



NORTH SLOPE

BOROUGH SCHOOL DISTRICT

— *Striving For Excellence* —



**ANAKTUVUK PASS
AREAWIDE MECHANICAL AND ELECTRICAL
BUILDING ASSESSMENT AND INVENTORY SURVEY REPORT**

August 19, 2024

Prepared by:



Engineering, Inc.

MECHANICAL AND ELECTRICAL CONSULTING ENGINEERS
670 W Fireweed Lane Suite 200, Anchorage, AK 99503 / 907-276-0521

This page intentionally left blank.

TABLE OF CONTENTS

SECTION 1. INTRODUCTION	5
A. OVERVIEW	5
B. BUILDING SUMMARY	5
C. REFERENCED CODES AND STANDARDS.....	6
SECTION 2. SURVEY RESULTS	7
NUNAMIUT SCHOOL	7
Mechanical Systems.....	7
Electrical Systems.....	16
ITINERANT HOUSING.....	23
Mechanical Systems.....	23
Electrical Systems.....	24
5-PLEX	27
Mechanical Systems.....	27
Electrical Systems.....	28
HILL HOUSE #345.....	31
Mechanical Systems.....	31
Electrical Systems.....	32
TRI-PLEX #4005.....	35
Mechanical Systems.....	35
Electrical Systems.....	36
SECTION 3. DEFICIENCY CODES & FINDINGS.....	39
A. DEFICIENCY CODES.....	39
B. MASTER DEFICIENCY INDEX	40

This page intentionally left blank.

SECTION 1. INTRODUCTION

A. OVERVIEW

The purpose of the survey was to develop a plan to prioritize and address the issues with the mechanical and electrical systems as money is available. The assessment was performed by a survey team composed of representatives from RSA Engineering Inc. and the NSBSD. The survey included a walk-through of each building to evaluate condition of the existing system. The survey was non-destructive, issues noted in this report were visible during the building walk-through or reported by NSBSD staff. During the walk-through, the survey team met with NSBSD staff to discuss issues at the buildings and proceeded to assess the project area to develop recommended upgrades for the facility.

Team Member	Title
Ralph DeStefano, P.E.	Principal Mechanical Engineer
Pat Colins, P.E.	Senior Electrical Engineer

B. BUILDING SUMMARY

The below table includes a list of buildings inspected in this survey:

Table 1: Buildings Surveyed

<u>Village</u>	<u>Building Name</u>
Anaktuvuk Pass	Nunamiut School
Anaktuvuk Pass	Itinerant Housing
Anaktuvuk Pass	5-Plex
Anaktuvuk Pass	Hill House #345
Anaktuvuk Pass	Tri-plex #4005

C. REFERENCED CODES AND STANDARDS

The buildings were inspected for conformance of the following adopted codes and standards:

International Existing Building Code 2021

International Mechanical Code 2021

International Fire Code 2021

International Fuel Code 2021

Uniform Plumbing Code 2021

National Electrical Code 2020

ASHRAE 62.1-2019 – Ventilation & Acceptable Indoor Air Quality.

National Fire Alarm Code (NFPA 72), 2019

ADA Standards for Accessible Design 2010

ANSI A117.1 2017: Accessible and Usable Buildings and Facilities

Illuminating Engineering Society (IES) Lighting Standards, latest published version

SECTION 2. SURVEY RESULTS

NUNAMIUT SCHOOL

Note that 2017 reports are included in regular text and updates from 2024 site visits are found in bold italic after each section.

Mechanical Systems

Overview

The school was visited on April 16th and 17th 2024 to review the current conditions of the building with the conditions of the building identified in the report from 2017. The plumbing waste system including lift stations and waste piping was replaced. The rest of the mechanical systems however have not seen any new work since the previous inspection, and many components and systems require attention and repair.

Plumbing

Domestic water and sanitary sewer service is provided to the school by the city water system. The domestic water service supplies domestic water and sprinkler system in the building. A double check backflow preventer was installed on branch serving the sprinkler system. The backflow preventer had not been tested within the last year. A water conditioning system was installed on the domestic water service. The on-site maintenance staff was not sure if the water conditioning system was working.

The condition of the plumbing piping is fair. The main domestic water piping and waste is approximately 37 years. There were no observed leaks or pipe deterioration on the potable water piping. According to the on-site maintenance staff, there are cross connects in the domestic water piping system between hot and cold water. The domestic hot water and cold water to sink in Break Room 131 were backwards, this is one possible location of cross connect. The domestic hot water to sink in Classroom 118 did not work. The domestic water piping does not comply with current low lead requirements.

The sanitary sewer system in the building is gravity drainage to four lift stations. There were no issues reported with the lift stations. The drain in the girl's shower room was not working and the waste piping in the kitchen is subject to freezing. The piping systems and lift stations are near the end of their useful life expectancy. The plumbing vents through roof in the building do not have heat trace for freeze protection. The on-site maintenance staff indicated that the vents are prone to freezing.

The plumbing fixtures vary in condition from good to poor. Most of the plumbing fixtures including water closets, lavatories and classroom sinks were replaced in the 2012 renovation of the school. The shop and utility sinks in the school are from the original construction and are at the end of their useful

life expectancy and should be replaced. The utility sinks in the janitor's room are connected to a chemical sanitization system; a spill resistant vacuum breaker should be installed on the hot water and cold water connections to these sinks to provide backflow protection. The eyewash in the vocational education classroom is at the end of its useful life expectancy and does not comply with current ANSI Z358 standard. The faucets on the sinks in the kitchen and science classroom are from original construction and are in poor condition. The new classroom sinks are leaking at the gooseneck connection to the sink. The goosenecks need to be repaired or replaced to eliminate the leaks. The lavatory in the girl's toilet room was not working and needs to be repaired. The drinking fountains in the pool and commons room did not work and need to be repaired or replaced.

Domestic hot water is provided by three hot water generators that are in good condition. They were installed during the renovation in 2012.

The fuel oil tank, day tank and piping are in good condition, the fuel system was installed during the 2012 renovation.

2024 Update

The sanitary sewer issues previously noted have been resolved. The sanitary sewer system was demolished and re-built in 2022 and is in good condition. The building is gravity drainage to four lift stations. The lift stations are where recently installed and are in good condition. The waste piping was also replaced in 2022 and is in good condition.

The cross connections between hot and cold water piping previously noted was repaired. The classroom sink faucets are no longer leaking.

The drinking fountains in the school were recently replaced with combination drinking fountains / water bottle fillers and are in good condition.

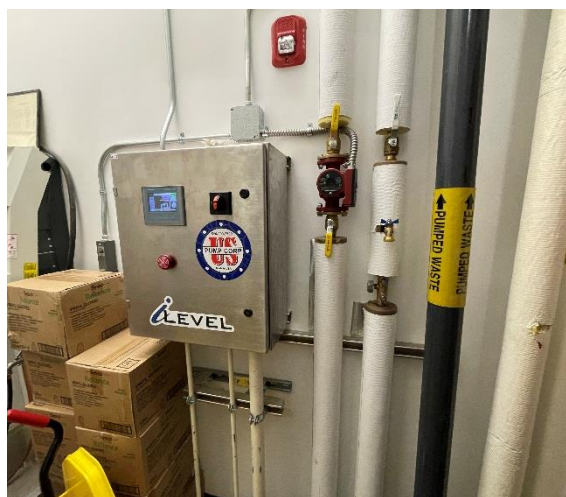


Photo M1 – Lift Station Panel



Photo M2 –Drinking Fountain



Photo M3 – School Hot Water Generators



Photo M4 – Fuel Tank

Heating

The heating system consists of two fuel oil cast iron sectional boilers. The boilers are rated at 1,100,000 BTU/hr gross output each. The boilers were installed in the 2012 renovation project. The boilers are in good condition. The boilers are piped in a primary/secondary with a circulation pump per boiler and seven pumps serving the building. The building heating pumps CP-5A/5B and CP-3A/3B have variable frequency drives; the rest of the pumps are constant volume. CP-3A/3b, CP-4A/4B and CP-5A/B operate in a lead/lag configuration. The pumps powered by VFDs will not automatically start after a power outage or when switching back to normal power after being on the generator. CP-3A/B and CP-5A/B are critical to the schools heating system and must be manually restarted. There were signs of leaks at the pump seals in multiple locations. The piping in the boiler room consists of steel and copper piping. The piping outside of the boiler room is nearing the end of its useful life expectancy. The piping in the fan rooms was in poor condition.

The boiler system is supplemented by a waste heat recovery heat exchanger and a 250-gpm heat recovery injection pump. The heat recovery pump seals have leaked, the pump is in poor condition and near the end of its useful life expectancy. There is older heat recovery piping that is unused and abandoned in place, the old piping should be demolished. The heat recovery piping through floor penetrations are not sleeved and sealed. The piping through floor penetrations should be sleeved and sealed.

Terminal heating equipment in the building includes finned tube in the classrooms and offices, unit heaters in the storage and mechanical rooms and cabinet unit heaters in the entry areas. The finned tube enclosures and elements are in fair condition.

2024 Update

There are no changes to the heating system report.



Photo M5 – Boilers

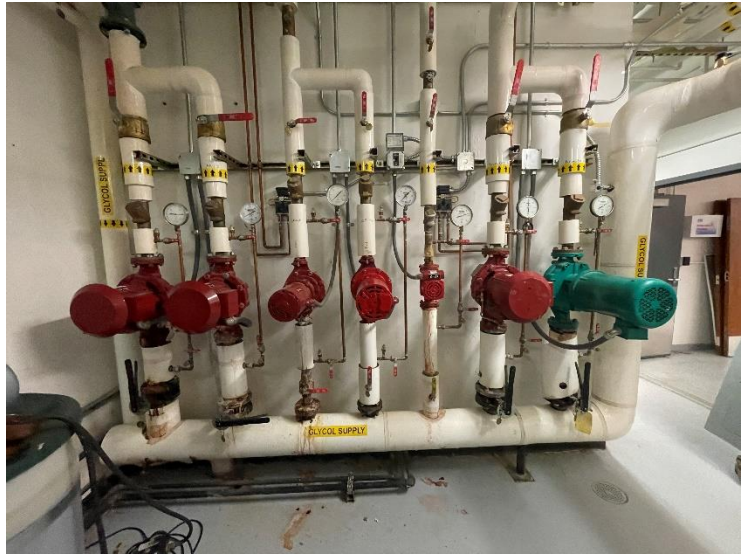


Photo M6 - Building Heating Pumps



Photo M7 – Heat Recovery Pump

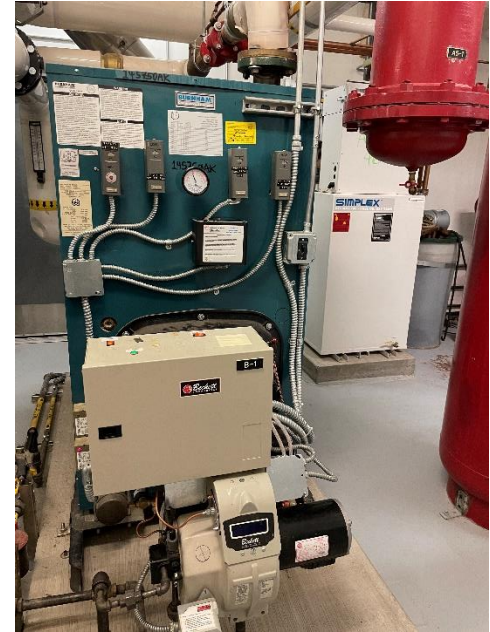


Photo M8 - Boiler and Burner

Ventilation

There are seven (7) air handlers in the building as well as multiple exhaust and ventilation fans. AHU-1 serves original East classroom wing. AHU-2 serves the Kitchen and provides makeup air for the exhaust hood. AHU-3 serves common areas, corridors, office and administrative spaces. AHU-4 serves the pool area. AHU-5 serves the Gymnasium. AHU-6 serves the vocational education and shop areas. AHU-7 serves the East classroom addition. The air handlers have hydronic heating coils and mixing dampers for economizer cooling and ventilation. The air handlers are nearing the end of their useful life expectancy. The control dampers and heating coils do not work properly on the units causing the school to overheat when the equipment was running. The air handling unit casing is in good condition and can be re-used.

Exhaust fans are installed for the locker rooms, restrooms, and school store. The exhaust fans are near the end of their useful life expectancy.

Exhaust and ventilation fans for the pool chemical room, pool equipment room, small engine repair and above the walk-in freezer and refrigerator in the kitchen storage space were replaced in 2012 and are in good condition.

The vocational education room is a combination wood/metal shop. The room has a duct collector that filters and recirculates air into the room. The dust collector does not have listing and safety devices required by current codes to allow for recirculation within the space.

The school has a commercial grade kitchen with associated exhaust hoods and fire suppression. The kitchen ventilation equipment is in good condition and was installed in 2012. The home science

classroom 109 has three range hoods that are not ducted to the building exterior. The range hoods should be ducted to the building exterior to comply with the IMC.

The combustion air system for the boiler is an engineered combustion air system with vent fan and combustion air/relief damper. The system was installed in 2012 and is in good condition.

The generator dampers, relief and outside air ductwork was installed in 2012 as is in good condition.

The pool dehumidifier was replaced in 2012. The dehumidification unit is in good condition and no issues were reported with the unit.

2024 Update

There are no changes to the ventilation system report.

HVAC Controls System

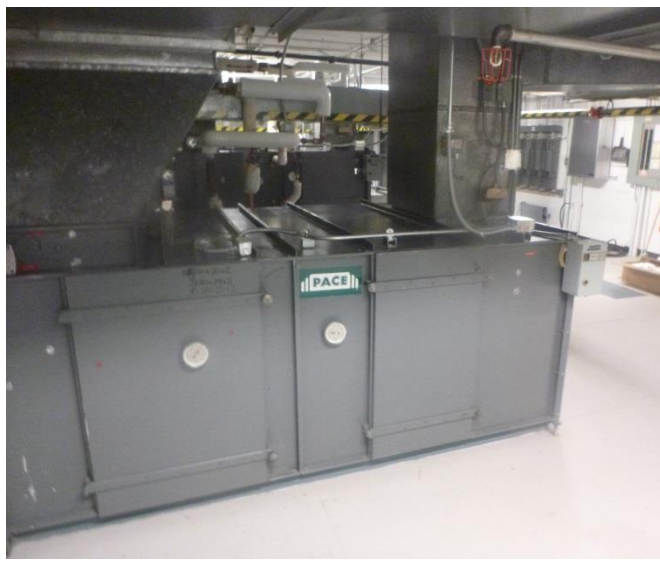


Photo M9 – Air Handler 5



Photo M10 – Air Handler Unit 7

The control system utilized throughout the building is a Johnson Control Metasys system. The system was originally installed around 1997 to control the central mechanical equipment. The classroom temperature controls were upgraded to the Johnson system during the 2012 renovation. The main controllers utilized throughout the school in the fan rooms are at the end of their useful life expectancy. The controls were not operating correctly while we were on-site the building was overheating. The main controls should be upgraded to modern DDC controls. The controls installed during the 2012 renovation should be retro-commissioned to verify operation and address issues with overheating of spaces.

The heat recovery system is on a standalone TAC control panel. This panel is nearing the end of its useful life expectancy.

The boiler system is controlled by a heat timer control panel. The heat timer panel is not working, and the boilers are manually operated.

2024 Update

There are no changes to the HVAC control system report.



Photo M11 – Heat Recovery Control Panel



Photo M12 – Boiler Control Panel



Photo M13 – Metasys Control Panels



Photo M14 – AHU-1 Disconnected Control Actuator

Fire Protection

The fire protection system is a wet sprinkler system and is supplied from the city water utility. The system is in fair condition. No issues were reported with the system. The sprinkler heads are not quick response required by IBC for use in school occupancies. The sprinkler heads should be replaced with quick response heads. The cold storage room adjacent is protected by a glycol sprinkler system. Glycol sprinkler systems with the concentration required for freeze protection in Northern Alaska are no longer allowed by NFPA 13. The sprinkler system should be replaced with a dry pipe sprinkler system.

2024 Update

The kitchen storage area (rm 141) had numerous openings in the ceiling that assumed to have been caused by a leaking sprinkler system.



Photo M15 – Kitchen Storage Ceiling Leak Damage



Photo M16 – Typical Sprinkler Heads



Photo M17– Fire Protection Sprinkler Riser

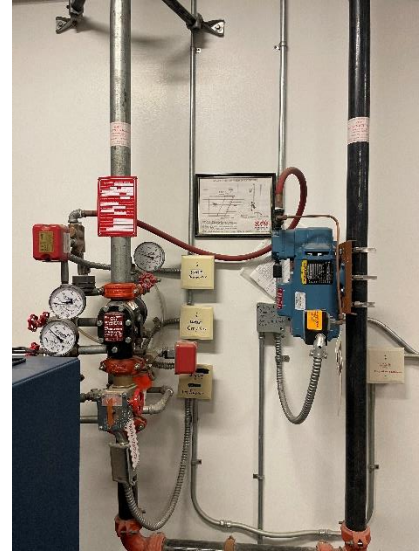


Photo M18 – Dry Pipe Sprinkler Riser

Pool

The pool equipment room was upgraded during the 2012 renovation project. The pool equipment is in good condition. The chemical feed controller was not working according to on-site maintenance staff.

2024 Update

The pool was drained and out of commission during our site visit. Work was in progress to repair the pool equipment.

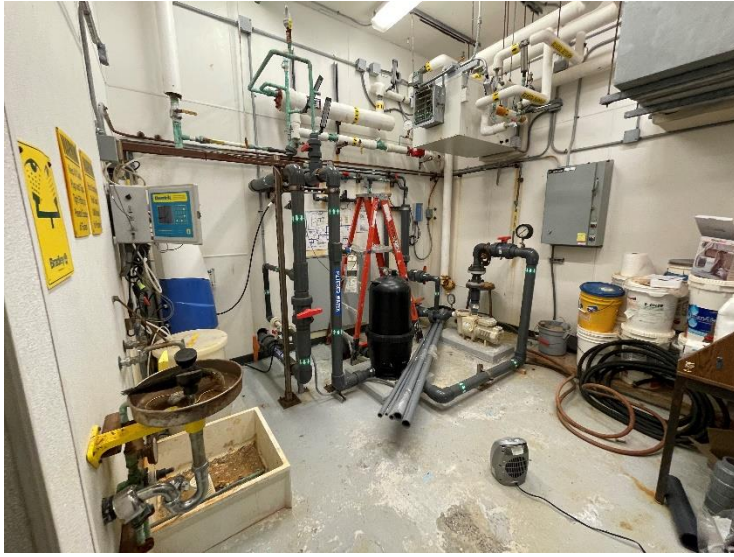


Photo M19 – Pool Mechanical Room



Photo M20 – Pool

Electrical Systems

Overview

The overall condition was good, with minor updates that need to be made.

2024 Update

The school was visited on April 16th and 17th 2024 to review the current conditions of the building with the conditions of the building identified in the report from 2017. The current fire alarm system has been updated to a new addressable system with the ability to upgrade to a voice evacuation system in the future. The clock system appears to be working properly now. All other systems have not had any updates since the 2017 inspection.

Power

The school electrical power service is supplied by the utility from a pole-mounted transformer located on the North side of the school. The service is fed from above the ceiling to a meter mounted to the side of the main switchgear. The interior switchgear houses the CT enclosure, an 800A, 208V, 3p disconnect, located in main electrical room (*Photo E1*). The main feeder was then routed into a 400A, 208V, 4p Automatic Transfer Switch next to the service entrance switchgear. The transfer switch serves a 400A, 120/208V, 3φ, 4W switchboard 'MDP' located next to it and is fed from a 175kW generator. The service switchgear and 'MDP' are General Electric AV-Line switchboard. The distribution section serves all of the normal power panelboards located throughout the facility and has little to no spare capacity for additional loads.



Photo E1 – Service Entrance Switchgear

Backup Power: The entire school is provided with standby power via a 175kW, 208V, 3ph, 4W diesel-fired engine generator set – Cummins Onan #175DGFB. The generator was installed in early 2014 and is in exceptional condition.

2024 Update

There are no changes to the power system report.

Wiring and Cabling Systems

The typical branch wiring system in the facility consists of ½” electrical metallic conduit with copper building wire with conduit used as ground path.

The wiring devices in the facility consisted of white NEMA 5-20R receptacles and 20A, 120V light switches with stainless steel wall plates. In general, they were holding up fairly well since most of the receptacles were changed out during the major renovation.

2024 Update

Newer installed panels have equipment grounding conductors installed in all branch circuits.

Lighting

In general, the school was illuminated with T8 fluorescent fixtures inside the building and with LED wall mounted fixtures outside the building. Most of the interior fixtures were in good shape due to the major renovation.

Most of the classrooms were illuminated with 3-lamp T8 pendant/surface-mounted lights with inboard/outboard switching (*Photo E3*). Lights fixtures are in OK shape, every classroom had at least one fixture out, which more than likely requires lamps to be replaced.

The gymnasium was illuminated with newer LED fixtures (*Photo E4*). Lighting levels were good. Lighting controls in the gym were supposedly not working and had to be turned off by breakers. This item was not tested, because the gym was being used throughout the day.

The exterior fixtures are in good condition, because they were update to LEDs in 2009 (*Photo E5*). The exterior lighting controls do not turn the light fixtures off. This is probably due to a non-functioning or bypassed photocell. Lighting control panel when used manually turns lights off.

Most of the emergency lights tested were in working order. Exit signs are self-illuminating (nuclear) type and are in working order.

The corridor lighting was controlled by keyed light switches.

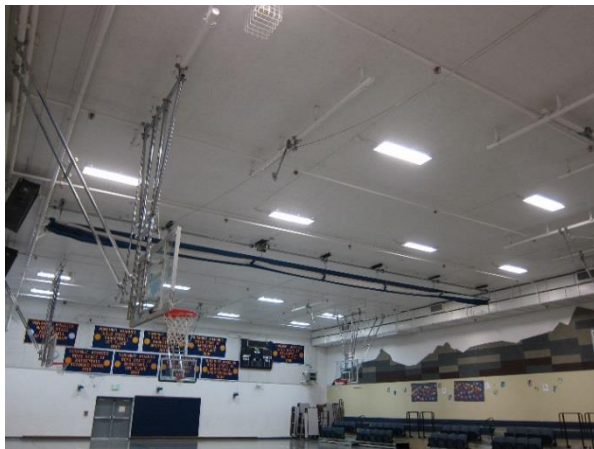


Photo E4 – Gymnasium Lights



Photo E5 – Exterior Lights

2024 Update

The exit signs that are self-illuminating (nuclear) are expired and need to be replaced. There are also self-illuminating, with no internal power, source we recommend being replaced.

There are a couple of emergency lighting units that are broken and need to be replaced, Corridor 134 and Gymnasium 136.

Telecommunication Systems

The building is fed from the utility by an overhead drop from the North side of the school to the main Telephone Terminal Board located on the second floor above the pool. From punchdown blocks at the TTB copper is terminated to patch panels located in an adjacent rack.

The telecommunications system cabling generally consists of category 5 and Cat 5e cabling run in conduit or surface raceways to surface or recess mounted computer jacks. There are two 7ft tall racks on the second floor that contain telecommunication patch panels and network equipment for the entire facility. (Photo E6). Wireless access points are installed throughout the school, but don't seem to be utilized by the faculty.

Classroom Telecommunication jacks were updated during the major renovation and are still in great shape (Photo E7). One Teacher that was in a classroom needed a jack closer to her computer, a few locations may need to have an added data jacks for convenience or wireless devices.

2024 Update

There are no changes to the telecommunication system report.

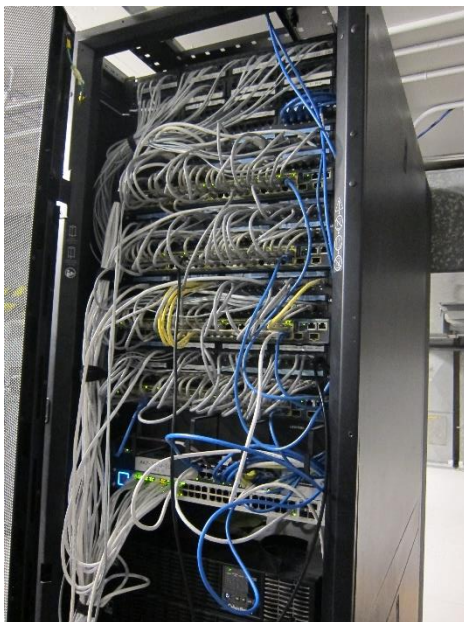


Photo E6 – Telecommunications Rack

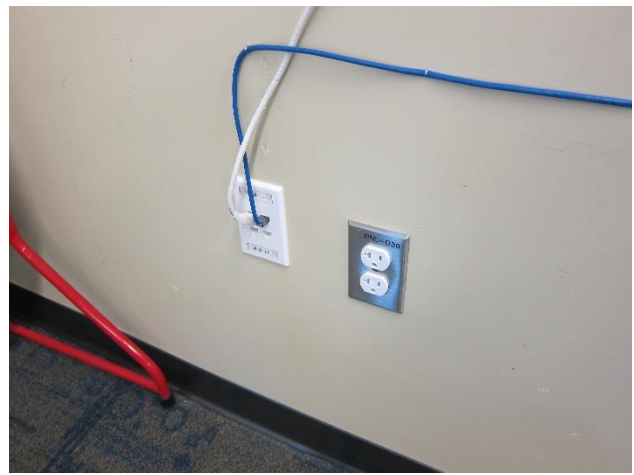


Photo E7 – Typical Classroom Data Jack

Fire Alarm System

The fire alarm system consists of a zone Class 'B' fire alarm System. The Fire Alarm Control Panel 'FACP' is located in the Maintenance office and is a Johnson Controls Metasys control panel. The fire initiating devices consist of pull stations at the exits, smoke detectors throughout the building, heat detectors in the mechanical and kitchen areas, duct smoke detectors on the air handlers, beam type smoke detectors in the gym, kitchen hood suppression system, and sprinkler flow/tamper switches. The signaling devices consist of fire alarm horn/strobe devices in the corridors, classrooms, and public spaces and an alarm dialer. The system as installed appeared to meet current NFPA 72 and ADA guidelines.

The only problem is that the fire alarm panel is 15+ years old and is approaching the end of its useful life and soon the maintenance staff will have difficulty finding parts.

2024 Update

Arctic Fire and Safety has recently updated the FACP with a new Notifier system, in the existing Metasys enclosure, along with annunciation devices. Original smoke detectors remain which are compatible with the new system controller. The new FACP is ready to be upgraded to the new code required voice evacuation system. New system is using the old Metasys enclosure. (Photo E8a).



Photo E8 – Fire Alarm Control Panel

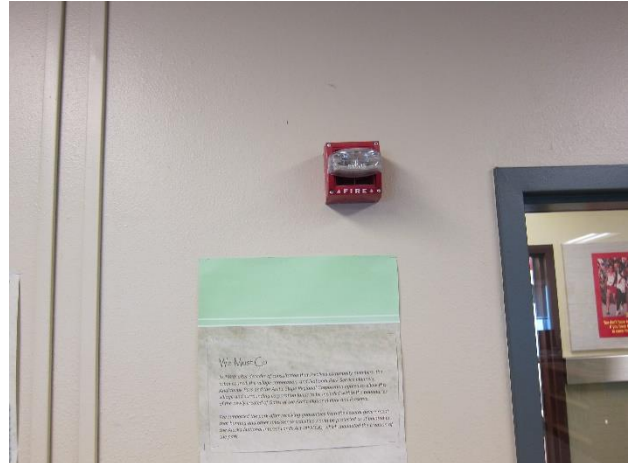


Photo E9 –Typical Fire Alarm Device



Photo E8a – Notifier FACP

Intercom, Master Clock and Bell System

The clock system was upgraded during the recent major upgrade to a wireless clock system by Primex Wireless. There are battery-operated 12” round clocks throughout the facility. Since these clocks were upgraded, the school has had major problems with the clocks. The clocks do not tell the correct time, they move sporadically throughout the day, and each clock has a different time. The clock system is a priority and needs to be troubleshoot and corrected. Intercom Speaker system does not work either. Headend equipment was located in principal’s room but was recently removed and placed upstairs in the telecom/mechanical room. Intercom system need to be reinstalled in working order.

2024 Update

The clock system appears to be repaired with only a couple of clocks in classrooms having issues.



Photo E10 – Typical Combo Clock/Speaker



Photo E11 – Gym Sound System Headend

Gymnasium Sound System

Gymnasium Sound System seemed to be in working order. The system was not tested at the time of the site visit due to activities going on in the gym.

2024 Update

There are no changes to the telecommunication system report.

Security Systems

There is a brand-new Pelco IP camera system that are located throughout the school per district standard. The headend equipment is located on the second-floor telecom/mechanical room. Principal never used it and did not know how to use the computer software.

2024 Update

There are no changes to the security system report.

End of Nunamuit School Survey results

ITINERANT HOUSING

Mechanical Systems

Overview

There are three units in the building, units A, B and C. The mechanical equipment in the building is nearing the end of its useful life expectancy and will need to be upgraded.

2024 Update

There are no updates to report.

Plumbing

Domestic water and sanitary sewer service is provided to the school by the city water system. The condition of the plumbing piping is fair to poor. The plumbing fixtures vary in condition from good to poor. The plumbing fixtures utilize higher water usage than is required by the current plumbing code and should be replaced with lower usage fixtures when repairs are performed.

Domestic hot water is provided by two hot water generators that are in fair condition.

The fuel oil piping is original from the construction of the building and is in fair condition, the fuel oil tank is a 300-gallon single wall tank.

There range in the kitchen is propane. There is one propane tank per unit.

2024 Update

There are no updates to report.

Heating

The heating system consists of one fuel oil cast iron sectional boiler. The boiler is rated at 126,000 BTU/hr gross output each. The boilers are in fair condition. The boilers are piped with one circulation pump serving 6 zones, each with a zone valve. The piping in the boiler room consists of uninsulated copper piping. The rooms are heated by finned tube.

2024 Update

There are no updates to report.



Photo M1 – Mechanical Room
Ventilation

Ventilation is provided by three HRVs, one Venmar HRV is installed to serve each unit. The HRVs do not have preheat coils and have limited capacity for operation in the winter. The HRVs were not operating when we were on-site.

2024 Update

There are no updates to report.

Fire Protection

There is no fire sprinkler system in the building.

2024 Update

There are no updates to report.

Electrical Systems

Overview

The electrical systems at the Itinerant Housing were generally in OK to poor condition and in need of minor updates.

Power

The building is served with power from the utility via an overhead service from a shared pole mounted transformer to the Northeast side of the building. (Photo E1) The overhead lines terminate in two



Photo M2 – Heat Recovery Ventilator Unit C

200A,240V,1ph service for the building and a separate weatherhead and 100A,240V,1ph service for the standard NSB sewer heat trace service (*Photo E2*).

Each feeder from meter/disconnected are routed in conduit through structure to a 60A,240V,1ph Square D panelboard located in each tenant space, one panel is a Cutler Hammer.

All of the electrical distribution equipment appeared to be in good shape however no arc fault protection was provided. Replace the Cutler Hammer panel with a Square D panel in order to be consistent and parts can be interchanged between panels.

2024 Update

There are no changes to the report.



Photo E1 – Utility Service Drop



Photo E2 – Electrical Service Entrance

Devices and wiring

Exposed wiring in the boiler room consists of building wire in conduit. Receptacles in the dwelling units are standard 20A receptacles and in average condition. GFI protection is provided in the bathrooms and kitchen. Kitchen receptacles were standard receptacles that were tied into the other GFI receptacles nearby, provide label indicating it is GFI protected.

Exterior receptacles were GFI protected. Half of them did not have the weatherproof cover.

2024 Update

There are no changes to the report.

Lighting

The lighting throughout the facility consists primarily of incandescent fixtures with Compact Fluorescent Lamp (CFL) screw-in replacement lamps (*Photo E3*) and also T8 fluorescent type in the kitchen area.

Most of the light fixtures are dated and in average condition. The lighting is switched with local 15A,120V line voltage switches.

2024 Update

There are no changes to the report.

Special Systems

The telephone service to the building is fed overhead and attached to the side of the building then down to an exterior Network Interface Device (NID) located adjacent the meterbase. Category 3 cable is routed inside to the RJ45 telephone jacks.



Photo E3– Typical Lighting

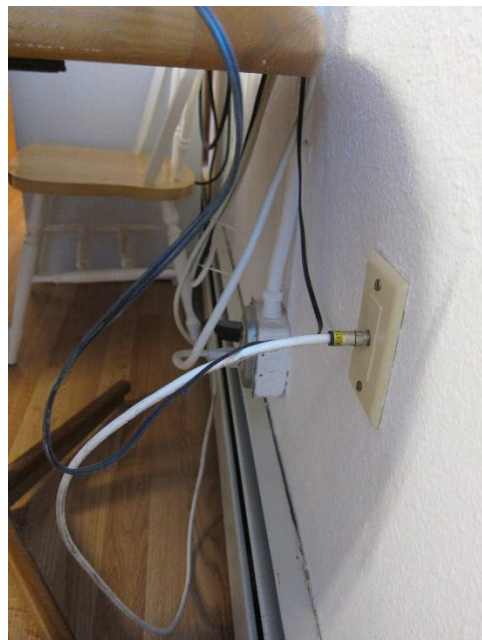


Photo E4– Cable TV

Fire alarm systems in the building consisted of hardwired and backup battery powered smoke detectors in the bedrooms and the common area outside the bedrooms.

2024 Update

There are no changes to the report.

End of Itinerant Housing Survey results

5-PLEX

Mechanical Systems

Overview

The central mechanical equipment in the building is nearing the end of its useful life expectancy and will need to be upgraded. The fixtures and mechanical equipment in the individual units were in fair condition.

Plumbing

Domestic water and sanitary sewer service is provided to the school by the city water system. Each unit has a domestic water meter. There were no issues reported with the plumbing piping. The plumbing fixtures are in fair condition.

Domestic hot water is provided by one hot water generator and five electric water heaters. The hot water generator is located in the boiler room, and it serves common areas of the building. Each of the 5 units has an electric water heater. The hot water generator is at the end of its useful life expectancy. The electric water heaters were in good condition, and they had been replaced recently.

2024 Update

There are no updates to report.

Heating

The heating system consists of two fuel oil cast iron sectional boilers. The boilers are rated at 126,000 BTU/hr gross output each. The boilers are in fair condition, the boilers are near the end of their useful life expectancy. The boilers are piped with two circulation pumps intended to operate lead/lag to circulate glycol to the building. The buildings circulate glycol to fintube in each of the units with zone control valve's location in the boiler room. The piping in the boiler room consists of insulated copper piping. There were visible signs of leaks on the piping, the valves and piping are at the end of their useful life expectancy.

2024 Update

There are no updates to report.



Photo M1 – Boilers



Photo M2 – Common Area Make-up Air Unit

Ventilation

Ventilation for each of the units is provided by operable windows. Each unit has a toilet exhaust fan and range hood. The range hoods are not ducted to the building exterior, they operate to recirculate air only.

The common area is ventilated by a make-up air unit. The unit was not operational at the time of the site visit. The unit is at the end of its useful life expectancy.

2024 Update

There are no updates to report.

Fire Protection

There is no fire sprinkler system in the building.

2024 Update

There are no updates to report.

Electrical Systems

Overview

The electrical system at the 5-Plex were generally in OK to good condition and in need of minor updates.

Power

The building is served with power from the utility via an overhead service from a pole mounted transformer to the side of the building to a 6-gang meterpack for the building and a separate weatherhead for the sewer heat trace service. (*Photo E1*) Services #1-6 are 60A,240V,1ph. The water/sewer heat trace panel is fed from a separate 100A,240V,1ph meter/main.

The feeders are routed through structure in conduit to loadcenter in each unit and to a house panel in the boiler room.

The boiler room panel is Square D 60A, 240V, 1ph, panel. The typical unit #1-#5 loadcenters were 60A,240V,1ph, Square D. (*Photo E2*) All of the electrical distribution equipment appeared to be original to the building and is past its useful life. No arc fault protection is provided.



Photo E1 – Electrical Service Entrance



Photo E2 – Typical Panel

The heat trace service and gear are in fair shape.

2024 Update

There are no changes to the report.

Devices and wiring

Exposed wiring in the boiler room consisted of building wire in conduit. Concealed wiring was not confirmed but assumed to be type NM cable (e.g. Romex). Receptacles in the dwelling units are standard 15A receptacles and in below average to poor condition. GFI protection is provided in the bathrooms and kitchen. Kitchen receptacles were standard receptacles that were tied into the other GFI receptacles nearby, provide label indicating it is GFI protected.

Exterior receptacles were GFI protected. Half of them did not have the weatherproof cover.

2024 Update

There are no changes to the report.

Lighting

The lighting throughout the facility consists primarily of incandescent fixtures with Compact Fluorescent Lamp (CFL) screw-in replacement lamps and T8 fluorescent type in common spaces. Most of the light fixtures are original to the building and in below average to poor shape. The lighting is switched with local 15A,120V line voltage switches.

2024 Update

Emergency lighting in corridor is not adequate.

Special Systems

The telephone service to the building is fed overhead. Each unit has Category 3 wired telephone jacks.

Fire alarm systems in the building consisted of hardwired and backup battery powered smoke detectors in the bedrooms and the common area outside the bedrooms.

2024 Update

There are no changes to the report.

End of 5-Plex Survey results

HILL HOUSE #345

Mechanical Systems

Overview

The mechanical systems in the building are in poor condition.

2024 Update

The Hill House suffered a major freeze up and the plumbing systems were heavily damaged.

Plumbing

Domestic water and sanitary sewer service is provided to the school by the city water system. There were no issues reported with the plumbing piping. The plumbing fixtures are in fair condition.

Domestic hot water is provided by an electric water heater. The electric water heater was in good condition and had been replaced recently.

The fuel system included a single wall fuel tank and soft copper piping to the fuel oil furnace.

2024 Update

The Hill House suffered a major freeze up and the plumbing systems were heavily damaged. The water piping is beyond repair and was replaced with surface mounted PEX piping.

The fuel system tank was upgraded in 2023 to a double wall 500-gallon tank.

Heating

The heating system consists of one fuel oil furnace located in the living room. The furnace is rated at 60,000 BTU/hr gross output. The furnace is in good condition, the furnace reported to have been installed in 2014. The furnace is not located in a 1-hr rated room.

2024 Update

There are no updates to report.



Photo M1 – Furnace



Photo M2 – Electric Water Heater

Ventilation

Ventilation is provided by operable windows, a toilet exhaust fan and range hood.

2024 Update

There are no updates to report.

Fire Protection

There is no fire sprinkler system in the building.

There are no updates to report.

Electrical Systems

Overview

The electrical system at the Hill House #345 were in OK condition and in need of minor updates.

Power

The building is served with power from the utility via an overhead service from a pole mounted transformer to the side of the building with a separate weatherhead for the sewer heat trace service. (Photo E1) The overhead line terminates in a 60A,240V,1ph service for the building.

The feeders are routed through structure in conduit to loadcenter located in the storage room. The loadcenter is a Square D QO loadcenter.

All of the electrical distribution equipment appeared to be original to the building and is past its useful life. No arc fault protection is provided. The heat trace service and gear are in fair shape.

2024 Update

There are no changes to the report.



Photo E1 – Electrical Service Entrance



Photo E2 – Interior Lighting



Photo E3 – Electrical Telephone Entrance

Devices and wiring

Exposed wiring in the boiler room consisted of building wire in conduit. Concealed wiring was not confirmed but assumed to be type NM cable (e.g. Romex). Receptacles in the dwelling units are standard 15A receptacles and in average condition. GFI protection is provided in the kitchen. Kitchen receptacles were standard receptacles that were tied into the other GFI receptacles nearby, provide label indicating it is GFI protected. Bathroom did not have a GFI protected receptacle.

Exterior receptacles were GFI protected but did not have the weatherproof cover. One exterior receptacle did not have a cover plate.

2024 Update

There are no changes to the report.

Lighting

The lighting throughout the facility consists primarily of incandescent fixtures with Compact Fluorescent Lamp (CFL) screw-in replacement lamps and T8 fluorescent type in the bedroom. *(Photo E2)*. Most of the light fixtures are original to the building and in below average to poor shape. The lighting is switched with local 15A,120V line voltage switches. The bathroom light is hanging by exposed wires and should be replaced as soon as possible.

2024 Update

The bathroom light has been repaired.

Special Systems

The telephone service to the building is fed overhead which feed the unit with Category 3 wired telephone jacks.

Satellite TV service is provided from a wall-mounted dish on the south side of the building with coaxial cable run under the building into the unit.

Fire alarm systems in the building consisted of hardwired and backup battery powered smoke detectors in the bedrooms and the common area outside the bedrooms.

2024 Update

There are no changes to the report.

End of Hill House #345 Survey results

Mechanical Systems

Overview

The central mechanical equipment has been partially upgraded recently. The fixtures and mechanical equipment in the individual units were in fair condition.

Plumbing

Domestic water and sanitary sewer service is provided to the school by the city water system. The domestic water service included a backflow preventer. There were no issues reported with the plumbing piping. The plumbing fixtures are in fair condition.

Domestic hot water is provided by two hot water generators. The hot water generators are located in the boiler room. One HWG is in fair condition, the second HWG was off and appeared to be leaking. The hot water generator is at the end of its useful life expectancy.

The fuel system for the building consists of two double wall 300-gallon fuel tanks.

There range in the kitchen of each unit is propane. There propane is located in a common propane storage room.

2024 Update

There are no updates to report.

Heating

The heating system consists of one fuel oil cast iron sectional boiler. The boiler is rated at 184,000 BTU/hr gross output. The boiler is in good condition, the boiler was installed in 2013. The boiler has a single circulation pump that circulates hot glycol to fintube in each unit of the building. The zone control valves are located in the boiler room. The piping in the boiler room consists of uninsulated copper piping. There were visible signs of leaks on the piping, some of the piping was replaced in 2013 with the new boiler. The room was very warm, the combustion air system does not comply with code.



Photo M1 – Boiler



Photo M2 – Hot Water Generators

2024 Update

There are no updates to report.

Ventilation

Ventilation for each of the units is provided by operable windows. Each unit has a toilet exhaust fan and range hood.

2024 Update

There are no updates to report.

Fire Protection

There is no fire sprinkler system in the building.

2024 Update

There are no updates to report.

Electrical Systems

The electrical system at the Tri-plex were generally in OK to good condition and in need of minor updates.

Power

The building is served with power from the utility via an overhead service from a pole mounted transformer to the side of the building to a 4-gang meterpack for the building and a separate weatherhead for the sewer heat trace service. (*Photo E1*) Services #1-4 are 60A,240V,1ph. The water/sewer heat trace panel is fed from a separate 100A,240V,1ph meter/main.

The feeders are routed through structure in conduit to loadcenters in the corridor/common space.

The typical loadcenters were 60A,240V,1ph, Square D. (*Photo E2*) All of the electrical distribution equipment appeared to be original to the building and is past its useful life. Panel A and M had working clearance code violations with the washer and the water main. No arc fault protection is provided throughout the building.

The heat trace service and gear are in poor shape and should be replaced.



Photo E1 – Electrical Service Entrance



Photo E2 – Typical Panel

2024 Update

There are no changes to the report.

Devices and wiring

Exposed wiring in the boiler room consisted of building wire in conduit. Concealed wiring was not confirmed but assumed to be type NM cable (e.g. Romex). Receptacles in the dwelling units are standard 15A receptacles and in below average to poor condition. GFI protection is provided in the bathrooms and kitchen. Kitchen receptacles were standard receptacles that were tied into the other GFI receptacles nearby, provide label indicating it is GFI protected.

Exterior receptacles were GFI protected. Half of them did not have the weatherproof cover.

2024 Update

There are no changes to the report.

Lighting

The lighting throughout the facility consists primarily of incandescent fixtures with Compact Fluorescent Lamp (CFL) screw-in replacement lamps and T8 fluorescent type in common spaces. Lighting in the bedrooms had low lighting levels and may require added fixtures or more receptacles for lamps. Most of the light fixtures are original to the building and in poor shape. The lighting is switched with local 15A,120V line voltage switches.

2024 Update

Emergency lighting is required in the common area with the panels.

Special Systems

The telephone service to the building is fed overhead. Each unit has Category 3 wired telephone jacks.

Fire alarm systems in the building consisted of hardwired and backup battery powered smoke detectors in the bedrooms and the common area outside the bedrooms.

2024 Update

There are no changes to the report.

End of Tri-Plex #4005 Survey results

SECTION 3. DEFICIENCY CODES & FINDINGS

This section explains the codification system for categorizing facility deficiencies based upon field survey findings.

A. DEFICIENCY CODES

1 – Health/Life Safety: These deficiencies identify areas where the facility is not constructed or maintained in compliance with provisions of the state mandated life safety aspects of building codes including the codes adopted from the International Code Council (such as the International Building Code) or other standards organizations (such as the National Fire Prevention Association). Deficiencies could include inadequacies in fire barriers, smoke barriers, capacity and means of egress, door ratings, and fire protection equipment not covered in other deficiency codes.

2 – Operating Cost: These deficiencies address the efficiency of lighting, heating systems/fuel types and the thermal enclosures of buildings, processes, and are required for energy conservation and good energy management.

3 – Technical Upgrade: These are items that would upgrade obsolete equipment or systems to the current technology.

4 – Code Upgrade: These are deficiencies related to building code violations where there is no imminent threat to life safety.

5 – Protection of Structure: These are deficiencies that endanger the physical structure of the facility.

6 – Functional Upgrade: These are deficiencies in the plumbing, heating, ventilating, air conditioning, power, lighting, special systems, etc. requiring maintenance due to normal wear and tear that would result in system failure.

7 – Education Program Upgrade: These are items that would improve the ability of the educators to instruct the students.

The deficiencies are further categorized by design disciplines and priority as follows:

Code	Discipline
M	Mechanical
E	Electrical

Priority	Description
1	Highest priority – Life safety or imminent danger
2	Repair/remodel within 3 years
3	Repair/remodel within 3-10 years

See attached Deficiency Matrix for detailed information.

B. MASTER DEFICIENCY INDEX

<u>Discipline/ Record #</u>	<u>Deficiency Code</u>	<u>Priority</u>	<u>Building</u>	<u>Deficiency Title</u>	<u>2024 Update</u>
M1	2	3	Nunamuit School	Heating Pump Upgrades	<i>No change noted.</i>
M2	6	2	Nunamuit School	Heating Equipment and Piping Upgrades.	<i>No change noted.</i>
M3	2	2	Nunamuit School	Failing Building controls	<i>No change noted.</i>
M4	6	2	Nunamuit School	Retro-commission Existing DDC controls.	<i>No change noted.</i>
M5	6	2	Nunamuit School	Failing piping system, lift station near end of life expectancy.	<i>Waste piping was replaced in 2022 and is in good condition.</i>
M6	6	2	Nunamuit School	Piping and end of useful life expectancy.	<i>No change to the domestic water piping. The cross connection and faucet have been repaired.</i>
M7	6	2	Nunamuit School	Fixtures in poor condition, at end of life expectancy.	<i>Many of the faucets have been replaced</i>
M8	6	2	Nunamuit School	Plumbing VTR Heat Trace	<i>No change noted.</i>
M9	4	2	Nunamuit School	Backflow Preventer Testing	<i>No change noted.</i>
M10	6	2	Nunamuit School	Water Conditioner	<i>No change noted.</i>
M11	4	2	Nunamuit School	Upgrade eyewash systems	<i>No change noted.</i>
M12	1	1	Nunamuit School	Natatorium Chemical Feed Controller	<i>No change noted.</i>
M13	4	2	Nunamuit School	Sprinkler System Upgrades	<i>No change noted.</i>

M14	6	2	Nunamuit School	Air handling units and associated exhaust fans are at the end of their useful life expectancy.	No change noted.
M15	3	2	Nunamuit School	Dust Collection system does not meet current codes.	No change noted.
M16	4	2	Nunamuit School	Voc-ed Ventilation Upgrades	No change noted.
M17	4	3	Nunamuit School	No exhaust on Range Hoods	No change noted.
M18	6	3	Nunamuit School	Freezer condensers utilize obsolete refrigerant	No change noted.
M19	1	2	Itinerant Housing	Upgrade Fuel Tank to Double Wall	Tank was replaced with double wall tank.
M20	6	2	Itinerant Housing	Upgrade boiler	No change noted.
M21	6	3	Itinerant Housing	Upgrade Heating Equipment	No change noted.
M22	6	2	Itinerant Housing	Hot water generators end of life expectancy.	No change noted.
M23	6	2	Itinerant Housing	Heat Recovery ventilators are near the end-of-life expectancy.	No change noted.
M24	6	2	Hill House 345	Upgrade Fuel Tank to Double Wall	Tank was replaced with double wall tank.
M25	6	2	Hill House 345	Ventilation Upgrade.	No change noted.
M26	6	2	Hill House 345	Furnace installed in living room.	No change noted.
M27	6	2	Tri-Plex 4005	Upgrade boiler piping.	No change noted.
M28	6	2	Tri-Plex 4005	Plumbing fixtures	No change noted.

				Replacement.	
M29	6	2	Tri-Plex 4005	Hot water generators end of life expectancy.	<i>No change noted.</i>
M30	6	2	Tri-Plex 4005	Ventilation Upgrade.	<i>No change noted.</i>
M31	4	2	Tri-Plex 4005	Backflow Preventer Testing	<i>No change noted.</i>
M32	6	2	5-Plex	Upgrade boiler	<i>No change noted.</i>
M33	6	3	5-Plex	Upgrade Heating Equipment	<i>No change noted.</i>
M34	6	2	5-Plex	Hot water generator end of life expectancy.	<i>No change noted.</i>
M35	6	2	5-Plex	Ventilation Upgrade.	<i>No change noted.</i>
M36	4	2	5-Plex	Backflow Preventer Testing	<i>No change noted.</i>
M37	1	1	Nunamuit School	Ceiling water damage	New item.
M38	6	1	Nunamuit School	Repair Pool Equipment	New item.
M39	3	2	Hill House	Replace water piping.	New item.
E1	7	2	Nunamuit School	Clock/intercom system has never worked	<i>Clock system was removed completely.</i>
E2	2	2	Nunamuit School	Exterior lights on all day	<i>No change noted.</i>
E3	2	3	Nunamuit School	Existing T8 lighting not as energy efficient as new LED	<i>No change noted.</i>
E4	4	3	Nunamuit School	Conduit not supported	<i>No change noted.</i>
E5	1	1	Nunamuit School	Fire alarm system parts are obsolete	<i>FACP upgraded to addressable and minimum upgrades for a voice evac system.</i>
E6	6	3	Nunamuit School	Panelboards Old	<i>No change noted.</i>
E7	4	2	Nunamuit School	Range hoods do not have power.	<i>No change noted.</i>

E8	7	2	Nunamuit School	Media room need more receptacles.	<i>No change noted.</i>
E9	4	2	All Housing	Multiple light switches not working	<i>No change noted.</i>
E10	1	1	All Housing	Fire alarm system parts are obsolete	<i>No change noted.</i>
E11	2	3	Itinerant Housing	Existing lighting not as energy efficient as new LED	<i>No change noted.</i>
E12	4	1	Hill House 345	GFCI needed in bathroom.	<i>No change noted.</i>
E13	1	1	Hill House 345	Bathroom fixture hanging by wires	<i>No change noted.</i>
E14	4	1	Hill House 345, Tri-plex, 5-Plex	Receptacles in units not tamperproof	<i>No change noted.</i>
E15	4	2	Hill House 345	Missing arc fault protection	<i>No change noted.</i>
E16	4	1	Tri-Plex 4005	Electrical Panelboards working clearance violation.	<i>No change noted.</i>
E17	4	2	Tri-Plex 4005, 5-Plex	Missing arc fault protection	<i>No change noted.</i>
E18	6	2	Tri-Plex 4005	Meters are corroded	<i>No change noted.</i>
E19	4	1	5-Plex	Electrical Panelboards working clearance violation.	<i>No change noted.</i>
E21	1	1	Tri-Plex, 5-Plex	Emergency Lighting	New item.