

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

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

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.

Condition Rating	Fair	Lifetime	75
Year Installed	1984	Years Remaining	42 (Observed)
Adjustment Factor	1	Unit Cost	\$865.65
Quantity	313	Units	LM
Replacement Cost	\$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.

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

Comments

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

Requirement: (Renewal)

Exterior Stairs - Concrete - New Renewal

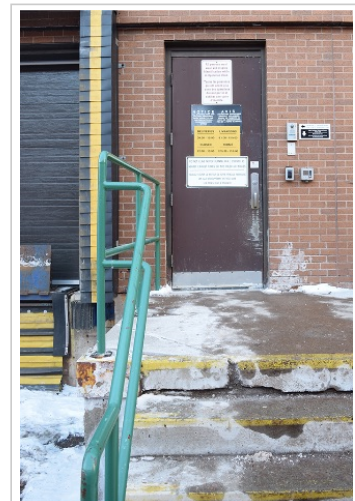
Description

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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$6,862	FY Action Date	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.

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

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

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

Condition Rating	Average	Lifetime	60
Year Installed	1984	Years Remaining	30 (Observed)
Adjustment Factor	1	Unit Cost	\$329.39
Quantity	500	Units	SM
Replacement Cost	\$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: $LF \times 12\text{-ft (hgt)} \times \# \text{ Stryes} - SF (\text{opngs})/1000 = SF\$$

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.

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

Priority	1- Year 1	Category	I - Reliability
Estimated Cost	\$3,102	FY Action Date	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.

Condition Rating	Average	Lifetime	30
Year Installed	1984	Years Remaining	17 (Observed)
Adjustment Factor	1	Unit Cost	\$678.15
Quantity	500	Units	SM
Replacement Cost	\$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)

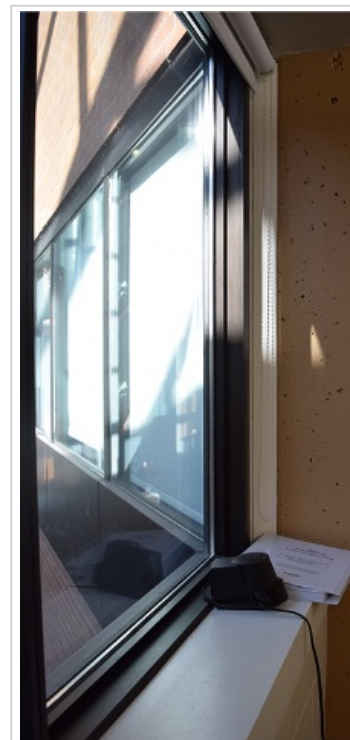
Aluminum Windows - New Renewal

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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$423,843	FY Action Date	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.

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

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

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

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

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

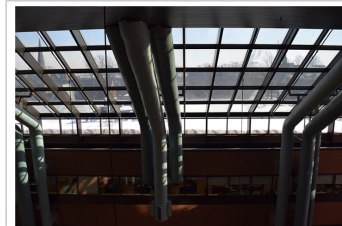
Auto generated renewal for Skylights - Monumental - New. System Description:
The atrium glazing system is composed of sloped, reflective thermopane glazing in extruded aluminum framing, mounted over the atrium.

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$987,700	FY Action Date	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.

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

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

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$238,256	FY Action Date	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.

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

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

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

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

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

Priority	5- Year 5	Category	I - Lifecycle
Estimated Cost	\$129,978	FY Action Date	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.

Condition Rating	Good	Lifetime	50
Year Installed	2003	Years Remaining	36 (Observed)
Adjustment Factor	1	Unit Cost	\$111.95
Quantity	100	Units	SM
Replacement Cost	\$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.

Condition Rating	Average	Lifetime	25
Year Installed	1984	Years Remaining	20 (Observed)
Adjustment Factor	1	Unit Cost	\$191.83
Quantity	800	Units	SM
Replacement Cost	\$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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$191,832	FY Action Date	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.

Condition Rating	Good	Lifetime	10
Year Installed	2010	Years Remaining	5 (Observed)
Adjustment Factor	1	Unit Cost	\$67.36
Quantity	9,000	Units	SM
Replacement Cost	\$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 = \$SF

Requirement: (Renewal)

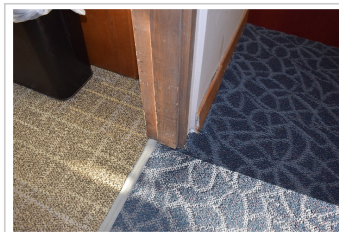
Carpeting - Broadloom - Medium Range - New Renewal

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**

Priority	5- Year 5	Category	I - Lifecycle
Estimated Cost	\$757,770	FY Action Date	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.

Condition Rating	Average	Lifetime	20
Year Installed	2003	Years Remaining	6 (Observed)
Adjustment Factor	1	Unit Cost	\$57.97
Quantity	250	Units	SM
Replacement Cost	\$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**

Priority	6- Year 6	Category	I - Lifecycle
Estimated Cost	\$18,114	FY Action Date	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.

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

Condition Rating	Average	Lifetime	30
Year Installed	1984	Years Remaining	7 (Observed)
Adjustment Factor	1	Unit Cost	\$39.40
Quantity	500	Units	SM
Replacement Cost	\$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**

Priority	7- Year 7	Category	I - Lifecycle
Estimated Cost	\$24,623	FY Action Date	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.

Condition Rating	Average	Lifetime	25
Year Installed	1984	Years Remaining	15 (Observed)
Adjustment Factor	1	Unit Cost	\$97.74
Quantity	500	Units	SM
Replacement Cost	\$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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$61,087	FY Action Date	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.

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

Comments

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

Requirement: (Renewal)

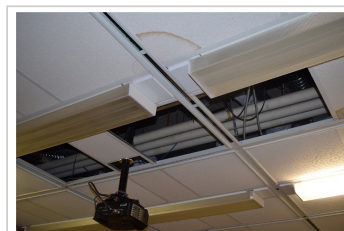
ACT System - Standard - New Renewal

Description

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

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

ACT System - Standard - New

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.

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

Requirement: (Renewal)

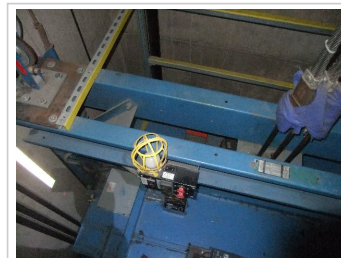
Traction Geared Passenger Elev - Low-Rise - 1,2 Renewal

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**

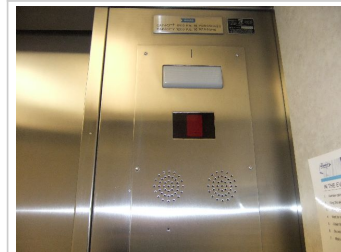
Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$521,562	FY Action Date	2031

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

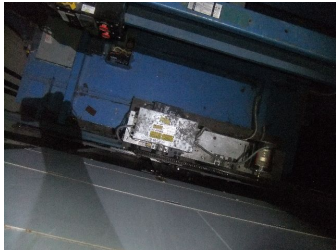
Traction Geared Passenger Elev - Low-Rise - 1,2



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



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



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



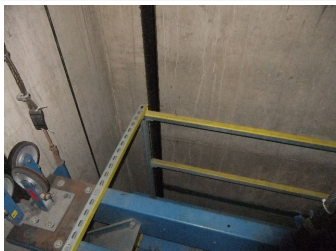
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Traction Geared Passenger Elev - Low-Rise - 1,2



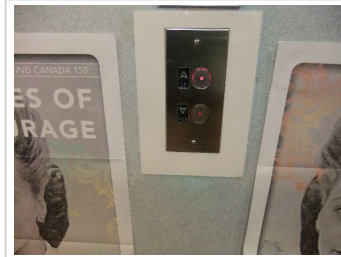
Traction Geared Passenger Elev - Low-Rise - 1,2



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



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



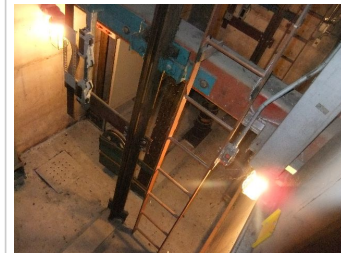
Traction Geared Passenger Elev - Low-Rise - 1,2



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



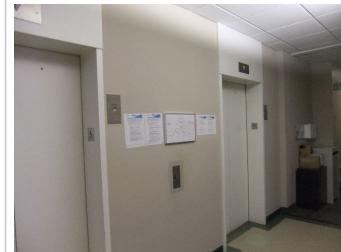
Traction Geared Passenger Elev - Low-Rise - 1,2



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



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



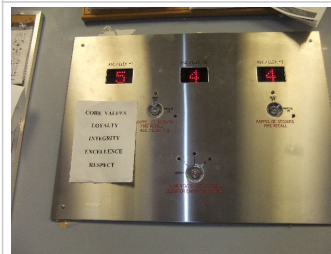
Traction Geared Passenger Elev - Low-Rise - 1,2



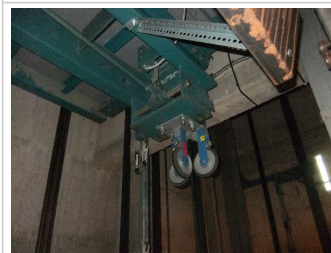
Traction Geared Passenger Elev - Low-Rise - 1,2



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.



Installation of elevator machine room equipment component guarding.

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

Priority	3- Year 3	Category	R - Life Safety
Estimated Cost	\$14,476	FY Action Date	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.

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

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$260,781	FY Action Date	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



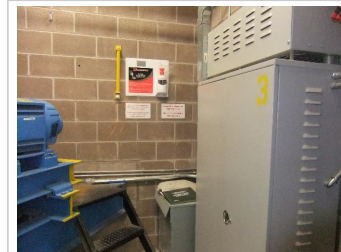
Traction Geared Passenger Elev - Low-Rise - 3



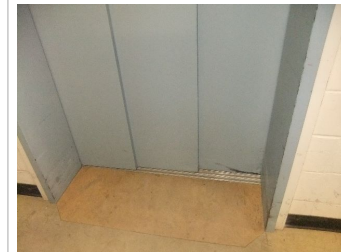
Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



Traction Geared Passenger Elev - Low-Rise - 3



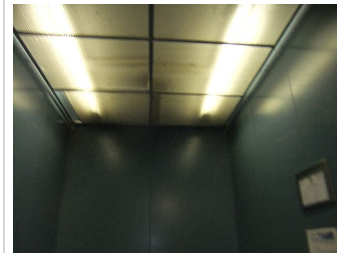
Traction Geared Passenger Elev - Low-Rise - 3



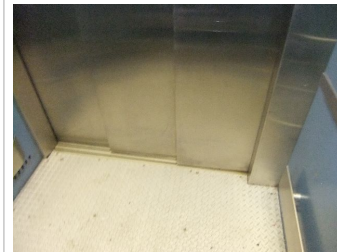
Traction Geared Passenger Elev - Low-Rise - 3



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.



Installation of elevator machine room equipment component guarding

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

Priority	3- Year 3	Category	R - Life Safety
Estimated Cost	\$7,238	FY Action Date	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.

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

Comments**Requirement: (Renewal)**

Hydraulic Passenger Elev - Special - 4 Renewal

Description

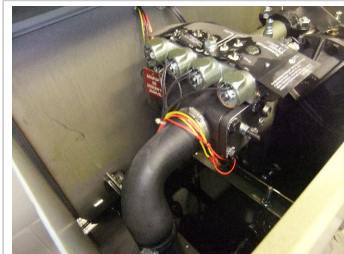
Auto generated renewal for Hydraulic Passenger Elev - Special - 4. System Description: Elevator 4 is a 4 stop hydraulic elevator that services the 3 storey wing of the building.

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

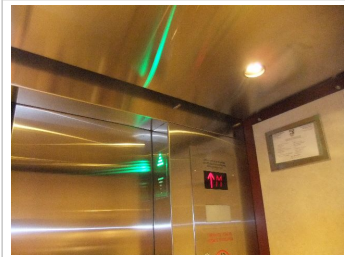
Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



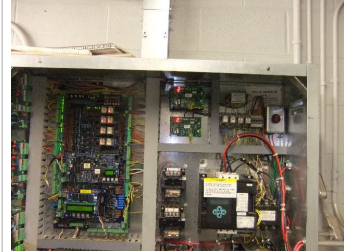
Hydraulic Passenger Elev - Special - 4



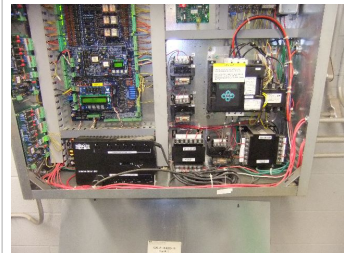
Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



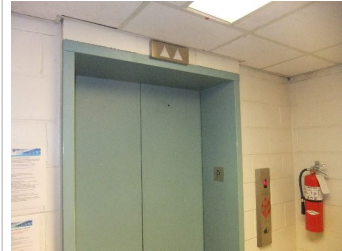
Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



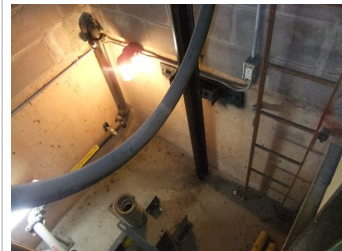
Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



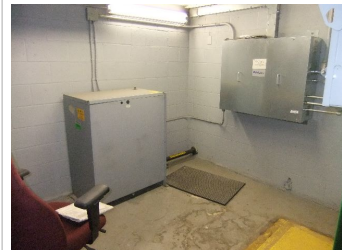
Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



Hydraulic Passenger Elev - Special - 4



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

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.

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

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$10,657	FY Action Date	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

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

Comments

Price per each.

Requirement: (Renewal)

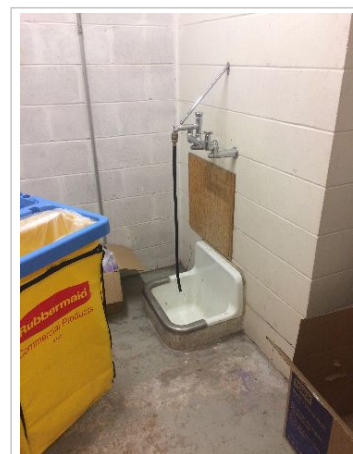
Custodial/Utility Sinks Renewal

Description

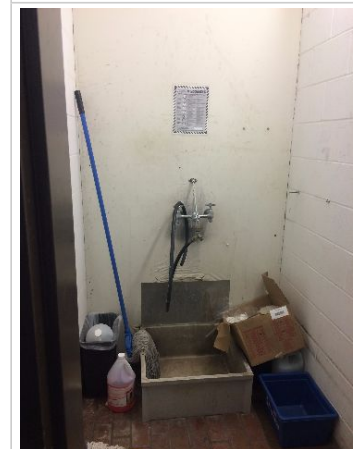
Auto generated renewal for Custodial/Utility Sinks. System Description: 6 original to the building utility mop sinks typically between male and female washroom groups

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$23,337	FY Action Date	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.

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

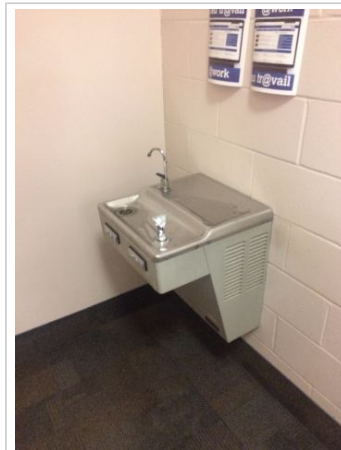
Description

Auto generated renewal for Water Coolers - Wall-Mounted Dual-Height. System

Description: Drinking fountains

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$21,625	FY Action Date	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

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

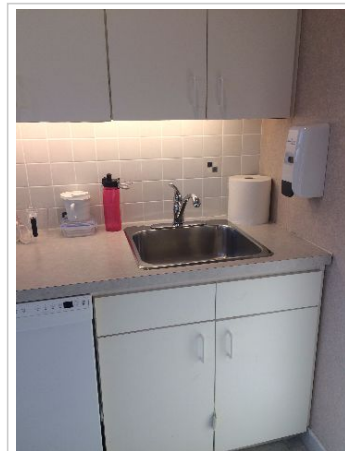
Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$72,906	FY Action Date	2030

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

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

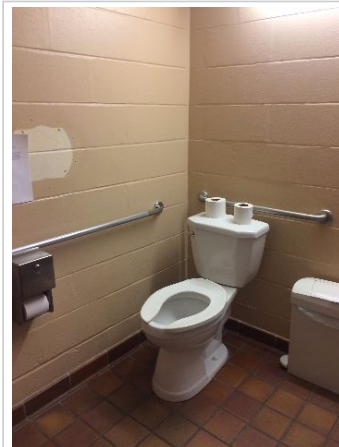
- 36 water closets
- 31 lavatories
- 13 urinals

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**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

Restroom Fixtures - Std Density - Avg Qual



Restroom Fixtures - Std Density - Avg Qual



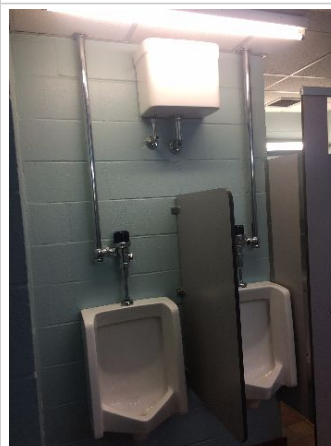
Restroom Fixtures - Std Density - Avg Qual



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.

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

Priority	7- Year 7	Category	I - Lifecycle
Estimated Cost	\$112,108	FY Action Date	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.

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

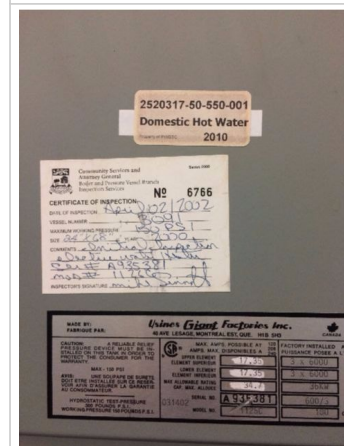
Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$26,623	FY Action Date	2017

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.

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

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$10,649	FY Action Date	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.

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

Comments

Price per each

Requirement: (Renewal)

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

Description

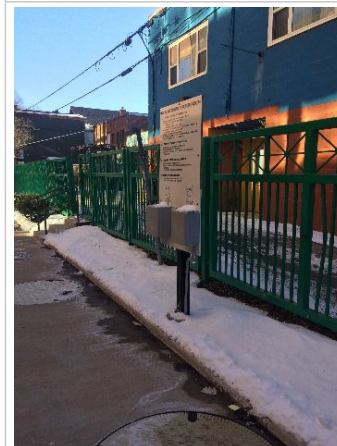
Auto generated renewal for Underground Fuel Tank - Fbgls - 4000L, incl. Piping & Pumps. System Description: No2 Oil Fuel System

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

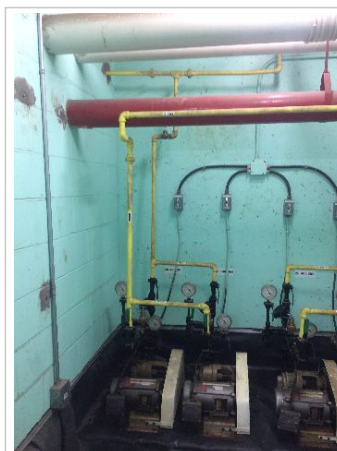
Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$61,948	FY Action Date	2032

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

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



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



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.

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

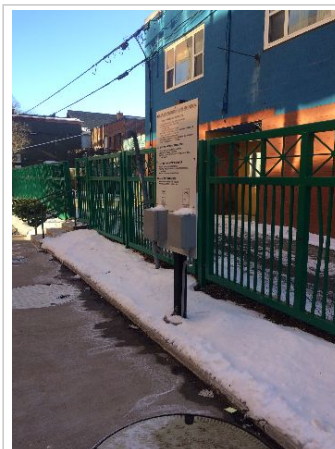
Implication of Requirement Deferral

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

Requirement Type

Comments

Deferral Reason? Explain Risk Mitigation



Underground Fuel Tank - Fbgls - 1000L

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

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

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$28,516	FY Action Date	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.

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

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$176,054	FY Action Date	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

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

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

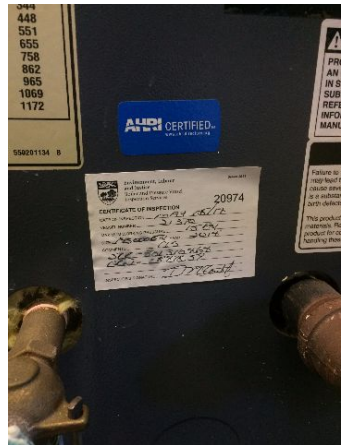
Boiler Steam - Gas/Oil-Fired



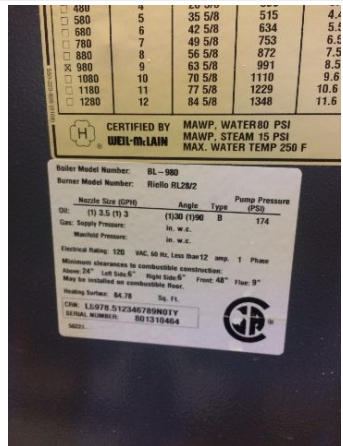
Boiler Steam - Gas/Oil-Fired



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.

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

Comments

Price based on SM of building area

Requirement: (Renewal)

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

Description

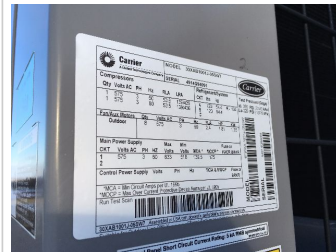
Auto generated renewal for Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps. System Description: 4 Carrier chillers, 75 tons each with a total capacity of 300 tons including 4 pumps P#11-P#14

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$1,386,856	FY Action Date	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



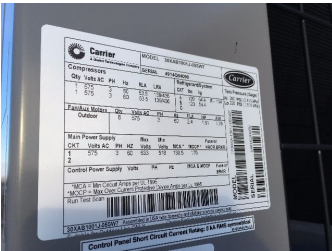
Chiller - Reciprocating - Air-Cooled - Chillers 1-4 & pumps



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.

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

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$1,775	FY Action Date	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.

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

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$403,617	FY Action Date	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.

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

Comments

Price per SM
of building area.

Requirement: (Renewal)

Central AHU - VAV System w/Distribution Renewal

Description

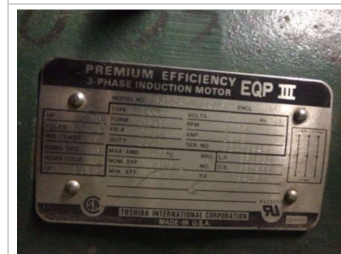
Auto generated renewal for Central AHU - VAV System w/Distribution. System
Description: AHU#1, AHU#2, AHU#4, AHU#5-Original AHU

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$875,954	FY Action Date	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

Condition Rating	Good	Lifetime	25
Year Installed	2008	Years Remaining	16 (Observed)
Adjustment Factor	1	Unit Cost	\$213.19
Quantity	200	Units	SM
Replacement Cost	\$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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$53,298	FY Action Date	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

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

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

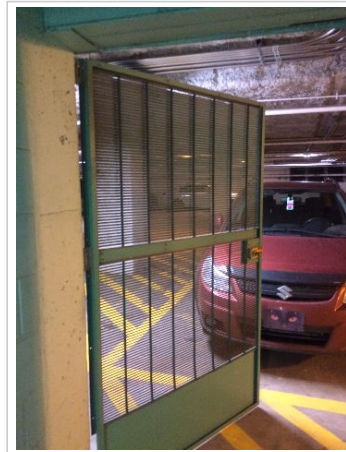
Exhaust System - General Building



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.

Condition Rating	Fair	Lifetime	25
Year Installed	2008	Years Remaining	16 (Observed)
Adjustment Factor	5	Unit Cost	\$86.96
Quantity	50	Units	SM
Replacement Cost	\$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.

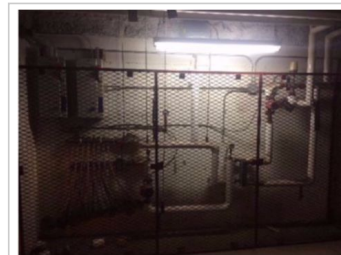
Requirement: (Renewal)

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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$5,435	FY Action Date	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.

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

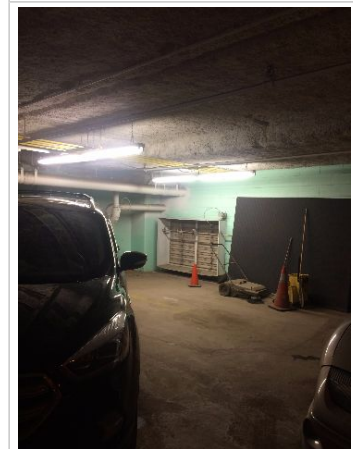
The ventilation system in the garage except the CO sensors, is original with the building. Based on its appearance and on a life expectancy of 25 years the system is due for replacement.

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

Exhaust System - Garage



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.

Condition Rating	Good	Lifetime	25
Year Installed	2008	Years Remaining	16 (Observed)
Adjustment Factor	0.5000	Unit Cost	\$33.02
Quantity	3,287	Units	SM
Replacement Cost	\$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.

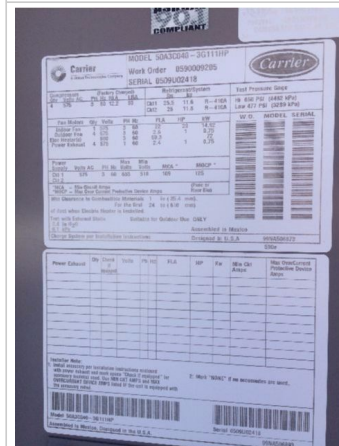
The AHU-6 on the roof of the 3rd floor is in excellent condition as it was replaced in 2008. Based on a life expectancy of 25 years the unit should be due for replacement by 2033.

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$135,682	FY Action Date	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.

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

Comments

Price per 1000 SF of building area.

Requirement: (Renewal)

DDC System - Extensive Renewal

Description

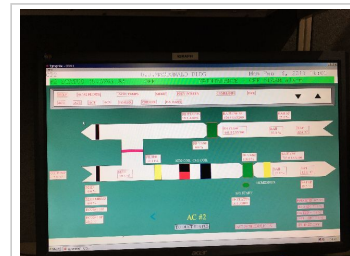
Auto generated renewal for DDC System - Extensive. System Description: The control system in the building is a mixture of pneumatic controls for the baseboard heating valves, ventilation air damper actuators and heating coils and DDC controls for the rest of the building. The pneumatic controls are original 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.

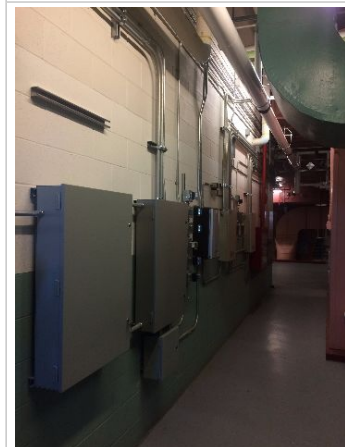
The DDC controls serving the level 3 South were installed around 2008 and based on a life expectancy of 10 years they should be due for replacement in 2018.

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

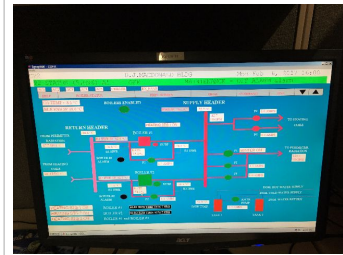
DDC System - Extensive



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.

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

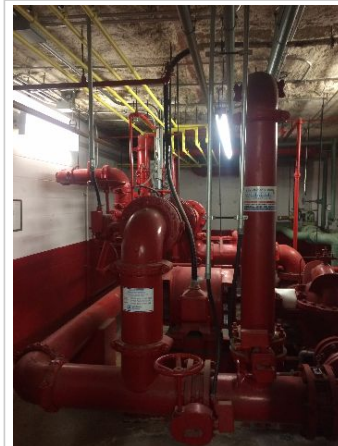
Wet Sprinkler System - Light Hazard w/ 60Hp electric Pump Renewal

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**

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$1,111,780	FY Action Date	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

Condition Rating	Fair	Lifetime	40
Year Installed	1984	Years Remaining	7 (Observed)
Adjustment Factor	1	Unit Cost	\$398.47
Quantity	65	Units	Each
Replacement Cost	\$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**

Priority	7- Year 7	Category	I - Lifecycle
Estimated Cost	\$27,196	FY Action Date	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.

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

Condition Rating	Good	Lifetime	30
Year Installed	1984	Years Remaining	10 (Observed)
Adjustment Factor	0.7000	Unit Cost	\$61.47
Quantity	16,435	Units	SM
Replacement Cost	\$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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$1,262,752	FY Action Date	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.

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

Estimated Cost \$35,541 **FY Action Date** 2018

Requirement Type Capital

Comments

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

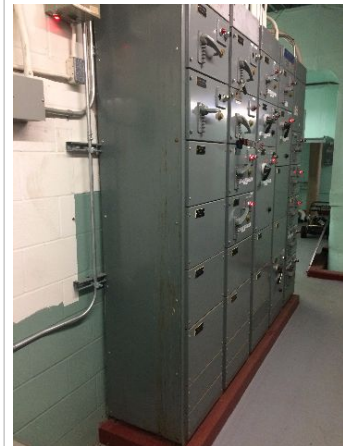
Deferral Reason? Explain Risk Mitigation



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.

Priority	1- Year 1	Category	R - Building Code
Estimated Cost	\$26,301	FY Action Date	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.

Condition Rating	Average	Lifetime	15
Year Installed	1999	Years Remaining	3 (Observed)
Adjustment Factor	1.5000	Unit Cost	\$626.13
Quantity	14	Units	Each
Replacement Cost	\$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)

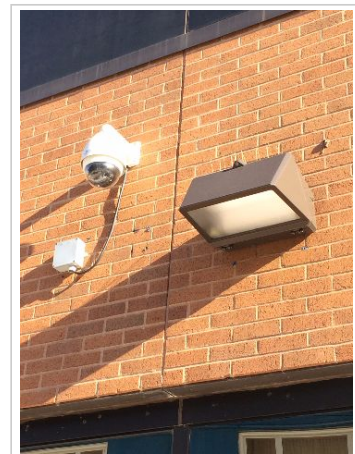
Lighting - Exterior - Wall Packs Renewal

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**

Priority	3- Year 3	Category	I - Lifecycle
Estimated Cost	\$10,957	FY Action Date	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.

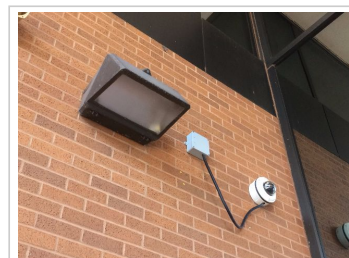
Requirement Justification and Strategy

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.

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

Requirement TypeCapital**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.

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

Priority	3- Year 3	Category	I - Lifecycle
Estimated Cost	\$164,636	FY Action Date	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

Priority	1- Year 1	Category	I - Reliability
Estimated Cost	\$1,188	FY Action Date	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.

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

Requirement TypeCapital

Comments**Deferral Reason? Explain Risk Mitigation**

Replace Branch Wiring Devices - 30A Disconnect Switch



Replace Branch Wiring Devices - 30A Disconnect Switch

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.

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

Requirement TypeCapital

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.

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

Requirement: (Renewal)

Interior Lighting Renewal

Description

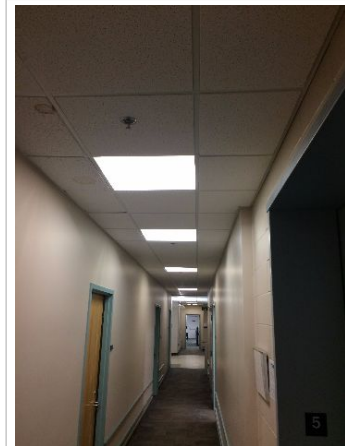
Auto generated renewal for Interior Lighting. System Description: The interior lighting system consists of primarily fluorescent fixtures controlled by GE relay panels.

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

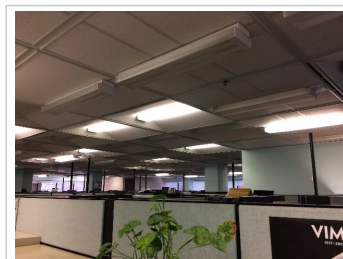
Interior Lighting



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.

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

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$304,898	FY Action Date	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.

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

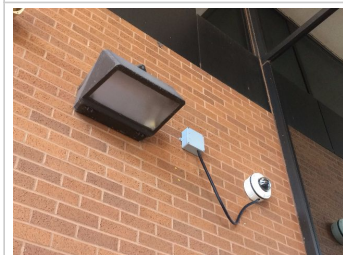
Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$567,242	FY Action Date	2035

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.

Condition Rating	Excellent	Lifetime	30
Year Installed	2017	Years Remaining	30 (Observed)
Adjustment Factor	2	Unit Cost	\$720.29
Quantity	175	Units	KW
Replacement Cost	\$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.

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

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

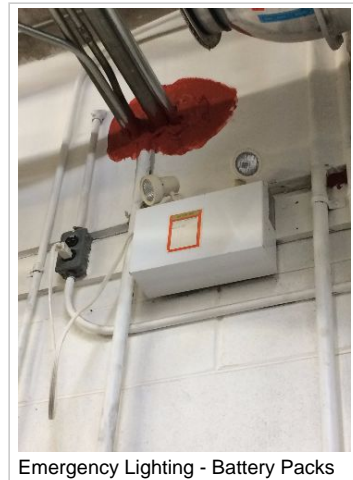
Emergency Lighting - Battery Packs Renewal

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**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

Emergency Lighting - Battery Packs

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.

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

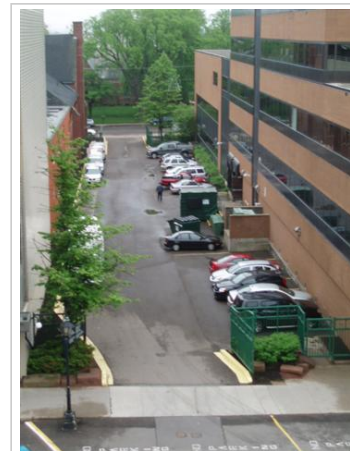
At end of service life.

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**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

P1013245.JPG



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.

Condition Rating	Good	Lifetime	25
Year Installed	1984	Years Remaining	25 (Observed)
Adjustment Factor	1	Unit Cost	\$1,396.69
Quantity	17	Units	Each
Replacement Cost	\$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.

Condition Rating	Average	Lifetime	10
Year Installed	2015	Years Remaining	8 (Observed)
Adjustment Factor	1.2500	Unit Cost	\$55.65
Quantity	25	Units	Each
Replacement Cost	\$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**

Priority	8- Year 8	Category	I - Lifecycle
Estimated Cost	\$1,600	FY Action Date	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.

Condition Rating	Average	Lifetime	25
Year Installed	2005	Years Remaining	13 (Observed)
Adjustment Factor	2	Unit Cost	\$152.37
Quantity	150	Units	SM
Replacement Cost	\$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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$28,570	FY Action Date	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 existing 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

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

Requirement TypeRepair

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.

Condition Rating	Good	Lifetime	25
Year Installed	2011	Years Remaining	19 (Observed)
Adjustment Factor	0.2500	Unit Cost	\$320.55
Quantity	120	Units	LM
Replacement Cost	\$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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$48,083	FY Action Date	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 TypeRepair**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.

Condition Rating	Average	Lifetime	40
Year Installed	1984	Years Remaining	42 (Observed)
Adjustment Factor	2	Unit Cost	\$907.80
Quantity	50	Units	LM
Replacement Cost	\$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.

Condition Rating	Average	Lifetime	40
Year Installed	1984	Years Remaining	15 (Observed)
Adjustment Factor	0.8000	Unit Cost	\$359.84
Quantity	30	Units	LM
Replacement Cost	\$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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$13,494	FY Action Date	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.

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

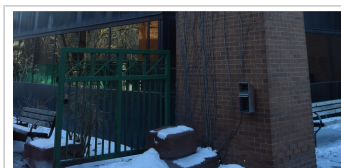
At end of service life Poor federal image; furnishings will be prone to disrepair.

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

Priority	Not Time Critical	Category	I - Lifecycle
Estimated Cost	\$33,680	FY Action Date	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.

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

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$6,974	FY Action Date	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.

Condition Rating	Good	Lifetime	20
Year Installed	2005	Years Remaining	13 (Observed)
Adjustment Factor	1	Unit Cost	\$227.45
Quantity	70	Units	SM
Replacement Cost	\$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**

Priority	9- Year 9	Category	I - Lifecycle
Estimated Cost	\$19,902	FY Action Date	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.

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

Requirement: (Renewal)

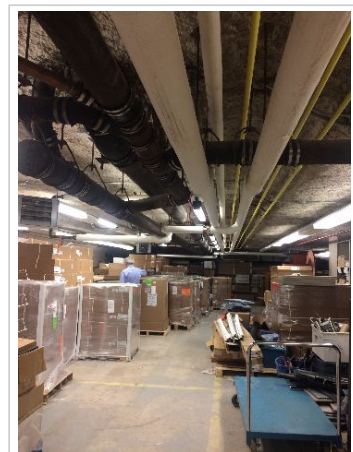
Sanitary Sewer - Waste Water Piping Renewal

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**

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**

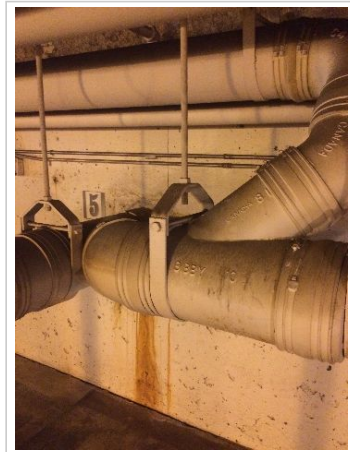
Sanitary Sewer - Waste Water Piping



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.

Condition Rating	Poor	Lifetime	37
Year Installed	1984	Years Remaining	4 (Observed)
Adjustment Factor	1	Unit Cost	\$527.25
Quantity	500	Units	LM
Replacement Cost	\$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.

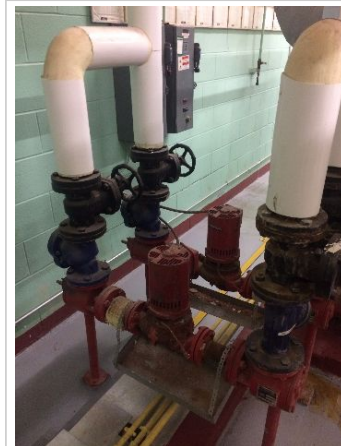
System Description: Building Heating Distribution System
piping, heaters, coils and pumps

Brief Description**Requirement Justification and Strategy****Implication of Requirement Deferral**

Priority	4- Year 4	Category	I - Lifecycle
Estimated Cost	\$276,808	FY Action Date	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

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

Requirement TypeCapital

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

Condition Rating	Poor	Lifetime	20
Year Installed	1984	Years Remaining	0 (Observed)
Adjustment Factor	1	Unit Cost	\$527.25
Quantity	20	Units	LM
Replacement Cost	\$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**

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$11,072	FY Action Date	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.

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

Comments

Quantity adjusted to reflect a reasonable replacement cost for pump replacement

Requirement: (Renewal)

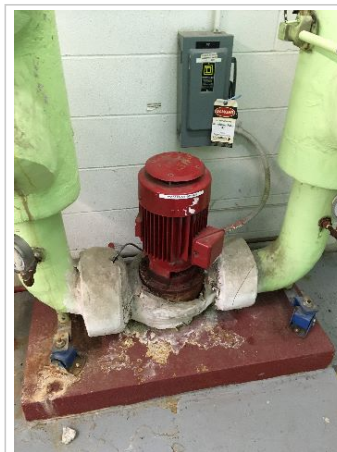
Cooling Distribution - Chilled Water Supply Pump #7 Renewal

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**

Priority	4- Year 4	Category	I - Lifecycle
Estimated Cost	\$11,072	FY Action Date	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.

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

Comments

Adjusted quantity to reflect a reasonable cost estimate for pump replacement

Requirement: (Renewal)

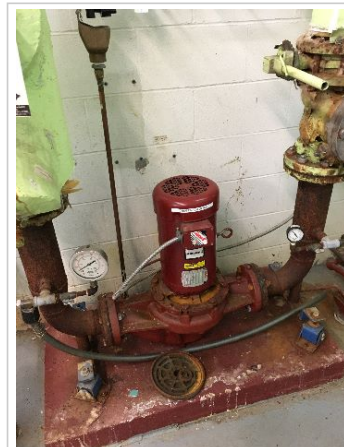
Cooling Distribution - Chilled water Supply Pump #6 Renewal

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**

Priority	1- Year 1	Category	I - Lifecycle
Estimated Cost	\$11,072	FY Action Date	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.

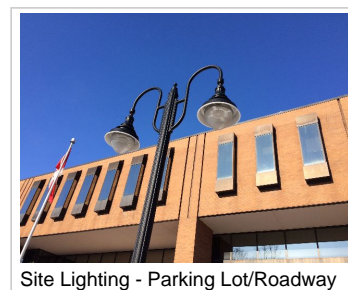
Condition Rating	Good	Lifetime	15
Year Installed	2009	Years Remaining	10 (Observed)
Adjustment Factor	1	Unit Cost	\$3,597.33
Quantity	4	Units	Each
Replacement Cost	\$14,389		

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**

Site Lighting - Parking Lot/Roadway

Implication of Requirement Deferral

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

Requirement Type**Comments****Deferral Reason? Explain Risk Mitigation**