4 PLUMBING

4.1 Plumbing Overview

In general, very minor upgrades and replacement of the original plumbing fixtures or infrastructure have been done since the building was originally constructed. The domestic hot and cold water systems are original, the fixtures are original with minor repairs and few replacements, and the sanitary waste and vent is original. The majority of the systems are in satisfactory condition, except for the items noted below

4.2 Existing Conditions

Domestic Cold Water:

Our Island Home is provided with cold water from a 6" water main off the town system. The water enters the main mechanical room before it splits, with one (1) 6" branch serving the fire protection system and the other 3" branch serving the building cold water needs (see photo). The cold water piping is constructed of copper with soldered fittings, is original to the building and appears to be in good condition. Building water usage is metered by a Sensus water meter with a by-pass line for servicing. SMRT did not observe any back-flow prevention on the domestic water system to inhibit cross contamination.

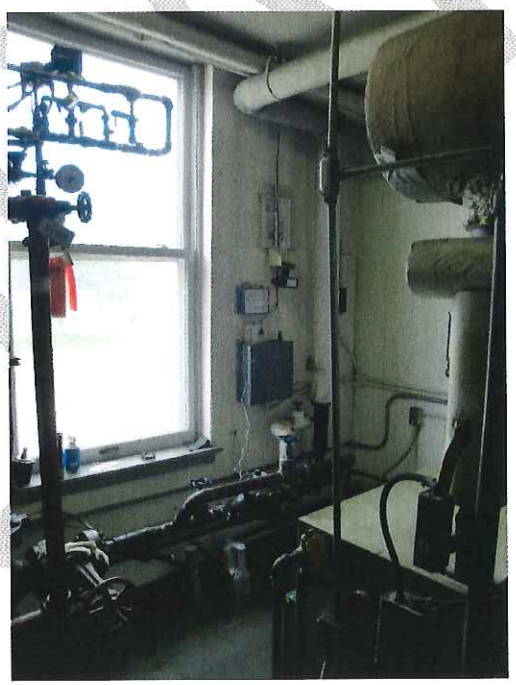

Photo #8

The main water service distributes cold water make-up to facility fixtures (sink, baths, showers, laundry, and kitchen areas), the heating hot water system, and domestic hot water heaters. There are hose bib connections on the exterior perimeter of the building. The hose bibs did not appear to have vacuum

breakers to prevent cross contamination or frost proof assemblies. Based on the length of the building, the quantity of hose bibs appears to be sufficient. The main mechanical room has portions of the cold water piping that have had the insulation removed and has resulted in significant sweating, causing pools of water to form on the boiler room floor. SMRT noted that efflorescent existed on the valves and sweated joints, and can lead to failure.

Domestic Hot Water:

Domestic hot water is produced by two (2), Bock, oil fired hot water heaters located in the main mechanical room. Each hot water heater has a storage capacity of 67 gallons and 258 gallon per hour (at 90°F temperature rise) recovery time. One of the unit's burners is supplemented by a "Burner Booster" similar to hot water boilers B-2 and B-3. The domestic water heaters are set to produce 180°F, a portion of which is sent to a mixing valve to produce 120°F Water. The 180°F water serves the adjacent laundry room while the 120°F serves the remaining portions of the building. The burners and burner booster appeared to be in good working condition. The water heaters were installed in 2007 and are nearing the end of their useful life (approximately 8-10 years depending on water quality and tank materials).

The mixing valve is a Leonard Type T valve and appears to be over 20 years old, perhaps original to the building. The valve is set to produce 120°F water. How water is circulated through the building by two bronze, Taco inline pumps (see photo below). The Taco pumps appear to be original to the building. The Leonard valve appears to be in good working condition with no issues to date. The two Taco inline pumps have outlived their useful life expectancy and although operational, should not be considered reliable.

Photo #9

Mr. King informed SMRT that two (2) tankless, direct fired (propane) water heaters were installed in 2006 (per the serial number) to supplement the main water heaters. The Noritz water heaters are wall mounted adjacent to large tubs in which they serve. Fuel is stored in surface tanks located outdoors. Combustion air and venting is achieved through two 3" galvanized pipes that route into a concentric

adapter outside. The units are approximately 10 years old and appear to be in good working condition. The heat exchanger should be assessed by a qualified service technician to address any corrosion and replace the units if necessary.

Propane:

Two separate groups of above ground propane storage tanks serve the direct fired water heaters, dryers (laundry room), and the kitchen equipment. The tanks vary in capacity and are filled/serviced by Yates Gas. The storage tanks appear to have been installed in 2004 and 2007. The storage tanks, regulators, and piping are in good working condition.

Sanitary, Waste, Vent and Miscellaneous:

The Sanitary lines are run under the foundation and could not be observed. Mr. King did not mention any issues with sanitary waste flow or back-up. SMRT was informed that the 6" sanitary line exits the building near the main water line in the mechanical room, before connecting to the town system. Sewage is gravity driven, there are no ejector pumps located in the facility.

The drains in the bathrooms, main mechanical room, and in other areas of the facility appeared to be in good working condition. Plumbing vents go up through the roof via 3" copper pipes. SMRT did note that the attic mechanical space did not have a drain, making draining the hot water system difficult. Lastly, one plumbing vent (unknown which system) exits the attic mechanical room within 2-3 feet of an outdoor air intake. Vents are required to terminate a minimum of 10'-0" from outdoor intakes.

The sinks and toilet fixtures throughout the facility and in the resident rooms appear to be original to the 1980 construction. The American Standard, wall mounted, toilet fixtures with sloan manual flush valves are located throughout the facility and are in working condition. The sinks appear to be in good working condition. One of the single resident rooms in the West wing of the facility had a sink removed from the bathroom because water wasn't getting to the fixture. Other than in this room, all of the fixtures appeared to be in good working condition. SMRT noted that many of the fixtures were not ADA compliant and if significant changes are done to the spaces, will need to be modified.

4.3 Recommendations

Immediate Concerns:

- Reduced Pressure Backflow Preventer: Depending on the short and long term plans of the facility, current Massachusetts plumbing code requires reduced pressure backflow preventers. SMRT recommends that OIH consider adding one to the domestic water main.

- Repair and replace existing Sink: The single patient room bathroom sink should be replaced in order to make the bathroom usable. A plumber should be retained to inspect the existing water connections, drain and vent.

Short Term Concerns:

- Domestic Hot Water Heaters: The existing domestic hot water heaters are nearing the end of their useful life expectancy. OIH should consider replacing the units with stainless steel liners for increased equipment life. Depending on the availability and reliability of propane, SMRT recommends replacing the units with high efficiency, condensing hot water heaters.

- Domestic Water Recirculation Pumps: OIH should consider replacing the existing recirculation pumps. The pumps are original to the building and have outlived their useful life expectancy. Formal calculations to determine the flow rate required should be performed to ensure hot water reaches the desired point in a timely manner.

- Mixing Valve: OIH did not report any issues with the existing mixing valve, however as the valve ages it will begin to lose its authority and water temperature setpoints will be harder to maintain. SMRT recommends replacing the valve in kind. The domestic water heaters. Recirculation pumps and mixing valve should be done concurrently as one project for cost savings and warranty purposes.

- SMRT recommends OIH replace the existing fixtures on an as needed basis with ADA compliant fixtures.

Legend	
Priority 3: Long Term Concerns (3-5 years)	
Priority 2: Short Term Concerns (1-2 years)	
Priority 1: Immediate Concerns	
System	***Status***
Provide Reduced Pressure Backflow Preventer	
Repair/replace Single Patient Bathroom Sink	
Replace Domestic Water Recirculation Pumps	
Replace Domestic Hot Water Heaters	
Replace Existing Leonard Mixing Valve	
ADA Compliant Fixtures	

5 FIRE PROTECTION

5.1 Fire Protection Overview

The existing fire protection system appears to have been modified since the original 1980 construction. Based on monthly service notices found in the main mechanical room, the existing dry system is checked and serviced periodically by Clarion Fire Protection, Inc. The system operates off of street pressure. Overall, the system appears to be in working condition.

5.2 Existing Conditions

Our Island Home is protected by a dry pipe system, serving the occupied spaces and is routed in the attic space. The fire protection system is connected to the main 6" water service before branching through a 6" check valve. After the check valve, it reduces to a 4" pipe that tees to the dry valve and a 4" pipe to the Siamese fire department connection. The 4" Firomatic dry valve is installed directly after the check valve and fire department connection. The dry pipe assembly is furnished with isolation valves, tamper switches, low air pressure alarms, main drain, air side and water side pressure gauges and water motor alarm (see photo). As noted above, the system appears to be on a regularly scheduled testing and maintenance program. Current NFPA 13 code requires a dual check valve assembly, where this system has a single check valve.

Photo #10

The fire department connection is located outside of the main mechanical room, as is the drain termination from the dry valve, and water meter alarm bell. The fire department connection point was missing the end caps at the time of SMRT's visit. The air compressor is on the floor adjacent to the valve assembly. The age of the compressor is unknown but looks to be approximately 15-20 years old. SMRT

did not note a Fire Department test connection on site, typically at the end of the system or as required by the authority having jurisdiction.

Our Island Home is protected by sprinklers that appear to be based on a light hazard occupancy type based on coverage. The rooms appear to be protected by standard response pendants. There are no hose connections on the interior of the building.

The kitchen hood is protected by a Badger, wet chemical fire suppression system. The age and condition of the fire suppression system is unknown.

OIH should verify the system has been hydraulically calculated with the most recent flow data to confirm flow is maintained at 0.1 gpm/ 1500 ft^2 consistent with NFPA light hazard requirement.

5.3 Recommendations

Short Term Concerns:

- Dual Check Valve Assembly: Depending on OIH's short and long term plans, SMRT recommends updating the existing fire protection assembly to include a dual check valve per code.

Legend	
Priority 3: Long Term Concerns (3-5 years)	
Priority 2: Short Term Concerns (1-2 years)	
Priority 1: Immediate Concerns	
System	***Status***
Dual Check Valve Assembly	

6 ELECTRICAL

6.1 Electrical Overview

The overall condition of the Our Island Home Facility's electrical systems is fair. Most of the normal and emergency power systems and equipment date from the original 1980 construction and have received little maintenance. Fire alarm and nurse call were replaced in 2011.

6.2 Normal Power

The Center is presently served by an 800 amp, 208Y/120 volt Westinghouse switchboard located in the corridor adjacent the exit door in the South Wing, behind an accordian style sliding curtain. This switchgear was installed in 1980 with the original building construction. An 800 amp main fused switch serves a single distribution section with 14 branch feeder breakers. One breaker is labeled "SP" and assumed to be spare. There are some spaces for additional breakers.

Photo 11: 800A Main Switchboard in egress corridor adjacent exit door.

Most of the feeder breakers are dedicated to branch panels located in small closets throughout the facility. Two breakers serve automatic transfer switches discussed under Emergency Power below. One breaker is labeled "Dryer". The switchboard did not appear to be maintained on a regular basis. The enclosure has surface rust and layers of dirt and dust on exposed horizontal surfaces. There was no arc flash labeling in place. Breakers were labeled with black marker. The switchboard's overall condition is poor. Based on a square foot analysis, the service is estimated to be loaded to less than 50%. Considering the age and condition, proper operation of the breakers under fault conditions is questionable. The service entrance switchboard should be replaced.

The service switchboard is grounded to the main water service in the boiler room. The grounding connection components are rusted and in poor condition. The ground bond to the main water service should be replaced.

Photo 12 & 13: Badly rusted ground bond water main; Missing jumper across water meter.

There was no surge suppression protective device in place on the switchboard or elsewhere in the facility. It is recommended that surge suppression be provided at the main panel. A short circuit, coordination, and arc flash study should be performed on the system including arc flash labels affixed to all equipment.

The existing branch panels throughout the facility were also manufacured by Westinghouse and are from the original 1980 construction. Some panels are located in dedicated electrical closets in the three patient wings. The door swing in these closets violates the code required working clearance requirements for this equipment. There are two panels in the staff core area, one in the kitchen, two in the corridor across from the service entrance switchboard at the South Wing exit door and one in the penthouse area. The panels are in fair to poor condition with surface rust and layers of dirt and dust. Considering the age and condition, proper operation of the breakers under fault conditions is questionable. These panels should be replaced.

Photo 14 & 15: Panel CPS & LPS; Interior surface rust, gaps in cover, heavy dust/dirt accumulation.

Photo 16 & 17: Panels CPW and LPE; Located behind door swing, working clearance code.

There is a mix of old and new receptacles across the facility. Many receptacles had green dots on their faces indicating they are hospital grade. Many were were noticeably worn and in need of replacement. Ground fault circuit interrupting (GFCI) receptacles were observed in some locations but GFCI protection could not be confirmed for all locations where required by code. No GFCI receptacles were observed in the kitchen. Patient rooms were reported to have both normal and emergency power at each bed. As evidence of this, some receptacles were labeled in red marker with an "E" indicating emergency power. Those same receptacles include dedicated green grounding jacks, which are not required by today's codes. Some of the grounding jacks were damaged. Some receptacles in the corridors had red cover plates indicative of emergency power. The facility should have a single standard for receptacles (such as red devices and cover plates) to indicate which are on emergency power and which are on normal power.

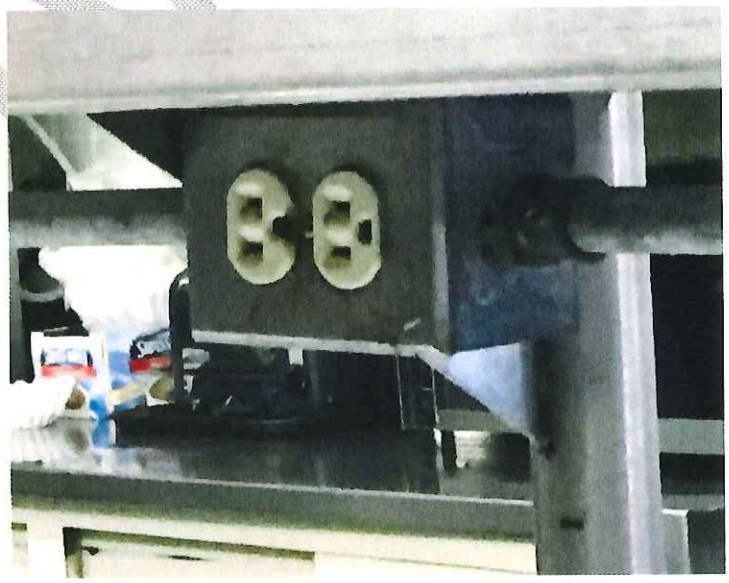

Photo 18 & 19: Typical Worn corridor receptacle; Damaged, non GFCI kitchen receptacle.

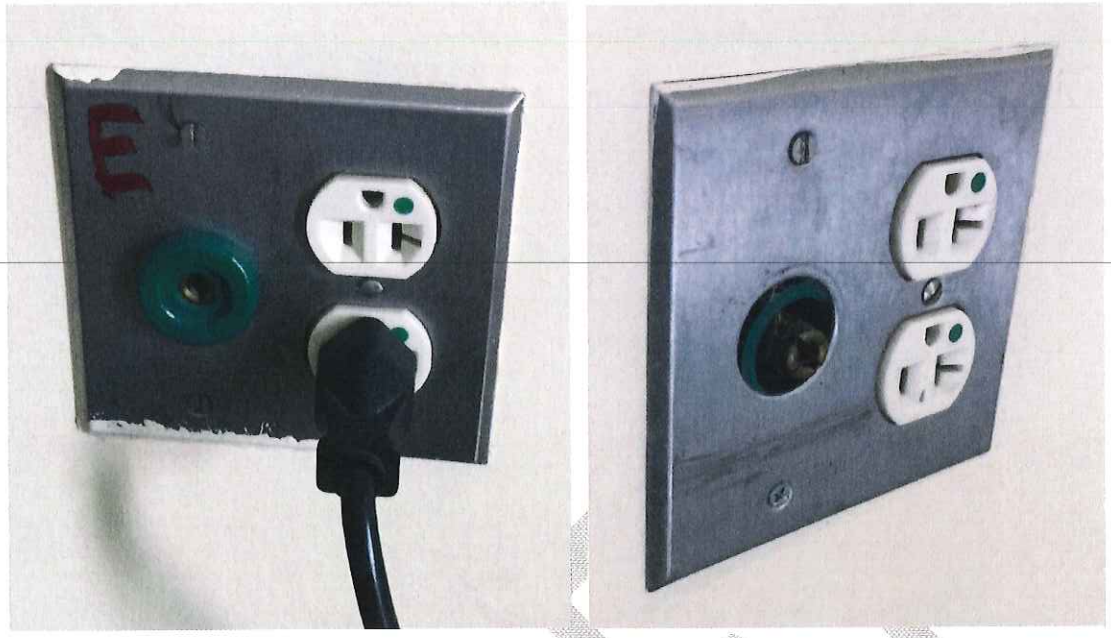

Photo 20 & 21: Resident room receptacles; Red "E" for Emergency, Damaged ground jack.

6.3 Emergency Power

The emergency system consists of a 45 kW Superior brand diesel generator located in a dedicated room in part of a detached wooded storage shed between the South Wing and the dining room. The generator has a 175 amp main breaker that serves two automatic transfer switches in the facility. The generator has a 330 gallon fuel tank located in the same room with the generator. The seperation between the generator room and the adjacent storage space did not appear to be 2 hour fire rated. The generator room is being used for storage. The stored items should be moved out of the generator room as they prevented quick and ready access to the generator equipment.

Photo 22: 45kW Superior generator, 330 gallon diesel tank, stored items preventing access.

The two automatic transfer switches in the facility include one 30 amp switch and one 104 amp switch. Both switches were manufactured by Kohler. The 30 amp automatic transfer switch is located in the corridor next to the service entrance switchboard at the South Wing exit door. This automatic transfer switch serves panel EPW in the staff core area which appears to be dedicated to Life Safety loads as defined by the Massachusetts Electrical Code. Neither the transfer switch nor panel EPW are in dedicated 2 hour spaces as required by code.

Photo 23: 30 Amp Automatic Transfer Switch adjacent Service Entrance Switchboard.

The 104 amp automatic transfer switch is located in the boiler room. This automatic transfer switch serves panel CPS which sub-feeds panels CPW, CPE, IPS and Laundry. All these panels appear to be dedicated to Critical and optional stand-by loads. Serving these two types of loads from the same panelboard is not allowed per the Massachusetts Electrical Code. Neither the transfer switch nor the load panels are located in dedicated 2 hour spaces as required by code.

Photo 24: 104 Amp Automatic Transfer Switch in Boiler Room.

Beneath the 30 amp automatic transfer switch is a junction box which contains the 175 amp feeder from the generator. The feeder is tapped in this junction box to serve the two transfer switches. The tap conductor sizes and lengths do not appear to comply with code requirements for these types of tap connections. In addition, these feeders from the generator and the feeders between the automatic transfer switches to their load panels are not 2 hour rated as required by the Massachusetts Electrical Code.

A control connection was observed between the two transfer switches, comprised of an orange extension cord routed through the ceiling space, with the caps cut off to make connections at the transfer switches' terminal blocks. This installation is not a code recognized wiring method and should be replaced.

Photo 25 & 26: Junction Box with Emergency Feeder Taps; "Extension cord" control wiring.

6.4 Lighting

Lighting is a mix of linear fluorescent recessed and surface mounted fixtures, as well as recessed down lights, wall mounted fixtures, chandeliers, and other fixtures. Most fixtures appear to be from the original 1980 construction. It was reported that a comprehensive lighting retrofit was completed on all the fixtures approximately 10 year earlier. The fluorescent lamps that could be observed were T8. Many of the down lights had incandescent lamps. Many fixtures were missing lenses or otherwise damaged. Manual switches are used throughout.

It is recommended that occupancy/vacancy sensing switches be installed in offices, staff toilets and other non-patient care related spaces for energy savings. It is recommended that a comprehensive lighting audit be completed to recommend upgrades to replace failed or failing fixtures, improve energy efficiency and to take advantage of any utility rebate or incentive programs available.

Photo 27 & 28: Surface mounted fixtures with missing lens in Kitchen and Corridor.

Emergency egress lighting includes every second or third fixture in the corridors as well as the exit signs powered from the generator via panel EPW in the Staff Core area. Exit signs are appropriately placed. There is a battery powered lighting fixture at the generator, but none at the automatic transfer switches.

6.5 Fire Alarm

The fire alarm system is a Fire-Lite Alarms system by Honeywell which was installed in 2011. This is an addressable system. There are smoke and heat detectors throughout the building. There are horn/strobes and pull stations at each exit door, and strobes in the public toilet rooms.

Photo 29 & 30: Fire Alarm Control Panel in Entry Vestibule and Annunciator at the Nurse Station.

Carbon Monoxide detectors were observed in corridors, but these are believed to be single station (stand-alone) units with integral alarm horns, not connected to the fire alarm system. The carbon monoxide detectors should be replaced with unit that are connected to and report to the fire alarm system.

Photo 31 & 32: Single Station Carbon Monoxide Detectors.

6.6 Nurse Call and Other Systems

The nurse call system is a tone/voice system, manufactured by West Call and believed to have been installed in 2011 with the fire alarm system. It consists of bed stations, toilet and shower pull stations, corridor dome lights, staff stations, duty stations and a master station at the nurses' desk. The system appeared to be functioning well at the time of the site visit.

Photo 33 & 34: "West Call" nurse call master station and sample bed station.

6.7 Exterior

There is a fire alarm master box on the West Wing that is connected to the Nantucket Fire Department. The disconnect switches serving ground mounted condensing unit were rusted on the exterior. Multiple flood lights and other fixtures are mounted on the exterior of the building on all sides. These fixtures are in very poor condition with many in immediate need of replacement. The flag pole has ground mounted lights that were partially covered with dirt and grass.

Photo 35 & 36: Samples of failed exterior light fixtures

7 SITE

7.1 Existing Conditions

The current Our Island Home facility (9 East Creek Road, Nantucket, MA) is located within the Special Our Island Home Zoning District. The permitted uses for the OIH district are: apartments for occupants age 55 or older or disabled; medical facilities for long-term care (nursing home); and services and facilities for the benefit of the elderly, long-term care residents, disabled persons, and/or others for whom social welfare programs may be provided.

The property also falls within the Wellhead Protection District and Harbor Watershed Protection District (Zone A). Also, the south corner of the property (lawn/parking area) is located within the 1% Annual Chance Flood Hazard overlay area. The north and south corners of the site (lawn/parking area) are located within the Category 4 Hurricane Inundation overlay area.

The existing site provides approximately 58 parking spaces for visitor and staff use. However, only approximately 22 of these spaces are accessible to the main entrance. The parking on the property is adequate for the staff and visitors; however, frequently vehicles for the Landmark House park on the OIH property which causes some parking capacity issues.

The facility currently has two handicap accessible vans, one pickup truck, and one ambulance van that are permanently on site. The facility would greatly benefit from a more efficient/covered area at the entrance due to the large number of medical transports that occur.

The support and maintenance areas include a loading dock, dumpster and recycling area, and oxygen storage. The parking spaces located next to the loading dock area provides a possible pedestrian hazard during deliveries.

Along the northwest and west side of the facility, a secure/enclosed garden and courtyard area is provided for the patients.

APPENDIX A