

**TPSGC/PWGSC**

**Building Condition Report - Daniel J. MacDonald Site Charlottetown  
P200153A**

161 Grafton  
Daniel J. MacDonald Site Charlottetown P200153A  
P200153-101-20000522  
Charlottetown  
Construction Year: 1984  
Gross Area (SM): 16,435  
Date of Most Recent Assessment: 06/02/17

**Asset Information**

<b>Region:</b>	Atlantic/Région de l'Atlantique	<b>Year Constructed:</b>	1984
<b>Property:</b>	161 Grafton	<b>Year Renovated:</b>	
<b>Asset:</b>	Daniel J. MacDonald Site Charlottetown P200153A	<b>Asset Number:</b>	P200153-101-20000522
<b>Address:</b>	161 Grafton	<b>CAPS ID:</b>	P200153A
<b>City:</b>	Charlottetown	<b>Postal Code:</b>	C1A1L1
<b>CCI:</b>		<b>Date of Current Assessment:</b>	February 6, 2017
<b>Asset Type:</b>	Building	<b>Historical Designation:</b>	Potential
<b>Asset Use:</b>	Office Facilities	<b>Area:</b>	16,435
<b>Ownership:</b>		<b>Replacement Cost New:</b>	
<b>Managed by:</b>		<b>Financial Ownership Type:</b>	Crown Owned
<b>Custodian:</b>	PWGSC		

**Asset Description**

The Daniel J. MacDonald building is located in downtown Charlottetown, on Prince Edward Island. It was constructed in 1983/84, specifically to serve as the headquarters building for the Department of Veterans Affairs. It has served in this function uninterrupted since its opening.

**BCR Project Team Documents:**

root architecture - architectural condition review  
 EastPoint Engineering - structural, electrical and mechanical condition reviews  
 Scotia Elevator Consulting - vertical transportation systems review

**Building History:**

The building finished original construction in 1984. It has been consistently occupied since then, and was renovated, adapted and maintained throughout its lifespan, to suit user needs. Its only tenant is the Department of Veterans Affairs, with some presence by other GoC departments purely in supportive functions.

The building occupies a central location in Charlottetown, and is highly visible. It does not have a heritage designation, but due to its location in the downtown core, changes to its exterior envelope or landscaping components would have potentially significant impact on the streetscape.

**BCR Executive Summary:**

The Daniel J. MacDonald was initially constructed in 1984. The normal design life of a typical building is in the range of 25 to 30 years. This anticipates regular maintenance will occur over its design life. The purpose of this audit is to assess the building structure and envelope, electrical, mechanical and vertical transportation systems, and to identify areas where problems are occurring within the building. Recommendations in the report will be prioritized and tagged with their anticipated costs. The regulations and codes governing the building have changed since its initial construction. It is appropriate to undertake a review to place the critical life safety elements in the context of the appropriate codes, to establish how the building may be deficient, identify what measures may be taken as corrective action, and present the capital costs to implement corrective measures.

The asset is located at 161 Grafton St. in downtown Charlottetown. It is a concrete structure with exterior brick and metal panel facades, and a ballasted roof system. The frame of the superstructure is steel. The building has one storey underground, used for parking, and five storeys plus a penthouse above. Gross floor area is 16,435 square metres.

The building is heated by two oil-fired hot water boilers. Cooling systems consist of four outdoor chillers located on the roof. Generally, the architectural/structural/electrical systems are in good condition, but major mechanical upgrades are required at this point, to keep the building functional. The total repair/replacement cost for mechanical systems is estimated at \$2,628,723, with approx. half of that the replacement of aging air handling equipment. Electrical repairs are estimated to be \$102,718, most of which would be costs to replace distribution systems. The total estimated cost of correcting all other observed deficiencies is \$22,721 for the upcoming 5-year window. In addition to these costs, there are cyclical repair/replacement costs such as repainting and some carpet replacements, that will be incurred over the planning cycle.

During the site inspection, special attention was paid to interviews with facility management and staff, relating to previous renovation work, ongoing maintenance items, and frequently observed deficiencies. Given that some deficiencies may be cyclical (e.g. seasonal or weather-driven) in nature, this helps include issues which may not have been present during the site inspection itself. One item of special interest that was discussed is the atrium, which experiences leakage even during average rainfall events. Attempts to repair have largely failed, and a complete system redesign should be contemplated.

**Design Parameters & Deficiencies – current & future:**

Original design parameters were for an office building with underground car parking for employees; this still is the current use, and no change to occupancy type is anticipated. The facility is only partly accessible to the public, with the majority of the office areas being access controlled. Design parameters will follow the established type, with recommendations for current Code Compliance and improvements aimed at extending the life of the facility and improving user experience.

Issues mentioned in the latest BPR were long wait times for domestic hot water in a kitchen area (not specified which kitchen this is), and elevated noise levels in the office environments. We will propose appropriate long-term solutions in our report.

**Overview Architectural & Structural Condition:**

Date of inspection: February 2017

This building dates from 1984 and is about 33 years old. It is in overall good condition, with no major structural or building envelope issues noted, except the recurring leakage to the atrium glazing (see appropriate section for details). No water infiltration has been noted for the windows or wall systems.

The structure was developed over a 9x9m concrete column grid. One storey is underground parking, then the building rises two storeys above ground before beginning to stagger from both street faces towards its middle cross-axis. The highest occupied story is the fifth, topped by a penthouse for machinery. Superstructure frames were not visible during the inspection. The roofs are in overall good condition.

Most interior finishes such as carpet, ceiling tiles and wall paint, are in average or good condition, as are the washroom facilities.

Our scope of work may be categorized as follows:

- a) preventive maintenance items, aimed at extending the life of a system/component, or
- b) replacement of systems/components at the end of their anticipated life cycle, or
- c) measures to improve safety, user comfort, serviceability or functionality of the facility.

An overview of the advised scopes of work are as follows for the architectural/ structural disciplines :

- a) Preventive Maintenance Items include: Repair steel fence (\$4,200); Reseal gaps in brick control joints (\$3,000); Replace cracked concrete walkways (\$12,521); Subtotal \$19,721
- b) Life Cycle Replacement items include: Repave side parking lot (\$63,796); Replace park benches (\$32,573); Subtotal \$96,369
- c) Safety, Serviceability, or Functionality Items include: Add kick plates to doors in heavy traffic areas (\$3,000)

#### Overview Site Condition:

A landscaping project was undertaken in 2005, with a follow-up / renewal program scheduled for 2030. The site is in generally good condition, but corrosion prevention for the fencing should be given high priority. Other items include repairs to cracks that have occurred in the pedestrian concrete walkways, and repaving of the employee-only parking lot at the side of the building.

#### Overview of Vertical & Horizontal Transportation Condition:

The facility is serviced by four (4) passenger elevators; three (3) traction elevators are located in the five storey section of the facility and one (1) hydraulic elevator is located in three storey wing. In the 5 storey wing there are two tenant/guest elevators operating as a duplex (elevator 1 and 2) and one service elevator (elevator 3 - known as the freight elevator) operating as a simplex. The hydraulic elevator is known as elevator 4. All elevating devices were found to be in good condition at the time of survey. All elevators have undergone a system renewal over the past 10-15 years. The traction elevator systems (elevators 1,2 and 3) were upgraded circa 2006 and will reach the end of their estimated life cycle in 2031. The hydraulic elevator was upgraded circa 2010 and will reach the end of its life cycle in 2035.

#### Overview of Mechanical Systems Condition:

##### Heating

The buildings primary heating is provided by (2) Smith oil fired boilers located in the dedicated boiler room beside the penthouse. The boilers provide heat to perimeter hot water baseboard heaters and on 3rd floor south hot water radiant panels.

##### Cooling

Mechanical cooling of the building is provided by four (4) 75 ton capacity packaged air cooled screw chillers located on the roof. Each chiller has an isolation valve and circulating pump that energize when the associated chiller is running. Two pumps (P-6 and P-7) in parallel supply chilled water cooling to the building AHU coils.

##### Air Distribution

The ventilation systems for the building are comprised of five (5) air handling units (AHU) . AHU-1, AHU-2, AHU-4, & AHU-6/RTU-6 are mixed air variable air volume (VAV) systems with cooling and heating capabilities. These units primarily serve office spaces and have a chilled water cooling coil with a control valve, a supply fan and return fan with inlet vanes, a humidifier, and a heating coil. AHU-5 is a mixed air constant volume air handling unit with heating capabilities. Air is distributed to the 383 zones of control through VAV boxes controlled by the building DDC temperature control system. AHU-1 services the North Block first to fifth floors, AHU-2 services the second floor and part of third floor South, AHU-6 services third floor South and the Central Registry area, AHU-4 services the first floor Kent Street side and AHU-5 services the atrium.

##### Humidity

Humidification is provided to the penthouse AHU by a Weil and McLain steam boiler located in the boiler room

##### HVAC Controls

The building's existing BAS is manufactured by Delta Controls and provides control for all of the air handling units, the heating and cooling plants as well as space control. The majority of the controls date from the mid 1990's and are proprietary DDC devices. AHU-6, third floor south and the new chiller are controlled by a separate Delta Controls BACnet DDC system. It is reported that the two systems utilize separate software packages and do not currently communicate with each other.

There is an operator's work station for the building DDC system located in the basement maintenance office with a second station located in the penthouse mechanical room. Only the basement workstation is capable of communicating with the Delta BACnet DDC system.

#### Overview of Electrical Systems Condition:

The Daniel J. Macdonald building is fed from a 2000A, 600V, electrical service. Two bus ducts run vertically from the main electrical room to the penthouse. One bus duct provides power to the sub electrical rooms on each floor. The other provides power to mechanical equipment in the penthouse. The overall electrical distribution system and components are in fair to good condition.

Most electrical system components were installed during building construction, or within the first 10 years of building operation and therefore have reached, or are nearing, the end of their life expectancy. Electrical equipment in poor condition includes the motor control center (MCC) and several disconnect switches. It is recommended that these components be replaced at this time to avoid failure of systems.

Interior lighting systems are in poor to fair condition, with lens and fixture bodies at end of life. Lighting control systems although in good physical condition, advancements in energy efficiency and size of equipment make the existing system in fair condition. Exterior lighting is in fair condition with corrosion appearing on wall mounted fixtures.

Fire alarm and security systems are in good condition, being upgraded regularly to meet code and owners needs.

#### Compliance with TBS Temp, Humidity & Ventilation Targets:

#### Regulator Testing Confirmation:

Refer to Recommissioning Report from March 2012

#### Compliance with Accessibility Standards:

This building was audited over the course of PWGSC's National Accessibility Audit completed in 2009 under parliamentary directive. (It was not identified as an AIP project). Upon site inspection of 2011 no work had been had been undertaken with respect to this scope of

work. It is addressed as an event within this report to action as part of the Building Management Plan.

Building compliancy measured against the federal policy is 87.5 for the CSA B651-95 standard and also 87.5 for the CSA B651-04 standard (most recent version). The cost to correct all deficiencies is \$109,250. This includes a General Overhead and Profit of 25% and a design allowance of 20%.

Report is obtainable from PWGSC AFMS section. Federal barrier free accessibility obligations not being met. Incremental improvements are being conducted under the OM budget plan.

#### Overview of Seismic Screening:

According to PWGSC Seismic Assessments related to Crown Inventory ( RPS Policy: Seismic Resistance of PWGSC Buildings ), this function is not required because PEI does not fall in a seismic zone of 2 or greater.

#### Overview of Environmental Issues:

Refer to Asbestos Management Plan by SNC Lavalin, dated August 2014. No other environmental issues were observed during the site visit.

#### Overview of Project Grouping – requirement for swing space:

Any exterior work, such as corrosion prevention on the steel fence and repairs to the concrete walkways, should be grouped. Where system (not local) replacement of ceiling tiles is considered, we recommend reviewing any piping, cabling and control systems above the ceiling area, and consider grouping their replacement at that time.

Replacement of both water heaters should be done concurrently, since both require a plumbing contractor. We recommend the boiler replacement be grouped with the replacement of the fuel tanks and their piping, since all work would be done by a heating contractor. This approach would also minimize system downtimes.

The AHU replacement is the single highest cost item. As part of that project, we recommend also removing the abandoned AHU, replacing the HVAC / garage exhaust fans, and the DDC. All of these items would require a Ventilation and Controls contractor, therefore it would be more economical to group these together. In addition to this, the majority of building would need to be out of operation for the main AHU to be replaced as it reportedly serves 60% of the building. The units dimensions and weights would not permit a parallel system to be installed prior to demolition to permit a quick changeover project. If the building was going through a shutdown for AHU replacements, it would be ideal timing for VAV box and control replacements as the majority of the equipment is within tenant spaces. For the Garage exhaust fans replacements and code review, it would be ideal to lay out a new exhaust duct routing be completed in tandem with new AHU and VAV layouts.

#### Code Compliance Summary:

No Code Compliance issues are listed in the latest BPR (2013-2014).

##### Overview:

The Daniel J. MacDonald building was constructed in 1984 and is not required to comply with the current version of the NBC, unless the building undergoes renovation, expansion or a change of occupancy. A general Code Compliance review was conducted to identify current risks or deficiencies, and recommend improvements.

The building was constructed entirely for Group D occupancy – Office, and complies with this occupancy.

##### Fire Separation, Firestopping, and Emergency Access:

The building is constructed from reinforced concrete, and clad in a mix of brick and metal panels. Interior fire separations are concrete, and generally meet Code Requirements.

A detailed audit of firestopping measures was not part of our scope, but during the walkthrough, no specific deficiencies were observed. Emergency vehicle access is available from both Grafton and Kent St.

##### Egress:

The building is serviced by five staircases, three of which lead all the way up to the fifth floor. The aggregate width of the staircases is not sufficient under current Code to evacuate all people, assuming a full occupancy load. However, the building currently operates, and is expected to continue operating, well below that maximum, so this is not considered an acute safety hazard. Unless a major renovation or significant increase in staffing is expected, no changes to the stair & exiting configuration are recommended.

The stairs discharge either to the main atrium, or directly to the outside; construction materials meet Code requirements. The distance between exits and location in relation to occupied areas meets requirements. Doors swings for most doors along lines of egress are in compliance with the NBC. There are a few doors that swing into the path of travel; they are most likely original to the building, and their swing should be corrected when the doors are scheduled for replacement.

Egress from the underground car parking level is through two exit doors directly adjacent to the overhead doors for vehicular access. There is also access to one protected staircase leading up to the main floor level. Egress is sufficient for occupancy loads, and marked well.

##### Exit Signs and Emergency Lighting:

Exit signage was recently upgraded and is in good condition throughout. Missing or incorrect Exit signage was observed in a small number of areas, including the workshop / office area in the underground car parking level. It is recommended to add appropriate exit signage to that space. Also, the main lobby does not have exit signs at the doors.

One apparently improvised office space was observed on the main floor level, which had no windows, improper exit signage, and insufficient ventilation. A closer review of this space is recommended. Incorrect exit signage should be removed or covered to avoid confusion in case of an evacuation.

No Code Compliance issues were observed with regards to emergency lighting.

##### Fire Suppression and Alarms:

The building is equipped with a sprinkler system throughout, including the underground car parking area. The sprinkler system is reviewed in more detail in the Mechanical Systems section, but generally meets Code requirements.

The fire alarm systems are code compliant. No upgrades are recommended at this point.

##### Washroom Requirements:

Minimum requirements for fixture / stall counts are met.

##### Other:

The roof of the three-storey block facing Grafton St. has no fall arrest provisions. Given that there is no serviceable equipment close to the roof edge, this is not considered an acute problem. It is however recommended to allow for installation of new fall protection equipment when the next re-roofing project is undertaken.

Some electrical rooms do not have sufficient clearance for equipment. This is difficult to rectify, and should be dealt with on a by-case basis.

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## Systems

**A - Substructure - Foundation Wall and Footings 2.43M - Full Basement - New**

**Description**

Full basement wall and foundation with a 2.43M height to include strip footing, foundation walls and damp proofing. Also included are the underdrains.

**System Description**

Exterior walls and floors of the basement parking garage.

**System Condition & Anticipated Replacement**

Condition is generally good with some localized areas of minor cracking and rust staining. The rust stains typically indicate the deterioration of reinforcing within the concrete from the passage of moisture through cracks.

Visual different levels of the construction joints next to columns which indicate differential settlement. Visual cracks at the service elevator on the floor and walls . seems to be due to shear forces generated due to settlement of the elevator shaft.

Water infiltration from roof / floor above in the atrium, maintenance has install a rain gutter to stop water from falling onto cars.

Cracks in floors and walls are minor in nature but should be monitored. no replacement.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	75
<b>Year Installed</b>	1984	<b>Years Remaining</b>	42 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$865.65
<b>Quantity</b>	313	<b>Units</b>	LM
<b>Replacement Cost</b>	\$270,948		

**Comments**

Quantity equals the actual linear footage of the foundation wall.

**B1015 - Exterior Stairs and Fire Escapes - Exterior Stairs - Concrete - New**

**Description**

Exterior concrete stairs with railing.

**System Description**

Concrete stairs with steel railing, servicing the loading dock area.

**System Condition & Anticipated Replacement**

The concrete is in average to good condition; so are the handrails, with replacement anticipated only toward the end of the 20-year planning window. However, some minor rust stains and chipped paint were observed. Preventive maintenance is recommended to extend the service life of the system.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	50
<b>Year Installed</b>	1984	<b>Years Remaining</b>	17 (Observed)
<b>Adjustment Factor</b>	2	<b>Unit Cost</b>	\$5,489.88
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$5,490		

**Comments**

Stairs: (Stair Count x Unit Cost)/Bldg SF = \$SF

**Requirement: (Renewal)**

Exterior Stairs - Concrete - New Renewal

**Description**

Auto generated renewal for Exterior Stairs - Concrete - New. System Description: Exterior concrete stairs with railing.

**Brief Description**

**Requirement Justification and Strategy**

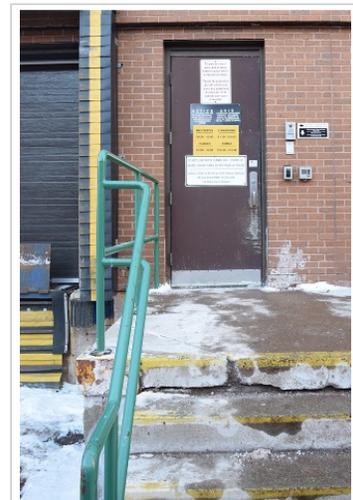
**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$6,862	<b>FY Action Date</b>	2034

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Exterior Stairs - Concrete - New

**B1015 - Exterior Stairs and Fire Escapes - Exterior Stairs - Concrete - New**

**Description**

Exterior concrete steps without railing.

**System Description**

Concrete steps framed in timber, servicing one of the emergency exits

**System Condition & Anticipated Replacement**

The steps were redone as part of the 2005 landscaping project. They are in good condition, with no replacement anticipated within the 20-year planning window.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	50
<b>Year Installed</b>	2005	<b>Years Remaining</b>	38 (Observed)
<b>Adjustment Factor</b>	0.6700	<b>Unit Cost</b>	\$1,839.11
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$1,839		

**Comments**

Stairs: (Stair Count x Unit Cost)/Bldg SF = \$SF

**B2010 - Exterior Walls - Pedestrian Covered Walkways (Sidewalk or Bridges) - New**

**Description**

Covered sidewalks

**System Description**

Pedestrian walkways exist at both Kent St. and Grafton St. sides of the building, along their entire lengths. There is also a recessed entrance towards the landscaped walkway connecting Kent and Grafton St.

The canopies are finished in stucco, framed with metal flashings, and appear to be ventilated. They also carry installations like lights, signage and security cameras.

**System Condition & Anticipated Replacement**

Covered walkways are original to the building and in average condition. Repainting of the stucco should be part of regular maintenance. No failure of flashings was observed. Replacement is not anticipated within the 20-year planning window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	N/A
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$6,908.56
<b>Quantity</b>	300	<b>Units</b>	SM
<b>Replacement Cost</b>	\$2,072,567		

**Comments**

Select the "show button" and Pick from the system cost, the construction type that best applies to your system and remove the rest. Size SF x Quantity= SF \$Unit Cost x Actual SF = SF\$

**B2010 - Exterior Walls - Concrete Walls - (CIP) - New**

**Description**

Exterior walls are of cast-in-place concrete.

**System Description**

Reinforced concrete walls, exposed, no other cladding or surface treatment except paint. These walls are primarily found as exterior basement walls.

**System Condition & Anticipated Replacement**

Original to the building, but still in average condition. With standard measures taken to prevent premature deterioration, no replacement will be required within the 20-year planning window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	75
<b>Year Installed</b>	1984	<b>Years Remaining</b>	N/A
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$304.52
<b>Quantity</b>	1,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$304,521		

**Comments**

Correction estimate units are total \$ per 1000 SF exterior wall. This is the exterior wall area only excluding openings. 12-ft flr to flr. Ext Walls: LF x 12-ft (hgt) x # Stryes - SF (opngs)/1000 = SF\$

**B2010 - Exterior Walls - Metal Paneled Walls - High Quality - New**

**Description**

Parts of the main exterior walls are built with aluminum panels as a facade material. They are original to the building, with a dark bronze finish that matches the aluminum frames of the glazing units.

**System Description**

Exit Stairwell, Atrium, and Below Strip Windows:

- Aluminum panel Siding;
- 20 mm Air Space;
- 76 mm Rigid Insulation;
- Air Seal;
- Metal Stud Framing; and
- Aggregate faced Reinforced Fiberglass Panels.

**System Condition & Anticipated Replacement**

Panels are original to building and are showing some minor dislocations, warping and discolouration, but are structurally sound and should not need to be replaced within the system planning window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	60
<b>Year Installed</b>	1984	<b>Years Remaining</b>	30 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$329.39
<b>Quantity</b>	500	<b>Units</b>	SM
<b>Replacement Cost</b>	\$164,693		

**Comments**

Correction estimate units are in total \$ per 1000 SF exterior wall. This is the exterior wall area only excluding openings. 12-ft flr to flr. Ext Walls: LF x 12-ft (hgt) x # Strys - SF (opngs)/1000 = SF\$

**B2010 - Exterior Walls - Brick Cavity Walls - CMU Backup - New**

**Description**

The primary exterior walls are built from concrete block clad in brick, with an insulation and air layer in between. These walls are original to the building and have been maintained, repointed and resealed periodically.

**System Description**

Primary Exterior Walls:

- 90 mm Brick Cladding;
- 20 mm Air Space;
- 76 mm Rigid Insulation;
- Air Seal; and
- Concrete Block (varies 90 mm, 140 mm & 190 mm), with painted interior finish

**System Condition & Anticipated Replacement**

The brick joints were repointed in 2002, but the bricks and blocks are all original to building. They are in average condition given their age. The sealant in the control joints has been replaced, and only few spots where it has failed have been observed.

Diagonal crack on brick wall from the corner of the stair #4 exit door.

This crack can be generated due to differential settlements between foundation for column F-7 and column G-8, which generated in some moment additional stresses in the brick wall.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	75
<b>Year Installed</b>	1984	<b>Years Remaining</b>	N/A
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$360.50
<b>Quantity</b>	15,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$5,407,427		

**Comments**

System includes typical cavity wall components such as brick, CMU, rigid insulation with no interior finish. Furring partition or painted plaster or paint on masonry system shall be included but as a separate system. If system observed in field differs use means unit prices to select accurate component and delete existing line item.

Correction estimate units are in total \$ per 1000 SF exterior wall. This is the exterior wall area only excluding openings. 12-ft flr. to flr. Ext Walls: LF x 12-ft (hgt) x # Strys - SF (opngs)/1000 = SF

**Requirement: (Non-Renewal)**

Control Joint Repairs

**Description**

Exterior sealants are used at the building control joints, at window/wall and wall/door interfaces, as well as wall jogs and similar situations.

**Brief Description**

Brick control joints have been resealed previously, and only minor failures were observed. These should be sealed within the next 12 month maintenance period with appropriate caulking material.

**Requirement Justification and Strategy**

Though only minor gaps in the caulking were observed, exterior joint failures can lead to leakage and damage within the wall; repairs should be executed as a high-priority item.

**Implication of Requirement Deferral**

Moisture infiltration into the wall system; possible damage by insects or other animal pests entering the wall system.

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Reliability
<b>Estimated Cost</b>	\$3,102	<b>FY Action Date</b>	2018



Control Joint Repairs

**Requirement Type**Repair

**Comments**

Sealants are used at a variety of joints at the exterior and interior. Most are non-ACMs, but some ACMs were observed previously - refer to Asbestos Management Plan by SNC Lavalin, dated August 2014.

**Deferral Reason? Explain Risk Mitigation**

**B2020 - Exterior Windows - Aluminum Windows - New**

**Description**

All windows are aluminum frame, non-thermally broken, dark bronze finish, with reflective thermopane glazing, non-operable.

**System Description**

Non-thermally broken aluminum frames with fixed, reflective thermopane glazing.

**System Condition & Anticipated Replacement**

Windows are in average condition given their age. No direct air or moisture infiltration was observed. Replacement is anticipated in the 10 to 20-year planning bracket. Given that this is a major expense and will make parts of the building temporarily unusable, careful phasing is recommended.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	17 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$678.15
<b>Quantity</b>	500	<b>Units</b>	SM
<b>Replacement Cost</b>	\$339,074		

**Comments**

Correction estimate units are in total \$ per 1000 SF Window. This is the window area only, excluding exterior wall material.  
 Conversion Formula- (Correction estimate unit/1000) x Window Factor  
 Window: Size SF x Quantity /1000 = SF\$

**Requirement: (Renewal)**

Aluminum Windows - New Renewal

**Description**

Auto generated renewal for Aluminum Windows - New. System Description: All windows are aluminum frame, non-thermally broken, dark bronze finish, with reflective thermopane glazing, non-operable.

**Brief Description**

**Requirement Justification and Strategy**

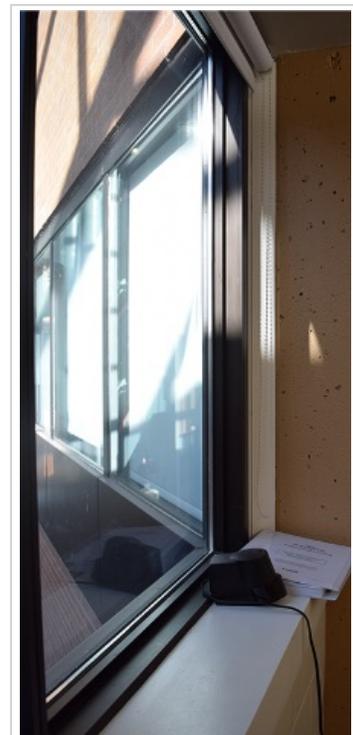
**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$423,843	<b>FY Action Date</b>	2034

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Aluminum Windows - New

**B2030 - Exterior Doors - Door Assembly - 1.82 x 2.13M Storefront - New**

**Description**

Main entrance doors are aluminum framed glass sliding doors. 3 sets of two are installed around the facility.

**System Description**

Sliding, aluminum frame double doors with thermopane glazing, serving the three main entrance points into the building. Clear anodized finish.

**System Condition & Anticipated Replacement**

Doors are in good condition as they were replaced in 2000 (one set) and 2010/11 (other 2 sets). With routine preventive maintenance, no replacement will be necessary within the 20-year planning window.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	30
<b>Year Installed</b>	2010	<b>Years Remaining</b>	23 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$4,940.57
<b>Quantity</b>	3	<b>Units</b>	Each
<b>Replacement Cost</b>	\$14,822		

**Comments**

Replaces Doors 1 - 6 Doors: (Door Count x Unit Cost Total)

**B2030 - Exterior Doors - Overhead Sectional Doors - Electric Operation - New**

**Description**

There are 6 sets of electrically operated, overhead doors; two lead to the loading dock and the other four to the underground parking garage.

**System Description**

Two overhead doors serve the loading docks at the side of the building. They are operated electrically from local controls. Four overhead doors (two pairs) serve the underground parking garage, with one pair on entrance and exit side each.

**System Condition & Anticipated Replacement**

All doors were replaced in recent years and are in good condition (parking garage) or very good condition (loading dock). Replacement is expected to be in line with typical life cycles for this system, i.e. not within the 20-year planning window.

<b>Condition Rating</b>	Excellent	<b>Lifetime</b>	30
<b>Year Installed</b>	2015	<b>Years Remaining</b>	28 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$2,408.96
<b>Quantity</b>	6	<b>Units</b>	Each
<b>Replacement Cost</b>	\$14,454		

**Comments**

Based on each. Click "Show" button to select line item observed in the field, set line item quantity to 1 and delete unused line items. Set system quantity to actual count observed in field.

**B2030 - Exterior Doors - Door Assembly .91 x 2.13M HM - New**

**Description**

There are several exterior steel doors at grade level.

**System Description**

Exterior doors include .91 x 2.13 M steel door and steel frame with hinges, lockset, exit hardware and closer. Includes painted door and painted frame. Total of four (4) around the site, serving as fire exit doors.

**System Condition & Anticipated Replacement**

These doors were replaced recently and should last well beyond the 20-year planning window, assuming regular preventive maintenance.

<b>Condition Rating</b>	Excellent	<b>Lifetime</b>	30
<b>Year Installed</b>	2015	<b>Years Remaining</b>	28 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$1,615.29
<b>Quantity</b>	4	<b>Units</b>	Each
<b>Replacement Cost</b>	\$6,461		

**Comments**

Based on each.

**B30 - Roofing - Single-Ply Membrane - Ballasted - New**

**Description**

The main roof areas of the building are built as an inverted, ballasted system.

**System Description**

Main Roof Inverted System (inverted):

- Reused original ballast;
- Rigid Insulation;
- Modified bitumen membrane; and
- Reinforced Concrete Deck.

**System Condition & Anticipated Replacement**

The roofs have recently all been replaced with new inverted roofing assemblies and are in excellent condition. Work took place from 2010 to 2011. They are anticipated to last another 25 years, beyond the current planning window.

<b>Condition Rating</b>	Excellent	<b>Lifetime</b>	25
<b>Year Installed</b>	2011	<b>Years Remaining</b>	25 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$96.29
<b>Quantity</b>	4,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$385,145		

**Comments**

If roof covering material is different from EPDM with stone ballast, replace that line item with the appropriate material: PVC, CSPE or PIB.  
 Roof: ((Bldg SF/Floor Levels) x (Unit Cost)/Bldg SF) = SF

**B3021 - Glazed Roof Openings - Skylights - Monumental - New**

**Description**

The atrium glazing system is composed of sloped, reflective thermopane glazing in extruded aluminum framing, mounted over the atrium.

**System Description**

The main atrium of the building is covered in sloped glazing (angled at slightly less than 45deg), framed in dark bronze extruded aluminum to match the exterior window systems. The glazing is held in place externally by horizontal pressure bars between the vertical mullions.

The glazing appears to be reflective thermopane glazing, and is original to the building (1983).

**System Condition & Anticipated Replacement**

The framing appears to be in average condition given its age. The glazing also appears to be in average condition. Leakage can be observed during strong rainfall events; this leakage occurs at horizontal seams in the glazing, which are secured by pressure bars from above. Attempts to reseal this system have reportedly failed to provide a permanent solution. Redesigning the system would be costly, and installing a full new system would also take the atrium out of commission, which hinders the functioning of the building. It is recommended to attempt another resealing instead.

Being 33 years old, with a typical system life of 50 years, it is anticipated the entire system be replaced in another 17 years (in 2034). If a mid life fit-up of the building should occur before this date, then it is advised to redesign and replace the system in its entirety at that time.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	17 (Observed)
<b>Adjustment Factor</b>	1.5000	<b>Unit Cost</b>	\$1,881.33
<b>Quantity</b>	420	<b>Units</b>	SM
<b>Replacement Cost</b>	\$790,160		

**Comments**

This is for the skylight area only excluding roof material.  
 Skylight: Size SF x Quantity= SF \$

**Requirement: (Renewal)**

Skylights - Monumental - New Renewal

**Description**

Auto generated renewal for Skylights - Monumental - New. System Description: The atrium glazing system is composed of sloped, reflective thermopane glazing in extruded aluminum framing, mounted over the atrium.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$987,700	<b>FY Action Date</b>	2034

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Skylights - Monumental - New



Skylights - Monumental - New

**C1010 - Partitions - CMU Block Walls - Plain - New**

**Description**

Some interior partition walls are made of concrete block, particularly around electrical rooms and washrooms.

**System Description**

Concrete masonry units (CMU) used for interior partitions.

**System Condition & Anticipated Replacement**

Some walls are original from 1982, and some are replacements from 1996. Overall condition is good, with no replacement envisioned within the 20-year planning window. Some cracks were observed at locations indicated on photos. Monitoring for active cracks is recommended over the next five years, with appropriate action determined on an individual basis where cracks are active.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	50
<b>Year Installed</b>	1984	<b>Years Remaining</b>	N/A
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$123.68
<b>Quantity</b>	3,800	<b>Units</b>	SM
<b>Replacement Cost</b>	\$469,989		

**Comments**

Partitions: ((LF Wall x Story Height [12-ft]) x Unit Cost)/Bldg SF) = SF\$

**C1010 - Partitions - GWB Walls - Standard (Non-Painted) - New**

**Description**

The majority of interior partitions are gypsum board on studs.

**System Description**

Standard drywall construction, for interior partitions.

**System Condition & Anticipated Replacement**

Average condition given their age, with regular cleaning and repainting. No replacement is anticipated within the 20-year planning window. Note that office spaces are reorganized on shorter cycles than the 50-year lifespan. Numerous original partitions have been moved, demolished, or replaced already. In the previous Building Performance Review, staff members on site complained about elevated noise levels within the office areas. This is likely due to a lack of sound attenuation measures in the partition walls and doors. Since full interior wall replacement would be highly disruptive and expensive, it is instead recommended that any future GWB partitions be built meet an STC around 50 (refer to NBC 2010 Appendix A). This will also impact new interior doors in those partitions, which should be gasketed to reduce sound transmission.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	50
<b>Year Installed</b>	1984	<b>Years Remaining</b>	17 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$38.43
<b>Quantity</b>	10,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$384,284		

**Comments**

Based on 1000 SF of Wall Surface Area. Based on 1 layer 5/8-in., FR GWB both sides 2 x 4 wood studs 16-in. o.c. No insulation, Taped and finished (not painted). Also use for standard GWB, MR GWB on 3 -5/8-inch, 25 gage metal studs at 16- 24-in. o.c. and smaller studs. See Wall Finishes for finish selection. Partitions: ((LF Wall x Story Height [12-ft]) x Unit Cost)/Bldg SF) = SF\$

**Requirement: (Renewal)**

GWB Walls - Standard (Non-Painted) - New Renewal

**Description**

Auto generated renewal for GWB Walls - Standard (Non-Painted) - New. System Description: The majority of interior partitions are gypsum board on studs.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$238,256	<b>FY Action Date</b>	2034

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**C1020 - Interior Doors - Swinging Doors - .91 x 2.13M Wd - NR - New**

**Description**

Interior hardwood doors

**System Description**

Interior hardwood doors are found throughout the building, typically mounted on pressed steel frames. Some are standard height (approx. 2,100mm), others are unusually high (see photo).

**System Condition & Anticipated Replacement**

With very few exceptions, these doors have been well maintained. Their service life is almost unlimited, given proper maintenance. Hardware replacement may be necessary within the planning window; refer to appropriate section.

Stains and scratches were evident at the bottom of several doors, most likely from shoe impact. Kick plates should be considered in high traffic areas, and would help to extend the service life of doors.

In the previous Building Performance Review, staff members on site complained about elevated noise levels within the office areas. This is likely due to a lack of sound attenuation measures in the partition walls and doors. It is recommended that any new interior doors should be gasketed to reduce sound transmission.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	50
<b>Year Installed</b>	1984	<b>Years Remaining</b>	25 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$1,601.10
<b>Quantity</b>	300	<b>Units</b>	Each
<b>Replacement Cost</b>	\$480,330		

**Comments**

Use medium price doors if walnut or plastic laminate.  
 Doors: (Door Count x Unit Cost Tot)/Bldg SF = SF\$

**C1020 - Interior Doors - Swinging Doors - 3 x 7 HM - Rated - New**

**Description**

Interior steel doors and frames

**System Description**

All fire doors are made of steel. Some have wired-glass inserts. Most are original to the building, except for those that go to the garage (12) which were replaced in 2002.

**System Condition & Anticipated Replacement**

All doors are in average to good condition, and replacement is not anticipated within the 20-year planning window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	50
<b>Year Installed</b>	1984	<b>Years Remaining</b>	27 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$3,557.00
<b>Quantity</b>	40	<b>Units</b>	Each
<b>Replacement Cost</b>	\$142,280		

**Comments**

Doors: (Door Count x Unit Cost Tot)/Bldg SF = SF.

**C1030 - Fittings - Toilet Partitions - Average - New**

**Description**

Washroom partition systems are used for stalls in all washrooms, as well as for urinal privacy screens in men's washrooms.

**System Description**

Washroom partitions are phenolic panels with aluminum framing / bracing. They are floor mounted and braced at the top. Urinal screens are wall mounted.

**System Condition & Anticipated Replacement**

Partitions were replaced in 1998 and are in good shape, better than anticipated given their age. No replacement is recommended within the 20-year bracket of the planning window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	40
<b>Year Installed</b>	1998	<b>Years Remaining</b>	25 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$14.89
<b>Quantity</b>	2,500	<b>Units</b>	SM
<b>Replacement Cost</b>	\$37,230		

**Comments**

Costs and quantities were modified to suit site conditions and anticipated replacement cost. Given that no replacement is necessary for approx. 20 years, escalation will need to be considered in future replacements.

**C20 - Stairs - Stairs - Average - New**

**Description**

There are several sets of interior stairs, serving as secondary circulation and escape routes.

**System Description**

Interior stairs, constructed from concrete and brick. Hand- and guardrails are stainless steel, with some glass inserts.

**System Condition & Anticipated Replacement**

All stairs are in good condition, and replacement is not anticipated within the 20-year planning window.

Stairwells East #2 and West #5

General cracks in steps and landing/platforms members of the stairs. (see photos)

The cracks observed are aesthetic (superficial) cracks, probably coming from lack of minimum reinforcement for shrinkage and temperature or inappropriate cure procedure during construction.

This is not a structural issue for the stairs.

The longitudinal crack at the bottom of the supporting beam at the central stairwell appears to be an old crack, due to flexible forces, this section was overloaded before the concrete curing process, and or a result of settlement at the main elevator shaft.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	75
<b>Year Installed</b>	1984	<b>Years Remaining</b>	42 (Observed)
<b>Adjustment Factor</b>	1.5000	<b>Unit Cost</b>	\$20,239.46
<b>Quantity</b>	34	<b>Units</b>	Each
<b>Replacement Cost</b>	\$688,141		

**Comments**

Quantity equals number of standard flights (12 risers) per stair tower.

**C3010 - Wall Finishes - Painted Finish - Average (1 Coat Prime - 2 Coats Finish) - New**

**Description**

Interior wall finishes include standard paint finish.

**System Description**

Most interior wall surfaces (both block and drywall) are finished in interior grade paint.

**System Condition & Anticipated Replacement**

Paint condition varies by area, since painting is done cyclically. It is recommended to schedule painting year-to-year, coordinating with the usage of a given area.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	10
<b>Year Installed</b>	2009	<b>Years Remaining</b>	5 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$7.53
<b>Quantity</b>	13,800	<b>Units</b>	SM
<b>Replacement Cost</b>	\$103,983		

**Comments**

See related costs at masonry painting.

Wall area = floor area X height of finished wall X .20.

This is a rule of thumb and gives an approximate square footage of wall area in a standard office building.

**Requirement: (Renewal)**

Painted Finish - Average (1 Coat Prime - 2 Coats Finish) - New Renewal

**Description**

Auto generated renewal for Painted Finish - Average (1 Coat Prime - 2 Coats Finish) - New. System Description: Interior wall finishes include standard paint finish.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	5- Year 5	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$129,978	<b>FY Action Date</b>	2022

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**C3020 - Floor Finishes - Epoxy Flooring - New**

**Description**

Floor finishes include cement epoxy flooring.

**System Description**

Sealed epoxy flooring, installed in the boiler room.

**System Condition & Anticipated Replacement**

The floor was finished in 2003 and is in good condition. No replacement is necessary; however, should a boiler replacement be carried out in the next ten years, a concurrent mid-life replacement of the epoxy flooring would be recommended as well.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	50
<b>Year Installed</b>	2003	<b>Years Remaining</b>	36 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$111.95
<b>Quantity</b>	100	<b>Units</b>	SM
<b>Replacement Cost</b>	\$11,195		

**Comments**

Based on building area.

**C3020 - Floor Finishes - Ceramic Tile - New**

**Description**

Floor finishes include ceramic tile and base in restrooms.

**System Description**

Ceramic floor tiles are used in various locations, mostly in washrooms.

**System Condition & Anticipated Replacement**

Much of the tile is original, but in good shape. Replacement is not required within the 20-year planning window, but older tile should be replaced if washroom upgrades are undertaken.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	25
<b>Year Installed</b>	1984	<b>Years Remaining</b>	20 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$191.83
<b>Quantity</b>	800	<b>Units</b>	SM
<b>Replacement Cost</b>	\$153,466		

**Comments**

2-1/4-in. x 2-1/4-in. tiles thin set. Assumes LF of base equals 25% of floor area. Cost is in \$/SF of flooring. Floor Finish: ((Floor Finish SF x SF Unit Cost) + (Perimeter Floor Finish SF x LF Unit Cost))/Bldg SF = \$SF. Adjust the unit cost by replacing line items if it can be determined that it is either economy or high end.

**Requirement: (Renewal)**

Ceramic Tile - New Renewal

**Description**

Auto generated renewal for Ceramic Tile - New. System Description: Floor finishes include ceramic tile and base in restrooms.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$191,832	<b>FY Action Date</b>	2037

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Ceramic Tile - New



Ceramic Tile - New

**C3020 - Floor Finishes - Carpeting - Broadloom - Medium Range - New**

**Description**

Medium priced carpeting and base.

**System Description**

Carpet tiles are used in most office areas.

**System Condition & Anticipated Replacement**

Carpet is replaced on a cyclical basis and most of it is in good condition. In some areas, the carpet is in fair to poor condition; this may be due to reuse of older carpet tiles from other areas of the building. It is recommended to continue the cyclical replacement, beginning in those areas where the carpet has deteriorated.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	10
<b>Year Installed</b>	2010	<b>Years Remaining</b>	5 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$67.36
<b>Quantity</b>	9,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$606,216		

**Comments**

Multiply SY by 9 to result in SF. Show locations. Assumes LF of base equals 25% of floor area. Also use for low end carpet 36 oz nylon level loop medium to heavy traffic. Cost is in \$/SF of flooring.  
 Floor Finish: ((Floor Finish SF x SF Unit Cost) + (.25 Floor Finish SF x LF Unit Cost))/Bldg SF = \$\$F

**Requirement: (Renewal)**

Carpeting - Broadloom - Medium Range - New Renewal

**Description**

Auto generated renewal for Carpeting - Broadloom - Medium Range - New.  
 System Description: Medium priced carpeting and base.

**Brief Description**

**Requirement Justification and Strategy**

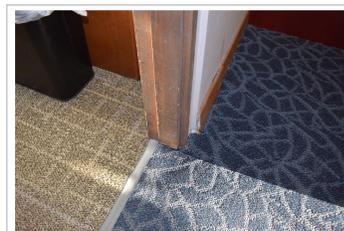
**Implication of Requirement Deferral**

<b>Priority</b>	5- Year 5	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$757,770	<b>FY Action Date</b>	2022

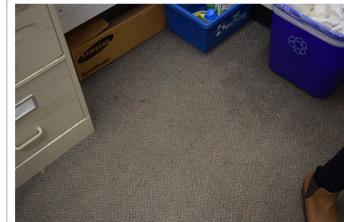
**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Carpeting - Broadloom - Medium Range - New



Carpeting - Broadloom - Medium Range - New



Carpeting - Broadloom - Medium Range - New

**C3020 - Floor Finishes - VCT - Quality - New**

**Description**

Solid vinyl tiles and base of higher quality than standard VCT.

**System Description**

Solid vinyl tiles, mostly used in elevators and kiosks.

**System Condition & Anticipated Replacement**

Vinyl tile flooring was replaced fourteen years ago (in 2003). Assuming the replaced flooring material was original to the building, this matches the typical 20-year life span of quality vinyl flooring. The currently installed floor is in good to average condition. Given its use in heavy traffic areas (esp. elevators), replacement is recommended within the 5 to 10 year bracket.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	20
<b>Year Installed</b>	2003	<b>Years Remaining</b>	6 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$57.97
<b>Quantity</b>	250	<b>Units</b>	SM
<b>Replacement Cost</b>	\$14,491		

**Comments**

Assumes LF of base equals 25% of floor area. Cost estimate is in \$/SF of flooring.  
 Floor Finish: ((Floor Finish SF x SF Unit Cost) + (.25 Floor Finish SF x LF Unit Cost))/Bldg SF = \$SF

**Requirement: (Renewal)**

VCT - Quality - New Renewal

**Description**

Auto generated renewal for VCT - Quality - New. System Description: Solid vinyl tiles and base of higher quality than standard VCT.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	6- Year 6	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$18,114	<b>FY Action Date</b>	2023

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**C3020 - Floor Finishes - Glazed Brick - New**

**Description**

There is brick floor tile in the grade level atrium areas.

**System Description**

The atrium area at grade level is finished with brick flooring.

**System Condition & Anticipated Replacement**

The brick is original to the building. It is in average condition given its age. Assuming preventive maintenance and re-grouting of small damaged areas, no replacement is anticipated within the 20-year planning window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	40
<b>Year Installed</b>	1984	<b>Years Remaining</b>	27 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$199.76
<b>Quantity</b>	1,500	<b>Units</b>	SM
<b>Replacement Cost</b>	\$299,637		

**Comments**

Based on 1000 SF.

**C3030 - Ceiling Finishes - GWB Taped and Finished - New**

**Description**

GWB ceiling system, taped, finished and painted with primer and 2 finish coats. Ceiling on suspension system or fastened to metal or wood furring.

**System Description**

Standard drywall ceiling, taped and painted finish.

**System Condition & Anticipated Replacement**

Gypsum board ceilings are in average shape, being original to the building. Replacement is recommended within the 5 to 10-year bracket.

Also see Section on Painting for refinishing. For any ceiling system replacements, coordination with electrical or mechanical system replacements is recommended.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	7 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$39.40
<b>Quantity</b>	500	<b>Units</b>	SM
<b>Replacement Cost</b>	\$19,699		

**Comments**

Ceiling Finish: (Ceiling Finish SF x SF Unit Cost)/Bldg SF = \$SF

**Requirement: (Renewal)**

GWB Taped and Finished - New Renewal

**Description**

Auto generated renewal for GWB Taped and Finished - New. System Description: GWB ceiling system, taped, finished and painted with primer and 2 finish coats. Ceiling on suspension system or fastened to metal or wood furring.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	7- Year 7	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$24,623	<b>FY Action Date</b>	2024

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**C3030 - Ceiling Finishes - Aluminum Panel System - New**

**Description**

Painted aluminum ceiling system with suspension system and acoustical insulation pads.

**System Description**

Metal panel ceiling system, mostly used in the atrium area.

**System Condition & Anticipated Replacement**

The metal panels are in good shape for being original to the building. Replacement toward the end of the 20-year planning window is recommended; replacement will need to be coordinated with mechanical, electrical and exit signage refits.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	25
<b>Year Installed</b>	1984	<b>Years Remaining</b>	15 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$97.74
<b>Quantity</b>	500	<b>Units</b>	SM
<b>Replacement Cost</b>	\$48,870		

**Comments**

Ceiling Finish: (Ceiling Finish SF x SF Unit Cost)/Bldg SF = \$SF

**Requirement: (Renewal)**

Aluminum Panel System - New Renewal

**Description**

Auto generated renewal for Aluminum Panel System - New. System Description: Painted aluminum ceiling system with suspension system and acoustical insulation pads.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$61,087	<b>FY Action Date</b>	2032

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**C3030 - Ceiling Finishes - ACT System - Standard - New**

**Description**

Standard suspended ACT ceiling system with regular tile grids.

**System Description**

Suspended ACT ceiling system, standard format.

**System Condition & Anticipated Replacement**

About 25% was done in 2000, with the rest being original to the building and in average condition. Various broken or discoloured tiles were observed; replacement of those tiles is recommended as an ongoing maintenance item. Full system replacement is recommended to be executed in phases within the 5 to 10-year planning window, coordinated with space usage, electrical upgrades and mechanical / plumbing replacements.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	20
<b>Year Installed</b>	1984	<b>Years Remaining</b>	5 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$70.29
<b>Quantity</b>	7,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$492,034		

**Comments**

Ceiling Finish: (Ceiling Finish SF x SF Unit Cost)/Bldg SF = \$SF

**Requirement: (Renewal)**

ACT System - Standard - New Renewal

**Description**

Auto generated renewal for ACT System - Standard - New. System Description: Standard suspended ACT ceiling system with regular tile grids.

**Brief Description**



ACT System - Standard - New

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	5- Year 5	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$615,043	<b>FY Action Date</b>	2022

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**D1010 - Elevators and Lifts - Traction Geared Passenger Elev - Low-Rise - 1,2**

**Description**

Elevator 1 & 2 are 6 stop geared traction elevators operating as a duplex. They are the main tenant/guest elevators in the 5 storey wing of the building. The elevators appear to adequately transport the people around the building.

**System Description**

Elevator nos. - 1 & 2  
 Gov't Installation nos. - PEP 1602, PEP 1603  
 Capacity- 2500 pounds  
 Speed- 300 fpm  
 Openings - 6 front only (P,1,2,3,4,5)  
 Controller - MCE - VFMC 1000  
 Hoist Machine - Hollister Whitney 640H  
 Motor - 25 Hp  
 Governor - Hollister Whitney 207  
 Drive - Yaskawa GPD 515/G5  
 Auxiliary brake - Hollister Whitney 622  
 Operation - Duplex  
 Door opening - 42" x 84" centre opening  
 Door operator - GAL MOVFR  
 Door protection - Infrared  
 Fire Emergency Operation - Phase 1 (Fire Recall) and Phase 2 (In-car Operation)  
 Lobby panel - located in security office (includes auxiliary FEO keyswitches, emergency power selection keyswitch and position indicators for cars 1, 2 and 3.)  
 Security - proximity readers control car buttons  
 Top of car guardrails - installed  
 Rail guides - roller  
 Direction indicators - both in-car and at each hall landing  
 Position indicator - combination at level 1 only

**System Condition & Anticipated Replacement**

The elevators are in average condition. They were upgraded circa 2006 and although they are showing wear it is mainly maintenance items. Since the major modernization has been completed there have been very few Code changes that would require a further expenditure of capital money. A more accurate major modernization budget amount can be provided closer to the time of the next major upgrade. Anticipated replacement date is 2031.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	25
<b>Year Installed</b>	2006	<b>Years Remaining</b>	14 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$208,624.76
<b>Quantity</b>	2	<b>Units</b>	Each
<b>Replacement Cost</b>	\$417,250		

**Comments**

**Requirement: (Renewal)**

Traction Geared Passenger Elev - Low-Rise - 1,2 Renewal

**Description**

Auto generated renewal for Traction Geared Passenger Elev - Low-Rise - 1,2. System Description: Elevator 1 & 2 are 6 stop geared traction elevators operating as a duplex. They are the main tenant/guest elevators in the 5 storey wing of the building. The elevators appear to adequately transport the people around the building.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$521,562	<b>FY Action Date</b>	2031

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



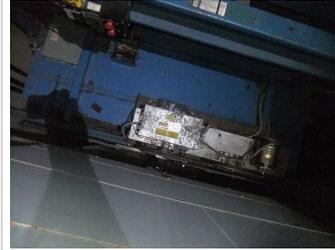
Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2



Traction Geared Passenger Elev - Low-Rise - 1,2

**Requirement: (Non-Renewal)**

Installation of elevator machine room equipment component guarding.

**Description**

Installation of elevator machine room equipment component guarding.

**Brief Description**

There elevator hoist machine, motor and governor all have rotating parts that pose a hazard to any person entering the elevator machine room. The installation of component guards on the elevator equipment will improve the safety of the work space. Component guards are shrouds that encapsulate the equipment to prevent accidental contact. See picture for an example.



**Requirement Justification and Strategy**

In a number of jurisdictions throughout Canada elevator hoist machines, motors and governors require guarding against accidental contact. This is not a current requirement in PEI but should be considered for the equipment. It will make the work place a safer environment for elevator personnel.

**Implication of Requirement Deferral**

<b>Priority</b>	3- Year 3	<b>Category</b>	R - Life Safety
<b>Estimated Cost</b>	\$14,476	<b>FY Action Date</b>	2020

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**D1010 - Elevators and Lifts - Traction Geared Passenger Elev - Low-Rise - 3**

**Description**

Elevator 3 is a 6 stop geared traction elevator operating as a simplex. This elevator is in close proximity to the building loading bay. It is called the freight elevator but in fact is a service elevator. The car call buttons are controlled by a security system and only persons with a card can operate this elevator.

**System Description**

This elevator services all floors and is used to move freight around the building. Its interior finish reflects its job. It is a painted steel shell that has a hand rail as well as a bumper rail to cushion the impact of carts and pallets. this elevator adequately services its purpose.

- Elevator no. - 3
- Gov't Installation no. - PEP 522
- Capacity- 2500 pounds
- Speed- 250 fpm
- Openings - 6 front only (P,1,2,3,4,5,6)
- Controller - MCE - VFMC 1000
- Hoist Machine - Hollister Whitney 540H
- Motor - 20 Hp
- Governor - Hollister Whitney 207
- Drive - Yaskawa GPD 515/G5
- Auxiliary brake - Hollister Whitney 622
- Operation - Simplex
- Door opening - 52" x 96" three speed, side opening
- Door operator - GAL MOVFR
- Door protection - Infrared
- Fire Emergency Operation - Phase 1 (Fire Recall) and Phase 2 (In-car Operation)
- Lobby panel - located in security office (includes auxiliary FEO keyswitches, emergency power selection keyswitch and position indicators for cars 1, 2 and 3.)
- Security - proximity readers control car buttons during all hours
- Top of car guardrails - installed
- Rail guides - rollers
- Direction indicators - both in-car and at each hall landing
- Position indicator - combination at level 1 only

**System Condition & Anticipated Replacement**

This elevator is in average condition. It underwent a major modernization in 2006 and does not require another one until 2031. There have not been changes in the elevator Code since the last major upgrade therefore the equipment does not require a further capital expenditure until the next major upgrade.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	25
<b>Year Installed</b>	2006	<b>Years Remaining</b>	14 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$208,624.76
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$208,625		

**Comments**

**Requirement: (Renewal)**

Traction Geared Passenger Elev - Low-Rise - 3 Renewal

**Description**

Auto generated renewal for Traction Geared Passenger Elev - Low-Rise - 3.  
 System Description: Elevator 3 is a 6 stop geared traction elevator operating as a simplex. This elevator is in close proximity to the building loading bay. It is called the freight elevator but in fact is a service elevator. The car call buttons are controlled by a security system and only persons with a card can operate this elevator.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$260,781	<b>FY Action Date</b>	2031

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3

**Requirement: (Non-Renewal)**

Installation of elevator machine room equipment component guarding

**Description**

Installation of elevator machine room equipment component guarding.

**Brief Description**

There elevator hoist machine, motor and governor all have rotating parts that pose a hazard to any person entering the elevator machine room. The installation of component guards on the elevator equipment will improve the safety of the work space. Component guards are shrouds that encapsulate the equipment to prevent accidental contact. See picture for an example.



**Requirement Justification and Strategy**

In a number of jurisdictions throughout Canada elevator hoist machines, motors and governors require guarding against accidental contact. This is not a current requirement in PEI but should be considered for the equipment. It will make the work place a safer environment for elevator personnel.

**Implication of Requirement Deferral**

<b>Priority</b>	3- Year 3	<b>Category</b>	R - Life Safety
<b>Estimated Cost</b>	\$7,238	<b>FY Action Date</b>	2020

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**D1010 - Elevators and Lifts - Hydraulic Passenger Elev - Special - 4**

**Description**

Elevator 4 is a 4 stop hydraulic elevator that services the 3 storey wing of the building.

**System Description**

- Elevator no. - 4
- Capacity- 2500 pounds (1200 kg)
- Speed- 150 fpm
- Openings - 4 front only (P,M,2,3)
- Controller - GAL Galaxy Hydraulic Control
- Power Unit - ThyssenKrupp (tank, pump, motor, valve)
- Motor - 30 Hp
- Starter - Electronic
- Operation - Simplex
- Door opening - 42" x 84" centre opening
- Door operator - GAL MOVFR
- Door protection - Infrared
- Fire Emergency Operation - Phase 1 (Fire Recall) and Phase 2 (In-car Operation)
- Top of car guardrails - installed
- Rail guides - slides
- Direction indicators - both in-car and at each hall landing
- Position indicators - located at each landing
- Position indicator - combination at level 1 only

The elevator is a 4 stop hydraulic elevator that services floors P,1,2,3. The system was completely renewed in 2011. This work included a new power unit (pump, valve, motor and tank), new controller, new hall and car fixtures, new cab finishes and new in-ground piston/cylinder assembly with code compliant PVC protection. The elevator will not require another major modernization until 2036.

**System Condition & Anticipated Replacement**

The elevator is in good condition and is operating satisfactorily. The elevator will not require another major modernization until 2036.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	25
<b>Year Installed</b>	2011	<b>Years Remaining</b>	19 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$180,564.66
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$180,565		

**Comments**

**Requirement: (Renewal)**

Hydraulic Passenger Elev - Special - 4 Renewal

**Description**

Auto generated renewal for Hydraulic Passenger Elev - Special - 4. System Description: Elevator 4 is a 4 stop hydraulic elevator that services the 3 storey wing of the building.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$225,706	<b>FY Action Date</b>	2036

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



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Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4

**D2010 - Plumbing Fixtures - Restroom Fixtures - Tiled Individual Shower**

**Description**

(2) shower unit in fair to good condition

**System Description**

(1) shower located on the main level mens locker room, Occupied during site visit in was reported to have (1) more similar in the womens locker room as well.

**System Condition & Anticipated Replacement**

(2) showers noted in the building in fair/good condition with no foreseen replacement requirements. Age of units are unknown however age shown is an estimate based on design used.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	30
<b>Year Installed</b>	2000	<b>Years Remaining</b>	13 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$4,262.76
<b>Quantity</b>	2	<b>Units</b>	Each
<b>Replacement Cost</b>	\$8,526		

**Comments**

Priced per each.

**Requirement: (Renewal)**

Restroom Fixtures - Tiled Individual Shower Renewal

**Description**

Auto generated renewal for Restroom Fixtures - Tiled Individual Shower. System Description: (2) shower unit in fair to good condition

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$10,657	<b>FY Action Date</b>	2030

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**D2010 - Plumbing Fixtures - Custodial/Utility Sinks**

**Description**

6 original to the building utility mop sinks typically between male and female washroom groups

**System Description**

6 original to the building utility mop sinks typically between male and female washroom groups

**System Condition & Anticipated Replacement**

All custodial mop sinks are original to the building and in fair to poor condition. These mop sinks are recessed in the floor and have potential to be a leaking hazard as it ages.

It would be recommended that these be replaced.

Potential leak hazard however appear to be rarely used and show no signs of issue currently therefore could be delayed to a time that is convenient

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$3,111.65
<b>Quantity</b>	6	<b>Units</b>	Each
<b>Replacement Cost</b>	\$18,670		

**Comments**

Price per each.

**Requirement: (Renewal)**

Custodial/Utility Sinks Renewal

**Description**

Auto generated renewal for Custodial/Utility Sinks. System Description: 6 original to the building utility mop sinks typically between male and female washroom groups

**Brief Description**

**Requirement Justification and Strategy**

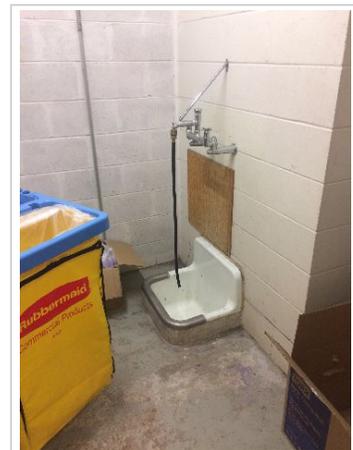
**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$23,337	<b>FY Action Date</b>	2017

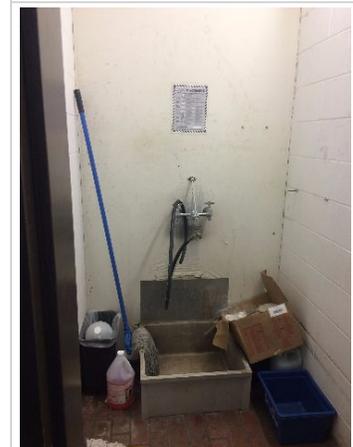
**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Custodial/Utility Sinks



Custodial/Utility Sinks

**D2010 - Plumbing Fixtures - Water Coolers - Wall-Mounted Dual-Height**

**Description**

Drinking fountains

**System Description**

There are 8 original drinking fountains (Halsey Taylor) in fair to poor condition,

**System Condition & Anticipated Replacement**

Age of units is unknown based on appearance and noted operation it was estimated. With a life expectancy of 20 years they are due for replacement.

Repair or replace 2-3 loud water coolers, having refrigeration units in need of repair could be hazardous to the environment in the event of a leak.

Most importantly older units that still use ozone depleting refrigerants.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	20
<b>Year Installed</b>	2000	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$2,162.45
<b>Quantity</b>	8	<b>Units</b>	Each
<b>Replacement Cost</b>	\$17,300		

**Comments**

Price per each. Adapt for single height, recessed or semi-recessed or drinking fountains.

**Requirement: (Renewal)**

Water Coolers - Wall-Mounted Dual-Height Renewal

**Description**

Auto generated renewal for Water Coolers - Wall-Mounted Dual-Height. System Description: Drinking fountains

**Brief Description**

**Requirement Justification and Strategy**

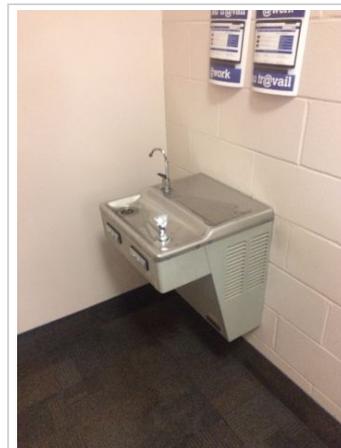
**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$21,625	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Water Coolers - Wall-Mounted Dual-Height (Each)



Water Coolers - Wall-Mounted Dual-Height (Each)



Water Coolers - Wall-Mounted Dual-Height (Each)

**D2010 - Plumbing Fixtures - Kitchenette - Cabinet, Counter and Sink**

**Description**

Majority of kitchenettes are relatively new and in good condition.  
There are 7 noted kitchenettes in the building

**System Description**

There are 7 noted kitchenettes in the building in various locations. Kitchenettes appear to be installed over multiple times for various office sectors

**System Condition & Anticipated Replacement**

Majority of kitchenettes are relatively new and in good condition with no foreseen replacements required

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	30
<b>Year Installed</b>	2000	<b>Years Remaining</b>	13 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$5.83
<b>Quantity</b>	10,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$58,325		

**Comments**

Area served adjusted to represent a reasonable cost estimate for 7 kitchenettes being replaced

**Requirement: (Renewal)**

Kitchenette - Cabinet, Counter and Sink Renewal

**Description**

Auto generated renewal for Kitchenette - Cabinet, Counter and Sink. System Description: Majority of kitchenettes are relatively new and in good condition. There are 7 noted kitchenettes in the building

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$72,906	<b>FY Action Date</b>	2030

**Requirement Type**

**Comments**

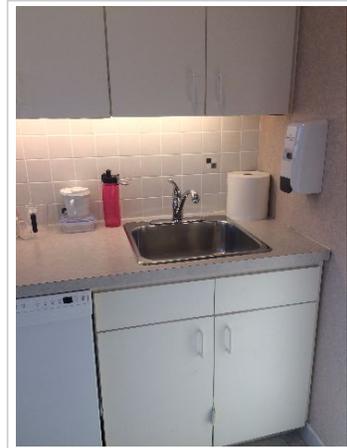
**Deferral Reason? Explain Risk Mitigation**



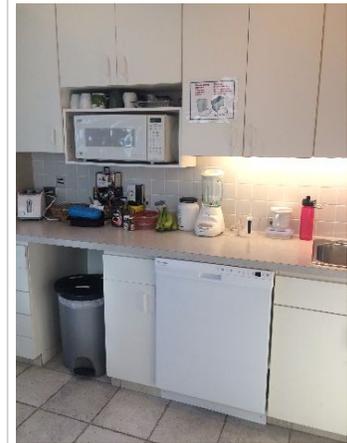
Kitchenette - Cabinet, Counter and Sink



Kitchenette - Cabinet, Counter and Sink



Kitchenette - Cabinet, Counter and Sink



Kitchenette - Cabinet, Counter and Sink

**D2010 - Plumbing Fixtures - Restroom Fixtures - Std Density - Avg Qual**

**Description**

There are 19 washrooms totaling the following plumbing fixtures:  
 - 36 water closets  
 - 31 lavatories  
 - 13 urinals

Most plumbing fixtures have been replaced at various stages and are in good operating condition, Urinals and lav faucets all implement infrared sensor control, water closets all have manual flush valves.  
 All washroom groups have had at least (1) Barrier free wall hung lav installed.

**System Description**

There are 19 washrooms totaling the following plumbing fixtures:  
 - 36 water closets  
 - 31 lavatories  
 - 13 urinals

**System Condition & Anticipated Replacement**

Most plumbing fixtures have been replaced at various stages and are in good operating condition, Urinals and lav faucets all implement infrared sensors control, water closets all have manual flush valves.  
 All washroom groups have had at least (1) Barrier free wall hung lav installed. No foreseen requirement for replacements

<b>Condition Rating</b>	Good	<b>Lifetime</b>	30
<b>Year Installed</b>	2000	<b>Years Remaining</b>	13 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$25.10
<b>Quantity</b>	3,287	<b>Units</b>	SM
<b>Replacement Cost</b>	\$82,488		

**Comments**

Price based on SM of building area  
 Building types - Lodges and dorms w/common facilities, educational facilities, business, passenger terminals, mercantile, assembly halls, arenas, theaters.

**Requirement: (Renewal)**

Restroom Fixtures - Std Density - Avg Qual Renewal

**Description**

Auto generated renewal for Restroom Fixtures - Std Density - Avg Qual. System Description: There are 19 washrooms totaling the following plumbing fixtures:  
 - 36 water closets  
 - 31 lavatories  
 - 13 urinals

Most plumbing fixtures have been replaced at various stages and are in good operating condition, Urinals and lav faucets all implement infrared sensor control, water closets all have manual flush valves.  
 All washroom groups have had at least (1) Barrier free wall hung lav installed.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$103,110	<b>FY Action Date</b>	2030

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Restroom Fixtures - Std Density - Avg Qual



Restroom Fixtures - Std Density - Avg Qual



Restroom Fixtures - Std Density - Avg Qual



Restroom Fixtures - Std Density - Avg Qual



Restroom Fixtures - Std Density - Avg Qual



Restroom Fixtures - Std Density - Avg Qual



Restroom Fixtures - Std Density - Avg Qual

**D2020 - Domestic Water Distribution - Water Dist Complete - Average**

**Description**

The domestic cold and hot water are copper. Water entrance is a 3" metered line from a dual 8" building supply to the fire pump  
 Domestic water distribution system includes all domestic water piping from the city supply up to but excluding the fixtures.  
 This includes valves, pipe, insulation, supports, etc  
 Does NOT include domestic water heaters, pumps

**System Description**

The domestic cold and hot water are copper. Water entrance is a 3" metered line from a dual 8" building supply to the fire pump  
 Domestic water distribution system includes all domestic water piping from the city supply up to but excluding the fixtures.  
 This includes valves, pipe, insulation, supports, etc

**System Condition & Anticipated Replacement**

The domestic cold and hot water are copper. Water entrance is a 3" metered line from a dual 8" building supply to the fire pump

Based on the piping age and on a life expectancy of 35 years the piping should be due for replacement, however with no known issues with the water distribution this can be deferred to a later more convenient time.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	40
<b>Year Installed</b>	1984	<b>Years Remaining</b>	7 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$30.45
<b>Quantity</b>	3,287	<b>Units</b>	SM
<b>Replacement Cost</b>	\$100,096		

**Comments**

Price per 1000 SF of building area.

**Requirement: (Renewal)**

Water Dist Complete - Average Renewal

**Description**

Auto generated renewal for Water Dist Complete - Average. System Description:  
 The domestic cold and hot water are copper. Water entrance is a 3" metered line from a dual 8" building supply to the fire pump  
 Domestic water distribution system includes all domestic water piping from the city supply up to but excluding the fixtures.  
 This includes valves, pipe, insulation, supports, etc  
 Does NOT include domestic water heaters, pumps

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	7- Year 7	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$112,108	<b>FY Action Date</b>	2024

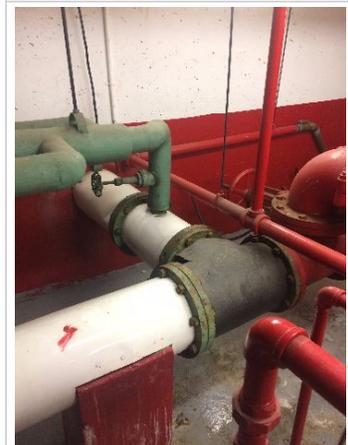
**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



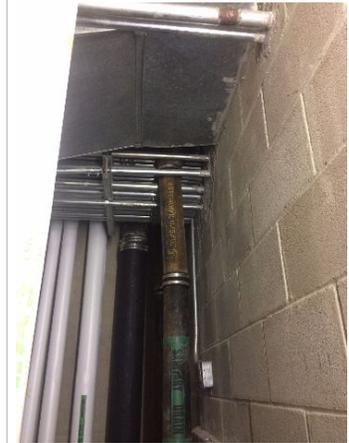
Water Dist Complete - Average



Water Dist Complete - Average



Water Dist Complete - Average



Water Dist Complete - Average



Water Dist Complete - Average

**D2020 - Domestic Water Distribution - Water Heater - Elec - Comm - 100 Gal DHWT#1**

**Description**

There is an electric domestic water heater located in the boiler room, made by Giant, 100 Gal, installed around 2001.

**System Description**

Electric domestic water heater located in the boiler room, made by Giant, 100 Gal, installed around 2001.

**System Condition & Anticipated Replacement**

The tank appears to be in average working condition and based on a life expectancy of 15 years it should be due for replacement. It was reported by the building operator that there are hot water shortages depending on shower usage. Another issue that has been reported is air locking within the system "due to many revisions to the system". It was suggested by the building operator that the system be reviewed to insure legionella is not a problem.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	15
<b>Year Installed</b>	2001	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$23,770.46
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$23,770		

**Comments**

Price per unit/assembly

**Requirement: (Renewal)**

Water Heater - Elec - Comm - 100 Gal DHWT#1 Renewal

**Description**

Auto generated renewal for Water Heater - Elec - Comm - 100 Gal DHWT#1. System Description: There is an electric domestic water heater located in the boiler room, made by Giant, 100 Gal, installed around 2001.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$26,623	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

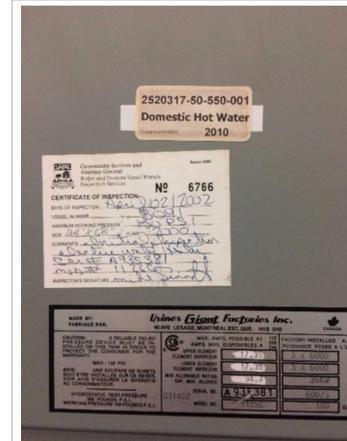
**Deferral Reason? Explain Risk Mitigation**



Water Heater - Elec - Comm - 100 Gal DHWT#1



Water Heater - Elec - Comm - 120 Gal - New



Water Heater - Elec - Comm - 120 Gal - New

**D2020 - Domestic Water Distribution - Water Heater - Elec - Comm - 60 Gal DHWT#2**

**Description**

There is an electric domestic water heater located in the boiler room, made by Rheem, 60 Gal, installed around 1996.

**System Description**

There is an electric domestic water heater located in the boiler room, made by Rheem, 60 Gal, installed around 1996.

**System Condition & Anticipated Replacement**

The tank appears to be in fair working condition and based on a life expectancy of 15 years it should be due for replacement

The hot water tank is past life expectancy and is due for replacement.

The domestic hot water system should be reviewed in depth to ensure it meets the PW MD15161 Control of Legionella in Mechanical Systems as well as still meets the needs of the building occupants after many upgrades and renovations over the years.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	15
<b>Year Installed</b>	1996	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	0.4000	<b>Unit Cost</b>	\$9,508.18
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$9,508		

**Comments**

Price per unit/assembly.  
Adjustment factor to reflect a reasonable cost estimate

**Requirement: (Renewal)**

Water Heater - Elec - Comm - 60 Gal DHWT#2 Renewal

**Description**

Auto generated renewal for Water Heater - Elec - Comm - 60 Gal DHWT#2.  
System Description: There is an electric domestic water heater located in the boiler room, made by Rheem, 60 Gal, installed around 1996.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$10,649	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Water Heater - Elec - Comm - 60 Gal



Water Heater - Elec - Comm - 60 Gal

**D3011 - Oil Supply System - Underground Fuel Tank - Fbgls - 4000L, incl. Piping & Pumps**

**Description**

No2 Oil Fuel System

**System Description**

There is a 4000 litre underground fiberglass storage tank storing no 2 oil for the boilers.

The oil piping system provides oil from the underground storage oil tanks up to the boiler room to the day tank and to the boilers.

There are 4 oil supply pumps located in a room of the garage in the basement, made by Baldor as follows:

HP 0.5  
Voltage 115  
Frequency 60  
Phase 1  
Amps 7.4  
RPM 1725

**System Condition & Anticipated Replacement**

The tank was Installed in 1997 and based on a 35 year life expectancy it should be due for replacement by 2032.

Most of the piping, except the oil piping between the boilers and the day tank, is original to the building dating back to 1981 and should be replaced .

The pumps were replaced in 1997 and appear to be in average operating condition. Pumps were not in operation during inspection. Based on a life expectancy of 20 years the pumps should be due for replacement by 2017.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	35
<b>Year Installed</b>	1997	<b>Years Remaining</b>	15 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$49,558.50
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$49,558		

**Comments**

Price per each

**Requirement: (Renewal)**

Underground Fuel Tank - Fbgls - 4000L, incl. Piping & Pumps Renewal

**Description**

Auto generated renewal for Underground Fuel Tank - Fbgls - 4000L, incl. Piping & Pumps. System Description: No2 Oil Fuel System

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$61,948	<b>FY Action Date</b>	2032

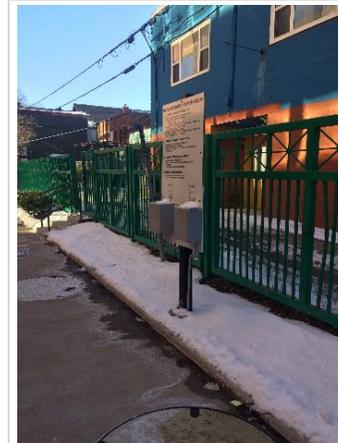
**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Underground Fuel Tank - Fbgls - 4000L, incl. Piping & Pumps



Underground Fuel Tank - Fbgls - 4000L, incl. Piping & Pumps



**D3011 - Oil Supply System - Underground Fuel Tank - Fbgls - 1000L**

**Description**

There is a 1000 litre underground fiberglass storage tank storing no 2 oil for the boilers.  
Assumed to be in average condition. The tank was Installed in 1997 and based on a 35 year life expectancy it should be due for replacement by 2032.

**System Description**

There is a 1000 litre underground fiberglass storage tank storing no 2 oil for the boilers installed in 1997 and based on a 35 year life expectancy it should be due for replacement by 2032.

**System Condition & Anticipated Replacement**

There is a 1000 litre underground fiberglass storage tank storing no 2 oil for the boilers.  
Assumed to be in average condition. The tank was Installed in 1997 and based on a 35 year life expectancy it should be due for replacement by 2032.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	35
<b>Year Installed</b>	1997	<b>Years Remaining</b>	15 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$49,558.50
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$49,558		

**Comments**

Price per each

**Requirement: (Renewal)**

Underground Fuel Tank - Fbgls - 1000L Renewal

**Description**

Auto generated renewal for Underground Fuel Tank - Fbgls - 1000L. System Description: There is a 1000 litre underground fiberglass storage tank storing no 2 oil for the boilers.  
Assumed to be in average condition. The tank was Installed in 1997 and based on a 35 year life expectancy it should be due for replacement by 2032.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$61,948	<b>FY Action Date</b>	2032

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



**D3011 - Oil Supply System - Aboveground Fuel Tank - Steel - 800L**

**Description**

There is a 800 L oil day tank installed in the boiler room providing #2 oil to the boilers. The oil is pumped up in the day tank via 2 oil pumps in a lead lag configuration. The oil tank was installed around 1995. It appears to be in good condition and based on a life expectancy of 20 years it should be due for replacement by 2015.

**System Description**

There is a 800 L oil day tank installed in the boiler room providing #2 oil to the boilers. The oil is pumped up in the day tank via 2 oil pumps in a lead lag configuration. The oil tank was installed around 1995.

**System Condition & Anticipated Replacement**

It appears to be in good condition and based on a life expectancy of 20 years it should be due for replacement by 2015. The oil tank is located away from any harsh environment and could be delayed for a few more years however it should be completed within 5 years

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	20
<b>Year Installed</b>	1995	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$22,812.98
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$22,813		

**Comments**

Price per each

**Requirement: (Renewal)**

Aboveground Fuel Tank - Steel - 800L Renewal

**Description**

Auto generated renewal for Aboveground Fuel Tank - Steel - 800L. System Description: There is a 800 L oil day tank installed in the boiler room providing #2 oil to the boilers. The oil is pumped up in the day tank via 2 oil pumps in a lead lag configuration. The oil tank was installed around 1995. It appears to be in good condition and based on a life expectancy of 20 years it should be due for replacement by 2015.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$28,516	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Aboveground Fuel Tank - Steel - 800L

**D3020 - Heat Generating Systems - Boiler HW - Gas/Oil-Fired incl. Expansion tanks**

**Description**

(2) Boilers and Expansion Tank

**System Description**

The building's primary heating is provided by two (2) oil fired, forced draft hot water boilers located in a dedicated boiler room at the roof level. Three building circulation pumps are located adjacent to the boilers and operate as lead-lag with one pump as a dedicated stand-by pump. The boilers setpoint is scheduled based on outside air (OA) temperature with the boilers being manually shut down in the spring and energized in the fall.

There are 2 expansion tanks serving the heating system located in the boiler room. They are manufactured by Amtrol, 600L installed in 1982.

**System Condition & Anticipated Replacement**

The boilers were replaced in 2001 and appears to be in poor working condition with both boilers requiring repairs during the week of the inspection. Based on a life expectancy of 25 years they should be due for replacement by 2026, however with significant signs of wear and damage these should be replaced in the near future.

There are 2 expansion tanks serving the heating system located in the boiler room. They are manufactured by Amtrol, 600L installed in 1982.

Appear to be in fair operating condition. However based on an expected working life of 15 years the tanks are due for replacement.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	17
<b>Year Installed</b>	2001	<b>Years Remaining</b>	1 (Observed)
<b>Adjustment Factor</b>	2	<b>Unit Cost</b>	\$95.36
<b>Quantity</b>	1,477	<b>Units</b>	SM
<b>Replacement Cost</b>	\$140,843		

**Comments**

Price per MBH of heating capacity  
Adjusted Life cycle to represent recommended replacement date.

**Requirement: (Renewal)**

Boiler HW - Gas/Oil-Fired incl. Expansion tanks Renewal

**Description**

Auto generated renewal for Boiler HW - Gas/Oil-Fired incl. Expansion tanks.  
System Description: (2) Boilers and Expansion Tank

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$176,054	<b>FY Action Date</b>	2018

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Replace: Boiler HW - Gas/Oil-Fired - Average 5256 MBH



Boiler HW - Gas/Oil-Fired



Boiler HW - Gas/Oil-Fired



Boiler HW - Gas/Oil-Fired

**D3020 - Heat Generating Systems - Boiler Steam - Gas/Oil-Fired w/DHW Coil and Tank**

**Description**

Humidity Steam Boiler

**System Description**

The buildings primary humidity source for the central AHUs is provided by an oil fired, forced draft steam boiler located in a dedicated boiler room at the roof level.

Location Boiler Room South  
 Make Weil McLain 80 Series  
 Date Installed 2014  
 IBR Rating Water 745 MBH

**System Condition & Anticipated Replacement**

The buildings primary humidity source for the central AHUs is provided by an oil fired, forced draft steam boiler located in a dedicated boiler room at the roof level.  
 The boiler was replaced in 2014 and appears to be in good working condition however the burner appears to be a reused Riello 28 dated to 1995 which based on a life expectancy of 20 years it should have been due for replacement in 2015

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$17,618.56
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$17,619		

**Comments**

Price per each.

**Requirement: (Renewal)**

Boiler Steam - Gas/Oil-Fired w/DHW Coil and Tank Renewal

**Description**

Auto generated renewal for Boiler Steam - Gas/Oil-Fired w/DHW Coil and Tank.  
 System Description: Humidity Steam Boiler

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$22,023	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Boiler Steam - Gas/Oil-Fired



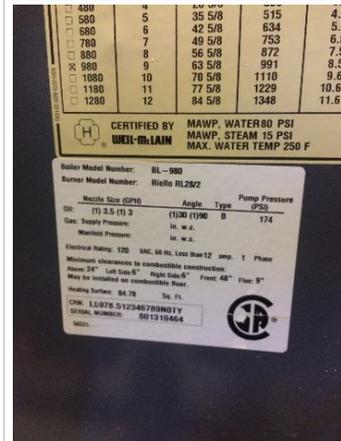
Boiler Steam - Gas/Oil-Fired



Boiler Steam - Gas/Oil-Fired



Boiler Steam - Gas/Oil-Fired



Boiler Steam - Gas/Oil-Fired



Boiler Steam - Gas/Oil-Fired



Boiler Steam - Gas/Oil-Fired

**D3030 - Cooling Generating Systems - Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps**

**Description**

4 Carrier chillers, 75 tons each with a total capacity of 300 tons including 4 pumps P#11-P#14

**System Description**

4 Carrier chillers, 75 tons each with a total capacity of 300 tons . Each individual chiller has its own circulator pump (P#11-P#14) which feeds a main chilled water loop. The chillers were replaced in 2011 and are in excellent condition. Chillers 1, 2 and 4 failed in 2013/14 repaired under warranty.

**System Condition & Anticipated Replacement**

The 4 Carrier chillers were installed in 2011 and therefore in excellent condition. Based on a life expectancy of 20 years the chillers should be due for replacement by 2031.

<b>Condition Rating</b>	Excellent	<b>Lifetime</b>	20
<b>Year Installed</b>	2011	<b>Years Remaining</b>	14 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$67.51
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$1,109,485		

**Comments**

Price based on SM of building area

**Requirement: (Renewal)**

Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps Renewal

**Description**

Auto generated renewal for Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps. System Description: 4 Carrier chillers, 75 tons each with a total capacity of 300 tons including 4 pumps P#11-P#14

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$1,386,856	<b>FY Action Date</b>	2031

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps



Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps



Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps



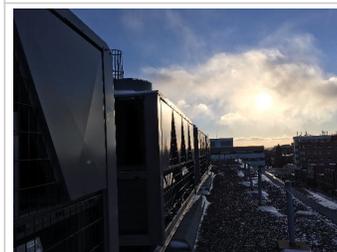
Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps



Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps



Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps



Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps

**D3040 - Distribution Systems - Exhaust System - General Building**

**Description**

(5) Miscellaneous exhaust fans

**System Description**

There are a number of miscellaneous fractional HP exhaust fans: 2 on the roof of level 3, an elevator machine room exhaust fan and an oil pump room exhaust fan.

**System Condition & Anticipated Replacement**

Ventilation fans are in operational condition however original to the building and are over 30 years old. They have an expected service life of 25 years and as such they have exceeded their expected working life and require replacement.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	25
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	179	<b>Unit Cost</b>	\$1,419.97
<b>Quantity</b>	1	<b>Units</b>	SM
<b>Replacement Cost</b>	\$1,420		

**Comments**

Price per 1000 SF of building area.

**Requirement: (Renewal)**

Exhaust System - General Building Renewal

**Description**

Auto generated renewal for Exhaust System - General Building. System Description: (5) Miscellaneous exhaust fans

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$1,775	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Exhaust System - General Building



Exhaust System - General Building

**D3040 - Distribution Systems - Perimeter Heat System - Hydronic Fin Tube**

**Description**

A perimeter hot water baseboard radiation system complete with pneumatic zone valves serves the majority of the building. Hydronic unit heaters and cabinet heaters serve the buildings entrances and service areas.

The baseboard units are original with the building and appear to be in fair condition. However all their valves are pneumatically controlled and consequently the valves and their controls have surpassed their expected working life and require replacement. The new valves should have electronic actuators which would require control upgrades as well.

**System Description**

A perimeter hot water baseboard, Hydronic unit heaters and cabinet heaters systems with pneumatic zone valves serves the majority of the building.

**System Condition & Anticipated Replacement**

The baseboard units are original with the building and appear to be in fair condition. However all their valves are pneumatically controlled and consequently the valves and their controls have surpassed their expected working life and require replacement. The new valves should have electronic actuators which would require control upgrades as well.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	18
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$90.09
<b>Quantity</b>	4,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$360,372		

**Comments**

Price per 1000 SF of building area served

**Requirement: (Renewal)**

Perimeter Heat System - Hydronic Fin Tube Renewal

**Description**

Auto generated renewal for Perimeter Heat System - Hydronic Fin Tube. System Description: A perimeter hot water baseboard radiation system complete with pneumatic zone valves serves the majority of the building. Hydronic unit heaters and cabinet heaters serve the buildings entrances and service areas.

The baseboard units are original with the building and appear to be in fair condition. However all their valves are pneumatically controlled and consequently the valves and their controls have surpassed their expected working life and require replacement. The new valves should have electronic actuators which would require control upgrades as well.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$403,617	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Perimeter Heat System - Hydronic Fin Tube

**D3040 - Distribution Systems - Central AHU - VAV System w/Distribution**

**Description**

AHU#1, AHU#2, AHU#4, AHU#5-Original AHU

**System Description**

The duct system is original with the building dating back to 1981 and consists of both rigid metal and flexible ducts. The ductwork distribution systems carries conditioned air from 5 air handler units located in the penthouse and on the lower roof of the building to the VAV boxes in the space. It also returns air from various spaces back to the mechanical room to the air handlers mixing boxes. Each AHU is broken down into a large Supply Fan and Return Fan

The component is in generally poor to fair condition however the system is 30 years old and has reached the end of its expected working life. Many pneumatic VAV boxes have issues and no longer are able to be repaired due to lack of available parts. Many of the VAV boxes are manually held open by 'C' clamps and are no longer functional which would certainly be affecting the building's energy consumption.

System does implement Coyote drives on the main AHU's.

AHU#1, AHU#2, AHU#4 do not implement unit heating coils, use perimeter heat only and therefore It was also reported that during the winter months the fresh air dampers are closed to the AHU which is not a recommended strategy

AHU#5 uses unit heating coil to serve Atrium supply air

AHU#3 has been replaced with AHU#6 and been abandoned in place. (AHU#6 omitted here)

The air handling system for the building consists of four (4) indoor air handling units and one (1) roof top unit (omitted here).

**System Condition & Anticipated Replacement**

All equipment listed is past service life and will continue to climb in maintenance costs annually. It is recommended the remainder of the original air handling units be replaced. In addition to the AHU replacements the original pneumatic VAV boxes should be replaced.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	25
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$213.19
<b>Quantity</b>	3,287	<b>Units</b>	SM
<b>Replacement Cost</b>	\$700,763		

**Comments**

Price per SM of building area.

**Requirement: (Renewal)**

Central AHU - VAV System w/Distribution Renewal

**Description**

Auto generated renewal for Central AHU - VAV System w/Distribution. System Description: AHU#1, AHU#2, AHU#4, AHU#5-Original AHU

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$875,954	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Central AHU - VAV System w/Distribution - New



Central AHU - VAV System w/Distribution - New



Central AHU - VAV System w/Distribution

**D3040 - Distribution Systems - Central AHU - VAV System w/Distribution -**

**Description**

AHU#6 roof top unit replaced

**System Description**

AHU#3 has been replaced with AHU#6 and been abandoned in place.

AHU#6 is a packaged roof mounted air handling unit which replaced the original indoor AHU#3 that has been abandoned in place. AHU#6 serves the north side of the third floor and consists of a packaged cooling section, electric heating section, and variable speed, 20hp supply fan complete with power exhaust system. A heat recovery ventilator (HRV) provides heat recovery from the exhaust air and operates based on the schedule of AHU#6 and space CO2 levels.

**System Condition & Anticipated Replacement**

The unit was installed in 2008 when the north side of the third floor was renovated. Unit appears to be in good operational condition

<b>Condition Rating</b>	Good	<b>Lifetime</b>	25
<b>Year Installed</b>	2008	<b>Years Remaining</b>	16 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$213.19
<b>Quantity</b>	200	<b>Units</b>	SM
<b>Replacement Cost</b>	\$42,638		

**Comments**

Price per 1000 SF of building area.  
Adjusted area served to reflect reasonable cost of replacement

**Requirement: (Renewal)**

Central AHU - VAV System w/Distribution - Renewal

**Description**

Auto generated renewal for Central AHU - VAV System w/Distribution -. System Description: AHU#6 roof top unit replaced

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$53,298	<b>FY Action Date</b>	2033

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Central AHU - VAV System w/Distribution -

**D3040 - Distribution Systems - Exhaust System - General Building**

**Description**

General exhaust fans (EF-5 and EF-6)

**System Description**

Two exhaust fans (EF-5 and EF-6) are located in the parkade and exhaust the north and south washrooms directly into the garage area. Both fans are inline, made by Mark Hot, 5HP, 575V/3ph.

**System Condition & Anticipated Replacement**

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	25
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	3,500	<b>Unit Cost</b>	\$27,764.77
<b>Quantity</b>	1	<b>Units</b>	SM
<b>Replacement Cost</b>	\$27,765		

**Comments**

Price per 1000 SF of building area.

1769sf x1000x2

**Requirement: (Renewal)**

Exhaust System - General Building Renewal

**Description**

Auto generated renewal for Exhaust System - General Building. System Description: General exhaust fans (EF-5 and EF-6)

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$34,706	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Exhaust System - General Building



Exhaust System - General Building



Exhaust System - General Building



Exhaust System - General Building

**D3040 - Distribution Systems - Heat Exchanger - Liquid/Liquid - Plate and Frame**

**Description**

Infloor heating system serving the ramp leading to the parkade located near South East entrance to parking garage.

**System Description**

There is an infloor heating system serving the ramp leading to the parkade located near South East entrance to parking garage. The glycol loop running under the ramp exchanges heat with a hot water loop via a small heat exchanger.

**System Condition & Anticipated Replacement**

The system appeared to be in fair condition, well maintained with recent upgrades. Based on a life expectancy of 25 years the system should be due for replacement by 2033.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	25
<b>Year Installed</b>	2008	<b>Years Remaining</b>	16 (Observed)
<b>Adjustment Factor</b>	5	<b>Unit Cost</b>	\$86.96
<b>Quantity</b>	50	<b>Units</b>	SM
<b>Replacement Cost</b>	\$4,348		

**Comments**

Price per 1000 SF of building area served.  
Adjustment factor was used to show a more realistic system replacement cost. Pricing would be designed to represent a larger building floor area, this instance is only a small ramp being served.

**Requirement: (Renewal)**

Heat Exchanger - Liquid/Liquid - Plate and Frame Renewal

**Description**

Auto generated renewal for Heat Exchanger - Liquid/Liquid - Plate and Frame.  
System Description: Infloor heating system serving the ramp leading to the parkade located near South East entrance to parking garage.

**Brief Description**



Heat Exchanger - Liquid/Liquid - Plate and Frame

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$5,435	<b>FY Action Date</b>	2033

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**D3040 - Distribution Systems - Exhaust System - Garage**

**Description**

There are 4 exhaust fans located on parking garage on the west wall interlocked with a fresh air damper and 4 CO sensors located throughout the garage. This system comes on when the CO levels detected by the CO sensors reach a certain threshold.

The ventilation system in the garage except the CO sensors, is original with the building. Based on its appearance and on a life expectancy of 25 years the system is due for replacement.

**System Description**

There are 4 exhaust fans located in the parking garage on the west wall interlocked with a fresh air damper and 4 CO sensors located throughout the garage. This system comes on when the CO levels detected by the CO sensors reach a certain threshold.

The interlocked fresh air damper has been out of operation for several years and has several parts removed to make it unusable which would not meet the required airflows for building code.

**System Condition & Anticipated Replacement**

The ventilation system in the garage except the CO sensors, is original with the building. Based on its appearance and on a life expectancy of 25 years the system is due for replacement.

The interlocked fresh air damper has been out of operation for several years and has several parts removed to make it unusable which would not meet the required airflows for building code.

In addition to this the garage is also receiving all building general and sanitary exhaust which is not an approved design to meet current required building codes.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	25
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	0.5000	<b>Unit Cost</b>	\$14.97
<b>Quantity</b>	4,000	<b>Units</b>	SM
<b>Replacement Cost</b>	\$59,884		

**Comments**

Price per SM of area served.

**Requirement: (Renewal)**

Exhaust System - Garage Renewal

**Description**

Auto generated renewal for Exhaust System - Garage. System Description: There are 4 exhaust fans located on parking garage on the west wall interlocked with a fresh air damper and 4 CO sensors located throughout the garage. This system comes on when the CO levels detected by the CO sensors reach a certain threshold.

The ventilation system in the garage except the CO sensors, is original with the building. Based on its appearance and on a life expectancy of 25 years the system is due for replacement.

**Brief Description**

**Requirement Justification and Strategy**

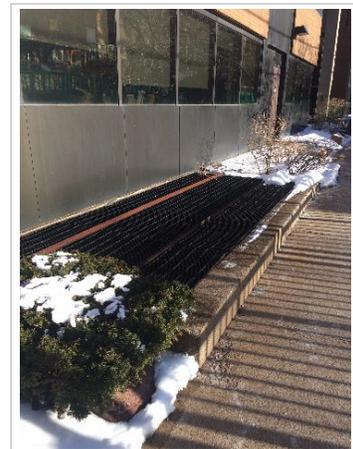
**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$74,855	<b>FY Action Date</b>	2017

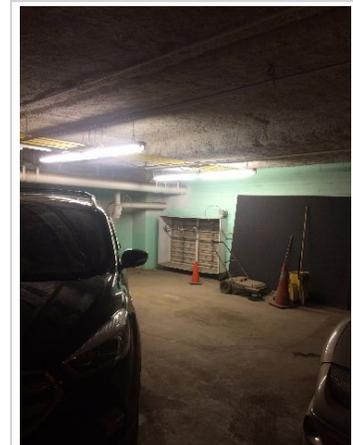
**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Exhaust System - Garage



Exhaust System - Garage



**D3050 - Terminal and Package Units - Rooftop Unitary AC - Elec. Heat/Cooling**

**Description**

There is a Carrier roof top unit (AHU-6) which is a packaged unit replacing the original indoor AHU-3 that has been abandoned in place. AHU-6 serves the north side of the third floor and consists of a 50 ton packaged cooling section, electric heating section, and variable speed supply fan complete with power exhaust system. The unit was installed in 2008 when the entire north side of the third floor was renovated. A heat recovery ventilator (HRV) provides heat recovery for the exhaust air and operators based on the schedule of AHU-6 and space CO2 levels.

The AHU-6 on the roof of the 3rd floor is in excellent condition as it was replaced in 2008. Based on a life expectancy of 25 years the unit should be due for replacement by 2033.

**System Description**

There is a Carrier roof top unit (AHU-6) which is a packaged unit replacing the original indoor AHU-3 that has been abandoned in place. AHU-6 serves the north side of the third floor and consists of a 50 ton packaged cooling section, electric heating section, and variable speed supply fan complete with power exhaust system. The unit was installed in 2008 when the entire north side of the third floor was renovated. A heat recovery ventilator (HRV) provides heat recovery for the exhaust air and operators based on the schedule of AHU-6 and space CO2 levels.

**System Condition & Anticipated Replacement**

The AHU-6 on the roof of the 3rd floor is in excellent condition as it was replaced in 2008. Based on a life expectancy of 25 years the unit should be due for replacement by 2033.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	25
<b>Year Installed</b>	2008	<b>Years Remaining</b>	16 (Observed)
<b>Adjustment Factor</b>	0.5000	<b>Unit Cost</b>	\$33,02
<b>Quantity</b>	3,287	<b>Units</b>	SM
<b>Replacement Cost</b>	\$108,546		

**Comments**

Note: 20 ton unit selected for this System example.

**Requirement: (Renewal)**

Rooftop Unitary AC - Elec. Heat/Cooling Renewal

**Description**

Auto generated renewal for Rooftop Unitary AC - Elec. Heat/Cooling. System Description: There is a Carrier roof top unit (AHU-6) which is a packaged unit replacing the original indoor AHU-3 that has been abandoned in place. AHU-6 serves the north side of the third floor and consists of a 50 ton packaged cooling section, electric heating section, and variable speed supply fan complete with power exhaust system. The unit was installed in 2008 when the entire north side of the third floor was renovated. A heat recovery ventilator (HRV) provides heat recovery for the exhaust air and operators based on the schedule of AHU-6 and space CO2 levels.

The AHU-6 on the roof of the 3rd floor is in excellent condition as it was replaced in 2008. Based on a life expectancy of 25 years the unit should be due for replacement by 2033.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$135,682	<b>FY Action Date</b>	2033

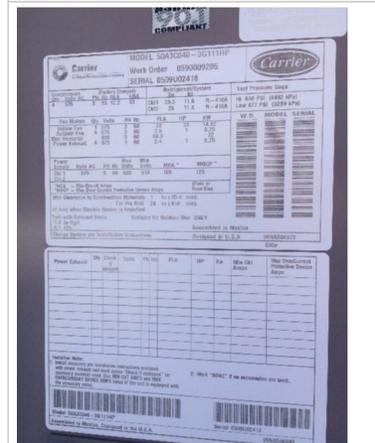
**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Rooftop Unitary AC - Elec. Heat/Cooling



Rooftop Unitary AC - Elec. Heat/Cooling

**D3060 - Controls and Instrumentation - DDC System - Extensive**

**Description**

The control system in the building is a mixture of pneumatic controls for the baseboard heating valves, ventilation air damper actuators and heating coils and DDC controls for the rest of the building. The pneumatic controls are original with the building and the DDC controls, except the 3rd floor South side are approx. 15 years old.

The DDC and pneumatic controls system, except level 3 South has reached the end of its service life and requires replacement. The DDC controls serving the level 3 South were installed around 2008 and based on a life expectancy of 10 years they should be due for replacement in 2018.

**System Description**

The control system in the building is a mixture of pneumatic controls for the baseboard heating valves, ventilation air damper actuators and heating coils and DDC controls for the rest of the building. The pneumatic controls are original with the building (33 years old) and the DDC controls, except the 3rd floor South side are approx. 15 years old. The DDC controls serving the level 3 South were installed around 2008 and based on a life expectancy of 10 years they should be due for replacement in 2018.

**System Condition & Anticipated Replacement**

All pneumatic control valves and pneumatic controls equipment have surpassed their useful life expectancy and are in need of replacement.

All DDC are a minimum of 9 years old and the majority are 15 years old. As a typical DDC system has a relatively short life cycle of 10 years to have readily available replacement parts this DDC will need to be replaced in its entirety within the next 5 years.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	20
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$33.71
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$554,074		

**Comments**

Price per 1000 SF of building area.

**Requirement: (Renewal)**

DDC System - Extensive Renewal

**Description**

Auto generated renewal for DDC System - Extensive. System Description: The control system in the building is a mixture of pneumatic controls for the baseboard heating valves, ventilation air damper actuators and heating coils and DDC controls for the rest of the building. The pneumatic controls are original with the building and the DDC controls, except the 3rd floor South side are approx. 15 years old.

The DDC and pneumatic controls system, except level 3 South has reached the end of its service life and requires replacement.

The DDC controls serving the level 3 South were installed around 2008 and based on a life expectancy of 10 years they should be due for replacement in 2018.

**Brief Description**

**Requirement Justification and Strategy**

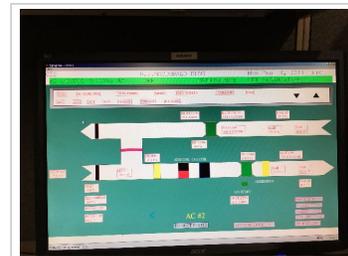
**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$692,593	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



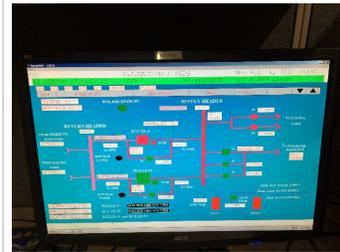
DDC System - Extensive



DDC System - Extensive



DDC System - Extensive



DDC System - Extensive



DDC System - Extensive

**D40 - Fire Protection - Wet Sprinkler System - Light Hazard w/ 60Hp electric Pump**

**Description**

Electric fire pump, standpipe system and 31 fire hose cabinets

**System Description**

There is an electric fire pump located in the basement, North West Corner. The pump is made by Brooks Crompton Parkinson Ltd, 575V/3ph and has 60 HP.

There are 31 fire hose cabinets throughout the building served by a standpipe system.

**System Condition & Anticipated Replacement**

The fire pump and standpipes are original to the building and based on a life expectancy of 30 years and on appearance they are due for replacement.

All the standpipes are original with the building dating back to 1981, slight corrosion visible, no excessive repairs noted by maintenance personnel.

The fire protection being a life safety system should be replaced preventatively rather than waiting for a potentially hazardous issue.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$54.12
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$889,424		

**Comments**

Price per SM of building area.

Light Hazard per NFPA 13 - Sprinklers includes offices, data centers, hospitals, veterinaries, residences, and nursing homes.

**Requirement: (Renewal)**

Wet Sprinkler System - Light Hazard w/ 60Hp electric Pump Renewal

**Description**

Auto generated renewal for Wet Sprinkler System - Light Hazard w/ 60Hp electric Pump. System Description: Electric fire pump, standpipe system and 31 fire hose cabinets

**Brief Description**

**Requirement Justification and Strategy**

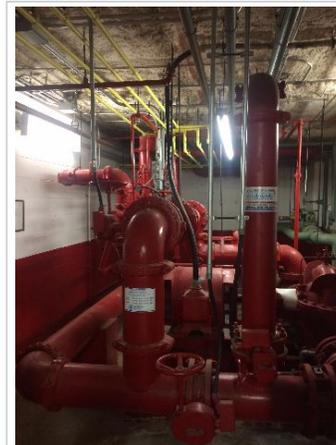
**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$1,111,780	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Wet Sprinkler System - Light Hazard w/ 60Hp electric Pump

**D40 - Fire Protection - Fire Extinguishers - Dry Chem w/Cabinet**

**Description**

There are approximate 65 fire extinguishers distributed throughout the building as required under the National Fire Code. These extinguishers are inspected monthly by the maintenance personnel and yearly by a certified company.

All the fire extinguishers were fully charged and had valid inspection tags. Replace and recharge as required.

**System Description**

There are approximate 65 fire extinguishers distributed throughout the building as required under the National Fire Code. These extinguishers are inspected monthly by the maintenance personnel and yearly by a certified company.

**System Condition & Anticipated Replacement**

All the fire extinguishers were fully charged and had valid inspection tags. Replace and recharge as required by code, no noted units with damage

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	40
<b>Year Installed</b>	1984	<b>Years Remaining</b>	7 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$398.47
<b>Quantity</b>	65	<b>Units</b>	Each
<b>Replacement Cost</b>	\$25,901		

**Comments**

Price per each fire extinguisher and cabinet. Select this System if SF basis is not appropriate.

**Requirement: (Renewal)**

Fire Extinguishers - Dry Chem w/Cabinet Renewal

**Description**

Auto generated renewal for Fire Extinguishers - Dry Chem w/Cabinet. System Description: There are approximate 65 fire extinguishers distributed throughout the building as required under the National Fire Code. These extinguishers are inspected monthly by the maintenance personnel and yearly by a certified company.

All the fire extinguishers were fully charged and had valid inspection tags. Replace and recharge as required.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	7- Year 7	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$27,196	<b>FY Action Date</b>	2024

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Fire Extinguishers - Dry Chem w/Cabinet

**D5012 - Low Tension Service and Dist. - Main Electrical Service - 2000A, 600/347V**

**Description**

Main electrical service system includes 2000A, 600/347V electrical service, main switchboard and meter cabinet.

**System Description**

Main electrical service system consists of a 2000A, 600/347V electrical service, main switchboard and meter cabinet.

**Main Switchboard:**

Square D Masterpact NW20H Main Breaker

600/347V, 2000A, 3ph, 4 wire

3 distribution cabinets with 4 fused disconnects feeding Bus Duct #1, Bus Duct #2, Panel DPX, and Panel P3G

**Meter Cabinet:**

4 Digital Power Meters:

- Main Switchboard
- Bus Duct #1
- Bus Duct #2
- P3G

**System Condition & Anticipated Replacement**

The main electrical service, main switchboard, and metering cabinet are in good physical and working condition. Anticipated system replacement in 2038.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	30
<b>Year Installed</b>	2009	<b>Years Remaining</b>	22 (Observed)
<b>Adjustment Factor</b>	1.5000	<b>Unit Cost</b>	\$237,505.37
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$237,505		

**Comments**

480/277V Service Entrance system was selected and renamed to 600/347V as there is not a 600V service entrance system to choose from in VFA.

Unit cost adjustment factor changed to 1.5 due to actual cost of electrical equipment. A more accurate cost for the system is approximately 233,000 Canadian dollars

**D5012 - Low Tension Service and Dist. - Distribution Equipment - 2000A, 600/347V & 208/120V**

**Description**

The electrical distribution system for this building consists of two bus ducts, one motor control center (MCC), panelboards, transformers, and feeders.

**System Description**

The electrical distribution system for this building consists of two bus ducts, one motor control center (MCC), 347/600V panelboards, 120/208V panelboards, 15-150kVA transformers, and feeders. Bus ducts run vertically from main floor to penthouse, supply power from the main switchboard to the majority of the building. The MCC is located in the penthouse mechanical room. Panelboards and transformers are located in sub electrical rooms throughout the facility.

Bus Ducts:  
 Square D, Cat. #AP-508-6  
 800A, 600/347V  
 3 phase, 4 wire

Motor Control Center:  
 Square D  
 600V, 600A  
 3 phase, 3 wire

Panelboards:  
 Square D, Siemens, Cutler-Hammer, and Federal Pioneer  
 120/208V or 347 600V, 40A-600A  
 3 phase, 4-wire

Transformers:  
 Polygon, Hammond, Mirus, and Rex  
 15 - 150kVA  
 600V Primary, 120/208V Secondary  
 3 phase

**System Condition & Anticipated Replacement**

Bus ducts were installed during original building construction and are in good condition. With on going preventative maintenance, Bus ducts will continue to operate adequately. The MCC in the facility is in poor condition. It has reached the end of its expected service life and replacement parts are no longer available. It is recommended that the MCC be replaced. Panelboards and transformers vary in age and condition. Most distribution panels are in fair condition as they were installed within the first 10 years of building operation and have reached the end of their life expectancy. Distribution panels that were installed in 2000 or later are still in good condition. Similarly, transformers installed within the first 10 years of building operation are in fair condition, while newer installations are in good condition.

In electrical rooms 1, 3, 5, 6, 7, 10, and 12, transformers are installed in front of distribution panelboards or disconnects, such that there is not 1m of working space available as required by the Canadian Electrical Code. It is recommended that all transformers installed within 1m working space of panels and disconnects be relocated to adhere to code.

Overall, distribution equipment has been well maintained and no equipment other than the MCC is in need of immediate replacement.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	10 (Observed)
<b>Adjustment Factor</b>	0.7000	<b>Unit Cost</b>	\$61.47
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$1,010,201		

**Comments**

480/277V Distribution system was selected and renamed to 600/347V as there is not a 600V service entrance system to choose from in VFA.  
 Unit cost adjustment factor changed to 0.7 due to actual cost of electrical equipment. TA more accurate cost for the system is approximately 1.1 million Canadian dollars

**Requirement: (Renewal)**

Distribution Equipment - 2000A, 600/347V & 208/120V Renewal

**Description**

Auto generated renewal for Distribution Equipment - 2000A, 600/347V & 208/120V. System Description: The electrical distribution system for this building consists of two bus ducts, one motor control center (MCC), panelboards, transformers, and feeders.

**Brief Description**



Distribution Equipment - 2000A, 600/347V & 208/120V

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$1,262,752	<b>FY Action Date</b>	2027

**Requirement Type**

Comments

Deferral Reason? Explain Risk Mitigation



Distribution Equipment - 2000A, 600/347V & 208/120V



Distribution Equipment - 2000A, 600/347V & 208/120V

**Requirement: (Non-Renewal)**

Replace Motor Control Center

**Description**

Square D, 600V, Motor Control Center

**Brief Description**

The MCC for this facility is in poor condition and in need of replacement.

**Requirement Justification and Strategy**

It has reached the end of its expected service life and replacement parts are no longer available. It is recommended that the MCC be replaced.

**Implication of Requirement Deferral**

The implications of requirement deferral include increased risk of equipment failure, and limitations to mechanical system expansion as replacement parts are no longer available.

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Reliability
<b>Estimated Cost</b>	\$35,541	<b>FY Action Date</b>	2018

**Requirement Type**Capital

**Comments**

Adjustment factor changed to 0.3 as the MCC would cost \$44,000 to replace.

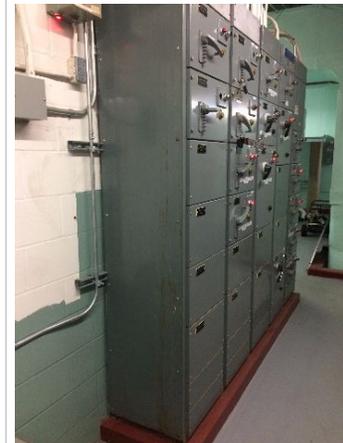
**Deferral Reason? Explain Risk Mitigation**



Replace Motor Control Center



Replace Motor Control Center



Replace Motor Control Center

**Requirement: (Non-Renewal)**

Relocate Transformers in Front of Electrical Components

**Description**

Transformers are installed in front of distribution panelboards or disconnects, such that there is not 1m of working space available as required by the Canadian Electrical Code.

**Brief Description**

In electrical rooms 1, 3, 5, 6, 7, 10, and 12, transformers are installed in front of distribution panelboards or disconnects, such that there is not 1m of working space available as required by the Canadian Electrical Code.

**Requirement Justification and Strategy**

It is recommended that all transformers installed within 1m working space of panels and disconnects be relocated to adhere to code requirements.

**Implication of Requirement Deferral**

Requirement deferral increases risk of equipment failure.

<b>Priority</b>	1- Year 1	<b>Category</b>	R - Building Code
<b>Estimated Cost</b>	\$26,301	<b>FY Action Date</b>	2018

**Requirement Type** Repair

**Comments**

Adjustment factor changed to 12.1 to reflect an estimated cost of \$4000 CAD to relocate each transformer.

**Deferral Reason? Explain Risk Mitigation**



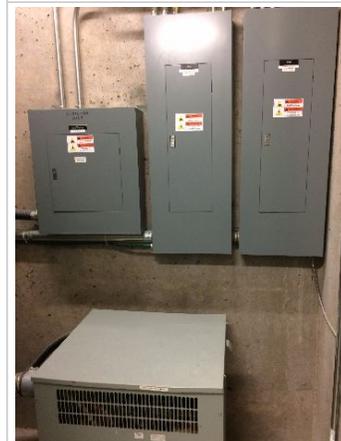
Relocate Transformers in Front of Electrical Components



Relocate Transformers in Front of Electrical Components



Relocate Transformers in Front of Electrical Components



Relocate Transformers in Front of Electrical Components



Relocate Transformers in Front of Electrical Components



Relocate Transformers in Front of Electrical Components



Relocate Transformers in Front of Electrical Components



Relocate Transformers in Front of Electrical Components

**D5020 - Lighting and Branch Wiring - Lighting - Exterior - Wall Packs**

**Description**

Exterior lighting consists of HID wall packs.

**System Description**

Exterior building lighting consists of 347V HID wall packs.

**System Condition & Anticipated Replacement**

Wall packs are in fair condition, due to corrosion occurring on the fixture body. It is recommended that they be replaced by new energy efficient LED wall packs by 2020.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	15
<b>Year Installed</b>	1999	<b>Years Remaining</b>	3 (Observed)
<b>Adjustment Factor</b>	1.5000	<b>Unit Cost</b>	\$626.13
<b>Quantity</b>	14	<b>Units</b>	Each
<b>Replacement Cost</b>	\$8,766		

**Comments**

Unit cost adjustment factor changed to 1.5 due to actual cost of electrical equipment. A more accurate cost for the system is approximately 15,000 Canadian dollars.

**Requirement: (Renewal)**

Lighting - Exterior - Wall Packs Renewal

**Description**

Auto generated renewal for Lighting - Exterior - Wall Packs. System Description: Exterior lighting consists of HID wall packs.

**Brief Description**

**Requirement Justification and Strategy**

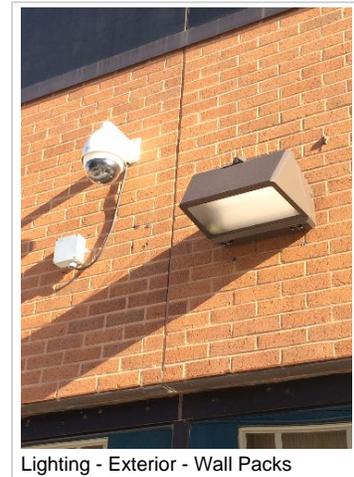
**Implication of Requirement Deferral**

<b>Priority</b>	3- Year 3	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$10,957	<b>FY Action Date</b>	2020

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Lighting - Exterior - Wall Packs

**Requirement: (Non-Renewal)**

Replace HID Wall Pack Lighting Fixture - Each

**Description**

Exterior lighting - HID wall packs

**Brief Description**

Exterior wall packs are 347V with HID type lamps.

**Requirement Justification and Strategy**

Exterior wall packs are at the end end of their life expectancy. It is recommended they be replaced with LED wall packs to provide better illumination.

**Implication of Requirement Deferral**

Implication of deferral is increased risk in exterior lighting failure.

<b>Priority</b>	3- Year 3	<b>Category</b>	I - Reliability
<b>Estimated Cost</b>	\$10,109	<b>FY Action Date</b>	2020

**Requirement Type**Capital

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Replace HID Wall Pack Lighting Fixture - Each

**D5021 - Branch Wiring Devices - Branch Wiring Devices**

**Description**

Branch wiring devices system in this facility includes starters, variable speed drives (VSDs), and disconnect switches.

**System Description**

Branch wiring devices system in this facility includes starters, variable speed drives (VSDs), and disconnect switches. VSDs are located in the penthouse mechanical room. Starters are located in electrical or mechanical rooms throughout the building. Disconnect switches in this facility vary in size, age, and condition. They are located throughout the facility in mechanical rooms, electrical rooms, and the parking garage.

HOA Starters:  
Square D,  
208V or 600V, 15-30A  
3 Phase, 3 wire

Variable Speed Drives:  
Coyote Electronics  
600V

Disconnect Switches:  
Square D, Siemens, Carrier  
208V or 600V, 30-200A  
3 phase, 3 wire

**System Condition & Anticipated Replacement**

Branch wiring devices in this facility vary in age in condition. Starters are in fair - excellent condition. Switches installed in 1984 have reached the end of their life expectancy but are still in working condition. Switches installed in 2014 are in excellent condition. VSDs were installed in 2009 and are in good condition. Disconnect switches vary in condition from poor - good. Most disconnects are in fair - good condition depending on the environment they were installed, however, there are 6 disconnects in very poor condition and should be replaced at this time.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	3 (Observed)
<b>Adjustment Factor</b>	0.2500	<b>Unit Cost</b>	\$8.01
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$131,709		

**Comments**

Unit cost adjustment factor changed to .25 due to actual cost of electrical equipment. A more accurate cost for the system is approximately 233,000 Canadian dollars.

**Requirement: (Renewal)**

Branch Wiring Devices Renewal

**Description**

Auto generated renewal for Branch Wiring Devices. System Description: Branch wiring devices system in this facility includes starters, variable speed drives (VSDs), and disconnect switches.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	3- Year 3	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$164,636	<b>FY Action Date</b>	2020

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Branch Wiring Devices



Branch Wiring Devices



Branch Wiring Devices

**Requirement: (Non-Renewal)**

Replace Branch Wiring Devices - 100A Disconnect Switch

**Description**

Siemens, 600V, 100A, Disconnect Switch

**Brief Description**

600V, 100A Disconnect switch is in poor condition and in need of replacement.

**Requirement Justification and Strategy**

Disconnect switch is passed life ex

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Reliability
<b>Estimated Cost</b>	\$1,188	<b>FY Action Date</b>	2018

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Replace Branch Wiring Devices - 100A Disconnect Switch



Replace Branch Wiring Devices - 100A Disconnect Switch



Replace Branch Wiring Devices - 100A Disconnect Switch

**Requirement: (Non-Renewal)**

Replace Branch Wiring Devices - 30A Disconnect Switch

**Description**

Replace 4 Square D, 600V, 60A Disconnect Switches.

**Brief Description**

4, 600V, 60A Disconnect switches are in poor condition and in need of replacement.

**Requirement Justification and Strategy**

Disconnect Switches are passed end of life expectancy with heavy corrosion on enclosure.

**Implication of Requirement Deferral**

Implication of deferral is increased risk of equipment failure.

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Reliability
<b>Estimated Cost</b>	\$3,013	<b>FY Action Date</b>	2018

**Requirement Type**Capital

**Comments**



Replace Branch Wiring Devices - 30A Disconnect Switch



Replace Branch Wiring Devices - 30A Disconnect Switch

**Deferral Reason? Explain Risk Mitigation**

**Requirement: (Non-Renewal)**

Replace Branch Wiring Devices - 60A Disconnect Switch

**Description**

Square D, 600V, 60A Disconnect Switch

**Brief Description**

600V, 60A Disconnect Switch is poor condition and in need of replacement. This is located within the Air Handling Unit in the penthouse.

**Requirement Justification and Strategy**

Disconnect Switch is passed end of life expectancy and has heavy corrosion on enclosure, due to the environment it was installed.

**Implication of Requirement Deferral**

Implication of deferral is increased risk of equipment failure.

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Reliability
<b>Estimated Cost</b>	\$1,287	<b>FY Action Date</b>	2018

**Requirement Type**Capital

**Comments**

Adjust factor changed to 0.5 as a more accurate cost for a 60A disconnect is approximately \$1500.

**Deferral Reason? Explain Risk Mitigation**



Replace Branch Wiring Devices - 60A Disconnect Switch

**D5022 - Lighting Equipment - Interior Lighting**

**Description**

The interior lighting system consists of primarily fluorescent fixtures controlled by GE relay panels.

**System Description**

The interior lighting system consists of primarily 305x1220mm or 610x610mm fixtures with T8 or T5 lamps. Other types of lighting used in the building include pot lighting, suspended direct and suspended indirect fixtures, wall mounted fixtures in stairwells, and pendant mounted fixtures in the main lobby.

All lighting in the building is fed from designated 347V lighting panels excluding the 120V stairwell lighting. The lighting control system includes General Electric relay panels, manual light switches, occupancy sensors, and time of day schedules. Certain light fixtures are on designated night lighting circuits to provide emergency lighting in case of power failure.

**System Condition & Anticipated Replacement**

The condition of the lighting system varies from poor to good as there have been several upgrades since original construction. In areas with old 305x1220mm, or 610x610mm fluorescent fixtures, the lighting is in poor condition. The frames and lenses have become brittle and often break when lamps are being replaced. In areas with suspended indirect fixtures, the lighting is in good condition.

The lighting control system is in fair condition. Lighting relay panels were installed in 1992 and have a life expectancy of approximately 30 years. Lighting controls should be replaced at end of life expectancy.

<b>Condition Rating</b>	Fair	<b>Lifetime</b>	30
<b>Year Installed</b>	1984	<b>Years Remaining</b>	5 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$33.38
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$548,548		

**Comments**

**Requirement: (Renewal)**

Interior Lighting Renewal

**Description**

Auto generated renewal for Interior Lighting. System Description: The interior lighting system consists of primarily fluorescent fixtures controlled by GE relay panels.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	5- Year 5	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$685,685	<b>FY Action Date</b>	2022

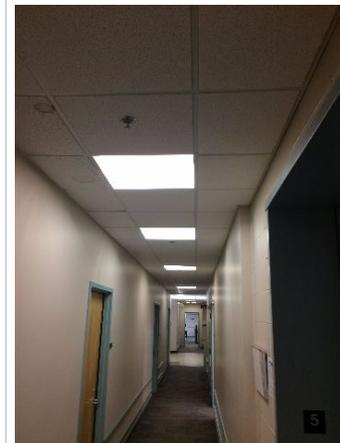
**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Interior Lighting



Interior Lighting



Interior Lighting



Interior Lighting

**D5037 - Fire Alarm Systems - Fire Alarm System**

**Description**

The fire alarm system in this facility is an addressable, sing stage system.

**System Description**

The fire alarm system in this facility is an addressable, single stage system. System components include a fire alarm control panel, smoke detectors, pull stations, alarms, and strobe lights. The fire alarm control panel is a Siemens, FS-250C.

**System Condition & Anticipated Replacement**

The fire alarm system is in good condition and has been upgraded since building construction and as owner requires. The system is inspected monthly. Anticipated end of life replacement in 2028, however, several individual components are nearing end of life. At this time, there are no components in need of immediate replacement.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	20
<b>Year Installed</b>	2008	<b>Years Remaining</b>	15 (Observed)
<b>Adjustment Factor</b>	0.4000	<b>Unit Cost</b>	\$14.84
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$243,918		

**Comments**

Unit cost adjustment factor changed to 0.4 due to actual cost of electrical equipment. A more accurate cost for the system is approximately 353,500 Canadian dollars.

**Requirement: (Renewal)**

Fire Alarm System Renewal

**Description**

Auto generated renewal for Fire Alarm System. System Description: The fire alarm system in this facility is an addressable, sing stage system.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$304,898	<b>FY Action Date</b>	2032

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Fire Alarm System

**D5038 - Security and Detection Systems - Security System**

**Description**

The security system for this facility consists of card access readers and a CCTV security system.

**System Description**

The security system for this facility consists of card access readers and a CCTV security system.

**System Condition & Anticipated Replacement**

Due to the importance of this system for the owner's requirements, security system is in very good condition, well maintained and has been upgraded numerous times throughout the building's life. Anticipated replacement at end of life expectancy.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	30
<b>Year Installed</b>	2005	<b>Years Remaining</b>	18 (Observed)
<b>Adjustment Factor</b>	0.5000	<b>Unit Cost</b>	\$27.61
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$453,793		

**Comments**

Unit cost adjustment factor changed to 0.5 due to actual cost of electrical equipment. A more accurate cost for the system is approximately 495,000 Canadian dollars.

**Requirement: (Renewal)**

Security System Renewal

**Description**

Auto generated renewal for Security System. System Description: The security system for this facility consists of card access readers and a CCTV security system.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$567,242	<b>FY Action Date</b>	2035

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Security System



Security System



Security System

**D5092 - Emergency Light and Power Systems - Emergency Power System**

**Description**

Emergency power system for this facility includes an emergency generator and automatic transfer switch.

**System Description**

Emergency power for this facility is supplied from 175kW back up generator. The generator is located in the parking area outside the building. The transfer switch is located in the main electrical room.

Generator:  
Kohler  
175kW, 600V  
3 phase, 3 wire

Automatic Transfer Switch:  
Kohler  
600V

**System Condition & Anticipated Replacement**

The Generator and ATS are in excellent condition as they were installed one week prior to inspection. Replace system at end of life.

<b>Condition Rating</b>	Excellent	<b>Lifetime</b>	30
<b>Year Installed</b>	2017	<b>Years Remaining</b>	30 (Observed)
<b>Adjustment Factor</b>	2	<b>Unit Cost</b>	\$720.29
<b>Quantity</b>	175	<b>Units</b>	KW
<b>Replacement Cost</b>	\$126,051		

**Comments**

Unit cost adjustment factor changed to 3 due to actual cost of electrical equipment. A more accurate cost for the system is approximately 147,000 Canadian dollars.

**D5092 - Emergency Light and Power Systems - Exit Signs**

**Description**

Exit lighting consists of bilingual, LED, single and dual faced units.

**System Description**

Exit lighting consists of bilingual, LED, single and dual faced units. Exit signs are Lumacell LER400B6L series.

**System Condition & Anticipated Replacement**

Exit lighting system is in good condition. Exit signs were installed in 2009 and have been well maintained, however, there are no exit signs at the main exits. It is recommended that one exit sign be installed at each of the three main exits.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	30
<b>Year Installed</b>	2009	<b>Years Remaining</b>	22 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$4.39
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$72,190		

**Comments**

**D5092 - Emergency Light and Power Systems - Emergency Lighting - Battery Packs**

**Description**

The emergency lighting system in this facility consists of a night lighting system and emergency battery packs. Emergency battery packs are used to provide emergency lighting where night lighting is not used.

**System Description**

Emergency battery packs with dual heads are installed in areas of the building that do not use night lighting. There are approximately 12, 347V emergency battery packs installed throughout the building.

**System Condition & Anticipated Replacement**

Emergency battery packs are in average condition. There are currently no units in need of replacement. Emergency battery pack units should be replaced over the next 5 years, however, due to the low number of units in this building, typical procedure is to replace individual battery packs upon failure.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	20
<b>Year Installed</b>	1999	<b>Years Remaining</b>	5 (Observed)
<b>Adjustment Factor</b>	0.0430	<b>Unit Cost</b>	\$0.27
<b>Quantity</b>	16,435	<b>Units</b>	SM
<b>Replacement Cost</b>	\$4,362		

**Comments**

There is a less than average amount of emergency lighting battery packs with light heads in this facility. Night lighting circuits provide most of the building with emergency lighting. Battery packs are only used in areas not included in the night lighting circuits. There are approximately 12 emergency battery pack units in the building. The adjustment factor was changed to 0.043 so the replacement cost is equal to approximately \$6000 (12 battery packs, approximately \$500 each).

**Requirement: (Renewal)**

Emergency Lighting - Battery Packs Renewal

**Description**

Auto generated renewal for Emergency Lighting - Battery Packs. System Description: The emergency lighting system in this facility consists of a night lighting system and emergency battery packs. Emergency battery packs are used to provide emergency lighting where night lighting is not used.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	5- Year 5	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$5,452	<b>FY Action Date</b>	2022



Emergency Lighting - Battery Packs

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**G2020 - Parking Lots - Repaving of parking lot.**

**Description**

There is a paved service area on the side of the building.

**System Description**

Asphalt paved area at the side of the building; used for deliveries and staff parking.

**System Condition & Anticipated Replacement**

Repaving was carried out in 2001; condition is average bordering on fair, with numerous cracks observed in the surface. Replacement is recommended in the 5 to 10-year planning window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	20
<b>Year Installed</b>	2001	<b>Years Remaining</b>	4 (Observed)
<b>Adjustment Factor</b>	1.2000	<b>Unit Cost</b>	\$79,158.07
<b>Quantity</b>	1	<b>Units</b>	ea
<b>Replacement Cost</b>	\$79,158		

**Comments**

**Requirement: (Renewal)**

Repaving of parking lot. Renewal

**Description**

Brief Description / Brève description:

Repaving of parking lot.

Event Description:

Tearing up of asphalt and paving with new.

Event Justification and Strategy / Justification de l'événement et stratégie:

At end of service life.

Implication of Event Deferral / Incidence du report de l'événement:

At end of service life. Health and safety issues, tripping hazards such as potholes, etc.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	6- Year 6	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$79,158	<b>FY Action Date</b>	2022

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



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Repaving of parking lot.

**G2023 - Curbs, Rails and Barriers - Parking Lot - Traffic Barriers - Pipe Bollards - New**

**Description**

Parking lot traffic barriers include concrete filled steel pipe bollards, 8' L x 4' D hole, 8" diameter, painted.

**System Description**

Steel and concrete bollards, painted finish, used in the parking garage incl. access and exit points

**System Condition & Anticipated Replacement**

Bollards are in good condition; they may have been replaced previously, but no information on replacement date was available. Barring accidents and given regular maintenance and re-painting, they can last well beyond the 25-year lifespan listed.

Note that new bollards were installed around the new exterior generator (in 2017; see picture). These are in excellent condition.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	25
<b>Year Installed</b>	1984	<b>Years Remaining</b>	25 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$1,396.69
<b>Quantity</b>	17	<b>Units</b>	Each
<b>Replacement Cost</b>	\$23,744		

**Comments**

**G2025 - Markings and Signage - Parking Lot - Traffic Control - Painted Pavement Markings - New**

**Description**

Parking lot includes painted pavement markings used to provide guidance and information to drivers and pedestrians. Includes parking space, directional arrows, crosswalk, accessibility and other parking lot graphics.

**System Description**

Parking space outlines and direction signage are painted on the exterior parking lot at the side of the building.

**System Condition & Anticipated Replacement**

Condition is good, with repainting carried out recently. Repainting is done on a cyclical basis, and should be coordinated with proposed replacement of the asphalt surface.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	10
<b>Year Installed</b>	2015	<b>Years Remaining</b>	8 (Observed)
<b>Adjustment Factor</b>	1.2500	<b>Unit Cost</b>	\$55.65
<b>Quantity</b>	25	<b>Units</b>	Each
<b>Replacement Cost</b>	\$1,391		

**Comments**

Per each parking spot

**Requirement: (Renewal)**

Parking Lot - Traffic Control - Painted Pavement Markings - New Renewal

**Description**

Auto generated renewal for Parking Lot - Traffic Control - Painted Pavement Markings - New. System Description: Parking lot includes painted pavement markings used to provide guidance and information to drivers and pedestrians. Includes parking space, directional arrows, crosswalk, accessibility and other parking lot graphics.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	8- Year 8	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$1,600	<b>FY Action Date</b>	2025

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**G2031 - Paving and Surfacing - Pedestrian Pavement - Concrete - New**

**Description**

Pedestrian pavement includes cast-in-place concrete sidewalk with sand bedding.

**System Description**

Concrete sidewalk / walkway along the side of the building

**System Condition & Anticipated Replacement**

The concrete walkway at the midpoint of its lifespan, and is generally in average condition. Some cracking has occurred (see picture). Repairs are recommended within the 2 to 5-year planning window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	25
<b>Year Installed</b>	2005	<b>Years Remaining</b>	13 (Observed)
<b>Adjustment Factor</b>	2	<b>Unit Cost</b>	\$152.37
<b>Quantity</b>	150	<b>Units</b>	SM
<b>Replacement Cost</b>	\$22,856		

**Comments**

This is based upon a cast-in-place concrete paved sidewalk.

Default requirement references the Canadian Code. Adjust to applicable project codes as required.

**Requirement: (Renewal)**

Pedestrian Pavement - Concrete - New Renewal

**Description**

Auto generated renewal for Pedestrian Pavement - Concrete - New. System Description: Pedestrian pavement includes cast-in-place concrete sidewalk with sand bedding.

**Brief Description**



Pedestrian Pavement - Concrete - New

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$28,570	<b>FY Action Date</b>	2030

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**Requirement: (Non-Renewal)**

Repair Damaged Pedestrian Paving: Estimate SF of concrete pedestrian pavement requiring repair

**Description**

Repairs cracks in paving

**Brief Description**

Repair small cracks in concrete walkway. Replace sections with larger cracks. Ensure new slabs tie in with exiting to allow for drainage, and maintain level walking surface.

**Requirement Justification and Strategy**

Cracks are minor now, but due to freeze/thaw cycles and continuous foot traffic will continue to expand, and become trip hazards eventually.

**Implication of Requirement Deferral**

Potential trip hazard / safety issue

<b>Priority</b>	2- Year 2	<b>Category</b>	I - Reliability
<b>Estimated Cost</b>	\$11,203	<b>FY Action Date</b>	2019

**Requirement Type** Repair

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**G2041 - Fences and Gates - Site Development - Fencing - Painted Steel - New**

**Description**

There are 4 painted steel gates and fences which sit on both sides of the building, and can secure both alleys when required.

**System Description**

Steel fencing and gates, bolted to concrete surfaces and tied to building façade at several points.

**System Condition & Anticipated Replacement**

The steel gates are in fair condition shape; the oldest (at both ends of the service lane) date from the mid 1990's. They are in good working condition, but there is significant corrosion. They have an additional 10+ years of service life left, but corrosion prevention needs to be conducted within the next year.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	25
<b>Year Installed</b>	2011	<b>Years Remaining</b>	19 (Observed)
<b>Adjustment Factor</b>	0.2500	<b>Unit Cost</b>	\$320.55
<b>Quantity</b>	120	<b>Units</b>	LM
<b>Replacement Cost</b>	\$38,466		

**Comments**

Unit cost was adjusted down because the system is based on a much more expensive wrought iron system.

**Requirement: (Renewal)**

Site Development - Fencing - Painted Steel - New Renewal

**Description**

Auto generated renewal for Site Development - Fencing - Painted Steel - New.  
 System Description: There are 4 painted steel gates and fences which sit on both sides of the building, and can secure both alleys when required.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$48,083	<b>FY Action Date</b>	2036

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Site Development - Fencing - Painted Steel - New



Site Development - Fencing - Painted Steel - New

**Requirement: (Non-Renewal)**

Exterior Steel Fence - Corrosion Prevention

**Description**

Repainting / corrosion prevention

**Brief Description**

Sand or grind existing paint finish, re-prime (min. 1 coat) and re-paint (min.2 top coats)

**Requirement Justification and Strategy**

Extend lifespan of steel fencing, posts and gates

**Implication of Requirement Deferral**

Progressing corrosion, reduced reliability, shortened lifespan

**Priority** 1- Year 1 **Category** I - Reliability

**Estimated Cost** \$4,343 **FY Action Date** 2018

**Requirement Type** Repair

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**G2042 - Retaining Walls - Site Development - Retaining Wall - Concrete - New**

**Description**

Concrete retaining walls

**System Description**

Cast-in-place concrete retaining walls, framing the exit from the underground parking garage to Grafton St. The walls come up to a height of approx. 1.5m above grade.

**System Condition & Anticipated Replacement**

The walls are in average condition assuming a 75-year lifespan, and no replacement is anticipated within the 20-year planning window. Power washing is recommended as part of regular cleaning and maintenance.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	40
<b>Year Installed</b>	1984	<b>Years Remaining</b>	42 (Observed)
<b>Adjustment Factor</b>	2	<b>Unit Cost</b>	\$907.80
<b>Quantity</b>	50	<b>Units</b>	LM
<b>Replacement Cost</b>	\$45,390		

**Comments**

Select the "show" button and pick the RS Means Line Item (retaining wall height) that applies; remove the rest. Revise wall height in the Description. Retaining wall height is assumed to be from top of footing to top of wall. Based on LF of wall.

**G2042 - Retaining Walls - Site Development - Retaining Wall - Wood Tie - New**

**Description**

Planters / retaining walls, built from pressure-treated wood ties.

**System Description**

Pressure treated wood is used to form planters on the employee parking / loading dock side of the building.

**System Condition & Anticipated Replacement**

The planters are in average condition, better than anticipated given that they are original to the building. Replacement is suggested for the 15 to 20-year window.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	40
<b>Year Installed</b>	1984	<b>Years Remaining</b>	15 (Observed)
<b>Adjustment Factor</b>	0.8000	<b>Unit Cost</b>	\$359.84
<b>Quantity</b>	30	<b>Units</b>	LM
<b>Replacement Cost</b>	\$10,795		

**Comments**

Select the "show" button and pick the RS Means Line Item (retaining wall height) that applies; remove the rest. Based on LF of wall.

**Requirement: (Renewal)**

Site Development - Retaining Wall - Wood Tie - New Renewal

**Description**

Auto generated renewal for Site Development - Retaining Wall - Wood Tie - New. System Description: Planters / retaining walls, built from pressure-treated wood ties.

**Brief Description**

**Requirement Justification and Strategy**

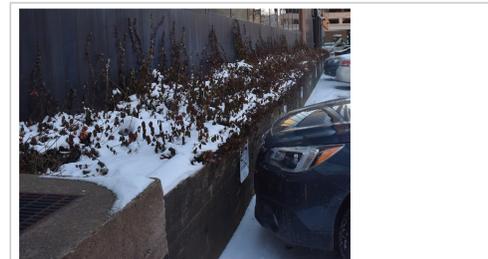
**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$13,494	<b>FY Action Date</b>	2032

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Site Development - Retaining Wall - Wood Tie - New

**G2045 - Site Furnishings - Wooden benches**

**Description**

Exterior wooden benches

**System Description**

Wooden seating benches with steel frame

**System Condition & Anticipated Replacement**

Replaced in 2005 as part of landscaping project. Average to good condition; with preventive maintenance and regular cleaning, life expectancy could be extended past the 2025 replacement date.

<b>Condition Rating</b>	Average	<b>Lifetime</b>	20
<b>Year Installed</b>	2005	<b>Years Remaining</b>	8 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$33,680.48
<b>Quantity</b>	1	<b>Units</b>	Cool tons
<b>Replacement Cost</b>	\$33,680		

**Comments**

**Requirement: (Renewal)**

Wooden benches Renewal

**Description**

Brief Description / Brève description:

Replace wooden benches

Event Description:

Replace the 8 wooden benches on the property

Event Justification and Strategy / Justification de l'événement et stratégie:

At end of service life

Implication of Event Deferral / Incidence du report de l'événement:

At end of service life Poor federal image; furnishings will be prone to disrepair.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	Not Time Critical	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$33,680	<b>FY Action Date</b>	2026

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

Not funded



Wooden benches



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**G2048 - Flagpoles - Site Development - Flagpoles - Aluminum - New**

**Description**

Aluminum flagpole, direct imbedded, internal halyard

**System Description**

Aluminum flagpole, installed on the building forecourt facing Grafton St.

**System Condition & Anticipated Replacement**

Flagpole was replaced in 2000 and is in good shape. Replacement is anticipated for 2030, in the 10 to 20-year planning window.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	25
<b>Year Installed</b>	2000	<b>Years Remaining</b>	13 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$5,579.16
<b>Quantity</b>	1	<b>Units</b>	Each
<b>Replacement Cost</b>	\$5,579		

**Comments**

Select the "show" button and pick the RS Means Line Item (flagpole and foundation) that applies; remove the rest.

**Requirement: (Renewal)**

Site Development - Flagpoles - Aluminum - New Renewal

**Description**

Auto generated renewal for Site Development - Flagpoles - Aluminum - New.  
System Description: Aluminum flagpole, direct imbedded, internal halyard

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$6,974	<b>FY Action Date</b>	2030

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**G2056 - Planters - Landscaping - Ground Bedding - Shrubs - Average - New**

**Description**

The site is extensively landscaped with trees, shrubs, vines and perennials.

**System Description**

Soft landscaping, consisting of soil, shrubs, trees and other plants.

**System Condition & Anticipated Replacement**

The landscaping is in good condition. An event for 2030 is planned for landscape renewal.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	20
<b>Year Installed</b>	2005	<b>Years Remaining</b>	13 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$227.45
<b>Quantity</b>	70	<b>Units</b>	SM
<b>Replacement Cost</b>	\$15,922		

**Comments**

Note: cost per SF based on 16'x2' planting bed; sprinkler system not included.

**Requirement: (Renewal)**

Landscaping - Ground Bedding - Shrubs - Average - New Renewal

**Description**

Auto generated renewal for Landscaping - Ground Bedding - Shrubs - Average - New. System Description: The site is extensively landscaped with trees, shrubs, vines and perennials.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$19,902	<b>FY Action Date</b>	2030

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**G3021 - Piping - Sanitary Sewer - Waste Water Piping**

**Description**

Sanitary and storm piping

**System Description**

All building storm and sanitary risers are routed through the garage. The sections of the piping routed through the garage should be replaced due to the harmful environment conditions.

**System Condition & Anticipated Replacement**

Based on the piping age and on a life expectancy of 35 years, appearance and past issues the piping should be due for replacement. Building operators have had several sections of sanitary and storm piping in the garage area due to cracks and breakage from heavy corrosion

It was reported that there was an in depth inspection on the storm and sanitary piping within the garage due to several issues in 2017 and should be referenced for any future project for this system.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	35
<b>Year Installed</b>	1984	<b>Years Remaining</b>	2 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$37.51
<b>Quantity</b>	3,287	<b>Units</b>	LM
<b>Replacement Cost</b>	\$123,287		

**Comments**

**Requirement: (Renewal)**

Sanitary Sewer - Waste Water Piping Renewal

**Description**

Auto generated renewal for Sanitary Sewer - Waste Water Piping. System Description: Sanitary and storm piping

**Brief Description**

**Requirement Justification and Strategy**

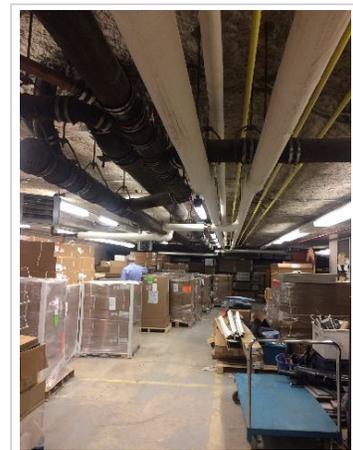
**Implication of Requirement Deferral**

<b>Priority</b>	2- Year 2	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$129,451	<b>FY Action Date</b>	2019

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Sanitary Sewer - Waste Water Piping



Sanitary Sewer - Waste Water Piping



Sanitary Sewer - Waste Water Piping



Sanitary Sewer - Waste Water Piping

**G3043 - Hot Water Supply System - Heating Distribution - Hot Water Piping & Pumps**

**Description**

Building Heating Distribution System  
piping, heaters, coils and pumps

**System Description**

The building's primary heating loop is provided by two (2) oil fired, forced draft hot water boilers via 2 circulation pumps. A perimeter hot water heating loop feeds off the primary hot water loop and serves the baseboard radiators, the hydronic unit heaters and the cabinet unit heaters.

These 2 pumps provide heating hot water recirculation in the boilers to maintain the water temperature in the boilers loop. They are located behind the boilers and are fractional HP.

There are 3 heating pumps supplying the building with heating hot water in a lead lag operation. They are installed in the boiler room and are 5 hp each.

**System Condition & Anticipated Replacement**

The heating hot water piping is original with the building and dates back in 1981. Slight to moderate corrosion noted in some locations including near connections to coils in AHU's. AHU heating coils, coil pumps are abandoned in place. Based on a life expectancy of 30 years the piping has reached the end of its expected working life however it is not anticipated to require replacement prior to the pump replacements in 2021.

These pumps were replaced in 2001 and appear to be in good operating condition. Based on a life expectancy of 20 years they will be due for replacement by 2021.

Pump #1 is original with the building and dates back in 1981. Based on a life expectancy of 20 years this pump is due for replacement. (Separated for lifecycle requirement)

The other 2 pumps (#2 and #3) were replaced in 2001 and based on the above life expectancy will be due for replacement by 2021.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	37
<b>Year Installed</b>	1984	<b>Years Remaining</b>	4 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$527.25
<b>Quantity</b>	500	<b>Units</b>	LM
<b>Replacement Cost</b>	\$263,627		

**Comments**

Per linear foot of piping.

**Requirement: (Renewal)**

Heating Distribution - Hot Water Piping & Pumps Renewal

**Description**

Auto generated renewal for Heating Distribution - Hot Water Piping & Pumps.  
System Description: Building Heating Distribution System  
piping, heaters, coils and pumps

**Brief Description**

**Requirement Justification and Strategy**

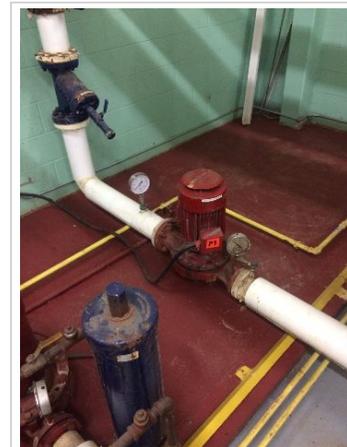
**Implication of Requirement Deferral**

<b>Priority</b>	4- Year 4	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$276,808	<b>FY Action Date</b>	2021

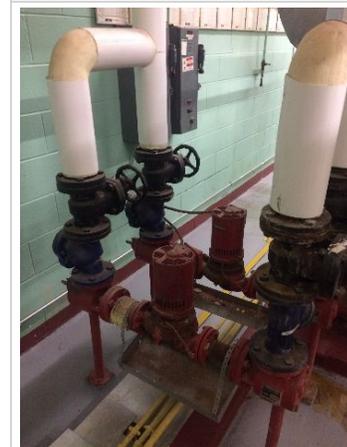
**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Heating Distribution - Hot Water Piping & Pumps



Heating Distribution - Hot Water Piping & Pumps



Heating Distribution - Hot Water Piping & Pumps



Heating Distribution - Hot Water Piping & Pumps

**Requirement: (Non-Renewal)**

Removing abandoned AHU Coils and pumps

**Description**

All redundant piping and abandoned in places piping should be removed when AHU are replaced.  
 Having all the AHU operating with additional static losses due to abandoned coils is a costing energy efficiency.

**Brief Description**

Removing abandoned AHU heating coils and associated piping and pumps. It would be recommended to remove equipment when AHU are replaced. New AHU need to supply tempered air only not heated.

**Requirement Justification and Strategy**

Redundant equipment which raises AHU power consumption. Coils are reportedly not required as they have not been used in several years. Building baseboard radiant provides adequate heating.

**Implication of Requirement Deferral**

Deferral would cause excessive energy consumption due to AHU static pressure losses and additional abandoned equipment remaining

<b>Priority</b>	5- Year 5	<b>Category</b>	O - Abandoned
<b>Estimated Cost</b>	\$40,000	<b>FY Action Date</b>	2022

**Requirement Type**Capital

**Comments**

Custom system requirement

**Deferral Reason? Explain Risk Mitigation**

**G3043 - Hot Water Supply System - Heating Distribution - Circulator Pump#1**

**Description**

Heating circulating Pump#1

**System Description**

There are 3 heating pumps supplying the building with heating hot water in a lead lag operation. They are installed in the boiler room and are 5 hp each.

This system represents #1 being the only pump which has not been replaced

**System Condition & Anticipated Replacement**

Circulator pump is original to the building and based on age and appearance is due for replacement

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	20
<b>Year Installed</b>	1984	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$527.25
<b>Quantity</b>	20	<b>Units</b>	LM
<b>Replacement Cost</b>	\$10,545		

**Comments**

Quantity adjusted to reflect a reasonable replacement cost for pump replacement

**Requirement: (Renewal)**

Heating Distribution - Circulator Pump#1 Renewal

**Description**

Auto generated renewal for Heating Distribution - Circulator Pump#1. System Description: Heating circulating Pump#1

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$11,072	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**

**G3051 - Chilled Water Piping - Cooling Distribution - Chilled Water Supply Pump #7**

**Description**

Armstrong pump #7

**System Description**

Armstrong pump #7, 5 HP, 575V/3ph/60hz, serving the AHU cooling coils as part of a secondary loop and works in a lead lag operation with Pump #6 which is separated

**System Condition & Anticipated Replacement**

Pump #7 was replaced in 2001 and appears to be in good operating condition. Based on a life expectancy of 20 years the pump will be due for replacement by 2021.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	20
<b>Year Installed</b>	2001	<b>Years Remaining</b>	4 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$527.25
<b>Quantity</b>	20	<b>Units</b>	LM
<b>Replacement Cost</b>	\$10,545		

**Comments**

Quantity adjusted to reflect a reasonable replacement cost for pump replacement

**Requirement: (Renewal)**

Cooling Distribution - Chilled Water Supply Pump #7 Renewal

**Description**

Auto generated renewal for Cooling Distribution - Chilled Water Supply Pump #7. System Description: Armstrong pump #7

**Brief Description**

**Requirement Justification and Strategy**

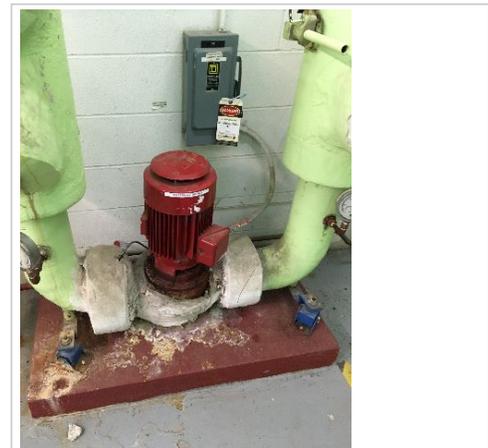
**Implication of Requirement Deferral**

<b>Priority</b>	4- Year 4	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$11,072	<b>FY Action Date</b>	2021

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Cooling Distribution - Chilled Water Supply Pump #7

**G3051 - Chilled Water Piping - Cooling Distribution - Chilled water Supply Pump #6**

**Description**

Cooling distribution Pump#6

**System Description**

Armstrong pump #6, 5 HP, 575V/3ph/60hz, serving the AHU cooling coils as part of a secondary loop and works in a lead lag operation with Pump #7

**System Condition & Anticipated Replacement**

Pump #6 is original with the building dating back to 1981. Based on a life expectancy of 20 years the pump is due for replacement.

<b>Condition Rating</b>	Poor	<b>Lifetime</b>	20
<b>Year Installed</b>	1981	<b>Years Remaining</b>	0 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$527.25
<b>Quantity</b>	20	<b>Units</b>	LM
<b>Replacement Cost</b>	\$10,545		

**Comments**

Adjusted quantity to reflect a reasonable cost estimate for pump replacement

**Requirement: (Renewal)**

Cooling Distribution - Chilled water Supply Pump #6 Renewal

**Description**

Auto generated renewal for Cooling Distribution - Chilled water Supply Pump #6.  
System Description: Cooling distribution Pump#6

**Brief Description**

**Requirement Justification and Strategy**

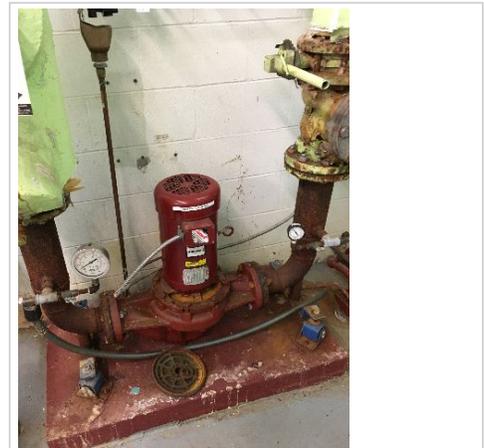
**Implication of Requirement Deferral**

<b>Priority</b>	1- Year 1	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$11,072	<b>FY Action Date</b>	2017

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Cooling Distribution - Chilled water Supply Pump #6

**G4021 - Fixtures and Transformers - Site Lighting - Parking Lot/Roadway**

**Description**

Site lighting consists of 4 decorative poles complete with 1-2, 347V, LED fixtures.

**System Description**

Site lighting consists of 4 decorative poles complete with 1-2, 347V, LED fixtures.

**System Condition & Anticipated Replacement**

Site lighting is in good condition and are energy efficient fixture models. Light poles and fixtures were installed in 2009 and appear to have been well maintained. Site lighting should be replaced at end of life expectancy.

<b>Condition Rating</b>	Good	<b>Lifetime</b>	15
<b>Year Installed</b>	2009	<b>Years Remaining</b>	10 (Observed)
<b>Adjustment Factor</b>	1	<b>Unit Cost</b>	\$3,597.33
<b>Quantity</b>	4	<b>Units</b>	Each
<b>Replacement Cost</b>	\$14,389		

**Comments**

**Requirement: (Renewal)**

Site Lighting - Parking Lot/Roadway Renewal

**Description**

Auto generated renewal for Site Lighting - Parking Lot/Roadway. System Description: Site lighting consists of 4 decorative poles complete with 1-2, 347V, LED fixtures.

**Brief Description**

**Requirement Justification and Strategy**

**Implication of Requirement Deferral**

<b>Priority</b>	9- Year 9	<b>Category</b>	I - Lifecycle
<b>Estimated Cost</b>	\$17,987	<b>FY Action Date</b>	2027

**Requirement Type**

**Comments**

**Deferral Reason? Explain Risk Mitigation**



Site Lighting - Parking Lot/Roadway