusers at locker room.	$ 1,500		X		
Refinish damaged wood doors, replace hollow-core door, locker room door, and shift commander's door	$ 6,500		X		
Replace corroding hardware at locker room, add door stops.	$ 1,000		X		
Scrape and paint hollow metal frames and steel lintels.	$ 2,500		X		
Remodel Watch Room/ Station Office, ~150 sf.	$ 10,000			X	
Renovate Kitchen/ Dining room and include accessible features, ~375 sf.	$ 80,000		X		
Scrape and paint partitions at men's restroom.	$ 500			X	
Enclose exterior stair with shed roof and mesh screens.	$ 15,000		X		
Add thermostatic mixing valves to public lavatories.	$ 2,000	X			
Replace water heater.	$ 5,000	X			
Insulate all hot water piping.	$ 500		X		
At office/living/training spaces and at apparatus support spaces, replace furnaces with VRF system, utilizing existing ductwork to satisfy fresh air requirements.	$ 300,000		X		
Replace main electrical switchboard and six panelboards and upgrade to 800 A service.	$ 30,000			X	
Replace generator with 150 kVA generator.	$ 130,000			X	
Replace exit signs.	$ 1,500	X			
Bump into training room to create a code-compliant landing at base of interior stairs.	$ 5,000		X		
Replace handrails and guardrails at the stairs.	$ 5,000	X			

Item	Estimated Construction Cost* as of April 2020	Recommended Time Period			
		Urgent	*Short Term*	*Medium Term*	*Long Term*
Add door from Shift Commander's Suite directly to exterior.	$ 3,500		X		
Add supply air to DC's office.	$ 1,000	X			
Wall off part of the physical conditioning room to create corridor to provide safe egress from training room. Add new door.	$ 5,000		X		
Add truncated domes.	$ 1,600			X	
Add sidewalk access from street to main entry.	$ 6,000		X		
Relocate emergency phone.	$ 500		X		
Replace main entry door.	$ 6,000			X	
Add automatic door operator at both vestibule doors, narrow doors, and doors without push/pull clearances.	$ 14,000		X		
Lower transaction window to be ADA compliant.	$ 6,000		X		
Add machine room-less elevator by the exterior stair. Include sump pit, electrical, and new openings in first floor wall and basement wall.	$ 300,000				X
Jack sidewalk at southeast corner of bays.	$ 1,000		X		
Renovate the men's locker room to provide accessibility by converting it into two single-user shower rooms (~200 sf) and a non-gendered locker area (~275 sf).	$ 85,000			X	
Renovate the basement restroom to provide accessibility by replacing lavatory, removing urinal, and adding grab bars.	$ 3,500		X		
Add photo-eyes to apparatus doors.	$ 2,000			X	
Convert the shift commander's suite into turnout gear storage.	$ 20,000			X	
Addition to building to hold a shift commander's suite on clean side of the building (~400 sf addition to building).	$ 160,000			X	
Extend ductwork from bay exhaust fans to lower levels of the bays.	$ 5,000		X		
Add decontamination vestibules (~50 sf each) at entrances to apparatus bay with hand sinks.	$ 45,000		X		
Add janitor closet and laundry to clean side of station.	$ 9,000		X		
Add bollards to front and rear apparatus doors.	$ 6,000		X		
TOTAL	$ 1,958,800				
Total Urgent Items	$ 24,500				
Total Short Term	$ 1,149,700				
Total Medium-Term	$ 484,600				
Total Long-Term	$ 300,000				

Facility Condition Index

The Facility Condition Index (FCI) is a benchmarking tool that allows us to make a statement about whether it makes financial sense to complete the needed repairs or if that would be "throwing good money after bad." The number is derived by dividing the Total Estimated Capital Improvement Costs, less the functionality issues, by the building's current replacement value. Typically, an FCI lower than 5% means the building is in good condition, an FCI between 5% and 10% means the building is in "fair" condition, an FCI between 10% and 30% means the building is in "poor" condition, and an FCI of more than 30% means the building is in "critical" condition.

For Station #1, the equation becomes: $\frac{\$1,510,000}{\$5,440,000} = 27.8\ \%$

The existing Fire Station #1 is classified as being in Poor condition. This does not automatically mean it should be demolished, but it does indicate that major work is needed. In this case, the fact that the building is significantly undersized compared to the space needs (detailed in the next section), the issues of differential settlement, and the fact that the way the building sits on the site means it cannot be effectively expanded all lead us towards the fact that salvaging it is not recommended. We can recommend replacement knowing that the building has been utilized for as long as possible without major investment. The Village has truly gotten its money's worth.

Space Needs Assessment

BKV Group assessed the Fire Department's space requirements based on national standards, interviews with the department leadership, current staffing levels, and demographic information.

Each section of the proposed work is programmed at the level of individual rooms or spaces. The areas identified for each are based on solid experience and familiarity of these types of facilities by the planning team, as well as data collected from Department staff. Consolidating this information, BKV Group developed a draft space needs matrix and reviewed, developed and refined the information with the project team.

The programming effort considers the current space allocation for each function, the number of firefighters, number of workstations and offices necessary, and current support spaces provided and projects these needs forward into the future. Once the program information is reviewed and confirmed with the team, this then forms the basis of the Master Planning Concepts and should be the basis of further exploration in Concept and Schematic Design phases.

A Note on the Validity of Long-term Space Needs Projections:

The development of the program is based on planning for a 20-year projected need. Although government buildings are commonly built to the quality of a 50- or 100-year life span, it is not financially feasible, nor reliable to construct spaces that may or may not be needed within that extended time frame. A community's population might vary 10% from projections within 20 years but could vary 50% from projections after 50 years. Rather, the building should be designed to easily accommodate renovation and expansion. A forecast of 20 years is the practical limit of reasonably accurate projections. It is important to note however, that as time passes, particularly if funding for a project is not immediately available, the original program should be updated upon project commencement to incorporate changing growth patterns.

Each space required for the department is listed in the matrix along with the area required for those spaces. The number of such spaces expected to be needed is shown, then the net area is calculated by multiplying the size of the room by the number of such rooms. These are tallied at the bottom of the page into a Total Net Area. This Net Area does not factor in the area occupied by wall thicknesses, columns, plumbing and mechanical shafts, corridors, etc. that cannot be precisely identified at this early phase of the project. To account for these other functions, architects use a "Circulation Factor" (typically 15% to 20%) and an "Envelope Factor" (typically 12% - 15%) that is added to the Net Square Footage to arrive at a Total Proposed Square Footage. Generally speaking, buildings that require greater circulation, wide public waiting areas or large public interface functions require larger efficiency factors.

	count	unit area (sf)	net total (sf)	comments
Public Areas				
Vestibule	1	55	55	air lock
Private Conference/ Exam	1	120	120	blood pressure, basic supplies, chairs
Lobby/ Display Space	1	400	400	includes space for reception seating
Training Room	1	1,000	1,000	seats 40 at tables
Training Room Storage	1	100	100	~10% of training room area
Public Restroom	2	130	260	2 fixtures, 1 lav. each
subtotal, Public Areas			*1,935*	
Administration Areas				
Fire Chief Office	1	240	240	desk, credenza, small table, closet
Deputy Chief Office	2	192	384	desk, credenza, 2 guest chairs, closet
Division Chief/ EMS Coord. Office	2	144	288	desk, credenza, 2 guest chairs, closet
Shift Commander Suite	1	320	320	office, bunk room, shower room
Management Assistant Office	1	120	120	desk, credenza, 2 guest chairs
Bureau Admin Workstation	1	64	64	
Fire Prevention Specialist Office	1	144	144	desk, plan table, 2 guest chairs
Fire Inspector Workstation	4	64	256	
Reception Counter	1	60	60	
Light Duty Workstation	2	64	128	
Conference Room	1	240	240	seats 10-12, includes counter
Copy Room/ Plan Room	1	200	200	includes office supply, plan storage
Active Records Storage	1	144	144	
Archive Storage	1	240	240	
Administration Restrooms	2	50	100	single user
Coffee Alcove	1	60	60	
Quartermaster Storage	1	120	120	uniforms, equipment, honor guard
Public Safety Education Storage	1	120	120	near Bureau offices
subtotal, Administration Areas			*3,228*	
Firefighter Areas				
Station Office	1	180	180	4 workstations, mailboxes, file cabinets
Lieutenant Office	1	120	120	1 desk shared by three shifts
Single User Bunk Room	8	90	720	bed, nightstand, 3 wardrobe lockers
Single User Shower Room	3	90	270	
Lockers	16	10	160	24"x24" lockers
Janitor/Storage/Laundry	1	200	200	w/d, mop sink, counter
Kitchen	1	280	280	
Dining Area	1	220	220	seating for 8-10 people

	count	unit area (sf)	net total (sf)	comments
Dayroom	1	360	360	7+/- recliners
Study Room	1	64	64	
Physical Conditioning Room	1	1,000	1,000	with door to exterior
subtotal, Living Areas			*3,574*	

Apparatus Bays & Support Areas

Apparatus Bays	4	1,530	6,120	18' W x 85' L - Engine, Ambulance, Squad, Shift Commander, Reserve Engine, Future Ladder
Small Vehicles	8	200	1,600	would prefer to store under cover - four command, training, three Bureau
Decontamination Vestibules	2	70	140	sink, floor mat, signage
Turnout Gear Storage	40	8	320	24" wide lockers, 4' aisle
Turnout Gear Laundry	1	80	80	washer/extractor and cabinet dryer
Equipment Decontamination	1	180	180	
Sweat Room	1	100	100	
Bay Restroom	1	60	60	
Maintenance Shop	1	150	150	
SCBA Compressor/ Fill	1	100	100	
SCBA and SCUBA Repair/ Testing	1	180	180	~100 bottles, ~50 packs
Medical Supply Closet	1	80	80	acts as depot for the full department
Hose Drying and Storage	1	100	100	
Snowblower Storage	1	100	100	
General Storage	1	650	650	
subtotal, Apparatus & Support			*9,960*	

Building Support

Mechanical	1	200	200	area is approximate
Sprinkler Riser	1	40	40	
Electrical	1	200	200	
Communications	1	120	120	
Stairs	6	144	864	assume two story + basement
Elevator	3	60	180	assume two story + basement
Elevator Equipment	0	100	0	
Fire Pole	2	40	80	assume two story + basement
Mezzanine	1	1,000	1,000	for indoor training
subtotal, Building Support			*1,684*	*excludes mezzanine area*

	count	unit area (sf)	net total (sf)	comments
Exterior Areas				
Visitor Parking	4	320	1,280	
Staff Parking	20	320	6,400	9 on shift, 11 day staff
Fleet Cars	7	320	2,240	includes three take-homes
Bicycle Racks	2	18	36	
Flagpole/ Memorial	1	100	100	
Patio	1	300	300	
Monument Sign	1	80	80	
Training Tower	1	400	400	
Training Pad	1	10,000	10,000	100'x100'
Fencing	1		0	
Dumpster Enclosure	1	120	120	
Generator Enclosure	1	120	120	
Total Net Area (sf)			**20,381**	
Circulation Factor (sf)		**12%**	**2,446**	
Envelope Factor (sf)		**12%**	**2,446**	
Building Footprint (sf)			**25,273**	**= approximately 25,300 sf**

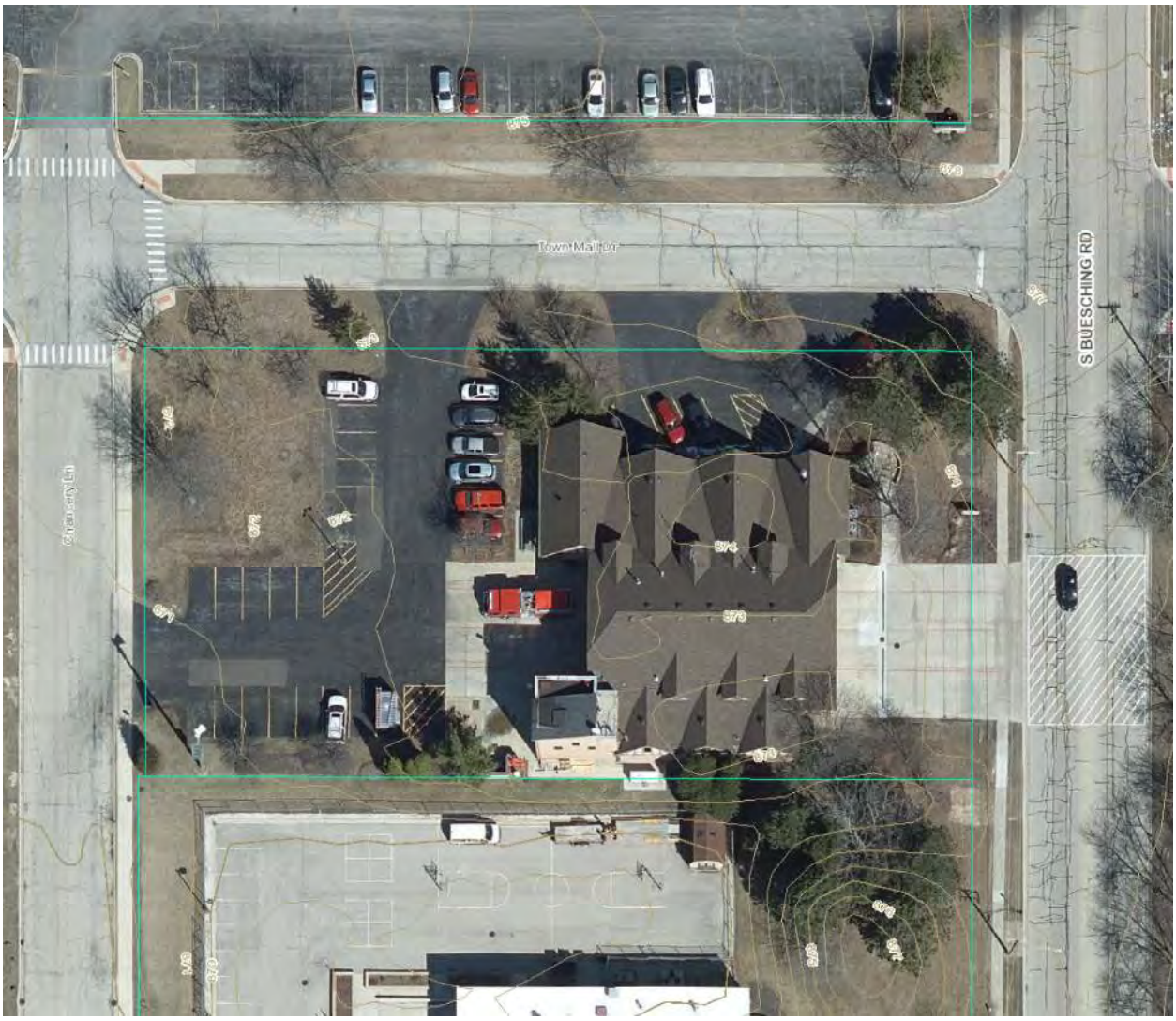
By way of comparison, the existing Station #1 is ~11,810 sf, with 9,360 sf on the First Floor and 2,450 sf in the Basement. There is a shortage of almost 13,500 sf. The discrepancy is because the station was constructed 40 years ago when the Department was still staffed by volunteers.

Community Comparisons

To provide a check to make certain that the stations being considered are neither too large nor too small, BKV Group collected data on similar stations. Though we do not advise utilizing such comparisons as the only means of projecting space needs, the process can identify irregularities and can confirm the projected program numbers, providing validity to the developed program.

While a police station or city hall may base size comparisons on the population of one city versus another, for fire stations the drivers of square footage are the number of apparatus bays. Because fire departments grow by adding stations instead of adding square footage to a station, we can compare stations from communities of widely varying population as long as the number of bays is the same and the staffing model is the same (volunteer vs. career). From the data presented, it is evident that the proposed square footage is within a typical range for similar facilities.

Square Footage of Recently Constructed Fire Stations with Four Apparatus Bays		
Streamwood #1 & HQ	4 bays	23,000 sf
Elk Grove Village #8	4 bays	20,700 sf
Normal #2 & HQ	4 bays	25,000 sf
Mt. Prospect #14	4 bays	23,200 sf
Carol Stream #28 & HQ	4 bays	30,000 sf
Proposed Lake Zurich #1 & HQ	**4 bays**	**25,300 sf**


Town Mall Dr
S BUESCHING RD
Gleneagles Ln

Master Planning Concepts

Based upon the space needs identified during programming, BKV Group examined, at a high level, three master planning options. Each has implications for capital costs, functionality, neighborhood impact, etc.

Due to the anticipated repair costs, the accessibility and building code issues, the significant list of Health and Safety concerns and Functionality concerns, and the difficulty of expanding the existing building into a proper facility, none of the Options keeps the existing building in place.

The existing site is well-located for responding throughout the Village of Lake Zurich and for supporting the District Stations. Exploration of other nearby sites was not within the scope of this study.

The current parcel is zoned as IB (Institutional Building) and has an allowable FAR of 0.35, so any new construction cannot exceed 15,225 square feet without a zoning variance. In addition, the IB zone has a minimum landscaped area of 50% (so only 21,750 SF of the site can be paved or built upon). This is an unrealistic goal for a fire station that requires large paved areas for apparatus circulation. Setbacks are 10' on the south and 25' on the east, north, and west property lines.

The budgets outlined for each option below represent BKV Group's judgment as a design professional and are intended to allow for order-of-magnitude planning of capital expenditures. BKV Group's database of construction cost information, plus information about recent fire station construction projects in Chicago, show that a suburban fire station might cost +/- $370 per square foot. Actual costs should be expected to vary from these numbers based upon the level of quality; the availability of labor, materials, or equipment; the Contractor's methods of determining bid prices; and the competitive bidding, market, or negotiating conditions. Construction costs increase significantly over time and are especially sensitive to changes in the economy. Reports suggest construction escalation could be as high as 6% per year, compounded, at the time of writing. Contingencies are shown at 10% for and Soft Costs (design fees, testing, furnishings, etc.) are shown consistent from option to option. **We stress that these are order-of-magnitude estimates based on current costs and should not be interpreted as recommendations for final budget goals in the future.** Project costs should be confirmed at the time of planned implementation once other critical information has become available, including the amount of escalation that occurs between now and project initiation.

Option One: Replace the Station within the existing site boundaries

The existing one-acre site is small for a station of the size proposed. To get four drive-through apparatus bays, an area for training, the front and rear apparatus aprons, and the necessary parking, a portion of that parking would need to be located below the building. This has significant additional expense for the structure as well as the ramp down to the parking level. Also, stormwater detention would have to occur below grade.

The Apparatus Bays would be located on the north portion of the site. Firefighter spaces would be on the first floor and the fire administration and training room spaces would be on the upper level. Building Support spaces and the parking would occur in a lower level below the Apparatus Support and Firefighter spaces. Public parking would be limited to 9 stalls, so any training event with participants outside the department, for instance a CPR training course, would mean opening the below grade parking to the public.

This option is the furthest outside the zoning requirements and would require major variances. This solution would require building up to the property line on the north (25' past the building setback), building the training tower outside the building setbacks, and would have an estimated FAR of 0.68 – well over that allowable by zoning.

	Area (sf)	*Cost / SF*		*Total*
Demolition of existing building			$	90,000
New Construction	25,300	$ 425	$	10,752,500
Below-grade Parking			$	540,000
Site Development			$	580,000
Training Tower			$	200,000
Total Estimated Construction Costs			$	12,162,500
Contingency		10%	$	1,216,000
Temporary Facilities			$	150,000
Soft Costs (FF&E, design, testing, etc.)			$	1,825,000
TOTAL ESTIMATED PROJECT COSTS			**$**	**15,353,500**

60 parking stalls

mezzanine

training and lobby

administration

Town Mall Dr

S BUESCHING RD

Carolian Dr

Chancery Ln

return apron (100')

four apparatus bays

response apron (90')

training tower

apparatus support

ramp down

firefighter spaces

9 public parking stalls

20 staff parking stalls below grade

FIRE STATION #1 MASTER PLANNING

VILLAGE OF LAKE ZURICH STUDY
PROJECT NUMBER: 2332.01

OPTION 1

N

BKV GROUP

mezzanine

administration

public

SECOND FLOOR

return apron
(100')

four
apparatus
bays

response apron
(67')

training
pad

training
tower

training
pad

apparatus support

firefighter spaces

public

stormwater
detention

canopy over fleet cars

27 staff
parking stalls
(pervious paving)

7 public
parking stalls
(pervious
paving)

building support

BASEMENT

S BUESCHING RD

Carolian Dr

Chancery Ln

FIRE STATION #1 MASTER PLANNING

VILLAGE OF LAKE ZURICH STUDY
PROJECT NUMBER: 2332.01

OPTION 2

BKV GROUP

Option Two: Expand the site boundary and place the Apparatus Bays to the North

This option would involve the Village abandoning the right-of-way to Town Mall Drive and incorporating it into the fire station parcel. Access to the apartments north of the site would still be possible from Chancery Lane. There appears to be no utilities in Town Mall Drive south of the roadway, and this option would retain the existing public sidewalk and green space north of the road.

The Apparatus Bays would be roughly aligned with Carolian Drive. Firefighter spaces would be on the first floor and the fire administration and training room spaces would be on the upper level. Building Support spaces could occur in the basement. With the additional land, there is space on-site for surface parking, training, and stormwater detention. Overflow parking for the public would occur in the adjacent staff parking lot.

This option allows the apparatus bays to be constructed before the original building is removed, which eliminates the need to relocate apparatus during the project. Firefighters can be temporarily accommodated in a trailer inside the apparatus bays. The administration offices would be relocated off site.

The two-story portion of the building is above the existing basement. Rather than fill that void with rock, this option proposes construction of a basement in the same location.

Zoning variances may still be required due to an estimated FAR of 0.38 and setback encroachment on the east side, where we recommend locating the building as close to Buesching Road as possible to provide an option for future westward expansion.

	Area (sf)	*Cost / SF*		*Total*
Demolition of existing building			$	90,000
New Construction	25,300	$ 425	$	10,752,500
Basement			$	247,000
Site Development			$	540,000
Training Tower			$	200,000
Total Estimated Construction Costs			$	11,829,500
Contingency		10%	$	1,183,000
Temporary Facilities			$	50,000
Soft Costs (FF&E, design, testing, etc.)			$	1,825,000
TOTAL ESTIMATED PROJECT COSTS			**$**	**14,887,500**

Option Three: Expand the site boundary enough for a one-story Station

By abandoning the right-of-ways for both Town Mall Drive and Chancery Lane the Village can absorb enough additional property to create a one-story station with surface parking and stormwater management.

Apparatus Bays would be located on a diagonal between Chancery Lane and Town Mall Drive, as far as possible from the water main running on the west edge of the current parcel. It may be difficult to get four drive-through apparatus bays while maintaining turning radii, so one bay might require backing in. Firefighter spaces would be adjacent to the Bays with Administration spaces closer to Buesching Road and the Training Room between the two. Parking for staff and the public would be in a combined lot south of the building.

This option closes an access point to the parking lot of the apartments north of the fire station and may require the relocation of the water main along Chancery Lane, the precise location of which has not been established. It is less expensive because it lacks stairs and elevators, but options for future expansion are very limited.

This site plan would be compliant with building setbacks and FAR, with an estimated FAR of 0.28.

	Area (sf)	*Cost / SF*		*Total*
Demolition of existing building			$	90,000
New Construction	23,900	$ 425	$	10,157,500
Site Development			$	650,000
Training Tower			$	200,000
Total Estimated Construction Costs			$	11,097,500
Contingency		10%	$	1,110,000
Temporary Facilities			$	150,000
Soft Costs (FF&E, design, testing, etc.)			$	1,825,000
TOTAL ESTIMATED PROJECT COSTS			**$**	**14,182,500**

training tower

response apron (60')

fleet cars

apparatus support

four apparatus bays

administration

training and lobby

firefighter spaces

stormwater detention

return apron

30 public/staff parking stalls

S BUESCHING RD

Carolian Dr

FIRE STATION #1 MASTER PLANNING

VILLAGE OF LAKE ZURICH STUDY
PROJECT NUMBER: 2332.01

OPTION 3

N

BKV GROUP

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Recommendations

This report provides the data necessary to make informed decisions about the future of Lake Zurich Fire Station #1, but is only the first step of the process. Recommended next steps are as follows:

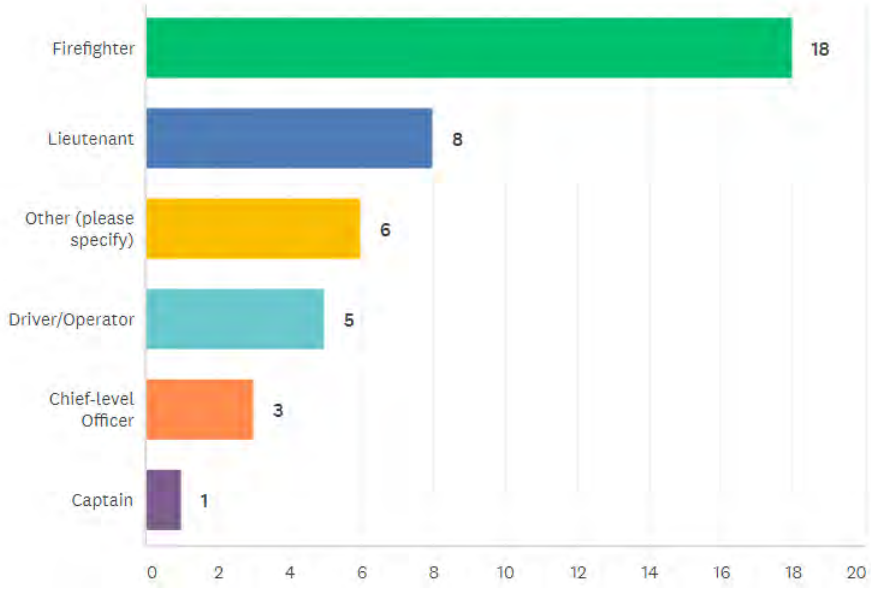
- Work with the Village Board to select one of the master plan options as the preferred option and to adopt goals for project completion dates that are economically feasible for the community.
- Work with financial planners to understand the financial impacts of the project over time and organize a bond referendum, if required.
- Make this report available for the general public and set up times for the public to visit the facility and observe the conditions firsthand.
- Select a Project Manager from the Department and Village staff to shepherd the project through completion. Send the PM to receive training if necessary.

Firefighter Survey Results

BKV Group conducted a survey of the Lake Zurich Firefighters to determine their thoughts on several of the issues being studied. The survey received 41 responses with an average of 21 years of service.

What is your current role/rank in the department?

Answered: 41 Skipped: 0

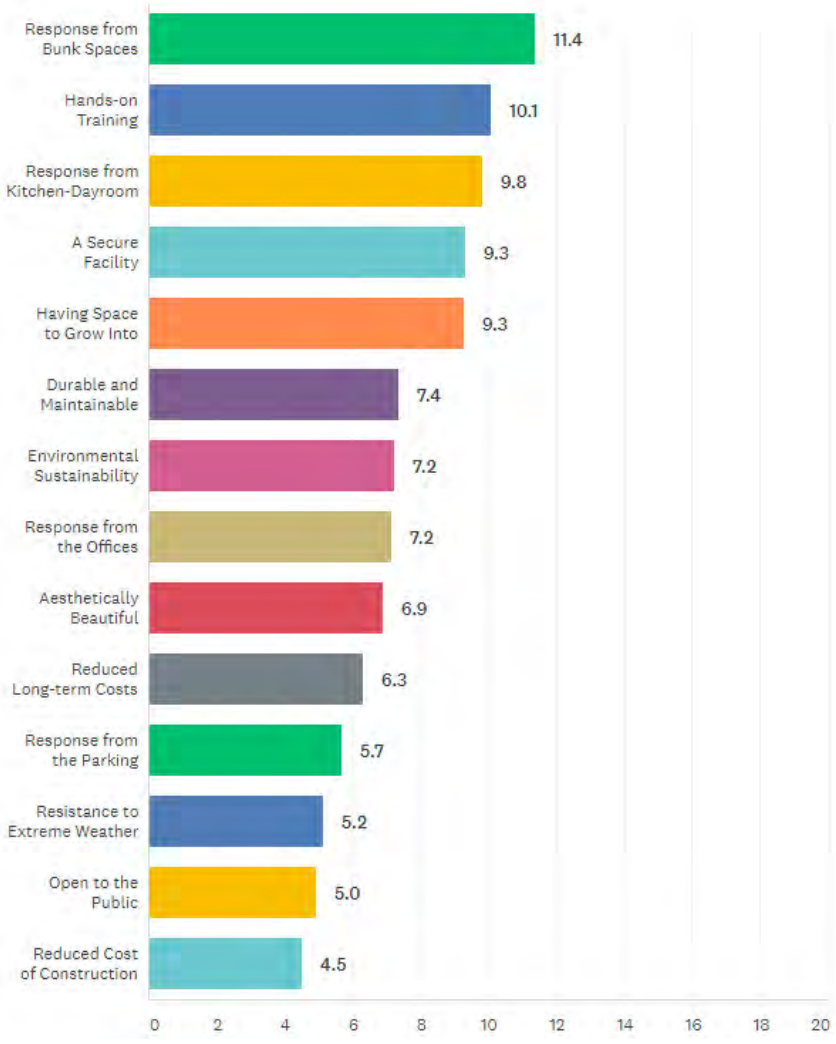


What historic elements should we save from Fire Station #1?

- Kitchen Table
- The Memorial Area, Flagpole
- Some of the Contents
- Plaques in Main Vestibule
- Piece of the Training Tower, Bell, Props

BKV Group prioritizes Health and Safety of the Firefighters above everything else in our Fire Station designs. But this still leaves many other priorities to be balanced during the design process. Please rank the following priorities from most to least important, in your opinion.

Answered: 40 Skipped: 1



What Aspects of Current Stations Should We Include in a New Station?

- Drive-thru bays
- Large Fitness Room
- First-floor bunk room
- Training Tower
- Grouped Admin offices
- Kitchen table, industrial stoves
- Location
- Drafting Pit
- Access between Admin and Firefighters
- Single Story
- Separate Shop area
- Direct Capture exhaust systems
- Ability to quickly respond, flow
- Outdoor grill
- Station Pride, logos
- Useable office space for Fire Prevention

What Aspects of Current Stations Should We Avoid in a New Station?

- Communal Bunk Space
- Tiny Locker Rooms
- Communal Showers
- Dim lighting
- Bad insulation
- No ability to expand
- Lack of alerting systems
- Carpet
- Offices in bunk room
- Lack of cancer prevention measures
- Bunk room right off apparatus floor
- Lack of closets for bedding
- Difficult HVAC system
- No live fire burns in Training Tower
- Using Attic space for storage
- Captains' space across the Bays
- ADA non-compliance
- Building Code non-compliance
- NFPA Standards non-compliance
- Noisy equipment near sleeping quarters
- Residential grade anything (e.g. appliances)

What features have you seen in other fire station that should be included in any new facility?

- Cancer Prevention
- Vestibule separating clean and dirty spaces
- Individual study area away from noise
- Individual Bunk Rooms
- Single-user Shower Rooms
- Heated Aprons
- Large kitchen
- Properly-sized office areas
- Station Security and Privacy
- Appropriately-sized Workout Spaces
- Practical Locker Room
- Three lockers in bunk rooms
- Alerting Systems in Bunk Rooms
- Museum Area
- Enclosed Gear Room
- Combined Kitchen/Dining/Dayroom
- Magnetic Plymovent
- Storage near Apparatus Bays
- Civilian Classroom
- High-performance HVAC
- Solar Power
- City-employee Fitness Room

Imagine the Fire Station of your dreams. Please rank, in order of preference, which general area of that Station you'd prefer to spend time in.

Answered: 40 Skipped: 1