# White Horse Fire Company
# Fire Engine #16
## 19 Locust Avenue, Hamilton, NJ 08610


# Feasibility Study

Prepared by

NETTA ARCHITECTS

1084 US Route 22 West, Mountainside, NJ 07092

December 7, 2017

NETTAARCHITECTS
1084 US22 Mountainside NJ, 07092
973 379-0006 I nettaarchitects.com

**Fire Station # 16, White Horse District 6 – 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

NETTAARCHITECTS
1084 US22 Mountainside NJ, 07092
973 379-0006 I nettaarchitects.com

# Fire Station # 16, White Horse District 6 – Audit

## Executive Summary

Fire Station #16

1. Is located at 19 Locust Ave., Hamilton, NJ
2. The station is Fire Company owned and the Fire District leases space.
3. The original building was constructed in 1914, and an addition was constructed in 1986 along with a renovation of the existing facility; the building is one and a half stories in height.

This building's current exterior and interior condition is **Fair** as is evident by the few deficient items identified within the Summary of Findings Section, with the exception of the concrete aprons, the concrete apron curbs and several interior items which are in poor condition.

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 September 19, 2017, and Concord Engineering (CCE) conducted their assessment survey on October 4, 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 station is approximately 15,302 square feet in size, and has approximately .67 acres of property. The facility does not have a current property survey.
B. The station has 1 engine/pumper and 1 rescue truck, for a total of 2 trucks.
C. There are 2 existing truck bays with one overhead door. The engine/apparatus room has a front and rear entry access.
D. The station has plans to purchase 1 additional engine/pumper and 1 rescue truck in the future.

E. There are no current plans to renovate or expand the fire house.
F. The station is a 24/7 facility with 4 career fire fighters on duty per shift.
G. Currently the staff is comprised of 16 men and 1 female fire fighters.
H. The Station has a Banquet Hall on the premises.
I. The building is only partially sprinklered with the heads located in certain storage rooms.

## 2. Site Analysis

A. The station does have adequate fire truck maneuverability and turn-around space.
B. The concrete apron at the station parking lot entrance is in poor condition with several cracks and spalls.
C. The concrete apron curb at the station parking lot entrance and banquet hall entrance are in poor condition containing many spalls and cracks in the concrete
D. The concrete curb along Locust Ave is in poor condition containing several spalls and cracks.
E. The concrete sidewalk at the banquet hall is in poor condition containing several cracks.
F. The station parking lot and the parking lot adjacent to the banquet hall is in poor condition with many pot holes and cracks.
G. There is a spall in the concrete curb/sidewalk located at the station parking lot.
H. There are designated parking lot and street barrier free parking spaces.
I. The banquet hall has barrier free entrances, however the main station and office entrance is non-barrier free.
J. The station has a communication tower.

## 3. Exterior Building Analysis

A. Building Façade Conditions
1. Locust Ave. Elevation (South Elevation)
i. The overhead truck bay doors all operate properly and are in fair condition.
ii. There are no issues with this façade, the façade received a new elastomeric coating in 2015 and is in good condition.
iii. The aluminum personnel doors original and are in fair condition.
iv. The aluminum windows are original and are in fair condition.

2. East Elevation
i. The aluminum personnel door is in fair condition.
ii. There no overhead truck bay doors on this elevation.

iii. There are no issues with this façade, the façade received new elastomeric coating in 2015 and is in good condition.
iv. There is one roof scupper box that has shifted slightly.
v. The aluminum windows are original and are in fair condition.

3. North Elevation
   i. There are no issues with this façade, the façade received a new elastomeric coating in 2015 and is in good condition.
   ii. There are no windows on this facade.
   iii. The aluminum personnel door is in fair condition.
   iv. The overhead truck bay doors all operate properly and are in fair condition.

4. West Elevation
   i. There are no issues with this façade, the façade received new elastomeric coating in 2015 and is in good condition.
   ii. There are no windows on this facade.
   iii. There are no overhead truck bay doors on this facade.

B. Roofs
   i. The roof was replaced in 2011 with a single ply membrane roofing system and base flashings and is currently under warranty. There were no reported roof leaks during our field visit.

## 4. Interior Building Analysis - Program Spaces and Deficiencies

A. Living Spaces

First Floor

1. The Engine/Apparatus Room is in fair condition with the exception of a few spalls and cracks in the epoxy floor finish, there is some paint peeling on the concrete masonry unit (CMU) walls and there is one vertical crack within CMU wall.
2. The wooden doors located in the Engine/Apparatus Room are in poor condition since they are starting to delaminate especially at the bottom of the doors.
3. There is a lounge room which is located off the banquet hall which is in fair condition, with the exception of a few damaged acoustical ceiling tiles.
4. There appears to be adequate storage areas.

5. There is an outdoor generator which provides backup to the building.

Banquet Hall on the First Floor

1. The banquet hall has an attached commercial kitchen which is also used by the fire fighters when on a shift. The banquet hall and kitchen are in fair condition, with the exception of several damaged acoustical ceiling tiles in the hall.
2. The halls maximum occupancy is 118 occupants with tables and chairs and 283 occupants with chairs only, based on the Township of Hamilton's maximum occupancy Posting.
3. There are non-barrier free mens and womens bathrooms located off the banquet hall.

Partial Basement in the Original Building

1. There is a recreation room with a bar in the basement which is in fair condition, with the exception of the damaged carpeting laid over the existing brick floor.
2. There is a non-barrier free bathroom adjacent to the recreation room.
3. The office is in fair condition.
4. The mechanical area and closet are unfinished with exposed original foundation walls and exposed wooden first floor framing.

Second Floor

1. The Board of Fire Commissioners Office and Captains Office are in fair condition.
2. The dormitory has 4 beds, and currently there is no separate dormitory room for the female staff.
3. There are mens and womens non-barrier free bathrooms each containing showers and lockers on the second floor.
4. The training room is in fair condition.
5. The exercise room is in fair condition.

**5. Interior Accessibility of Station**

i. The banquet hall has entrances that are barrier free accessible, however the main fire station entrance off Locust Ave is non-barrier free accessible.
ii. The facility does not have any barrier free mens and womens bathrooms and showers.
iii. This facility does have an elevator which provides access from the first to second floor.
iv. The partial basement is non-barrier free accessible and there is no bathroom.

## 6. Building Code Considerations

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

1. The wooden first floor framing in the basement should have fire rated type gypsum board installed to provide a fire rated floor assembly.

## 7. Fire Fighting Equipment and Misc Appliances

A. There are standard clothes washer and dryer which are in fair condition.
B. The facility has a SCBA air compressor unit and equipment storage. However, the equipment storage appears to be insufficient in size.
C. There is a one compartment 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 female staff.
B. There is no standard kitchen for the staff.
C. There are no mens and womens locker rooms.

## 9. Mechanical Systems

A. Cooling for both Township and Volunteer Fire Fighters spaces is provided by six air cooled DX split AC units, four of 4 ton capacity each of ICP and HEIL make, one of 3 ton capacity of ICP make and one of 10 ton capacity of Trane make. All the condensing units are installed on the roof. Associated indoor units are installed either in ceiling or on floor. Three units (two of 4 ton and 1 of 3 ton capacity) are 14 years old, two 4 ton capacity units are 8 years old and the 10 ton unit was being installed during our walkthrough.
B. Heating for the facility for both Township owned and Volunteer Fire Fighter owned spaces is through heating hot water provided by two Burnham natural gas fired sectional cast iron boilers. One boiler has an input rating of 266 MBH and the other has an input rating of 232 MBH. Both boilers are 31 years old. Heating hot water is circulated to all the spaces by hot water pumps, a network of hot water piping and convectors and finned tube radiators. Heating system is divided into seven zones with temperature controls provided for each zone.

C. The fire truck bays are provided only with heating through four 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 old and about 15 years old.

D. An air compressor unit by Ingersoll Rand of 14.7 SCFM at 175 PSI capacity with an 60 gallon storage tank is provided for the facility. The unit is approximately 8 years old and appeared to be in good working condition.

E. There were no records to indicate the age of the units. 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.

F. 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 boilers associated pumps and equipment perform satisfactorily and that there are no major issues with them. Maintenance service is provided by an outside contractor.

G. As per ASHRAE, median life expectancy of split AC units is 15 years and that of exhaust fans is 20 years. Based on this, all air cooled split DX AC units, except the newly installed 10 ton unit, are nearing the end of their useful life. Moreover, the units work on R-22 refrigerant that is no longer produced.

**10. <u>Plumbing Systems</u>**

A. Domestic hot water to all spaces in the facility is provided by a Richmond 100 gallon capacity natural gas fired water heater installed in 2009 and a State 50 gallon water heater installed in 1985. All the water heaters appear to be in good working condition however the State water heater has exceeded it's useful life.

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. <u>Electrical Service</u>**

A. Electrical services are comprised of one (1) 208v-3 phase 400 amp service for the Firecomm Building and one (1) 208v-3 phase 200 amp service for the Fire House Building. The electrical equipment consists of electrical panels PP1, PP2, BP1, BP2, FH, and EM electrical panels, ATS switch, and 2 two electrical meters.

B. The electrical equipment consists of older equipment and appears to be in good condition. Panel schedules appear to be inaccurate and out of date.

C. The Firecomm and Fire House Building 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 appears to be adequate for the existing electrical loads.

**12. Emergency Generator**

A. A 100 KW diesel generator serves both the old and new building emergency loads. Manufacturer is Onan. Model No. 100 Genset The generator is at least 20 years old and appears to be in good working condition and is regularly maintained.

**13. Fire Alarm**

A. The existing fire alarm control panel is relatively new but the majority of the existing fire alarm devices are relatively old. The existing system is comprised of horn strobes, pullstations and smoke detectors. Fire alarm devices provide code compliant fire alarm coverage thru-out the facility. The fire alarm system devices appear to have exceeded it's life expectancy.

**14. Lighting**

A. Interior lighting fixtures are comprised of a mixture of newer and older 2x2, 2x4, 1x4, exit lights and recessed lighting fixtures. Exterior lighting fixtures are comprised of outdoor wall packs. 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**

A. 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 concrete apron at the station parking lot entrance | $15,000 |
| ii. | Replace the concrete apron curbs | $7,500 |
| iii. | Replace the concrete curb along Locust Ave. | $16,500 |
| iv. | Repair the concrete sidewalk at the banquet hall | $2,500 |
| v. | Replace the station asphalt parking lot | $260,000 |
| vi. | Repair the concrete curb/sidewalk at the station parking lot | $1,200 |
| B. | Facades | |
| i. | Repair the roof scupper box that has shifted slightly | $750 |
| C. | Roofs | |
| | N/A | |
| D. | Interior | |
| i. | Repair the Engine/Apparatus Room epoxy flooring | $7,500 |
| ii. | Repaint the concrete masonry unit (CMU) walls | $12,000 |
| iii. | Repair the vertical crack within the CMU wall | $2,500 |
| iv. | Replace the wooden doors in the Engine/Apparatus Room with hollow metal doors | $6,500 |
| v. | Replace acoustical ceiling tiles in the lounge room | $650 |
| vi. | Replace acoustical ceiling tiles in the banquet hall | $600 |
| vii. | Replace the carpeting in the basement recreation room | $5,500 |
| E. | Interior Accessibility of Station **(*)** | |
| i. | Provide a barrier free accessible building entrance off Locust Ave | $8,500 |
| ii. | Provide barrier free mens and womens bathrooms and showers | $35,000 |
| iii. | Provide barrier free accessibility to the partial basement | $12,000 |
| F. | Building Code Considerations | |
| i. | We suggest providing a fire rated Type X gypsum board in the basement at the underside of the wooden first floor framing | $4,500 |
| G. | Building Shortfalls (*****) | |

| | | |
|---|---|---|
| i. | Provide separate sleeping facility for women staff | $9,500 |
| ii. | Provide a standard kitchen for the staff | $20,000 |
| iii. | Provide mens and womens locker rooms | $Incl Above |
| H. | HVAC & Plumbing | |
| i. | Replace five older air conditioning units in a phased manner | $45,000 |
| ii. | Replace two boilers with high efficiency boilers | $45,000 |
| iii. | Replace the water heater | $6,500 |
| iv. | Option 1-provide low water consuming fixtures & Automatic flushometeres | $6,500 |
| I. | Electrical | |
| i. | Identify all existing circuits and update all electrical panel schedules | $4,500 |
| ii. | Replace the fire alarm control panel and associated devices | $7,500 |
| iii. | Replace all interior lighting fixtures with new energy efficient LED lighting fixtures | $70,000 |
| | Sub-Total Cost Opinion | $613,200 |
| | Contingency (20%) | $122,640 |
| | **Total Cost Opinion** | **$735,840** |
| | **Say** | **$736,000** |

(*) 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.

White Horse Fire Company
Fire Engine #16
19 Locust Avenue, Hamilton, NJ 08610

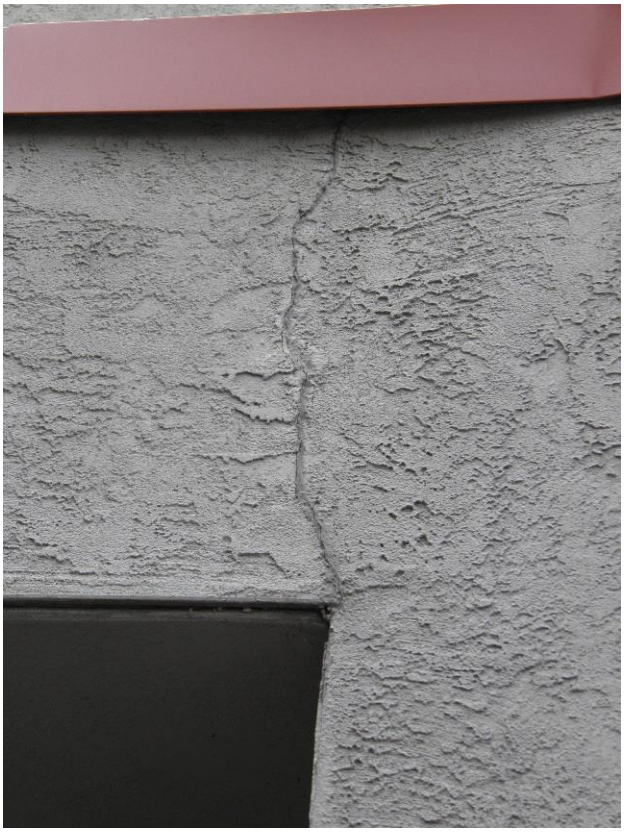
# Appendix A

## Field Photographical Report

# White Horse Fire Company
# Fire Engine #16
## 19 Locust Avenue, Hamilton, NJ 08610


EXTERIOR CONDITIONS

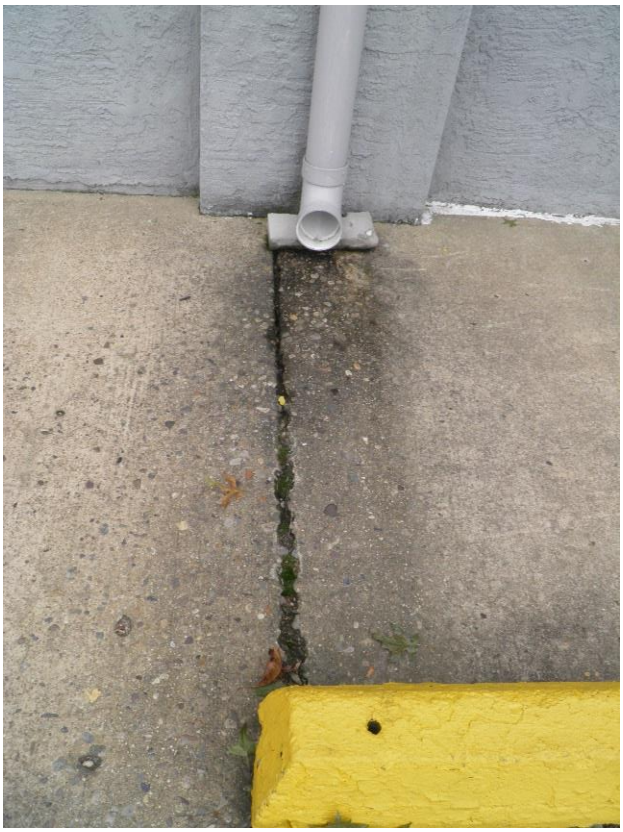
# Fire Engine #16 – Hamilton Township



VISIBLE CRACK IN THE WALL

VISIBLE CRACK IN THE PARKING LOT

VISIBLE CRACKS IN THE PARKING LOT



ERODED CONCRETE JOINT

# Fire Engine #16 – Hamilton Township

VISIBLE CRACK IN THE CONCRETE PAVERS

VISIBLE CRACK IN THE CONCRETE PAVERS

VISIBLE CRACK IN THE CONCRETE PAVERS

VISIBLE CRACK IN THE CONCRETE PAVERS

VISIBLE EROSION AT CONCRETE JOINT

VISIBLE EROSION AT CONCRETE JOINT

# Fire Engine #16 – Hamilton Township

VISIBLE EROSION IN THE CONCRETE PAVERS

VISIBLE CRACK IN THE CONCRETE PAVERS

VISIBLE CRACKS IN THE DRIVEWAY

VISIBLE CRACK IN THE DRIVEWAY

VISIBLE DAMAGE TO CURB

VISIBLE DAMAGE TO CURB

# Fire Engine #16 – Hamilton Township

DAMAGED RAIN LEADER

VISIBLE CRACK THE PARKING LOT

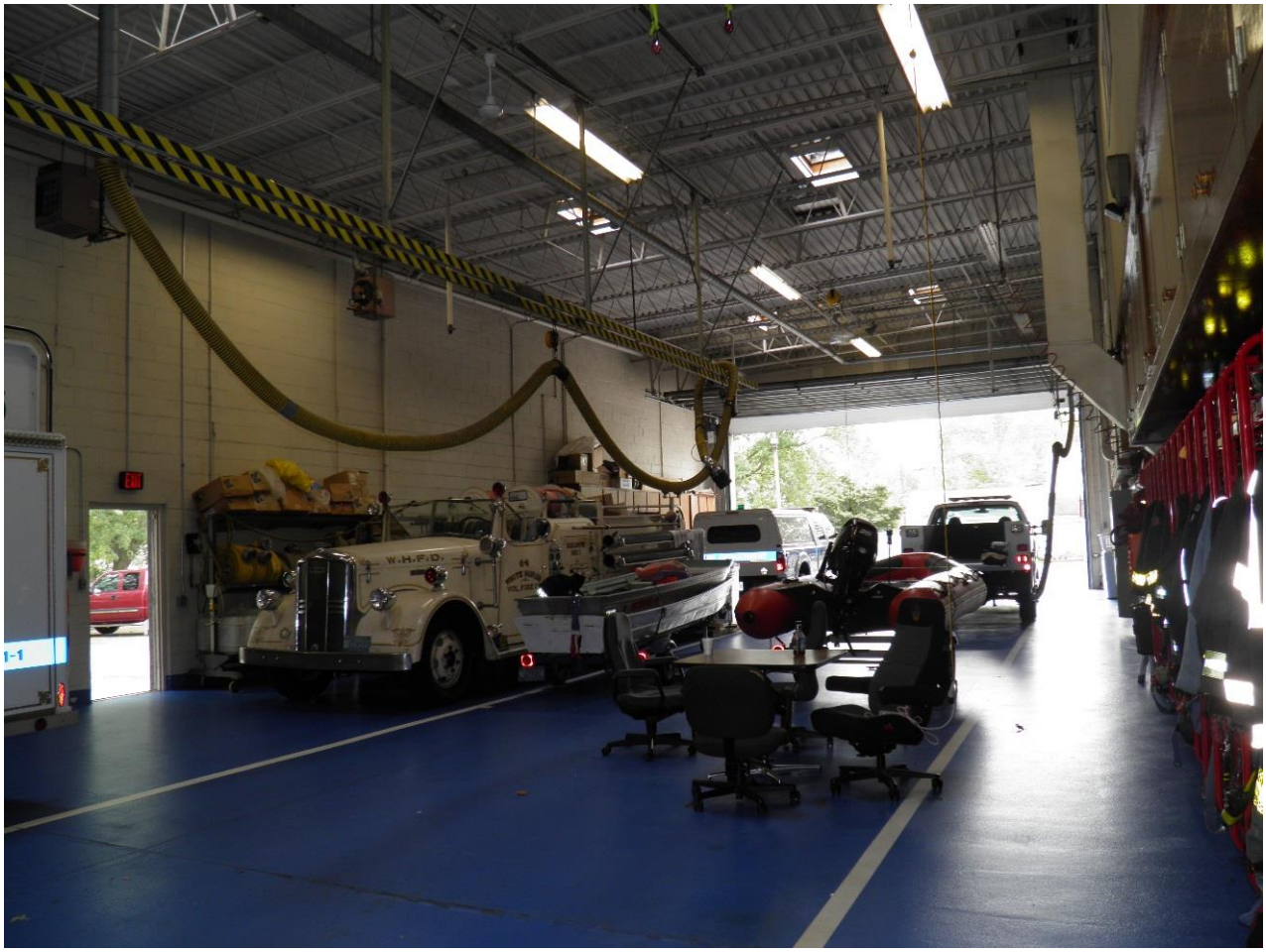

VISIBLE EROSION AT CONCRETE JOINT


VISIBLE CRACK IN THE PARKING LOT


VISIBLE CRACK IN THE PARKING LOT

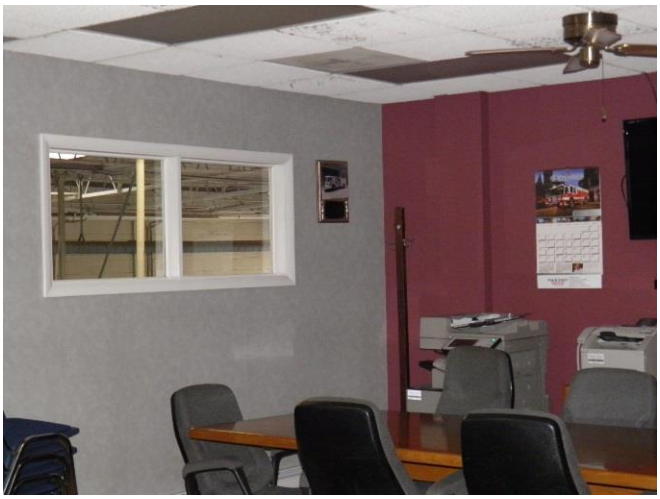

VISIBLE DAMAGE TO CURB

# White Horse Fire Company
# Fire Engine #16
## 19 Locust Avenue, Hamilton, NJ 08610



INTERIOR CONDITIONS

# Fire Engine #16 – Hamilton Township

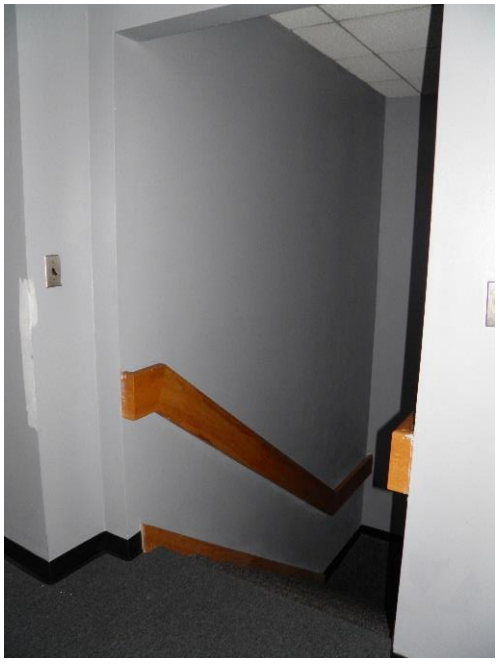


DIRTY CEILING TILES

MISSING CEILING TILES

DAMAGED WALLPAPER

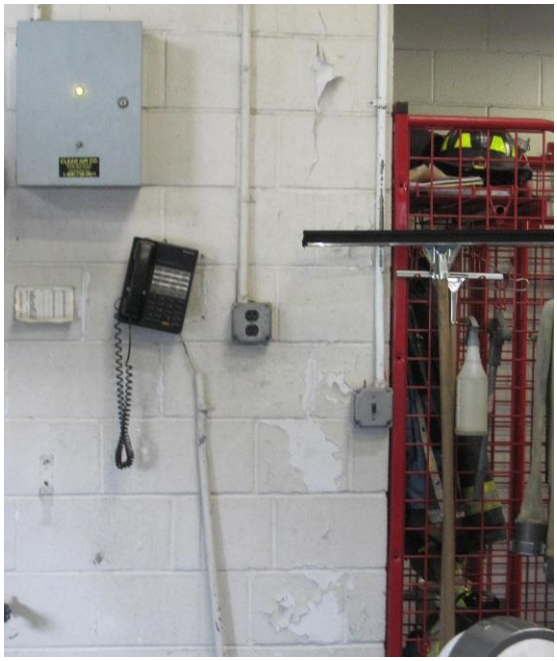
SIGNS OF WATER DAMAGE ON THE CEILING TILES



UNFINISHED REPAIR O WALL DAMAGE

SEVERE CRACK IN THE MASONRY

# Fire Engine #16 – Hamilton Township



PAINT PEELING FROM WALL


FLOOR PAINT PEELING FROM CONCRETE


VISIBLE DETERIORATION TO DOOR


VISIBLE DETERIORATION TO DOOR


STAINS ON CARPET COULD INDICATE A WATER LEAKEAGE


DIRTY CARPET

# White Horse Fire Company
# Fire Engine #16
## 19 Locust Avenue, Hamilton, NJ 08610

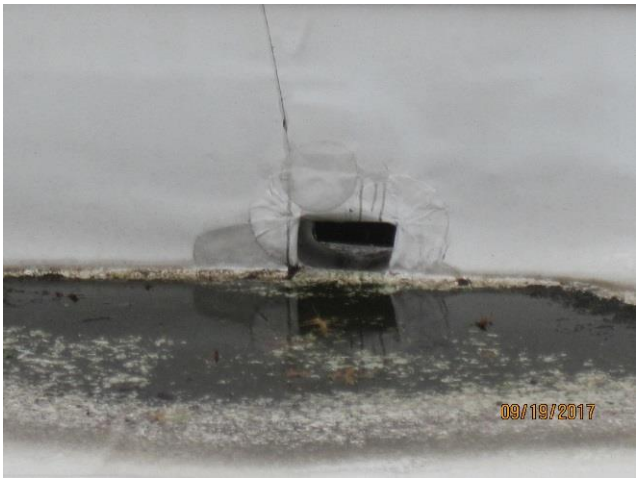
ROOF

# Fire Engine #16 – Hamilton Township

SIGNS OF WATER PONDING

VISIBLE WATER PONDING

PREVIOUS REPAIR TO STOP WATER INFILTRATION AT SKYLIGHT




POOR DRAINAGE AT SCUPPER

VISIBLE ROOF PATCHES