Mercerville Fire Company
Fire Engine #12
2711 Nottingham Way, Hamilton, NJ 08619

Feasibility Study

Prepared by

NETTA ARCHITECTS

1084 US Route 22 West, Mountainside, NJ 07092

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Fire Station # 12, Mercerville District 2 – Audit

Fire Station Audits

Hamilton, NJ

Hamilton Township has authorized Netta Architects to conduct and prepare a Fire District Facilities Audit of the following fire houses: Fire Stations 12 through 19 to assess the Current conditions of these Fire Stations.

Contents

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Fire Station # 12, Mercerville District 2 – Audit

Executive Summary

Fire Station #12

1. Is located at 2711 Nottingham Way, Hamilton, NJ
2. The station is district owned and the fire department volunteers lease the space.
3. The original portion of the building was constructed in 1910, an addition was constructed in 1928 and a 3 truck bay addition was built in the 1950's. The building is one story in height.
4. The interior of the Station was renovated in 2006.

This building's current exterior and interior condition is **Poor** as is evident by the number of deficient items identified within the Summary of Findings Section, such as the poor condition of metal roofing system, the parking lots, the concrete sidewalks, the engine/apparatus room, etc.

A description of the Site and Building deficiencies is indicated below and recommendations and cost opinions for repairing these deficiencies is summarized in the recommendation section.

Introduction

This feasibility study considered the following items;

- Architectural: Building and Code deficiency conditions.
- Preliminary probable construction costs for the repairs.

Netta Architects conducted an assessment survey of the Building on October 3, 2017 and Concord Engineering (CCE) conducted their assessment survey on October 17, 2017.

Analysis of Existing Conditions:

(Refer to the Photos located within the Field Report in the Appendix of this report typical)

1. General Station Information

A. The interior of the station was renovated in 2006.
B. The station is approximately 17,200 square feet in size, and has approximately 2 acres of property. The facility does not have a current property survey.
C. The station has 2 pumper trucks, 2 fire chief command \vehicles, 1 pickup truck, 1 rehabilitation truck and 1 fire/police vehicle. 7 total vehicles. There are 5 existing truck bays.
D. The station is not planning on purchasing any additional vehicles.

E. There are no current plans to renovate or expand the fire house.
F. The facility has 1shift per day with a total occupant load of 5 fire fighters present during each shift.
G. Currently the staff is comprised of 17 males & 0 female firefighters. The projected ratio of men and women fire fighters per shift is unknown at this time.
H. The facility appears to have adequate program space requirements.
I. The Station has the Capitol heath Life Mobile/Stroke Vehicle as an outside agency.
J. The building is not sprinklered.

2. Site Analysis

A. The station has adequate fire truck maneuverability and turn-around space.
B. The parking lot located off Nottingham Way and in the rear of the facility are in poor condition with multiple cracks and pothole areas.
C. The concrete apron in front of the overhead side door truck entrance is pitched downward toward the building and does not contain a trench drain. This apron contains cracks.
D. One corner of the concrete landing at the personnel door leading into the side truck room entrance is raised higher than the surrounding asphalt pavement.
E. The concrete apron located on Nottingham Way is in fair condition but contains several spalled areas especially along the concrete joints and has several cracks.
F. There are several cracks in the sidewalk leading to the door that leads into the side of the engine/apparatus room.
G. The bollards surrounding the generator are rusted and in need of repainting.
H. There is a crack in the concrete generator pad.
I. There are several recessed voids in the annular space around the metal pipe railing post sleeves located along the perimeter of the concrete ramp.
J. There are designated parking lot barrier free parking spaces.
K. The station has barrier free entrances.
L. There are several locations along the concrete sidewalk on Whitehorse Avenue and Nottingham Way where a section of the sidewalk is depressed lower than the adjacent sidewalk sections, and there are several cracks in the sidewalk.
M. The landscaping area brick walls located on Nottingham Way are in poor condition and have several severe stepped cracks which are bowing outward.
N. The vertical sealant joint between the landscaping brick wall and the brick façade located at the corner of Nottingham Way and Whitehorse Avenue is alligatoring and oxidizing causing it to split open.

3. Exterior Building Analysis

A. Building Façade Conditions

1. South Elevation
   - i. There is some peeling of the elastomeric coating on the EIFS finish system that is occurring within the alcove area between the engine/apparatus room and the single truck bay addition.
   - ii. A section of the gutter within this alcove area the appears to be detached and bent downward.
   - iii. The sealant around the perimeter of the hollow metal door frame is alligatoring and oxidizing causing it to split open.
   - iv. The overhead truck bay door operates properly and in fair condition.
   - v. The paint on the exterior wall mounted ductwork is peeling.

2. West Building Elevation
   - i. There are some cracks and peeling of the elastomeric coating on the EIFS finish system in several locations on this façade.
   - ii. There appears to be an opening within the EFIS finish were an abandoned item was removed; such as a pipe. Which is not properly sealed/closed.
   - iii. There is an unsecured section of metal roof gravel stop at the one truck bay addition.

   The following pertain to the 1928 Addition (iv-viii):
   - iv. The existing steel hopper window is in poor condition.
   - v. The existing steel double swing exterior doors are in fair condition.
   - vi. The suspended stucco ceiling system has several cracks.
   - vii. The concrete masonry unit (CMU) walls have several step cracks.
   - viii. The concrete floor slab has several cracks.

3. Whitehorse Ave. Elevation (North Elevation)
   - i. There are some cracks and peeling of the elastomeric coating on the EIFS finish system in several locations on this façade.
   - ii. The vertical sealant joint at the intersection of the brick and the EIFS finish system façade is either missing or alligatoring and oxidizing causing it to split open and fail.

4. Nottingham Way Elevation (East Elevation)
   i. There is a vertical crack in the brick façade adjacent to the main entrance doors.
   ii. The hollow metal door is rusting at the sill and at the bottom of the door frame. The mortar joint directly above the door lintel exhibits erosion and is missing in some locations.
   iii. The exterior wall above the second truck bay from the left (when viewed from the exterior on this façade) appears to be slightly bowed outward.

B. Roofs
   i. The single ply roofing membrane system and base flashings located on the majority of the roofs is in fair condition, expect in areas that have been either patched or replaced. The roof is not currently under warranty. The age of the single ply roof is approximately 15 years, and appears to be approaching its life expectancy.
   ii. The single truck bay addition has a pitched roof with asphalt shingles which were installed approximately 2 years ago. This roof is in good condition.
   iii. The Engine/Apparatus Room has a standing seam metal roof system that was installed in approximately 1980. This roof is in poor condition and is encountering water infiltration especially over the engine truck bay number 4.
   iv. The metal roof copings at the metal roof are in poor condition and the coping color has faded with age. The exposed coping fasteners are rusting. The sealant in the transverse joints of the parapet wall aluminum copings is alligatoring and oxidizing causing them to split open and fail.

4. Interior Building Analysis - Program Spaces and Deficiencies

A. Living Spaces
   1. The engine/apparatus room is in poor condition with several cracks within the concrete slab.
   2. The engine/apparatus room is in poor condition with several tears in the overhead roof insulation membrane covering thereby exposing the batt insulation.
   3. The trench drains within the engine/apparatus room are in fair condition.
   4. The gypsum wallboard on the outside corner of the office partition is damaged at the lower portion of the wall.

5. The facility has a Maintenance Shop, a SCBA Room, a Janitors Closet, a Unisex Barrier Free Toilet and an
6. Abandoned generator room since the generator is now located outside of the engine/apparatus room.
7. The gypsum board ceiling in the SCBA room is damaged.
8. The Storage Room and Common Workroom contains VCT floor tiles which appear to be damaged and several are lifting up.
9. The Meeting/Lounge Room for the Volunteers is located in the basement is in good condition. There is no bathroom facility serving the basement.
10. The Meeting/Training Room and adjacent break area are in good condition.
11. The kitchen and dining area are in fair condition.
12. The dormitory has capacity to sleep 12 staff by utilizing bunk beds. Currently there is no separate sleeping area for future women staff.
13. The recreational room is in fair condition.
14. There are barrier free mens and womens bathrooms, showers and locker rooms.
15. The exercise room is in fair condition.
16. The offices are in fair condition.
17. This facilities common workroom serves as an operations room.
18. This facility does not have a rental hall or a commercial kitchen.
19. There appears to be adequate storage areas.

5. Interior Accessibility of Station

i. There are several entrances that are barrier free accessible and the entire first floor is accessible.
ii. This facility does not contain an elevator to provide access to the basement Volunteers Meeting/Lounge Room.
iii. There is no barrier free bathroom located in the basement.

6. Building Code Considerations

The following items identified below are not in compliance with the latest IBC Building Code, 2015 NJ Edition requirements.

A. The 1928 addition has a non-code complaint guardrail along the stairway opening based on the latest building code.
B. The 1928 addition has no handrails on either side of the stairway leading down into the basement, which is non-code complaint based on the latest building code.

7. Fire Fighting Equipment and Misc Appliances

1. There are two standard clothes washers and a dryer which are all in fair condition.

2. There is a commercial fire department extractor/gear washer which is in fair condition.
3. The facility does have an air compressor, hose dryer, ice machine, adequate equipment storage and a SCBA compressor unit.
4. The facility has a double service sink.

8. Building Shortfalls (In addition to the building's deficiencies indicated in Previous Sections)

A. There is no current separate sleeping facility for future female staff.
B. There is no barrier free access to the basement Volunteer Meeting/Lounge Room.
C. There is no bathroom located in the basement to service the Volunteer Meeting/Lounge Room.

9. Mechanical Systems

A. Cooling for all spaces in the facility is provided by eight air cooled DX split AC units by Trane. Six of the condensing units are installed on the roof - one condensing unit is of 6 ton capacity, one of 5 ton capacity, two of 4 ton capacity each and two of 3 ton capacity each. Two condensing units also by Trane, one of 3 ton capacity and another of 2 ½ ton capacity, are installed on grade. All the units were installed in 2016. The units utilize R410A refrigerant. Each condensing unit is associated with ceiling mounted variable air volume (VAV) units equipped with hot water coils. The VAV units are about 14 years old. The installed systems appear to be in good working condition.
B. Heating for the facility is through heating hot water provided by one Lochinvar make natural gas fired fully condensing boiler. The boiler has an output rating of 374 MBH and was installed in 2016. Heating hot water is circulated to all the spaces by hot water pumps, a network of hot water piping and heating hot water coils in the VAV units and finned tube radiators in the basement.
C. The fire truck bays are provided only with heating through five ceiling mounted natural gas fired unit heaters. Ceiling fans are also provided to ventilate the truck bays. Plymovent vehicle exhaust systems are provided for the fire trucks. Restrooms as well as truck bays are provided with roof mounted exhaust fans. Exhaust fans appear to be 5 years old.
D. An air compressor unit by Ingersoll Rand with a rating of 24.1 SCFM at 90 PSI with an 80 gallon storage tank is provided for the facility. The unit was installed in 2016 and appears to be in good working condition.
E. The self contained breathing apparatus (SCBA) air compressor unit is by CompAir with a capacity rating of 10.5 CFM at a maximum pressure of 5000 PSIG. The unit is over 20 years old however appears to be in good working condition.

F. CCE used the nameplate data on the units to estimate the age of the units. Age of units that had no nameplates was based on interview with the Fire Station officials.

G. All the installed equipment appears to be in good condition and well maintained. The Fire Station officials stated that the air conditioning units, hot water boiler associated pumps and equipment perform satisfactorily and that there are no major issues with them. Maintenance service is provided by an outside contractor.

H. As per ASHRAE, median life expectancy of split AC units is 15 years, VAV units is 20 years, boilers is 25 years, and that of exhaust fans is 20 years. The installed equipment is relatively new and has several years of useful life.

10. Plumbing Systems

A. The facility is provided with one Bock 100 gallon capacity natural gas fired water heater installed in 2016. The water heater is new and appears to be in good working condition.

B. Urinals and water closets are provided with manual flushometers and wash basins are provided with manual faucets. The fixtures appear to be in good working condition.

11. Electrical Service

A. Electrical service is comprised of 208v-3 phase 800 amp service. The electrical equipment consists of electrical panels MDP, EMPP1, EMRP1, EM1, LP1, LP2 and AC1, two ATS switches and one electrical meter. The equipment is relatively new equipment and appears to be in good condition.

B. Panel schedules appear to be accurate and up to date.

C. The electrical loads consists of lighting, site lighting, general receptacles, TV outlets, roll up doors, mechanical and plumbing equipment (rooftop units, fans, air conditioners, boilers, water heaters, heaters, etc), cooking equipment and other miscellaneous loads. The electrical service seems adequate for the existing electrical loads.

12. Emergency Generator

A. A 50 KW diesel generator serves the emergency loads. Manufacturer is Generac. Model No. SD50. The generator is relatively new and appears to be in good working condition and is regularly maintained.

13. Fire Alarm

A. The existing fire alarm system is comprised of horn strobes, pullstations and smoke detectors. Fire alarm devices provide code compliant fire alarm coverage thru-out the facility. The existing fire alarm control panel and fire alarm devices are due to be replaced with new according to Fire House officials.

14. Lighting

A. Interior lighting fixtures are comprised of 2x4, 1x4, exit lights and recessed lighting fixtures. Exterior lighting fixtures are comprised of outdoor wall packs . According to Firehouse officials lighting fixture lamps have been replaced recently with energy efficient LED lamps. There is adequate lighting coverage thru-out the facility. Light switches are installed thru-out the facility for lighting controls.

15. Receptacles

A. All receptacles are in good condition. There is adequate receptacle coverage thru-out the facility.

Deficiency Repair Recommendations and Estimated Cost Opinion

1. The following repairs are required based on Netta Architects' evaluation of the existing building's condition;

Work Item		Estimated Cost Opinion
A.	Site	
i.	Replace the asphalt paving base and top wearing course throughout the parking lot.	$200,000
ii.	Replace the concrete apron in front of the overhead side door truck entrance and re-pitch it away from the building.	$4,500
iii.	Raise the adjacent area drain accordingly.	$850
iv.	Repair the concrete apron spalls and cracks	$10,000
v.	Replace the damaged and cracked sidewalk sections	$7,500
vi.	Repaint the bollards surrounding the generator	$1,500
vii.	Repair the crack in the concrete generator pad	$1,200
viii.	Seal the voids in the annular space around the metal pipe railing posts located along the perimeter of the concrete ramp	$800
ix.	Replace the sunken sections of sidewalk	$750
x.	Replace the landscaping area brick walls and provide weep holes to allow water to escape behind these walls.	$17,000
xi.	Reseal the joint between the landscaping brick wall and the brick façade	$600
B.	Facades	
i.	Repair the peeling areas of the elastomeric coating on the EIFS finish system	$2,500
ii.	Repair the section of gutter within the alcove between the engine/apparatus room and the single truck bay addition	$750
iii.	Reseal around the perimeter of the hollow metal door frame	$500

iv.	Repaint the exterior wall mounted ductwork that is peeling	$1,250
v.	Close the existing abandoned opening within the EFIS finish	$500
vi.	Replace the existing steel hopper window with an aluminum awing window	$6,000
vii.	Repair the suspended stucco ceiling system within the 1928 addition	$750
viii.	Repair the step cracks in the CMU walls of the 1928 addition	$6,500
ix.	Repair the cracks in the concrete floor slab of the 1928 addition	$1,300
x.	Reattach the loose section of the roof metal gravel stop on the one truck bay addition	$600
xi.	Reseal the vertical sealant joint at the intersection of the brick and the EIFS finish system façade	$500
xii.	Repair the vertical crack in the brick façade adjacent to the main entrance doors	$1,500
xiii.	Replace the hollow metal door and frames	$1,750
xiv.	Remove mortar and install sealant at the joint directly above the door lintel	$750
xv.	Repair the brick façade wall above truck door bay number two	$50,000

C. Roofs

i.	Replace the single ply membrane roofing system with a built-up roofing system	$300,000
ii.	Replace the metal copings at built-up roof	$7,500
iii.	Replace the metal roof and associated metal copings	$225,000

D. Interior

i.	Repair cracks in the engine/apparatus room concrete slab	$2,300
ii.	Replace the overhead insulation in the engine/apparatus room	$40,000
iii.	Repair the damaged outside corner of the office partition and provide a metal corner wall protection angle	$500
iv.	Repair the gypsum board ceiling in the SCBA room	$700
v.	Replace the VCT floor tiles	$3,000

E. Interior Accessibility of Station **(*)**

i.	Provide access to provide access to the basement Volunteers Meeting/Lounge Room	$17,000
ii.	Provide a barrier free bathroom located in the basement	$10,500

F. Building Code Considerations

i.	Provide a code complaint guardrail along the stairway opening in the 1928 addition	$1,500
ii.	Provide handrails on either side of the stairway leading down into the basement in the 1928 addition	$750

G.	Building Shortfalls **(*)**		
i.	Provide separate sleeping facilities for women staff on either the first floor		$9,500
ii.	Provide barrier free access to the basement		Incl. Above
iii.	Provide one unisex barrier free bathroom in the basement		Incl. Above
H.	HVAC		
i.	Replace the SCBA Air Compressor Unit		$14,000
ii.	Option 1-provide low water consuming fixtures & Automatic flushometeres		$3,500
I.	Electric N/A		
	Sub-Total Cost Opinion		$955,600
	Contingency (20%)		$191,120
	Total Cost Opinion		**$1,146,720**
		Say	**$1,147,000**

(*) The Building Shortfalls and Interior Barrier Free Accessibility renovation estimate costs are not based on a design for these items and therefore the costs are only a suggested budget cost and will certainly vary in cost based on actual design drawings.

Mercerville Fire Company
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Appendix A

Field Photographical Report

Mercerville Fire Company
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EXTERIOR CONDITIONS

Fire Engine #12 – Hamilton Township

PLANTER WALL IS DISPLACED AND SHOWS SEVERE SIGNS OF CRACKING

VISIBLE DAMAGE TO THE SIDEWALK AND SIGNS OF REPAIRS TO THE BRICK

SEVERE CRACKS TO THE PLANTER BRICK WALL AND THE BELL PEDESTAL

SEVERE CRACKS TO THE PLANTER BRICK WALL

Fire Engine #12 – Hamilton Township

UNEVEN TRANSITION BETWEEN
ASPHALT TOP AND CONCRETE PAVERS

RUST IN THE METAL PANEL SIDING VISIBLE
DAMAGE TO THE STUCCO FINISH

SIGNS OF RUST IN THE WINDOW FRAME
AND BLISTERING IN THE GLASS SEALANT

VISIBLE SIGNS OF EROSION IN THE
CONCRETE SIDEWALK

SPALLING IN THE CONCRETE SIDEWALK

Fire Engine #12 – Hamilton Township

VISIBLE CRACKS IN THE PARKING LOT

VISIBLE CRACKS IN THE PARKING LOT

VISIBLE CRACKS IN THE PARKING LOT

VISIBLE CRACKS IN THE PARKING LOT

VISIBLE CRACKS IN THE PARKING LOT

Fire Engine #12 – Hamilton Township

SEVERAL CRACKS ARE VISIBLE IN THE PARKING AREAS

BROKEN CURB AT THE SIDEWALK

VISIBLE CRACK IN THE CONCRETE WALKWAY

SIGNS OF EROSION AND CRACKS IN THE DRIVEWAY'S BLACKTOP

VISIBLE CRACK IN THE CONCRETE WALKWAY

TRIPPING HAZARD. DEPRESSION IN THE CONCRETE WALKWAY

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INTERIOR CONDITIONS

Fire Engine #12 – Hamilton Township

SEVERE CRACK AND SURFACE DAMAGE IN THE CONCRETE FLOOR

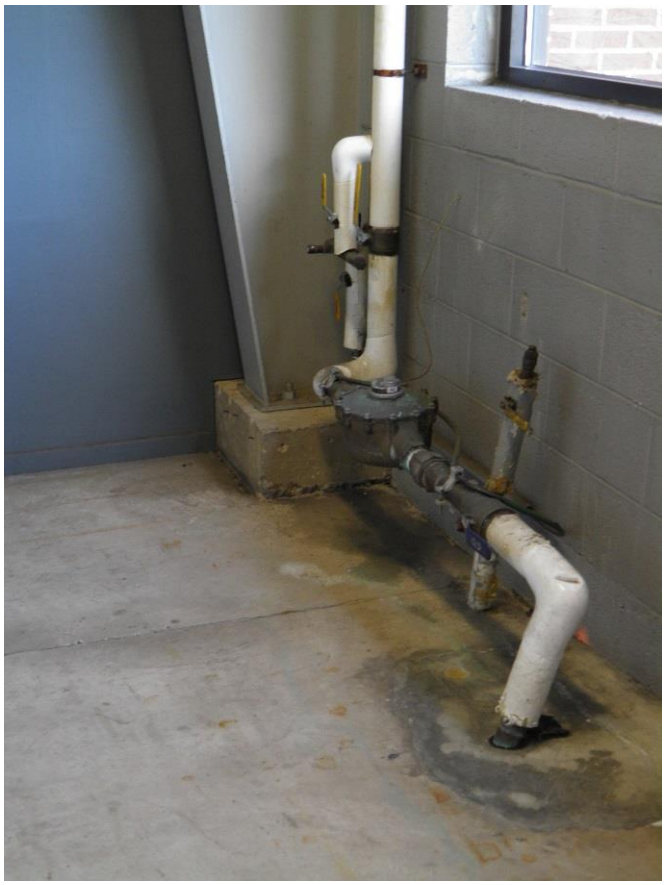
VISIBLE CRACKS IN THE CONCRETE FLOOR

DETERIORATED FLOOR SEALER

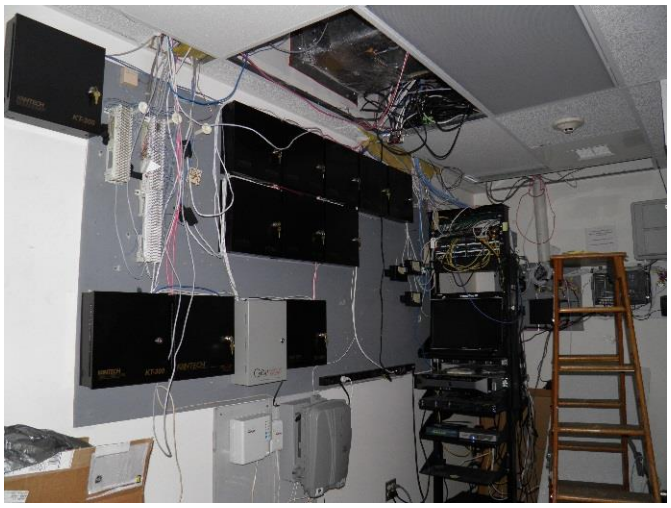
SEVERE CRACK IN THE CONCRETE FLOOR

DAMAGED FLOOR TILES

Fire Engine #12 – Hamilton Township



SIGNS OF WATER LEAKEAGE ON THE FLOOR



VISIBLE CRACK IN THE CONCRETE FLOOR

VISIBLE CRACK IN CONCRETE FLOOR

REPAIR ATTEMPT AT DAMAGED WALL

SIGNS OF WATER LEAKEAGE ON THE FLOOR

Fire Engine #12 – Hamilton Township

MISSING CEILING TILE

VISIBLE CRACK IN CONCRETE FLOOR

VISIBLE CRACK IN CONCRETE AND SIGNS OF LEAKEAGE ON THE FLOOR

VISIBLE DAMAGE TO THE CEILING

LACK OF SEALANT AROUND CEILING PENETRATION

Mercerville Fire Company
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ROOF

Fire Engine #12 – Hamilton Township

SIGNS OF WATER PONDING

MISSING DRAIN COVER

MISSING VENT PIPE

THE ROOF IS PART EPDM AND PART STANDING SEAM METAL ROOF

VISIBLE CRACKS IN THE CHIMNEY STACK

MISSING DRAIN COVER AND SIGNS OF WATER PONDING

Fire Engine #12 – Hamilton Township

THE CONNECTION BETWEEN ROOF IS NOT SMOOTH AND CREATES A CHANEL

MISSING FLASHING AT THE VENT