

# Fire Station #2 Assessment and Capital Plan



## AA. Building Description

1. Past and Current Use
  1. The Fire Station was purpose built in the 1980's. The City Hall was added in 1990. Only the Fire Station portion of the building was reviewed.
2. Location
  1. The address is 12260 South Diamond Lake Road.
  2. The building is located in the NE portion of the City of Dayton, east of Pineview Lane.
3. Size
  1. The total building has a footprint of approximately 10,000 square feet. The fire department has sole occupancy of approximately 3,450 square feet with a mezzanine of approximately 1,000 square feet.
  2. The site is within the boundaries of Central Park.

## BB. Site

1. Topography
  1. The site is relatively flat with a general downward slope from south to north. The bulk of the park is a few feet lower than the building pad.
  2. The low spot is at the northwest corner of the parking area.
2. Storm Water Drainage
  1. The Fire Station roof drains through two scuppers on the east elevation, which daylight to grade, and two scuppers on the west side, one of which daylights to grade and the other which empties onto the City Hall roof.
  2. The City Hall roof drains through three scuppers on the west elevation, which daylight to grade.

3. There is a slight drainage swale between South Diamond Lake Road and the walking path with storm sewer inlet.
4. The rear parking area sheet flows into the park.
3. Paving and concrete
  1. The asphalt paving in South Diamond Lake Road right-of-way is in good condition.
  2. The concrete portion of the response apron is in bad condition and should be replaced.
  3. The asphalt portion of the response apron is in good condition.
  4. The asphalt at the public parking lot is in average condition and shows signs of repair and maintenance. We recommend treating the cracks and recoating within five years to improve the longevity of the paving.
  5. The concrete patio by the public entrance is in average condition with some cracking and evidence of grinding.
  6. The concrete sidewalk west of the building is in poor condition with spalling occurring at the control joints.
  7. The asphalt parking lot east and north of the building is in bad condition and is past the point of repair. Large sections potholes have formed and plows are accumulating chunks of paving in the corners of the lot. We recommend replacement. We recommend concrete be used at locations where apparatus turn.
  8. The asphalt portion of the return apron is in poor condition and should be replaced.
  9. The concrete portion of the return apron is in average condition.
  10. The curb and gutter at the firefighter parking lot is in generally average condition with some areas of advanced degradation.
  11. The concrete sidewalks north and east of the building are in average condition.
  12. The asphalt walking path is in good condition.
4. Landscaping and Site Elements
  1. Plantings were not observed due to the time of year.
  2. The flagpole is in good condition with cosmetic discoloration at the base.
  3. The monument sign is in good condition.
  4. The bollards at the rear apron are starting to rust and are not sealed at the base. We recommend scraping any loose paint and rust and recoating with a rust-inhibiting paint, then caulking at the base with sealant to prevent cracking of the concrete.
  5. The no parking signs at the front apron are faded or missing. We recommend replacement.
5. Water service entrance was not observed.
  1. There is a fire hydrant at the northeast corner of the parking lot.
6. Electrical power comes from a pad mounted transformer north of the building.
  1. The service entrance and electric meter are at the north wall of the City Hall.
  2. There is no building backup generator.
7. The Natural Gas meter is located at the southwest corner of the building.
8. Sanitary Sewer Utility was not observed.
9. Cable television enters the building at the northwest corner of the original Fire Station.

## **CC. Structural Frame**

1. The foundation appears to be in good condition as there is no evidence of building settlement.
2. The slab-on-grade, where visible, appears to be in generally good condition with minor cracking and superficial staining.

3. The exterior bearing walls are stacked-bond concrete masonry and are generally in good condition.
4. The mezzanine floor is precast concrete plank with a concrete topping and is in good condition.
5. The walls supporting the mezzanine are stacked-bond concrete masonry and are in good condition.
6. The roof structure is metal decking over steel trusses and appears to be in good condition.

## **DD. Exterior Enclosure**

1. The exterior bearing walls are painted stacked-bond fluted concrete masonry with an EIFS soffit at the top and are generally in good condition.
  1. The sealant at the base of the wall where it meets concrete sidewalk or apron has failed. We recommend replacement to reduce the amount of water running down the face of the foundation.
  2. The piping and conduit penetrations at the fluted block are not tightly sealed. We recommend sealant over the paint.
  3. There are no visible control joints in the block. These cannot be added retroactively, and the lack of such joints increases the likelihood of cracks forming between the blocks and the mortar. We recommend closely monitoring the exterior for micro-cracks that would allow water into the wall.
  4. There is no evidence of a dedicated weather resistive barrier in the wall construction. Concrete blocks are porous and do not resist the passage of water or air. When used as exterior cladding they are reliant on a separate barrier system, in this case the exterior paint serves as the closest substitute. Some paint is starting to chip, so we recommend painting the exterior wall with a high-grade coating within the next year and repeating every five years to ensure air and water cannot migrate into the building.
  5. There is no evidence of flashing at the base of the wall. The lack of any such flashing increases the likelihood that any water that gets into the cores will damage the integrity of the wall over time.
  6. The EIFS soffit abuts the downspouts without a sealant joint. This will cause damage to the exterior weather resistive layer as the metal downspout contracts and expands. We recommend removing a sliver of the EIFS to allow a backer rod and sealant to be inserted between the cladding and the downspout.
  7. There is no evidence of flashing at the bottom of the EIFS soffit. The lack of any such flashing increases the likelihood that water will run back to the face of the building and degrade the EIFS system backup wall.
2. Windows and Doors
  1. The apparatus doors, springs, and tracks are in good condition.
    - (1) The weatherstripping and bottom seals at the apparatus doors are in poor condition and should be replaced.
    - (2) The wood jambs are in average condition with some damage visible at the bottoms. We recommend repainting.
  2. The exterior hollow metal doors and frames are in generally good condition but the paint is beginning to fade. We recommend repainting to increase the longevity of the doors and frames.
    - (1) The hinges are starting to rust. We recommend replacement with non-ferrous hinges.

- (2) The sealant at the door perimeters appears to be in good condition. We anticipate needing replacement in approximately 5 years.
- (3) There are no drips at the head of the doors. We recommend adding this piece of hardware to reduce water intrusion.
- 3. The exterior windows are in generally good condition.
  - (1) There are horizontal mortar joints at the window sills. We recommend raking these joints back 1/2" and filling with sealant to prevent water from getting into the wall system through cracks between block and mortar.
  - (2) The sealant at the perimeter of the frames appears to be in good condition. We anticipate needing replacement in approximately 5 years.
- 3. Roof
  - 1. The ballasted roof membrane is reported to be leaking. We recommend immediate repair.
    - (1) The roof ballast is not blocked from the scuppers. We recommend adding a gravel stop to prevent losing rock from the roof.
    - (2) The roof ballast has migrated away from the corners due to wind. We recommend redistributing the ballast to protect the roof from uplift.
    - (3) The roof access hatch is in good condition.
  - 2. The metal parapet caps and flashings are peeling and the underlying steel is corroding. We estimate that replacement will be necessary within five years.

## **EE. Interior Elements**

- 1. Flooring
  - 1. The VCT flooring is in poor condition and should be replaced.
  - 2. The paint on the floor of the walkway in the apparatus bay is worn off.
- 2. Walls
  - 1. The cement block walls are in generally good condition.
  - 2. The gypsum board over the exterior walls is in generally good condition.
    - (1) There is a crack above the door to the firefighter parking. This is location where control joints are normally provided and is not a cause for concern. We recommend filling with sealant.
    - (2) There is water damage evident at the north jamb of the door to firefighter parking. This may be from the adjacent truck fill and hose. We recommend repair and monitoring for reappearance.
    - (3) The insulation and gypsum board was removed to put in the fire alarm pull stations. We recommend patching the wall to avoid wash water causing damage to the exposed gypsum board cores.
    - (4) The gypsum board adjacent to the mop sink is in poor condition and should be replaced.
- 3. The hollow metal doors and frames are in good condition.
- 4. There were no ceiling systems observed.
- 5. The cabinets and countertop in the Shop have exceeded their expected service life.
- 6. Equipment
  - 1. The drawbar-type overhead door operators appear to be in good condition.
  - 2. The ceiling fans in the apparatus bays appears to be in good condition.
  - 3. The PPE storage lockers are in good condition.
  - 4. The refrigerator and microwave in the PPE storage room appear to be in good condition.
  - 5. The 30-lb Unimac washer-extractor in the Shop appears to be in good condition.

- (1) It is a hardmount cabinet model and does not appear to have a foundation compliant with manufacturer's recommendations.
6. The residential dryer in the Shop appears to be in good condition.
  - (1) The dryer exhaust consists of only flex duct and terminates in a lint trap elsewhere in the room. We recommend venting through hard-sided duct to an exterior wall.
  - (2) There is another dryer sitting in the hose tower.
7. The icemaker in the shop appears to be in good condition.

## **FF. Vertical Transportation**

1. There is no elevator in the building.
2. A mezzanine is accessed from a steel stair.
3. The roof hatch is accessed from a ships ladder.
4. The hose tower platform is accessed via a ladder.

## **GG. Fire Protection**

1. There is no fire sprinkler system installed in the building.
2. Fire extinguishers are located at points throughout the building.

## **HH. Plumbing**

1. Water meter is located in the Shop.
2. The Water softener appeared in good condition, no date of install was identified. We do not expect replacement to be necessary in the next five years.
3. The 75-gallon Perfect Fit water heater on the mezzanine is in good condition and in the middle of its useful life. We estimate that replacement will not be needed for another 5-10 years.
4. The Howard air compressor is past its useful life and should be replaced in the next 1-5 years.
5. Sanitary piping was not observed.
6. Fixtures
  1. Lavatory faucets are aging and should be replaced with low flow fixtures in the next 1-5 years.
  2. The toilets in the men's and women's restrooms have reached the end of their expected life and should be replaced.
  3. The urinal in the men's restroom is in good condition.
  4. The mop sink in the Shop is in average condition but is difficult to access because of the amount of equipment using the water lines.
    - (1) There are separate hot and cold water taps.
  5. The showerhead in the Hose Tower is missing.
  6. The drinking fountain in the apparatus bay in in good condition.
7. The pressure washer pump is in the Shop and pulls water from the mop sink. The wand is immediately outside the Shop.
8. The washer-extractor drains to the adjacent mop sink.
9. Floor drains in the bays are in good condition.

## **II. HVAC**

1. Unit heaters in apparatus bay appeared 5-10 years old but were not examined due to height of units.

2. There was no ventilation in the garage. Per code there should be continuous exhaust and outdoor air coming to the apparatus bay. We recommend adding high-low exhaust fans along with CO detectors to monitor gas levels in apparatus bay. Exterior Louvers or hoods on roof with motorized dampers should be added to let outdoor air into space.
3. Furnace on mezzanine feeds the Shop and appears to supply air under the slab to the restrooms. It has exceeded its service life and should be replaced with a larger unit that can service additional areas of the fire station.
  1. Furnace does not appear to pull in ventilation air. We recommend pulling outside air to meet ventilation requirements for the Fire Station spaces.
4. Office areas do not have any heating/cooling and have no outdoor air. We recommend expanding the air system to provide ventilation to these spaces, and heating/cooling as desired.
5. Exhaust fans for the restrooms are located on the mezzanine and are ducted into a roof hood. The fans are aging and we expect replacement to be needed in the next 5-10 years.
  1. Fan operation is interlocked with light switches in bathrooms.
6. Exhaust fan serving PPE storage is located on the mezzanine and discharges into mezzanine air space. This air needs to be exhausted to the exterior. The fan is aging and we expect replacement to be needed in the next 5-10 years.
  1. Fan operation is interlocked with light switch in PPE storage area but should run continuously.
  2. Transfer grille to PPE storage area from the apparatus bays should be removed and replaced with makeup air from the exterior.

## **JJ. Power Distribution**

1. The service is fed from pad mounted transformer in the back of the building.
2. Electric meter is shared with the City Hall and located in the back of the building.
3. The fire station panel is fed from 400A, 208/120V service in the City Hall area.
4. A 100 Amp three-phase main panel is located in the Shop.
  1. The panel powers all lighting fixtures, mechanical equipment, and receptacles in the apparatus area.
  2. The electrical panel and all circuit breakers appear to be in good working condition.
5. There is a junction box in the Office without a cover plate.
6. Outlets in the Apparatus Bays appear to be without Ground Fault Interrupt

## **KK. Emergency Power Distribution**

1. There is a connection for a portable generator that backs up the entire building.
2. Emergency battery operated lights are located above exit doors.

## **LL. Lighting**

1. Exterior lighting consists of wall packs.
2. Interior lighting throughout the fire station consists of surface-mounted four-foot strip fluorescent fixtures.
3. All interior lighting control consists of line voltage toggle switches.

## **MM. Systems, Safety, and Security**

1. No data network was observed.
2. Fire alarm system is provided for the Fire Station and City Hall together with the access panel located in the City Hall.

1. Pull stations are located by all exterior doors.
3. Exterior doors have card readers for access and motion detectors that unlatch the door.

## **NN. Building Code Issues**

1. There is no means of egress from the office and common areas that does not pass through the apparatus bays.
2. There is no exhaust system in the vehicle storage area. We recommend adding.
3. There is no ventilation air into the office, shop, PPE storage, or restroom spaces. We recommend adding.
4. The electrical outlets in the apparatus bays are without ground fault interrupt. We recommend adding.
5. There is storage in front of the electrical panels. We recommend relocating these items

## **OO. Accessibility Code Issues**

1. There is no sidewalk connection between the public path and the front door.
2. There are no truncated dome detectable warnings where the apparatus apron crosses the sidewalk.
3. There are no truncated dome detectable warnings at curb ramps.
4. The accessible parking spaces are not correctly painted.
5. Doors throughout the building have knob hardware instead of lever hardware.
6. There is a step between the Apparatus Bay floor and the support spaces. There is a step between the Apparatus Bay floor and the support spaces.
7. The men's restroom is not accessible.
  1. There is no accessible toilet stall.
  2. The lavatory does not have insulated piping.
  3. The mirrors are mounted too high.
  4. The shower does not have accessible fixtures.
  5. The door into the station does not have the required pull clearance.
  6. The signage does not meet requirements.
  7. The urinal rim is too high.
  8. There is insufficient clearance between the wall and the partition doors.
8. The women's restroom is not accessible.
  1. There is no accessible toilet stall.
  2. The lavatory does not have insulated piping.
  3. The mirrors are mounted too high.
  4. The shower does not have accessible fixtures.
  5. The door into the station does not have the required pull clearance.
  6. The signage does not meet requirements.
  7. There is insufficient clearance between the wall and the partition doors.

## **PP. Energy Efficiency**

1. The insulation on domestic hot water piping is falling off.
2. The furnace was manufactured in the 1970's and does not meet current efficiency standards.
3. Efficiency of the lighting system could be improved by retrofitting all fluorescent fixtures with LED lamps and adding occupancy and daylight sensors to appropriate spaces.
4. The apparatus doors are not well sealed against air infiltration.
5. The exterior hollow metal doors and frames are not thermally broken and insulated, so they act as a major conduit for heat to escape the space.

## QQ. Health and Safety Issues

1. There is no fire suppression system.
2. The overhead doors do not meet the provisions of UL325 because they do not have two means of sensing obstacles.
3. There is insufficient glass in the apparatus doors to be able to see what is directly outside the doors before opening them.
4. There is insufficient space to fit fire apparatus comfortably within the building. The apparatus is parked very close to the side walls and very close to the doors. This proximity increases 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 getting onto the rig.
5. Vehicles must be backed into the station, which increases the risk that a firefighter could be injured by backing apparatus.
6. The Office and PPE storage room are raised one step above the apparatus bay level, creating a trip hazard.
7. The hose tower ladder does not have a fall protection cage in compliance with OSHA requirements.
8. There is no exhaust extraction system in the apparatus bays, so there is no way to clean the air of fireground toxins and diesel exhaust fumes.
9. The PPE storage room does not have doors separating it from the apparatus. This is a violation of NFPA 1937 and forces the firefighters to wear gear that has been exposed to diesel exhaust.
10. The exhaust air from the PPE storage room is released back into the apparatus bay, exposing all building occupants to off-gassing from fireground contaminants.
11. 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. The makeup air into each of the support spaces comes directly from the apparatus bays, letting air full of fireground toxins and diesel exhaust fumes into those spaces.
  2. There is no dedicated cleaning equipment for the apparatus bays. This results in the same mops being used to clean the office and restroom areas as well as fireground toxins and diesel particulates from the apparatus bay floor.
  3. There is a refrigerator and microwave in the PPE storage area where the contents can be easily contaminated and then placed in the mouth.
  4. There is insufficient space for storage of EMS supplies, coolers, water bottles, etc. These items are then stored in the apparatus bay where they are exposed to fireground toxins and diesel particulates.
  5. There are no gaskets at the doors into the apparatus bay, letting air full of fireground toxins and diesel exhaust fumes into those spaces.
  6. There is a drinking fountain in the apparatus bays where it is exposed to fireground toxins and diesel particulates, which then get picked up by the water and swallowed by the person drinking.
  7. The ice maker is not properly segregated from the apparatus bay so all of the ice will contain not insignificant amounts of diesel exhaust particulates and fireground toxins. This ice is then used to cool water bottles, which may be placed against the mouth, or the ice itself may be consumed.
12. There are no clean and functional showers in the facility. To reduce the risk of cancer, firefighters exposed to fireground toxins are expected to shower within one hour of

returning from a call to remove the hazardous chemicals from their skin (skin absorption of carcinogens increases 400% for each 5 degree elevation in skin temperature). If showers are not provided at the station, the firefighters are delayed in showering because they are cleaning equipment and restocking the apparatus. In addition, firefighters sit in their personal vehicles and enter their private homes, exposing everyone in their family to carcinogenic compounds until every surface they touch or sit on has been decontaminated.

13. There are no decontamination facilities for the cleaning of small tools and personal protective equipment after a call. This is a violation of NFPA 1581.
14. There are no laundry facilities for cleaning personal clothing after returning from a call.
15. There are no lockers for firefighters to store extra clothes to wear after returning from a call.
16. There is no sink for handwashing before entering clean areas of the station.
17. There is no eyewash to flush the eyes if firefighters handle contaminated equipment then rub their eyes.

## **RR. Functionality Issues**

1. There is no dedicated educational and meeting space for the fire department. The meeting space in the City Hall may not be available during Department meeting nights. This may lead to problems complying with training requirements of NFPA 1720.
2. There are no bollards protecting the front of the building from backing apparatus.
3. The apparatus door width of 12' and the overall center-to-center dimension of 14'-8" results in insufficient space between apparatus.
4. The apparatus doors are not designed for heavy use with 100,000 cycle springs and 3" tracks, leading to more frequent failures.
5. There is only one "drive-through" bay but apparatus are double stacked in both bays. This means that if the vehicle in front breaks down the apparatus behind it cannot respond either.
6. There is insufficient space for future apparatus.
7. The backup generator for the building must be brought from offsite, which may render the building non-functional until it is set up and may cause the radio equipment in the trucks to drain the batteries in the event of power failure.
8. The PPE storage is not located along the pathway between the firefighter parking and the apparatus, increasing response times.
9. There is insufficient space for the repair and maintenance of small tools.
10. There is insufficient storage space.

**AA. Building Description**

Figure AA.1.1



Figure AA.2.2



**BB. Site**

Figure BB.1.1



Figure BB.1.2



Figure BB.2.1a



Figure BB.2.1b



Figure BB.2.1c



Figure BB.2.2



Figure BB.2.3a



Figure BB.2.3b



Figure BB.2.4



Figure BB.3.1



Figure BB.3.2a



Figure BB.3.2b



Figure BB.3.2c



Figure BB.3.2d



Figure BB.3.3



Figure BB.3.4



Figure BB.3.5a



Figure BB.3.5b



Figure BB.3.6



Figure BB.3.7a



Figure BB.3.7b



Figure BB.3.7c



Figure BB.3.7d



Figure BB.7e



Figure BB.3.7f



Figure BB.3.7g



Figure BB.3.8



Figure BB.3.9



Figure BB.3.10a



Figure BB.3.10b



Figure BB.3.11a



Figure BB.3.11b



Figure BB.3.12



Figure BB.4.1

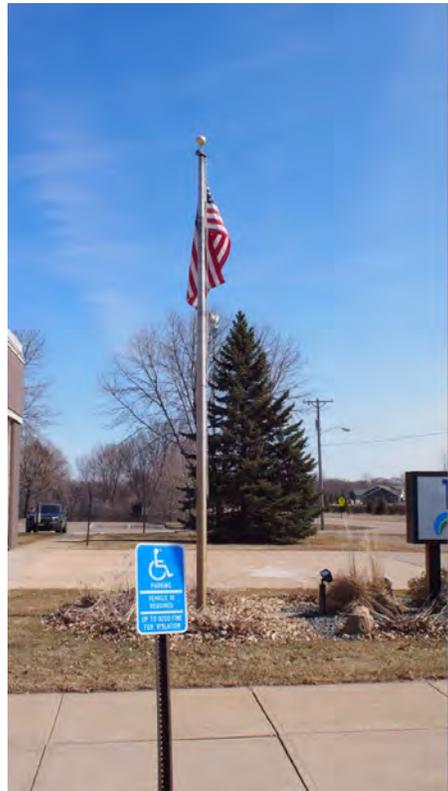


Figure BB.4.3



Figure BB.4.4



Figure BB.4.5a



Figure BB.4.5b



Figure BB.5.1



Figure BB.6



Figure BB.6.1



Figure BB.7



Figure BB.9



### CC. Structural Frame

Figure CC.2a



Figure CC.2b



Figure CC.2c

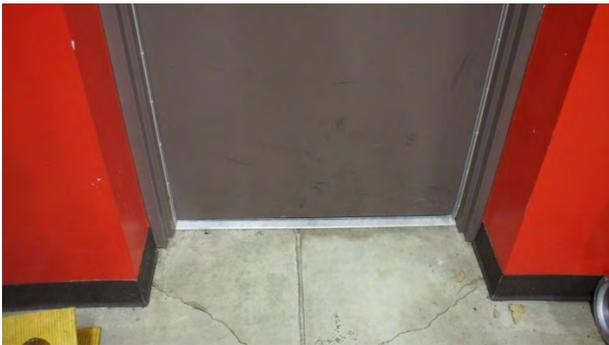


Figure CC.3



Figure CC.4



Figure CC.5



Figure CC.6



## DD. Exterior Enclosure

Figure DD.1



Figure DD.1.1

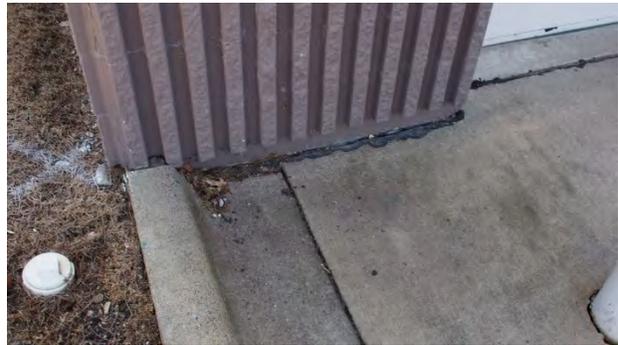


Figure DD.1.2



Figure DD.1.4a



Figure DD.1.4b



Figure DD.1.5



Figure DD.1.6a



Figure DD.1.6b



Figure DD.1.1.7



Figure DD.2.1a



Figure DD.2.1b



Figure DD.2.1c



Figure DD.2.1d



Figure DD.2.1e



Figure DD.2.1f



Figure DD.2.1.1



Figure DD.2.1.2



Figure DD.2.2



Figure DD.2.2.1



Figure DD.2.2.2



Figure DD.2.2.3

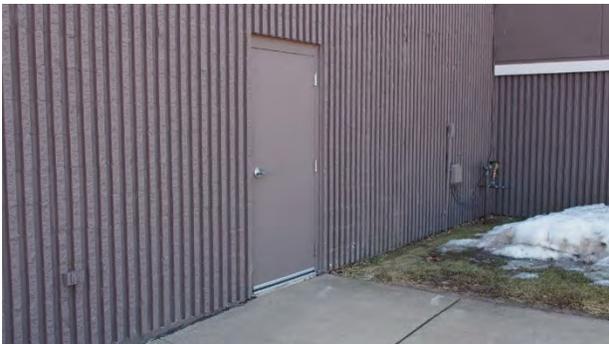


Figure DD.2.3



Figure DD.2.3.1



Figure DD.2.3.2



Figure DD.3.1



Figure DD.3.1.1



Figure DD.3.1.2



Figure DD.3.1.3



Figure DD.3.2a



Figure DD.3.2b



Figure DD.3.2c



Figure DD.3.2d



## EE. Interior Elements

Figure EE.1.1a



Figure EE.1.1b



Figure EE.1.2



Figure EE.2.1



Figure EE.2.2



Figure EE.2.2.1



Figure EE.2.3



Figure EE.2.2.4



Figure EE.3



Figure EE.5A



Figure EE.5B



Figure EE.6.1



Figure EE.6.1b



Figure EE.6.1c



Figure EE.6.2



Figure EE.6.3a



Figure EE.6.3b



Figure EE.6.4



Figure EE.6.5a



Figure EE.6.5b



Figure EE.6.6



Figure EE.6.6.1



Figure EE.6.6.2



Figure EE.6.7



## FF. Vertical Transportation

Figure FF.2



Figure FF.3



Figure FF.4



**GG. Fire Protection**

Figure GG.2



**HH. Plumbing**

Figure HH.1



Figure HH.2



Figure HH.3



Figure HH.4



Figure HH.6.1



Figure HH.6.2a

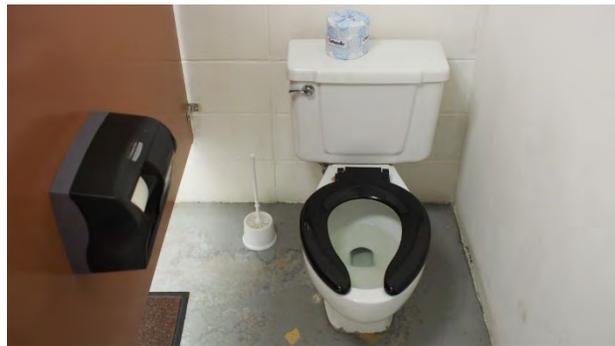


Figure HH.6.2b



Figure HH.6.3



Figure HH.6.4



HH.6.5



Figure HH.6.6



HH.7a



Figure HH.7b



HH.8



## II. HVAC

Figure II.1a



II.1b



Figure II.3a



Figure II.3b



Figure II.6



Figure II.6.2



## JJ. Power Distribution

Figure JJ.1



Figure JJ.2



Figure JJ.3a



Figure JJ.3b



Figure JJ.4



Figure JJ.6



## KK. Emergency Power Distribution

Figure KK.1



Figure KK.2



## LL. Lighting

Figure LL.1



Figure LL.2a



Figure LL.2b



Figure LL.2c

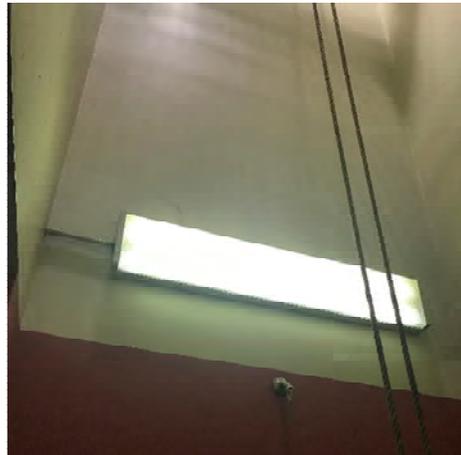


Figure LL.2d



Figure LL.2e



Figure LL.3



### MM. Systems, Safety, and Security

Figure MM.2a



Figure MM.2b



Figure MM.2.1



Figure MM.3



## NN. Building Code Issues

Figure NN.4



Figure NN.5



## OO. Accessibility Code Issues

Figure OO.1



Figure OO.2



Figure OO.3a



Figure OO.3b



Figure OO.3c



Figure OO.3d



Figure OO.3e



Figure OO.4



Figure OO.5



Figure OO.6



Figure OO.7.1



Figure OO.7.2



Figure OO.7.3



Figure OO.7.4



Figure OO.7.5



Figure OO.7.7



Figure OO.8.1



Figure OO.8.2



Figure OO.8.4



Figure OO.8.5



Figure OO.8.6



**PP. Energy Efficiency**

Figure PP.1



Figure PP.4a



Figure PP.4b



**QQ. Health and Safety Issues**

Figure QQ.2

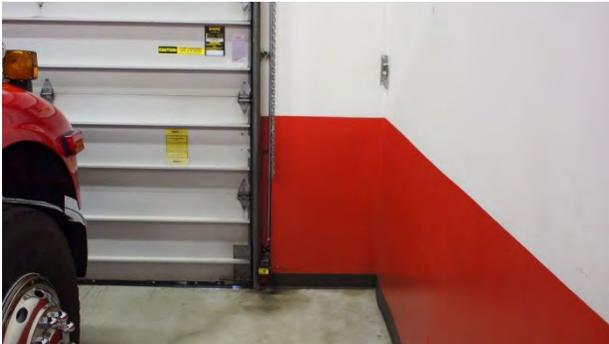


Figure QQ.3



Figure QQ.4a



Figure QQ.4b



Figure QQ.5



Figure QQ.6

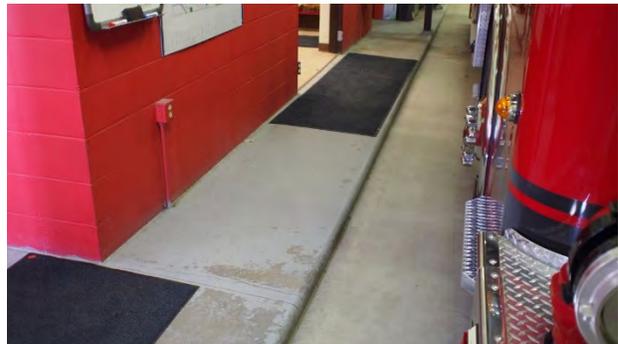


Figure QQ.7

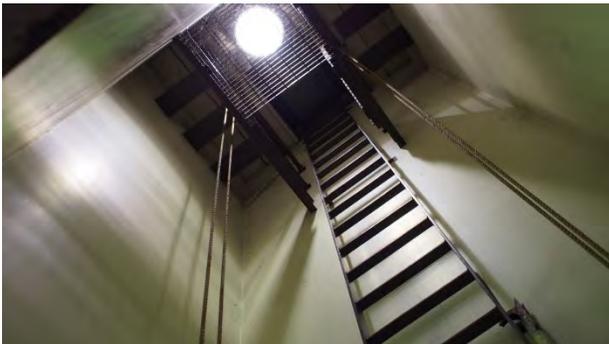


Figure QQ.8



Figure QQ.9



Figure QQ.10



Figure QQ.11.3



Figure QQ.11.4



Figure QQ.11.5



Figure QQ.11.6



Figure QQ.11.7



Figure QQ.12a



Figure QQ.12b



## RR. Functionality Issues

Figure RR.2



Figure RR.3



Figure RR.4



Figure RR.7



Figure RR.9



Figure RR.10



The following preliminary capital improvement estimates, which are based on construction costs in July 2019, 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 8% per year, compounded, at the time of writing. This escalation should be factored into any capital planning.

Item	Estimated Construction Cost*	Recommended Time Period				
		as of July 2019	Urgent	Short Term	Medium Term	Long Term
Replace concrete response apron	\$ 13,000				X	
Remove, regrade, and repave asphalt at employee parking lot and return apron	\$ 200,000				X	
Patch and seal asphalt at public parking lot	\$ 2,000				X	
Replace concrete sidewalk west of building	\$ 7,500				X	
Provide sealant at base of bollards	\$ 500			X		
Replace site signage	\$ 1,000		X			
Provide new on-site generator for Fire Department emergency backup power	\$ 70,000			X		
Repair roof	\$ 40,000		X			
Replace sealants where base of wall meets concrete.	\$ 3,000				X	
Replace sealant at conduit and piping penetrations through exterior wall	\$ 500			X		
Lightly sandblast exterior walls and repaint to maintain weather resistive barrier (every five years)	\$ 10,000			X		
Provide sealant where EIFS meets downspouts	\$ 1,500			X		
Replace apparatus door weatherstripping	\$ 1,200			X		
Repaint at apparatus door jambs	\$ 1,000			X		
Repaint hollow metal pedestrian doors	\$ 1,600			X		
Replace rusting hinges at pedestrian doors	\$ 1,000			X		
Provide drip at pedestrian doors into app bays	\$ 900			X		
Replace sealant at pedestrian doors	\$ 1,200				X	
Rake back mortar and provide sealant at horizontal masonry joints at windows	\$ 1,200			X		
Replace sealant at windows	\$ 900				X	
Replace metal parapet cap	\$ 40,000				X	
Replace damaged flooring in turnout storage, office, shop, and app bays with epoxy flooring	\$ 30,000			X		

Item	Estimated Construction Cost*	Recommended Time Period			
		as of July 2019	Urgent	Short Term	Medium Term
Provide sealant at crack in gypsum board above east entry into app bays	\$ 500			X	
Patch gypsum board at locations of fire alarm installation	\$ 1,400			X	
Replace gypsum board around mop sink and protect with FRP	\$800			X	
Replace cabinets and countertop in Shop	\$ 3,500			X	
Provide dryer exhaust vent	\$ 800			X	
Replace water heater	\$ 2,500				X
Replace air compressor	\$ 2,500				X
Remodel restrooms	\$ 30,000				X
Add continuous ventilation in app bays as required by building code (least expensive option)	\$ 16,000			X	
Provide office with ventilation air, heating, and cooling (thru wall)	\$ 2,000			X	
Replace outlets in app bays with GFI outlets	\$ 600			X	
Provide sidewalk between walking path and front entry	\$ 1,100				X
Provide truncated dome detectible warnings as required (surface applied)	\$ 4,500			X	
Repaint accessible parking striping	\$ 1,000	X			
Replace knob hardware with lever hardware	\$ 500				X
Re-insulate domestic hot water piping	\$ 500			X	
Add sensor bottom and bumper-height photoeye to apparatus doors	\$ 1,800			X	
Replace apparatus door track and springs	\$ 9,000				X
Add fall protection cage to hose tower ladder	\$ 10,000			X	
Replace apparatus doors	\$ 45,000				X
Install sprinkler system	\$ 140,000				X
Install direct capture exhaust system	\$ 60,000			X	
Enclose the turnout gear storage room and provide exterior exhaust and makeup air	\$ 30,000			X	
Provide bollards at front bay doors	\$ 2,000			X	
Replace concrete response apron	\$ 13,000				X