

# PORT WASHINGTON HIGH SCHOOL: BUILDING SYSTEMS SUMMARY

The following is summary of Plumbing, HVAC and Electrical needs. This is not intended to be a comprehensive list, but a summary of existing building system needs and possible recommendations as identified by the engineering team. Full engineers' reports are located later in this document.

Port Washington High School	Analysis	Recommendations
<b>Building Systems</b>		
<b>Plumbing</b>		
<b>Domestic Water</b>		
Water Service	Water Service includes 8" Ductile Iron water service supplied by the local municipal water utility, 3" water meter with 4" bypass piping and valves.	
Water Distribution Piping	Piping system is copper and CPVC with galvanized piping. Domestic hot water and cold water hard & soft piping system is in fair condition. The system relies on a pressure booster pump. Backflow preventers are in fair condition.	Backflow preventer shall be maintained, repaired, and tested. Galvanized piping shall be replaced. Repair leaks, extend hot water return and supply piping to fixtures.
Fire Sprinkler System	There is an automatic fire sprinkler system in the building with its water service combined with the domestic water system.	Existing service can support a whole building automatic fire sprinkler system.
<b>Sanitary and Storm Piping</b>		
Sanitary Waste	Sewer includes the following: Sewer lateral discharges to the local municipal sewage utility with no a backwater valve.	
Sanitary Waste and Vent Piping	Piping system is Cast Iron, Galvanized, and PVC. Sanitary piping is in poor condition. No solid waste interceptors. Catch Basins are present near overhead doors, in fair condition.	Repair leaks, inspect, replace problem areas, and provide maintenance. Cast iron and galvanized piping shall be replaced.
Kitchen Equipment	Natural gas system supplying HVAC, plumbing, and kitchen equipment pressure is 2 pound with single regulators. System material is black iron steel and copper.	
Shops	Compressed air system in shop area on mezzanine, it cycles often and loudly. System material is black iron steel and copper. Welding gas system consists of a two pipe system to each welding booths and is black iron steel and copper.	Provide new air compressor that is properly sized. Provide high capacity mounting vibration pads. Provide compressed air piping to welding booth equipment.
Storm System	Piping system material is Cast Iron, Galvanized, and PVC, in fair condition. Interior roof drain and conductor piping system discharges to underground storm drainage system.	Repair leaks, inspect, replace problem areas, and provide maintenance. Cast iron and galvanized piping shall be replaced.
<b>Plumbing Equipment</b>		
Water Heater	5qty. 100-gal. with 120 degree storage temperature, in good condition and installed in 2016.	
Circulating Pumps	2qty. 10 gpm, in good condition and installed in 2016.	
<b>Plumbing Fixtures</b>		
Plumbing Fixtures		Provide sensor operated valves and faucets, new fixtures and trim, wall mounted fixtures, and floor drains. Replace non-ADA compliant fixtures with ADA compliant ones.
Water Closets	Water Closets are wall mount with manual flush valves. The majority of the fixtures are in fair condition and ADA compliant.	
Lavatories	Lavatories are wall mount with manual faucets. The majority of the fixtures are in good condition and ADA compliant.	
Lavatory Wash Stations	Lavatory Wash Stations are floor in the shop areas. Faucets are manual and sensor operated. The majority of the fixtures are in fair condition and ADA compliant.	
Urinals	Urinals are floor and wall mount with manual flush valves. The majority of the fixtures are in fair condition and not ADA compliant.	
Electrical Water Coolers	Electrical Water Coolers are a mix of with and without bottle filling stations. The majority of the fixtures are in good condition and ADA compliant.	
Sinks - General	The majority of the fixtures are in fair condition and ADA compliant.	
Emergency Fixtures	No emergency fixtures found in the technical education area.	Provide emergency fixtures in the technical education area.

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<b>HVAC</b>		
<b>Heating System</b>		
Boiler Plant	Served by two identical boiler plants. Each consists of three Thermal Solutions high-efficiency condensing hot water boilers, installed in 2016 and in excellent condition. The ASHRAE service life expectancy is 20-25 years.	Continue preventative maintenance.
Piping and Pumping	The system for each plant is a primary-secondary variable flow system with a stand-by system pump, installed in 2016 and in excellent condition. The ASHRAE service life expectancy is 20-25 years.	Continue preventative maintenance.
<b>Ventilation and Air Conditioning Systems</b>		
Air Handling Units	Served by multiple indoor and roof-mounted units. Units contain hot water and chilled water coils and are either single-zone variable air volume (SZVAV) or VAV systems, installed between 2017 and 2018. Units are in excellent condition and should continue to serve for 30-35 years.	Continue with the current maintenance program.
	The lower level locker rooms are served by a roof-mounted unit that contains an energy recovery wheel and hot water & chilled water coils to provide outside air and exhaust air.	
	Cooled by two air-cooled chillers with variable speed screw compressors on the roof. Each chiller is served by a variable speed system pump with a stand-by pump, installed between 2017 and 2018 and in excellent condition. These system should continue to serve for another 25-30 years.	To address the current COVID-19 situation as well as future health concerns, we recommend installing bipolar ionization equipment within all existing air handling units.
<b>Control Systems</b>		
System	The building is served by a Tridium/Niagara open protocol head-end system with Johnson Controls F-Ex digital controllers. The digital control system is in good condition.	Continue to operate the digital control systems as originally specified and remain current with upgrades.
<b>Electrical</b>		
<b>Electric Service</b>		
Utility Service	One service is 3000 amp 480Y/277 volt 3-phase 4-wire, located in Electrical Room A127B. The other service is 1,200 amp 480Y/277 volt 3-phase 4-wire, located in Electrical Room G116B. Both installed in 2016/2017. The CT's and meters are located the transformer vault. Installation violates the UL listing of the switchboard and is not allowed by code.	The two main switchboards have been newly replaced and nothing needs to be done at this point.
<b>Panelboards</b>		
	The panelboards throughout the school are Square D type. A majority of the panelboards have space for more breakers.	The panelboards are in good working order and can remain. Additional panelboards can be added when required.
<b>Generator</b>		
	The generator is a 200 kW Kohler model 200REOZJF, located outside of Electrical Room A127B and installed in 2016. There are two Kohler automatic transfer switches. The 400 amp transfer switch feeds a life safety panel and the 150 amp transfer switch feeds a non-life safety panel.	The generator, transfer switches and emergency panelboards are in good working order and can remain.
<b>Light Fixtures &amp; Controls</b>		
Classrooms	The classrooms have 2x4 LED fixtures with occupancy sensors, installed new in the building in 2016/2017.	All areas with LED lighting are in good working order and can remain.
Corridors	The corridors have either 1x4 or 2x4 LED fixtures as well as LED exit lights, installed new in the building in 2016/2017 with long throw occupancy sensors.	
Auxiliary Gymnasium	The Auxiliary Gym has 6-lamp T8 high bay fixtures. There are high bay occupancy sensors.	
Shop Areas	The shop areas have T12 light fixtures, with no occupancy sensors, and were not replaced in 2016/2017.	Existing fixtures should be replaced with LED light fixtures and occupancy sensors.
Exterior Lighting	Exterior wall packs, parking lot lighting and walkway lighting are LED type installed in 2016/2017.	



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<b>Electrical</b>		
<b>Wiring Devices</b>	The receptacles and toggle switches are commercial grade 20A, installed in 2017 in all areas except for the tech ed rooms. In a typical classroom there are multiple receptacles.	Replace any broken switches and receptacles in the tech ed rooms. Add additional receptacles to tech ed areas as required.
<b>Fire Alarm System</b>	There is a Notifier addressable fire alarm system located in the lower level Data B021. There are pull stations by exterior doors, horn strobe and strobe appliances and smoke detectors in the corridors, heat detectors in mechanical rooms, horn strobe and strobe appliances in classrooms, and duct smoke detectors in air handling units operating at 2000 CFM or more.	
<b>Clock System</b>	There is a Primex wireless synchronized clock system. There are 120V Primex analog clocks in the classrooms, offices, and other public areas. The bell tone is controlled by the public address system.	Clock system is in good working order and can remain.
<b>Public Address System</b>	There is a Rauland public address system located in Data B021. There are ceiling mounted speakers in the corridors and classrooms. The bell system is toned through the speakers.	Additional intercom speakers can be added.
<b>Data System</b>	The floor mounted MDF data rack is located in the server room. The data cable is CAT6 which is routed to patch panels in the data rack. There are rack mounted UPS's.	Additional data can be added to the existing rack.
<b>CCTV System</b>	There is a new IP based CCTV system throughout the building.	CCTV system is in good working order, can remain and be added to if required.
<b>Access Control System</b>	There is a Brivo door access control system for this building. There are electric strikes or magnetic locks on exterior doors. There are FOB readers and door contacts at each door.	The access control system is in good working order. Electric strikes may be added to additional doors if needed.
<b>Theatrical Lighting</b>	The theatrical stage LED lighting and dimming system that was installed in 2016/2017.	The theatrical lighting system is in good working order and can remain.