Town of Nantucket

Our Island Home Facility Assessment

Draft

August 18th, 2015

Project # 15126-00

SMRT

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1.0 EXECUTIVE SUMMARY

SMRT has been engaged by the Town of Nantucket to perform an existing condition needs assessment of the current Our Island Home (OIH) facility at 9 East Creek Road Nantucket, MA to include: architectural, mechanical, electrical, and landscape assessments. This report will outline the existing equipment and infrastructure associated each trade, provide recommendations as to what items should be addressed, and give guidance on how time sensitive these recommendations are. Where applicable, these items will be graphically represented in a table at the end of each section. Also provided in the Appendix at the end of this report are trade inventory spreadsheets detailing pertinent equipment and infrastructure information for the Town of Nantucket's use.

Secondly, this report is to be used to help aid the town in determining the overall facility condition and provide a basis of analysis for the town to determine if renovation of the existing site or relocation to a new site is the best long term solution.

SMRT toured the facility on July 14 and 21, 2015. The SMRT team consisted of Richard Webb (Principal in Charge) William Heil (electrical), Jonathan Kasper (mechanical), Allan Wright (architect) and Melissa Flynn (site/civil). During the site visit the team met with Rachel Chretien, Facilities Administrator and Ed King of Facilities & Grounds to review the existing facility conditions. The team also studied the functionality and appropriateness of the system components to meet the nursing home's needs.

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2.0 ARCHITECTURAL

2.1 Overview

The interior of the overall superstructure has been maintained in working order and is functioning at a mid to late 20th century status since its construction in 1980-1981. Current updates such as the added Cafeteria allowed for growth and development in the year 2000, yet the facility needs updating on many fronts. Although the building area of approximately 20,000 square feet, in the original building, is minimally adequate in most spaces, the artery corridors are congested with excess equipment and functional, patient support devices such as wheelchairs and patient walkers, as well as, the usual soiled waste receptacles. More space is necessary to provide for those uses to accommodate staff and client alike.

The buildings overall, effective condition, has begun to show its age related to material longevity and useful remaining life

2.1.2 Exterior

The exterior wood shingle wall finishes have worn with age, are showing cracks, staining and cupping, which generally indicates the need to be replaced. The same can be said for the cedar wood trim, on the roof eaves and rakes, as well as, all window and door exterior surrounding trim panels. All of the exterior wall finish materials are in need of replacement and are nearing or at the end of their useful life. (Left side of roof railing has fallen across the flat roof area and was propped into place temporarily while we were visiting some balustrade were missing.)

Cupping, warping and deterioration of exterior shingles

Exterior finish staining and wear

Paint chipping at door trim Door
Door insulating glass Argon seals are broken resulting in loss of insulating properties

Shingle staining and deterioration at left and inside overhung enclosure

The existing asphalt shingle roofing is brittle and deteriorated, having reached the end of its usefulness and weather tight qualities. The residential building exterior roof asphalt shingles should be removed and replaced imminently. According to Mr. King, 18 squares of the existing shingles have been recently replaced, with the remaining roof shingles scheduled to be replaced within the next coming year.

The flat mechanical roof, above the existing mechanical space at the buildings spatial center, is at its useful limits. The EPDM roof, in its entirety, should be removed and replaced. Inspection of the underlying roof structure should be examined by a Structural Engineer for viability and longevity.

All mechanical equipment should be placed on anchored pedestals to raise it above the roof drainage plane. Loose pedestals are placed under equipment, on thin roofing membrane, similar to the existing roofing membrane materials and thickness. This installation condition prohibits proper drainage away from the equipment metal cabinet base, while indenting the composite roofing below, further inducing corrosive affects upon the composite roof structure and mechanical equipment cabinets. These conditions limit the longevity of the roof structure and the roofing. The flat mechanical roof structure should be replaced within the next one to two years to include code compliant fall protection railing and anchored equipment pedestals.

The approximately 15 x 15 ft. square roof, surrounding 36 inch tall wood guard railing was out of place and lay flat across the roof access door when we attempted to access the mechanical roof area. The 36 inch tall wood guardrail height is no longer code compliant. The railing had been displaced and was out of position at a third of the roof perimeter and generally of no protective use to anyone while working or walking on the flat roof area. Parts of the existing wood guard railing were held in place temporarily with elastic strapping, at the fixed, vertical steel pipe at the flat roof area corners.

This railing condition is not code compliant. Current code requires 42 inch tall guard rails at the surrounding edges of this type of roof location with precipitous edges.

2.1.3 Attic Mechanical Spaces

Attic spaces have protected structure wrapped in sheetrock, taped and spackled. This condition is deteriorating, though can be remedied at areas showing wear and tear. With extensive repairs, the Gypsum wallboard wrap will provide greater protection. Currently the conditions are not strictly code compliant, according to NFPA 101 for this facility. Duct and other penetrations through smoke compartment partitions appear to be intact with appropriate dampers at wall intersections. (Testing was not performed).

Typical Attic catwalk with worn fire rating sheetrock joints

2.1.4 Interiors – Residential

The Initial impression, upon entering the front vestibule of the facility was cramped and congested. The use of ad-hoc seating arrangements, gathered along the walls at each side of the sliding entry doors, is a result of having no specific waiting area for guests and visitors. The furniture and waiting arrangements also precludes safe exiting at that location, since wall mounted hand rails are blocked, rendering them useless should an evacuation event occur.

Waiting area shown at corridor hub (person sitting)
w/ med. crash cart and portable med. equipment stored in exit corridor

Corridor Walls lined with wheelchairs and medical equipment

Currently, areas that have congestion are the three patient wing corridors in the North, East and West wings with patient equipment distributed along the walls in those corridors. As such, the usefulness of the hand railing along the walls is negated and the equipment may be an impediment to access during an emergency situation for ambulatory clients. Patients in wheel chairs will compete with ambulant persons and staff during an emergency situation for egress access. The layout of the overall facility is outdated. Functions have been squeezed into existing spaces that are already insufficient and suffering lack of usefulness.

Corridor smoke partition doors, located at the head of each residential unit corridor, are intact and held in place with electrical, magnetic hold open devices. Those hold open devices are designed to de-activate during a fire emergency, allowing the doors to swing closed to prevent smoke and gasses from infiltrating into other areas of the building. Corridor smoke partitions and doors appear to be intact. (Testing was not performed)

Residential sleeping quarter, room arrangements (Facility Guidelines Institute) for spatial adequacy, is a driving force in determining needs for the existing facility. Sleeping arrangements are not adequate for the specific room layout and use. Headwalls, bed spacing and furniture are not optimally ordered in the room for the required uses and are in need of review and/or re-design. Bedding is in a state of overuse and in dire need of replacement.

SMRT noted that the majority of the operable windows in the facility were in working order to help with natural ventilation during certain seasons.

Closet space provided and maintained, while adequate, could be better designed for each person, in the double occupied rooms, to provide for more distinct and personable space.

The bathrooms are in need of personal storage for each occupant. All other accommodation is met, but with outdated fixtures, in dire need of replacement to be code compliant installations There are no towel racks.

2.1.5 Interior Residential Recommendations

The continued use of the building for Our Island Home as a Nursing Facility would involve renovation of the interior to accommodate clearing of exit access ways, while maintaining the existing facilities nurses' station, offices and examination rooms possibly converting several rooms or adding rooms for new code compliant uses. The conversion/additions may consist of soiled holding areas in each wing, medical waste storage, and a variety of storage rooms or areas. The associated systems required for each, are governed by the Department of Public Health, Joint Commission, FGI-2014, NFPA 99, NFPA 101, as well as local and other standards and codes related to Long Term Health Care Facilities.

Space requirements to meet the basic DPH guidelines and NFPA 101 Life Safety Code, Chapter 19, Existing Health Care Occupancies, as well as, 780 CMR for this facility need to be implemented. Access corridors should be relieved of all but essential equipment. Storage space is lacking for specific equipment and needs to be met with additional construction provided for each of the residential and staff wings. With that in mind, the logical location available for such added space would be at the end of each residential wing corridor. Additional rooms added at those areas would remove windows and eliminate views while preserving the existing exits. In addition, encroachment into site zoning setback areas may occur.

2.1.6 Interior - Service Wing

The service South wing lacks optimal design considerations for ease of use, access by staff in proximity to patient rooms and cohesive function of the individual spaces. Most of the functions in this wing would be better served at a lower floor level, with the exception of the dining and kitchen areas.

Dining:

While the kitchen appeared to be in working order, the Dining room Air conditioning apparently worked only when someone opened a window to raise the temperature in order to engage the thermostat, according to dining employees. Otherwise the dining room layout and proximity to the kitchen appeared to function well. A vestibule to separate the kitchen from the dining area would allow for better function to keep residents and kitchen employee work and entry paths from crossing.

Dining Entry

Dining

Kitchen: The newer, dining facility addition of 2000 eliminated one of two light inducing and ventilating windows that were located inside the existing kitchen. The newer dining addition also reduced the useful truck loading dock area immediately outside of the rear kitchen entrance which uses a man door for kitchen access from the street level dock for all deliveries. The kitchen atmosphere was hot and somewhat muggy possibly due to having prepared the afternoon meal at the time of this review.

Laundry: Due to lack of enough space, Laundry facilities are using areas apparently designed primarily for other uses. The current laundry facility lacks sufficient counters for folding, clearances at laundry machines and proper ventilation, as well as, floor drainage for laundry equipment. Laundry also lacks proper areas for storage carts and laundry bins and is burdened with inadequate space for soiled and clean use separation.

Abandoned entry vestibule (center) - Laundry Exterior wall fresh air ventilation (right)

Service Corridor:

The South Corridor is of adequate size and is kept clear of obstruction. The corridor may have been designed and built to code in 1980, but at this date is not code compliant. The electrical panels are located inside, and at the end of, an exit access corridor and adjacent to an emergency exit door. The corridor currently houses the exposed 800 amp, 208/120 volt electrical switchboard and other panels that, by current code, must be enclosed in a two hour rated enclosure with appropriate rated doors and clearances for access. None of the equipment installation meets code and may be harmful to exiting occupants during an emergency evacuation.

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2.2 Architectural Recommendations

Legend	
Priority 3: Long Term Concerns (3-5 years)	🟢
Priority 2: Short Term Concerns (1-2 years)	🟡
Priority 1: Immediate Concerns	🔴

System	***Status***
Architectural spatial requirements	🟡
Roof	🔴
Exterior Walls	🟡
Exterior Exit Access Doors	🟡
Exterior Door Hardware	🟡
Exterior Windows (specific areas)	🔴
Louvers	🔴
Interior Wall Finishes	🟢
Interior Doors	🟢
Interior Door Hardware	🟡
Ceiling Finishes	🟢
Floor Finishes	🟡
Casework	🟢
Plumbing Fixtures	🔴
Toilet Accessories	🔴
Corridors	🔴

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3 MECHANICAL

3.1 Existing Conditions

Heating Systems:

Boilers:

Our Island Home is primarily heated via three (3), Weil-Mclain, oil fired, cast iron sectional boilers located in the main mechanical room. Each boiler has an output capacity of 231 MBH for a total system capacity of 693 MBH. The boilers are not original to the building and appear to have been installed in 2000. Boiler #1 has been patched with a metal plate where a hole in the boiler jacket has appeared. SMRT was informed that the hole appeared due to hot gasses leaking through a gasket between two cast iron sections (see photo below). It is unknown if the gasket has been addressed. Boilers #2 and #3 have a useful life expectancy of approximately 10-12 years with proper maintenance. Boiler #1 may have a shorter useful life expectancy depending on the status of the gasket failure.

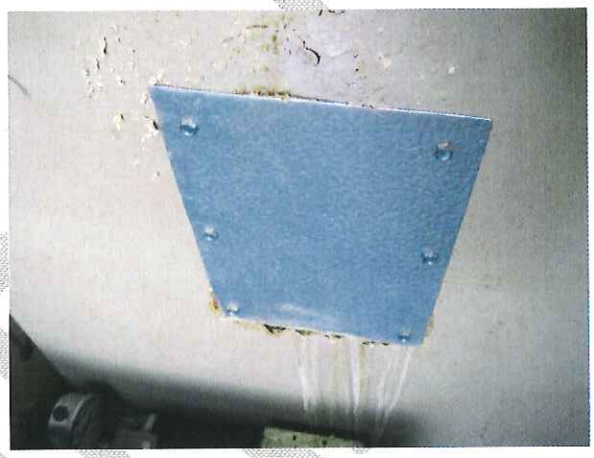

Photo #1

Boiler #1 is equipped with a Carlin burner while boilers #2 and #3 are equipped with Wayne Blue Angel burners. The Carlin burner may have been replaced in association with boiler #1's jacket failure. The burners appear to be in working condition and have a useful life expectancy of 5-8 years. Two boilers are supplemented by a burner booster which aids the combustion process to allow increased burner efficiency. The burner booster has been added after the original installation, is approximately 5-10 years old and appears to be in good working condition.

The boilers are vented by an induced draft fan through a common galvanized ductwork. The backdraft dampers on two of the boilers appeared to be frozen open while the 3rd boiler's backdraft damper was completely disconnected (see photo). The vent backdraft dampers should be replaced and adjusted to ensure proper venting. Combustion air is introduced at the ceiling and floor levels (per code) by louvers, sheetmetal ductwork and damper actuators.

Photo #2

The boilers fire #2 fuel oil pumped from a duplex pump set located next to the boilers. Oil is stored in a 2,000 gallon above ground storage tank located outside adjacent to the mechanical room. The fuel oil tank was installed in the last 5 years and is in good working condition. The fuel oil pumps, filters, and specialties appear to have been installed at the same time as the boiler replacement. Since the original installation, one of the pump motors has been replaced in the last 2-3 years. The pumps appear to be in working condition. The original pump has a useful life expectancy of 3-5 years while the newer pump has a useful life expectancy of 10-12 years.

Hot water is circulated through the building by constant speed, inline centrifugal pumps installed in a primary-secondary pumping configuration. Two primary pumps (redundant pumps) are located in the mechanical room and appear to have been installed when the boilers were replaced. P-2's (top pump) cast iron body is original; however the motor has been replaced in the past 3-5 years. The pumps are approximately 15 years old and have a useful life expectancy of approximately 5-8 years.

Pumps and Specialties:

Six (6) secondary zone pumps are located in the attic mechanical space. Four (4) pumps serve the north, east, south and west wings of the facility; one pump serves the heat recovery unit (HRV) and one pump is strictly stand-by. The pumps and motors have all been replaced between 2003 and 2013. The pumps are in good working condition and have useful life expectancies between 8-15 years with proper maintenance. SMRT observed that P-1 and five (5) zone pumps were running despite the outdoor temperature being approximately 80°F. The boilers were not firing and the water temperature was approximately 60°F. The pumps are turned on and off manually by a local disconnect switch (see photo with disconnect switch in the "on" position). SMRT informed Mr. King that the pumps were not providing any hot water to the system and that by running them all the time, the useful life expectancy of the pumps is significantly decreased and the facilities electric bills would be unnecessarily high. The dining hall, which was added after the 1908 construction is also furnished with a zone pump, although it was unable to be observed at the time of SMRT's visit.

Photo #3

Hot water is circulated through a 2"main copper pipe. SMRT observed that the majority of the visible piping had insulation. The valves from the original 1980 construction were all tagged however the valves associated with the boiler replacement had not been tagged. The expansion tank for the system is located in the ceiling of the mechanical room is original to the building. The cold water make-up, backflow preventer, and air separator appear to have been replaced during the boiler construction. The expansion tank may have been left due to the lack of floor space. The hot water system has a 5 gallon chemical shot feeder for water treatment, though SMRT was informed that chemical treatment is not regularly administered. Overall, the piping, valves and pumping specialties appeared to be in good condition.

Terminal Heating:

The facility is primarily heated by baseboard radiation installed along the perimeter of the building. Each room is furnished with wall mounted local controls that are original to the 1980 construction. The local thermostat is intended to adjust a control valve installed in the baseboard enclosure based on the user's desired setpoint. Mr. King noted that due to the age of the valves, many have frozen and no longer work, leaving some areas cold during the winter. The baseboard radiation has no "moving" parts and thus has a very long life expectancy; however the control valves have outlived their useful life expectancy. SMRT noted that many of the rooms had furniture and items butted up along the wall restricting the ability of the baseboard to properly transfer heat to air through natural convection.

The vestibules, mechanical spaces, and back of house areas are heated by unit heaters and cabinet unit heaters. One cabinet unit heater located in the North wing has been replaced in the last 10-15 years. The remaining terminal heating units are original to the building. The units are operational, although their useful life expectancy (approximately 20 years) has expired. The terminal equipment is operational, but may need replacement in the coming years.

While on site, SMRT was informed that the facility has trouble maintaining temperature setpoint in the winter months signifying that the boiler plant is undersized. Facilities staff de-energizes the HRV during colder days in order to save boiler plant capacity for space heating. The facility is approximately 20,000 square feet and has a boiler output capacity of 693,000 BTUh's. This calculates to 34.6 BTUh/ft^2 which is well within the average heat capacity for commercial buildings (20-45 BTUh/ft^2). The inability to maintain temperature setpoint is most likely due to temperature controls malfunctions such as control valves on the terminal units. Formal calculations and further investigation is required to confirm the adequacy of the boiler plant capacity to maintain 75°F per Department of Public Health guidelines.

Air Conditioning Systems:

Our Island Home has limited air conditioning in the facility. The areas that are cooled are tempered by multiple split DX air conditioning units with remote air cooled condensing units located outdoors. The units are all controlled by local programmable thermostats furnished by the AC manufacturer. The resident rooms are not provided air conditioning by a central system, but are provided with residential type, window mounted units upon request.

The majority of air conditioning units utilize R-22 refrigerant that has since been phased out due to its negative affect on the environment. R-22 is still recycled and may be available in the future, however the industry has moved on to more environmentally friendly refrigerants (R-410A).

While on site, SMRT noted that many of the air cooled condensing units (ACCU's), including the IT Room, Medical Records Office, and Dry Storage, were installed very close the perimeter wall which may restrict airflow and heat transfer. The majority of the suction line refrigerant piping insulation was deteriorating due to UV exposure. This will lead to longer equipment runtimes putting additional stress on the compressors and condensing fans. Lastly, due to the salinity of the air at OIH, future ACCU's should be provided with condensing coil treatments to lengthen the lifetime of the equipment which is an option offered by most manufacturers. SMRT could not confirm that these were provided with the existing equipment.

Administration and Hallways:

The central administration area and offices are heated and cooled by a three (3) ton Carrier, split DX air conditioning unit with an electric coil (capacity unknown). The air handling unit is located in the ceiling of the mechanical attic with the air cooled condensing unit installed on the attic roof. The indoor unit appears to be in working condition and is original to the 1980 construction. The ACCU has been replaced in the last 5-10. Ventilation air is introduced through a small intake duct connected to the return mains and controlled via motorized dampers. The intake hood is adjacent to a plumbing vent (system unknown – see photo). The indoor air unit is over 35 years old and despite remaining operational, has outlived its useful life expectancy. The Bryant air cooled condensing unit is in working condition and has a useful life expectancy of 5-7 years.

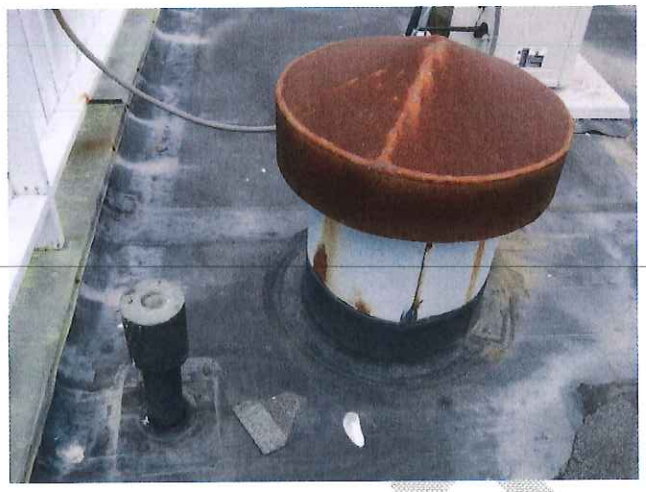

Photo #4

The North, South, East and West wings of Our Island Home have had three (3) ton, split DX units installed at the end of each hallway wing adjacent to the vestibules. The units are suspended from the structure, below the drop ceiling. The associated ACCU's are installed outside at grade. The air conditioning systems serving the wings appear to be good working condition 12-15 years old. The equipment is nearing the end of their useful life expectancy, approximately 2-3 years.

Central Dining and Kitchen Areas:

The dining hall addition was completed sometime after 2000 and included the installation of a Carrier, split DX air conditioning system. The air handling unit is located in the ceiling space above the hall and was not accessible at the time of SMRT's visit. The 7-½ ton ACCU is located outside at grade. The system appeared to be in good working condition and has a useful life expectancy of 5-8 years.

The dry foods storage closet is cooled by a 9,000 BTU, Friedrich split DX unit. The indoor unit is wall mounted with the ACCU located outside at grade. This air conditioning unit is one of the few systems that utilize R-410A. The split system appears to have been installed in the last 2-3 years, is in good working condition and has a useful life expectancy of 10-12 years.

Miscellaneous Areas:

The Physical Therapy & Activity Rooms are each served by a 5 ton, Carrier split DX system. The units are suspended from the structure, below the drop ceiling. The associated ACCU's are installed outside at grade. These two units appear to have been installed at the same time as the hallway wing units. The air conditioning systems serving these spaces are in good working condition and approximately 12-15 years old. The equipment is nearing the end of their useful life expectancy, approximately 2-3 years.

Two, 9,000 BTU, split DX air conditioning units serve the Medical Records office and IT rooms. Mr. King informed SMRT that neither unit was operational and replacement has been scheduled. The units appear to be 15-20 years old and have outlived their useful life expectancy. The air cooled condensing unit serving the IT room has ice forming on one of the refrigerant lines. Ice formation is normally caused

by a lack of heat transfer (perhaps due to the proximity of the exterior wall) or a loss of refrigerant charge due to a leak in the system.

Photo #5

Ventilation Systems:

Heat Recovery Unit:

The majority of Our Island Home is ventilated by a nominal 10,000 CFM heat recovery ventilator (HRV) located in the mechanical attic. Outdoor air in introduced through an intake hood above the attic and distributed to the corridors, offices, and resident rooms through insulated sheetmetal ductwork. The air is exhausted from the spaces, routed through the heat exchanger and exits a louver on the outside of the building. The HRV has a heating coil with a 2 way valve and but has no cooling coil. The unit was running, though SMRT observed that the dampers were frozen half closed (see photo). The unit is controlled locally to maintain a discharge air temperature setpoint. The unit is over 30 years old and has outlived its useful life expectancy. SMRT noted that the majority of the windows in the facility were operable, to help naturally ventilate the facility if required.

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Photo #6

Kitchen:

The kitchen hood is served by a roof mounted hood exhaust fan with and untempered make-up air unit located in the attic mechanical room. The fan is controlled locally by an on/off toggle switch, which interlocks the make-up air unit and exhaust fan. The kitchen exhaust fan was inaccessible but appeared to be over 20 years old, perhaps the original fan (see photo). The make-up air unit is original to the building. Both have outlived their useful life expectancy, and though operational, should not be considered reliable.

Photo #7

The dishwasher and cart wash areas have dedicated inline exhaust fans located in south wing of the attic. It is unclear how the fans are controlled. Both fans are original to the building and although appeared fully functional, they have exceeded their useful life expectancy and should not be considered reliable.

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Miscellaneous Spaces:

The mechanical attic is cooled during the summer months by a utility fan controlled by a reverse acting thermostat. Make-up air is introduced through an intake louver on the roof of the attic. The intake damper actuator appeared to be original and its operability is unknown. The exhaust fan and controls were operational, but have outlived their useful life.

The laundry room is ventilated by a sidewall mushroom fan with make-up air entering from an intake louver on the same wall. The exhaust fan is not original to the building and appears to have been installed in the last 5-10 years. The fan is in good working condition and has a useful life expectancy of 8-10 years.

Temperature Controls:

The building does not have a building management system (BMS) and the majority of the HVAC equipment is controlled locally via on/off switches, thermostats, and programmable thermostats. Much of the equipment runs all day, year round, including the hot water pumps, HRV, and mechanical room induced draft fan. Based on discussions with Mr. King and on site observations, many of the control valves and actuators have failed, rendering the respective equipment ineffective.

The boilers and primary pumps are controlled via a 3rd party Tekmar controller, which sequences the boilers and pumps on a schedule and uses an outdoor temperature sensor to energize the heating system. The controller appears to have been installed during the boiler replacement in 2000. The Tekmar controller has the ability to reset the hot water temperature based on the outdoor air temperature, but it is unclear if this feature is used. As noted above, one primary pump was operating even though this controller should have had the unit de-energized. This feature should be looked into and corrected. Other than the pump, the controller appears to be operational and has a useful life expectancy of 5-10 years.

All of the air conditioning units are controlled by their manufacturer's provided thermostats. In general, the controls associated with the air conditioning units should be replaced, if and when the air conditioning units are replaced. Please refer to the Air Conditioning Systems for specific equipment information and condition

3.2 Recommendations

Immediate Concerns:

- Boiler 1: A bad gasket caused hot gasses to burn hole through the jacket of B-1. It should be confirmed if the gasket was ever addressed or if the plate installed over the hole is a temporary fix. Hot gas from the boiler is a safety hazard and if left unattended, could destroy the equipment or severely injure someone.

- HRV-1: HRV is operating, but SMRT noted that the damper actuators have frozen closed. SMRT did not observe much airflow, if any, through much of the supply and exhaust ductwork in the attic spaces. The operability of the hot water control valve is unknown. Introducing fresh outdoor air and exhausting polluted air through is crucial to maintaining healthy living conditions and ensuring the wellbeing of the residents and staff. Due to the size of the HRV, OIH may consider having the unit refurbished with new controls, motors, dampers, actuators, rebalanced while having the hot water coil and heat exchanger professionally cleaned in lieu of replacing the unit with one or multiple units. Demolition of the unit will require significant wall/roof modifications to rig the unit out of the building or require the unit to be disassembled and brought out piece by piece. If the unit is replaced, SMRT recommends four (4) units (1 per wing), with a total energy wheel and DX cooling for proper dehumidification. OIH should consider the short and long term facility plans when deciding to replace or refurbish, as they will have significant cost differences.

- Baseboard Controls: Local controls have been reported to have frozen, resulting in a lack of heat and occupant control. SMRT recommends two solutions, depending on the short and long term facility plans. In the short term, the baseboard controls should be replaced with similar thermostatic control valves and wall mounted controls. In the long term, the baseboard controls should be provided with 2-way modulating control valves and room temperature sensors (see temperature controls below) for additional comfort control. This would most benefit the facility if the secondary zone pumps were replaced with variable speed pumps for better control and energy savings. Both solutions will need to be phased and implemented in a manner as to not be invasive to the occupants living quarters.

- Kitchen Exhaust Fan & Make-up Air: The facility cooks all of its meals on site for the residents. Relying on 35 year old equipment in order to operate the primary kitchen equipment is a risk to the facility. Due to the importance of the kitchen hood and the age of the equipment serving it, SMRT recommends scheduled replacement rather than risk failure. The make-up air unit provided with heat (source dependent on boiler plant capacity).

- Dishwasher and Cart Wash Exhaust Fans: These units appear original to the building and have outlived their useful life expectancy. They should not be considered reliable, even though they are operable. Scheduled replacement should be considered rather than waiting for them to fail unexpectedly.

- AC for Administration: The unit has outlived its useful life expectancy and may be undersized for the current program. It is unclear if the unit is introducing proper ventilation to the spaces, or if it has the capacity to handle ventilation air. SMRT recommends replacing the unit with a heat pump furnished with an electric coil, filter and mixing box. The condensing unit coil should be treated for salt environments and sized based on formal calculations.

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- AC for Data Center: SMRT recommends replacing the unit in kind with the space loads confirmed by formal calculations. Installation should allow for manufacturer recommended clearances and with proper condensing coil treatment for salt environments.

- Boiler Flue/ Induced Draft Fan Modifications: The backdraft dampers that are frozen or removed from the flues should be repaired or replaced to ensure proper flue operation. OIH should consider decoupling the single induced draft fan serving the domestic hot water heaters and boilers. Each system should have an independent fan, running whenever a burner is energized.

Short Term Concerns:

- AC Units: The existing Carrier air conditioning units serving the hallway wings, Physical Therapy and Activity Rooms will likely need replacement in the near future. Depending on the availability and cost of replacement parts and R-22 refrigerant, replacement in kind may be most cost effective. The units can be replaced on an as-needed basis (i.e. when units fail). However, SMRT recommends replacing the units as one project.

- Attic Exhaust Fan: The exhaust fan provides ventilation for the mechanical attic during the summer months via a reverse acting thermostat. The unit is original to the building and because it does not serve a crucial portion of the building, should be scheduled for replacement in the near future.

- Temperature Controls: Depending on the short and long term facility plans, OIH should consider installing a BMS system. New direct digital controls help reduce energy usage, monitor equipment, and provide better comfort for the occupants when compared to stand alone systems. OIH should consider adding a new BMS if the building is to be occupied long term. A BMS project would be most cost effective if implemented concurrently with another project, such as hot water control valves and sensors mentioned above. As the facility replace or add equipment in subsequent projects, controls and interface cards can be added to interface with the BMS until the whole building is monitored.

Long Term Concerns:

- Fuel Oil Pump: One fuel oil pump has already failed and it is likely that the second will fail within the next 5 years. OIH should be prepared to replace the existing pump or motor in kind.

- Unit and Cabinet Unit Heaters: Although the majority of these units have outlived their useful life expectancy, they appear to be in good working condition. OIH may consider scheduling replacement them in the future if funds are available.

- Boiler 2 & 3: B-2 and B-3, with proper preventative maintenance, should last another 4-6 years. OIH will likely need to replace them during this time period. At the time, formal heat loss

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calculations should be performed to validate the capacity of the plant. Depending on fuel costs, OIH may consider propane fired condensing boilers over fuel oil.

Legend	
Priority 3: Long Term Concerns (3-5 years)	🟢
Priority 2: Short Term Concerns (1-2 years)	🟡
Priority 1: Immediate Concerns	🔴
System	***Status***
Hot Water Boiler B-1	🔴
Heat Recovery Ventilator (HRV)	🔴
Baseboard Radiation Controls	🔴
Kitchen Hood Exhaust and Make-up Air	🔴
Air Conditioning Unit (Serving Administration)	🔴
Air Conditioning Unit (Serving Data Center)	🔴
Boiler Flue/ Induced Draft Fan Modifications	🔴
Air Conditioning Unit (Serving Hallway Wings)	🟡
Air Conditioning Unit (Serving PT & Activity Rooms)	🟡
Air Conditioning Unit (Serving IT & Medical Records)	🟡
Dishwasher and Cart Wash Exhaust Fans	🔴
Attic Ventilation Exhaust Fan	🟡
Temperature Controls	🟡
Fuel Oil Pump	🟢
Hot Water Unit and Cabinet Unit Heaters	🟢
Boiler B-2 and B-3	🟢

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