RECAPP Facility Evaluation Report

Alberta Health Services

Walter C. MacKenzie Health Sciences Centre

B6631A

Edmonton

Report run on: March 27, 2012 10:22 AM

Facility Details

Building Name: Walter C. MacKenzie Health
Address: 8440 - 112 Street
Location: Edmonton

Building Id: B6631A
Gross Area (sq. m): 0.00
Replacement Cost: $0
Construction Year: 0

Evaluation Details

Evaluation Company: Morrison Hershfield
Evaluation Date: November 7 2011
Evaluator Name: Julien St-Pierre

Total Maintenance Events Next 5 years: **$55,439,177**
5 year Facility Condition Index (FCI): **0%**

General Summary:

The Walter MacKenzie Health Science Centre was constructed in two phases. Phase 1, consisting of the north portion of the building, includes a five-storey building, with a mechanical penthouse plus two storeys below ground was completed in 1981. Phase 2 was constructed in 1986, and consists of the south wing of the building, and serves as a continuation of Phase 1.

Interstitial spaces between floors in the original building house mechanical and electrical delivery systems. For the purpose of this study, we have assumed all components to have been installed in 1981 unless specified otherwise herein.

The total gross floor area is reported to be approximately 180,000 m2, but does not include the interstitial floors in this area calculation.

The Walter MacKenzie Health Science Building is general in acceptable overall condition.

Structural Summary:

Both phases of the building are constructed of concrete grade beams and piles, with a slab on grade lower basement level. The upper basement level is precast double-T prestressed concrete beams spanning between cast-in-place concrete beams, columns, and foundation walls. The main floor and above is constructed of metal deck with concrete topping, supported by steel joists, bearing on steel beams and columns.

The structure of the building is generally in good condition.

Envelope Summary:

The building envelope consists predominately of brick masonry between bands of precast concrete. The 6th floor is clad with prefinished textured panels. There is a band of aluminum-framed curtain wall at each occupied floor, with glazed and spandrel panels. Door and entry systems are comprised predominately of storefront entry systems with horizontally sliding automatic doors and steel utility doors. Vaulted skylights span between the main roof sections, and the roofing is predominately an inverted/protected assembly, covered with ballast or pavers. Select portions are roofed with styrene-butadiene-styrene (SBS) modified bitumen or standing-seam metal.

The building envelope is generally in acceptable overall condition.

Interior Summary:

The interior finished of the building consist of tile flooring, resilient sheet flooring, resilient tile flooring, broadloom carpet, and carpet tile. Walls are typically painted gypsum board, with locations various styles of glass partitions. Ceilings are predominately acoustic ceiling tile and painted gypsum board. Various rooms are supplied with acoustic wall and ceiling treatment finish.

Overall, the interiors of the building are generally in acceptable condition.

Mechanical Summary:

The Walter C. MacKenzie Health Sciences Centre was constructed in two phases in 1981 and 1986. For the purpose of this report we have used 1981 as the install years for all electrical systems unless specified otherwise herein.

Domestic water supply is from the City utility.

Plumbing fixtures are mostly original with some replacements due to attrition in recent years. Toilets are a mixture of porcelain wall and floor mounted with flushmatic and proximity sensor flush valves. Urinals are floor and wall mounted fixtures with proximity sensor flush valves. Lavatories are mostly counter-top fixtures with barrier free faucet sets.

Domestic hot water is generated by steam to hot water plate heat exchangers with three (3) holding tanks.

The heat source is supply by off-site steam boilers at the University of Alberta (UofA) physical plant. Steam lines enter the facility at the lower basement with vertical risers to the mechanical penthouse. Heating and ventilation is supplied by "Sheldon" packaged air handling units (AHUs) located in the mechanical penthouse. Each air handler is provided hot water heating through steam-to-hot water plate heat exchangers.
Cooling water is also supplied from the UofA physical plant and services cooling coils in the AHUs. The are four (4) packaged roof mounted heat/cooling units.

Type II water for dialysis and laboratory use is supply through reverse osmosis filtration located in the mechanical penthouse.

Building automation and controls is on two (2) systems: a SCMS utilizing Reliable Controls devices (new installation in 1998-99), and a Mico-D\CCMS system (original).

The building is protected by a wet-pipe sprinkler system throughout all areas.

An acid neutralizer sump) on the sanitary drainage system was replaced 2010.

The following concerns were identified and will require repair/replacement over the tactical window of this study:

- The Type II water system is failing and requires replacement. A study is recommended to determine options for its replacement.
- All isolation valves on the domestic water and hot water heating distribution lines are failing and require replacement.
- Two the three grease traps in the kitchen are failing and require replacement.

The mechanical systems are generally in acceptable overall condition.

Electrical Summary:

The Walter C. MacKenzie Health Sciences Centre was constructed in two phases in 1981 and 1986. For the purpose of this report we have used 1981 as the install years for all electrical systems unless specified otherwise herein.

The electrical supply is fed underground from the University of Alberta campus power plant to eight (8) facility-owned electrical sub-stations distributed throughout the site. Each sub-station has both normal power and emergency power main step-down transformers, electrical disconnect switch gear and central distribution panelboards (CDP).

Power is fed from the sub-stations to the secondary panelboards distributed throughout the facility. Secondary panelboards average 70% capacity and have covers over unused circuits. Emergency power is provided by six (6) diesel-powered standby generators.

The interior lighting consists predominately of fluorescent strip lighting, both T-12 and T-8, with some incandescent fixtures utilizing screw-in compact fluorescent lamps. Mercury vapor lighting is present in the atrium areas.

The fire alarm system consists of a Simplex fire alarm control panel which monitors manual pull stations, area smoke alarms, rate-of-rise heat detectors and in-duct smoke alarms. Activated components consist of bells, horns and combination of horns & strobes, as well as magnetic door-hold-open devices.

Intrusion/Security systems consist of card readers/Key FOB controlled access systems and video surveillance located throughout the building.

The electrical systems are generally in acceptable condition.

Rating Guide

Condition Rating	Performance
1 - Critical	Unsafe, high risk of injury or critical system failure.
2 - Poor	Does not meet requirements, has significant deficiencies. May have high operating/maintenance costs.
3 - Marginal	Meets minimum requirements, has significant deficiencies. May have above average operating maintenance costs.
4 - Acceptable	Meets present requirements, minor deficiencies. Average operating/maintenance costs.
5 - Good	Meets all present requirements. No deficiencies.
6 - Excellent	As new/state of the art, meets present and foreseeable requirements.

S1 STRUCTURAL

A1010 Standard Foundations*

The foundations consists primarily of concrete foundation walls on footings. The northeast portion of the building is supported on concrete piles.

Rating	Installed	Design Life	Updated
5 - Good	1981	100	MAR-12

Event: Investigate Cause and Extent of Foundation Movement (Lump Sum Allowance).

Concern:

Cracking in an interior concrete block wall was observed. In addition, differential movement has caused cracking and damage to the floor tiles in the second floor basement close to expansion joints.

Recommendation:

An investigation is recommended to assess the condition of the current foundation system and to ascertain if further remedial repairs are required.

Type	Year	Cost	Priority
Study	2012	$7,000	Medium

Updated: MAR-12

Event: Repair Foundation Work as a Result of Differential Settlement (Order of Magnitude Allowance).

Concern:

Cracking in an interior concrete block wall was observed. In addition, differential movement has caused cracking and damage to the floor tiles in the second floor basement close to expansion joints.

Recommendation:

The results of the study are required to determine appropriate repair options and their associated costs; therefore, and "order of magnitude" estimate has been provided herein.

Type	Year	Cost	Priority
Repair	2014	$750,000	Low

Updated: MAR-12

A1030 Slab on Grade*

The lower basement slabs consist of slab on grade concrete.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

Event: Investigate Extent of Slab Deterioration(lump sum allowance).

Concern:

Spalling and delamination is present in locations on the slab on grade.

Recommendation:

Retain building science specialist/structural engineer to assess extent of damage to existing slab on grade parking area.

Type	Year	Cost	Priority
Study	2012	$7,000	Low

Updated: MAR-12

Event: Repair Surface Spalling and Delaminations of Concrete Slab On Grade (Order of Magnitude estimate).

Concern:

Surface spalling and delaminations have occurred on portions of the slab on grade drive lanes and parking stalls. Patch repairs have been completed in the past; however, additional repairs are required to the original and repaired areas. Approximately 20% of the entire area is affected by various degrees of spalling/delamination.

Recommendation:

Remove delaminated/spalled areas of concrete and replace with new concrete surface. Results from the study are required to determine extent of repairs required; therefore, an order of magnitude cost has been included.

Type	Year	Cost	Priority
Repair	2013	$150,000	Low

Updated: MAR-12

A2020 Basement Walls (& Crawl Space)*

Concrete basement walls are located perimeter and interior of the building, and concrete masonry unit walls are located throughout the interior.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	100	MAR-12

Event: Investigate Cause of Leakage Through Basement Walls (Lump Sum Allowance).

Concern:

Water leakage was observed at two locations, and appear to be caused by plumbing/ductwork failures. In addition, locations of cracking were observed in the upper and lower parkade walls.

Recommendation:

Retain building science specialist to investigate the cause of water leaks in the parkade and parkade ramp areas, and to investigate cause of cracking of concrete elements.

Type	Year	Cost	Priority
Study	2012	$5,000	Medium

Updated: MAR-12

Event: Repair Basement Walls as per Findings of The Study (Order of Magnitude Estimate).

Concern:

Water leakage observed in two locations within the parkade.

Recommendation:

Perform repairs as recommended by the condition assessment. Results from the investigation study are required to determine extent of repairs required; therefore, an order of magnitude cost has been provided.

Type	Year	Cost	Priority
Repair	2013	$40,000	High

Updated: MAR-12

B1010.01 Floor Structural Frame (Building Frame)*

Structural steel joists, beams, and columns comprise the superstructure of the building. Structural steel trusses support the walkways in the atrium areas.

The upper level parkade is constructed of double-T precast bearing on cast-in-place concrete beams and columns.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

Event: Investigate Causes of Spalling Concrete (Lump Sum Allowance).

Concern:
Concrete is spalling around floor drains on upper level parkade.

Recommendation:
Retain building science specialist/structural engineer to assess current condition and extent of damage of concrete.

Type	Year	Cost	Priority
Study	2012	$5,000	Low

Updated: MAR-12

Event: Repair Spalling Concrete Areas Around Floor Drains (Order of Magnitude Estimate).

Concern:
Spalled/delaminated concrete areas around floor drains.

Recommendation:
Perform repairs as recommended by condition assessment. Results from the study are required to determine extent of repairs required; therefore, an "order of magnitude" cost has been included.

Type	Year	Cost	Priority
Repair	2013	$50,000	Medium

Updated: MAR-12

B1010.03 Floor Decks, Slabs, and Toppings*

Floor decks are constructed of steel decks with concrete topping, which bear on the steel superstructure. The floors of the interstitial floor spaces are exposed steel deck on steel joists bearing on the steel superstructure.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	100	MAR-12

B1010.06 Ramps: Exterior*

Access to the basement and sub-basement level parking areas is provided by concrete ramps. Non-slip traction surface has been added to drive-lane portion of ramps.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

B1010.07 Exterior Stairs*

Cast-in-place concrete stairs are found on the exterior of the building at exits that are not at grade.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

B1010.09 Floor Construction Fireproofing*

Fireproofing is obtained by the fire rating of the flooring assembly and taped gypsum board within the interstitial spaces. Spray-applied fireproofing is located on exposed steel work.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

B1010.10 Floor Construction Firestopping*

Fire-caulk was noted at penetrations throughout the floor assemblies.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	50	MAR-12

B1020.01 Roof Structural Frame*

The roof deck is supported by a superstructure of structural steel joists, beams, and columns.

Rating	Installed	Design Life	Updated
5 - Good	1981	100	MAR-12

B1020.03 Roof Decks, Slabs, and Sheathing*

The roof deck consists of steel deck.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

S2 ENVELOPE

B2010.01.01 Precast Concrete: Exterior Wall Skin*

Precast concrete bands are located between bands of brick masonry and aluminum window assemblies. Precast concrete corners are located on the exterior corners of all adjoining brick masonry areas.

Rating	Installed	Design Life	Updated
5 - Good	1981	75	MAR-12

B2010.01.02.01 Brick Masonry: Ext. Wall Skin*

The predominant cladding of the building is brick masonry.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

Event: Investigate Cause of Staining (Lump Sum Allowance).

Concern:

Staining has occurred on the brick adjacent to the precast concrete bands. While the deficiency is currently aesthetic, this may be suggesting a failure in the performance of the envelope from a water shedding or thermal performance perspective.

Recommendation:

Further review is recommended to ascertain the cause of the stain and to recommend remedial action.

Type	Year	Cost	Priority
Study	2012	$7,000	Medium

Updated: MAR-12

Event: Repair Brick Masonry Walls (Order of Magnitude Estimate).

Concern:

Surface staining observed on exterior brick masonry.

Recommendation:

Repair surface staining/efflorescence and mitigate causes. Results from the study are required to determine extent of repairs required; therefore, an order of magnitude cost has been included.

Type	Year	Cost	Priority
Repair	2013	$200,000	Medium

Updated: MAR-12

B2010.01.06.03 Metal Siding**

Metal panels clad the exterior stairwells of the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Metal Siding (~1,320 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$383,500	Unassigned

Updated: MAR-12

B2010.01.11 Joint Sealers (caulking): Ext. Wall**

Sealant is located between panels and between dissimilar cladding materials.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	20	MAR-12

Event: Replace Exteior Caulking (~6,615 m).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$193,500	Unassigned

Updated: MAR-12

Event: Replace ~30% of Exterior Caulk.

Concern:
Instances of cracking and adhesion failure of the caulking were observed throughout.
Recommendation:
Replace deficient caulking (~30% of total).

Type	Year	Cost	Priority
Failure Replacement	2012	$82,900	Medium

Updated: MAR-12

B2010.02.01 Cast-in-place Concrete: Ext. Wall Const*

Exposed cast-in-place concrete walls are located at select locations in the building, such as at parkade ramp entrances.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

B2010.02.03 Masonry Units: Ext. Wall Const.*

Glass block masonry units form transparent wall assembly at the southwest corner of the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

B2010.02.99 Other Exterior Wall Construction*

Insulated metal panels enclose the 6th floor mechanical space.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

B2010.03 Exterior Wall Vapour Retarders, Air Barriers, and Insulation*

Concealed.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	100	MAR-12

B2010.05 Parapets*

Parapets capped with metal flashing line the exposed perimeter of roofing sections.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	50	MAR-12

B2010.06 Exterior Louvers, Grilles, and Screens*

Louvers are located on the exterior envelope of the 6th floor for air exchange to the mechanical systems.

Rating	Installed	Design Life	Updated
5 - Good	1981	50	MAR-12

B2010.09 Exterior Soffits*

The underside of protruding building overhangs are predominately finished with metal slat soffits.

Rating	Installed	Design Life	Updated
5 - Good	1981	50	MAR-12

B2020.01.01.02 Aluminum Windows (Glass & Frame)**

Double-glazed, aluminum-framed window band units are the predominant glazing assembly located on the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Aluminum Windows (~11,850 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$12,909,500	Unassigned

Updated: MAR-12

B2020.02 Storefronts: Windows**

Storefront window assemblies with insulated glazing units in aluminum frames are provided at entrances.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Storefront Windows (~45 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$41,000	Unassigned

Updated: MAR-12

B2020.03 Glazed Curtain Wall**

A sloped glazing curtain wall canopy is located over the main west entrance. In addition, sloped glazing is located above the theater and at the southwest portion of the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Glazed Curtain Wall (~658 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$1,435,900	Unassigned

Updated: MAR-12

B2030.01.01 Aluminum-Framed Storefronts: Doors**

Aluminum entrance doors are part of a storefront glazing system.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Storefront Doors (~34 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$108,900	Unassigned

Updated: MAR-12

B2030.01.06 Automatic Entrance Doors**

Horizontally-sliding aluminum frame automatic doors are provided at entrances to the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Automatic Entrance Doors (~20 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$259,000	Unassigned

Updated: MAR-12

B2030.02 Exterior Utility Doors**

Various steel doors are located at exits on the ground floor and provide access to the roof. Doors are provided with exterior toggle pull sets and interior panic hardware.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Exterior Utility Doors (~56 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$44,900	Unassigned

Updated: MAR-12

B2030.03 Large Exterior Special Doors (Overhead)*

Ovehead doors provide access to the ambulance loading areas and parking floors at and below grade.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	30	MAR-12

Event: Replace Overhead Doors and Operators (~4 ea).

Concern:
Due to contact with vehicles, several doors are not functioning properly.
Recommendation:
Replace overhead doors and operators.

Type	Year	Cost	Priority
Failure Replacement	2012	$53,700	Medium

Updated: MAR-12

B3010.01 Deck Vapour Retarder and Insulation*

Concealed.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

B3010.04.04 Modified Bituminous Membrane Roofing (SBS)**

SBS roofing protects two mechanical penthouse areas south of the atrium glazing.

Rating	Installed	Design Life	Updated
5 - Good	2000	25	MAR-12

Event: Replace SBS Roofing (~506 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2025	$84,700	Unassigned

Updated: MAR-12

B3010.04.08 Membrane Roofing (Inverted/Protected)**

The majority of roof cover consists of a protected/inverted membrane assembly, with field gravel ballast and perimeter paver stones.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	30	MAR-12

Event: Replace Inverted Roofing (~20806 m2).

Concern:
Several instances of roof leaks were reported by maintenance staff.

Recommendation:
Replacement of the inverted roofing assembly is recommended.

Type	Year	Cost	Priority
Failure Replacement	2013	$3,874,300	High

Updated: MAR-12

B3010.05 Traffic Coatings: Exterior**

A traffic bearing membrane is located on the helipad on the 5th floor of the southwest wing of the building.

Rating	Installed	Design Life	Updated
2 - Poor	1995	15	MAR-12

Event: Replace Helipad Traffic Coating (~490 m2).

Concern:
The traffic bearing membrane of the helipad has deteriorated and requires replacement. It was reported that the helipad is current dormant, but replacement of the traffic coating surface should be considered to protect underlying components.

Recommendation:
Replace traffic coating on southwest helipad.

Type	Year	Cost	Priority
Failure Replacement	2013	$85,600	Medium

Updated: MAR-12

B3010.07 Sheet Metal Roofing**

A standing seam metal roof covers one mechanical penthouse unit.

Rating	Installed	Design Life	Updated
5 - Good	2000	40	MAR-12

Event: Replace Metal Roofing (~72 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2040	$24,100	Unassigned

Updated: MAR-12

B3020.01 Skylights** - Pyramidal Unit Skylights

Pyramidal skylight units are located above the library wing and also at the east entrance lobby.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	25	MAR-12

Event: Replace Failed Pyramidal Skylight Units (~150 m2).

Concern:
Persistent leaks of the pyramidal skylight units were reported. The assessment team observed use of several buckets to collect water from skylights.

Recommendation:
Replacement of the failed skylight units is recommended, as required.

Type	Year	Cost	Priority
Failure Replacement	2012	$327,400	High

Updated: MAR-12

Event: Replace Pyramidal Unit Skylights (~142 m2)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$309,900	Unassigned

Updated: MAR-12

B3020.01 Skylights** - Vaulted Metal-Framed Skylights

A barrel-vault metal-framed curtain wall skylight system covers the atrium areas.

Rating	Installed	Design Life	Updated
2 - Poor	1981	25	MAR-12

Event: Investigate Cause/Source of Leaks of Vaulted Metal-framed Skylights (Lump Sum Allowance).

Concern:

Significant leaks and thermal comfort issues attributed to the skylight assemblies were reported by the maintenance staff. Ongoing replacement of failed glazing panels was also reported.

Recommendation:

A complete assessment of the condition of the skyligjht assemblies is recommended, including repair methodology.

Type	Year	Cost	Priority
Study	2012	$7,000	High

Updated: MAR-12

Event: Repair Vaulted Skylights (Order of Magnitude Estimate).

Concern:

Barrel-vaulted skylight assemblies are experiencing ongoing leaks. An active project is ongoing with attempts by maintenance staff to replace all failed glazing units and mitigate water leaks.

Recommendation:

Results of the study are required to determine the extent of issues and appropriate repair options, and related costs. Therefore, an "order of magnitude" estimate has been provided herein.

Type	Year	Cost	Priority
Repair	2012	$1,500,000	High

Updated: MAR-12

Event: Replace Vaulted Metal-Framed Skylights (~4200 m2)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$9,165,000	Unassigned

Updated: MAR-12

B3020.02 Other Roofing Openings (Hatch, Vent, etc)*

Hinged roof hatches provide access to the upper roof areas. Main roof areas are accessed by utility doors from the mechanical penthouse.

Rating	Installed	Design Life	Updated
5 - Good	1981	25	MAR-12

S3 INTERIOR

C1010.01 Interior Fixed Partitions*

Various fixed interior partition systems are used throughout the building, including glass block walls. Damage was noted in select shower facilities in gypsum board walls where adjoining to tile walls. Minor repairs needed.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

Event: Repair Damaged Gypsum Sheathing in Shower Facilities (Lump Sum Allowance).

Concern:
Damage was noted in select shower facilities in gypsum board walls where adjoining to tile walls.

Recommendation:
Repair damaged areas of gypsum board in shower facilities.

Type	Year	Cost	Priority
Repair	2012	$5,000	Medium

Updated: MAR-12

C1010.03 Interior Operable Folding Panel Partitions**

Accordion-style folding wall partitions are used in several rooms in the building to alter room size and layout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Folding Panel Paritions (~230 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$200,800	Unassigned

Updated: MAR-12

C1010.04 Interior Balustrades and Screens, Interior Railings*

Metal railings line all exposed walkways overlooking the atrium spaces.

Rating	Installed	Design Life	Updated
5 - Good	1981	40	MAR-12

C1010.05 Interior Windows*

Interior aluminum-frame windows provide views into the atrium. Additionally, wire-glass windows in pressed-steel frames form fire separations throughout the building.

Rating	Installed	Design Life	Updated
5 - Good	1981	80	MAR-12

C1010.06 Interior Glazed Partitions and Storefronts*

Interior glazed partitions are located throughout the building to separate department areas. The interior vestibule glazing at the main entrances to the building consist of storefront glazing systems.

Rating	Installed	Design Life	Updated
5 - Good	1981	80	MAR-12

C1010.07 Interior Partition Firestopping*

Flexible smoke-barrier sealant and dampers with fusible links are used as firestopping on interior partition walls.

Rating	Installed	Design Life	Updated
5 - Good	1981	50	MAR-12

C1020.01 Interior Swinging Doors (& Hardware)*

A mixture of solid core wood, hollow core wood, and hollow core metal doors are provided throughout. Publicly accessible doors are equipped with lever-type handsets for barrier free access. Several door frames have experienced superficial damage, such as chipped paint, due to contact with utility carts, beds, etc. Repainting of the door frames should be considered (repair <$1000).

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

C1020.02 Interior Entrance Doors*

The interior vestibule glazing at the main entrances to the building consist of storefront glazing systems.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

C1020.03 Interior Fire Doors*

Interior fire doors on magnetic door-hold-open devices are found throughout. Several fire doors are kept closed for departmental division and are used as fire exits only.

Rating	Installed	Design Life	Updated
5 - Good	1981	50	MAR-12

Event: Install Door-Hold-Open Devices (~3 ea).

Concern:
Some fire doors were observed to be held open by door stops or blocks and are not equipped with door-hold-open devices.

Recommendation:
Install door-hold-open devices on affected doors.

Type	Year	Cost	Priority
Code Repair	2012	$7,500	High

Updated: MAR-12

C1020.04 Interior Sliding and Folding Doors*

Several sliding glass aluminum-framed doors are found throughout the building, complete with tempered glass.

Rating	Installed	Design Life	Updated
5 - Good	1981	25	MAR-12

C1020.06 Interior Gates*

Sliding and overhead interior security gates enclose secure areas.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

C1030.01 Visual Display Boards**

Various chalkboards are found in the classrooms and auditorium rooms. Whiteboards are found in several classrooms. Push-pin tack boards are locate in many staff lounges, department front reception desks, etc.

Rating	Installed	Design Life	Updated
5 - Good	1981	20	MAR-12

Event: Replace Chalkboards (~5 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$3,100	Unassigned

Updated: MAR-12

Event: Replace Marker/Whiteboards (~5 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$3,100	Unassigned

Updated: MAR-12

Event: Replace Tack Boards (~70 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$43,300	Unassigned

Updated: MAR-12

C1030.02 Fabricated Compartments (Toilets/Showers)** - 2005

Floor mounted toilet partitions provide enclosure for multi-use toilet facilities. Several appear to have been replaced since construction of the building. Age of the newly installed toilet compartments appears to be within the past 5-7 years.

Rating	Installed	Design Life	Updated
5 - Good	2005	30	MAR-12

Event: Replace Toilet Paritions (~10 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2035	$11,600	Unassigned

Updated: MAR-12

C1030.02 Fabricated Compartments (Toilets/Showers)** - Original

Floor mounted toilet partitions provide enclosure for multi-use toilet facilities.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Toilet Partitions (~85 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$98,400	Unassigned

Updated: MAR-12

C1030.05 Wall and Corner Guards*

Stainless steel corner guards are found throughout the building.

Rating	Installed	Design Life	Updated
5 - Good	1981	15	MAR-12

C1030.06 Handrails*

Wall mounted handrails are found throughout the building, constructed of either PVC or a combination of wood, stainless steel, and fabric inlay. Select portions of the handrail are missing end-caps, which could case sanitary or health issues. Replacement of the end caps is recommended (repair <$1000).

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Fabric Handrails with PVC Handrails (~350 m).

Concern:
Fabric handrails pose sanitary concerns.
Recommendation:
Replace fabric handrails with PVC handrails.

Type	Year	Cost	Priority
Program Functional Upgrade	2014	$10,500	Medium

Updated: MAR-12

C1030.08 Interior Identifying Devices*

Various floor directories, identification signage, and way-finding sings are located throughout the building.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	20	MAR-12

Event: Upgrade Directories and Signage (Order of Magnitude Estimate).

Concern:
Deficiencies in signage and way-finding were highlighted as a major issue affecting circulation for staff and visitors to the building.
Recommendation:
Upgrading of all signage and way-finding methods is required. An upgrade strategy should include the adjoining buildings for consistency. Estimate of costing provided by previous report; the order of magnitude estimate deemed reasonable by the operations staff.

Type	Year	Cost	Priority
Program Functional Upgrade	2012	$100,000	High

Updated: MAR-12

C1030.10 Lockers** - 1981

Various configurations of lockers are found throughout the locker rooms, changing rooms and washrooms, including full height lockers, stacked-half lockers, and tote lockers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Lockers (~1297 Full Height Lockers).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$613,300	Unassigned

Updated: MAR-12

C1030.10 Lockers** - 1995

Various configurations of lockers are found throughout the locker rooms, changing rooms and washrooms, including full height lockers, stacked-half lockers, and tote lockers.

Rating	Installed	Design Life	Updated
5 - Good	1995	30	MAR-12

Event: Replace Lockers (~300 Full Height Lockers, ~110 Half-stacked Lockers, ~210 Tote Lockers).

Type	Year	Cost	Priority
Lifecycle Replacement	2025	$215,200	Unassigned

Updated: MAR-12

C1030.10 Lockers** - 2005

Various configurations of lockers are found throughout the locker rooms, changing rooms and washrooms, including full height lockers, stacked-half lockers, and tote lockers.

Rating	Installed	Design Life	Updated
5 - Good	2005	30	MAR-12

Event: Replace Lockers (~700 Full Heigh Lockers).

Type	Year	Cost	Priority
Lifecycle Replacement	2035	$331,000	Unassigned

Updated: MAR-12

C1030.12 Storage Shelving*

Various metal storage shelving and prefabricated wood storage shelving is located in storage rooms and areas throughout the building.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

C1030.15 Scales*

An in-floor utility scale is installed in the basement floor.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

C2010 Stair Construction*

The interior stairwells are predominately cast-in-place concrete stairs, and several stairwells on the perimeter of the building are of metal construction with concrete tread infill.

Rating	Installed	Design Life	Updated
5 - Good	1981	100	MAR-12

C2020.01 Tile Stair Finishes*

The majority of the cast-in-place concrete stairs are finished with porcelain floor tiles.

Rating	Installed	Design Life	Updated
5 - Good	1981	60	MAR-12

C2020.05 Resilient Stair Finishes**

Select stairwells within the building have resilient sheet flooring.

Rating	Installed	Design Life	Updated
5 - Good	1981	20	MAR-12

Event: Replace Resilient Stair Finish (~282 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$22,600	Unassigned

Updated: MAR-12

C2020.08 Stair Railings and Balustrades*

Metal railings and balustrades are provided at all interior stairwells.

Rating	Installed	Design Life	Updated
5 - Good	1981	40	MAR-12

C2030 Interior Ramps*

Concrete ramps are provided at mechanical storage rooms to prevent potential spills from contaminating adjoining spaces.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

C3010.01 Concrete Wall Finishes (Unpainted)*

Some locations of cast-in-place concrete walls are unpainted.

Rating	Installed	Design Life	Updated
5 - Good	1981	100	MAR-12

C3010.04 Gypsum Board Wall Finishes (Unpainted)*

The wall covering of interstitial spaces is taped but unpainted gypsum board.

Rating	Installed	Design Life	Updated
5 - Good	1981	60	MAR-12

C3010.06 Tile Wall Finishes**

Ceramic and quarry tile wall finish, painted and glazed, is found in elevator lobbies, washrooms, and shower facilities.

Rating	Installed	Design Life	Updated
5 - Good	1981	40	MAR-12

Event: Replace Wall Tiles (~1,058 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$254,000	Unassigned

Updated: MAR-12

C3010.09 Acoustical Wall Treatment**

Sound deadening panels are located in classrooms, assembly areas, and various other locations throughout the building where sound attenuation is required.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	MAR-12

Event: Replace Acoustic Wall Treatment (~312 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$68,100	Unassigned

Updated: MAR-12

C3010.11 Interior Wall Painting*

Wall paint covers most general wall surfaces, such as concrete, concrete block masonry, and gypsum board. The age of the paint interior is generally variable, as repainting occurs during clinical renewal projects.

Rating	Installed	Design Life	Updated
4 - Acceptable	0	10	MAR-12

C3020.01.01 Epoxy Concrete Floor Finishes*

Various vintages of epoxy floor coating was identified at select locations in the lower floors and on the 6th floor mechanical floor.

Rating	Installed	Design Life	Updated
4 - Acceptable	0	0	MAR-12

Event: Replace Localized Areas of Epoxy Floor Finishes (~485 m2).

Concern:
Portions of the epoxy floor coating have worn off, exposing the concrete floor below.

Recommendation:
Localized replacement of the epoxy coating is recommended.

Type	Year	Cost	Priority
Repair	2013	$74,100	Medium

Updated: MAR-12

C3020.01.02 Painted Concrete Floor Finishes*

Select areas on the lower floors have painted concrete floor finish. In addition, select stairwells have painted stair treads.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	10	MAR-12

C3020.02 Tile Floor Finishes**

Areas consisting of tile flooring include the flooring in the atrium areas, entrance vestibules, and several washroom areas. Localized damage around floor drains was observed (repair <$1000).

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	50	MAR-12

Event: Replace Tile Floor Finish (~3150 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$514,100	Unassigned

Updated: MAR-12

C3020.03 Terrazzo Floor Finishes*

Terrazzo floor finish is found in several washrooms and in select operating rooms on the upper floors.

Rating	Installed	Design Life	Updated
5 - Good	1981	75	MAR-12

C3020.04 Wood Flooring** - Strip Flooring

Wood strip flooring is located in the auditorium on the first floor and within the squash and basketball courts in the upper basement.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Wood Strip Flooring (~589 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$145,700	Unassigned

Updated: MAR-12

C3020.04 Wood Flooring** - Wood Laminate

Wood laminate flooring is present in the rehabilitation gyms on the main floor.

Rating	Installed	Design Life	Updated
5 - Good	2005	30	MAR-12

Event: Replace Wood Laminate Flooring (~340 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2035	$9,500	Unassigned

Updated: MAR-12

C3020.07 Resilient Flooring** - 2001 Sheet Flooring

Resilient sheet flooring was installed as part of the hospital renovation in 2001.

Rating	Installed	Design Life	Updated
5 - Good	2001	20	MAR-12

Event: Replace Sheet Flooring (~42,204 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$3,376,800	Unassigned

Updated: MAR-12

C3020.07 Resilient Flooring** - 2006 Sheet Flooring

Portions of the sheet flooring have been replaced within the last 5 years.

Rating	Installed	Design Life	Updated
5 - Good	2006	20	MAR-12

Event: Replace Sheet Flooring (~12,086 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2026	$967,100	Unassigned

Updated: MAR-12

C3020.07 Resilient Flooring** - Original Sheet Flooring

Resilient sheet flooring installed as part of the original construction is located in many bathrooms, process rooms, and corridors.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	MAR-12

Event: Replace Sheet Flooring (~33,974 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$2,718,400	Unassigned

Updated: MAR-12

C3020.07 Resilient Flooring** - Original Vinyl Tile

Vinyl Composite Tile (VCT) is the predominant resilient floor tile found in the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	MAR-12

Event: Replace Original Vinyl Tile Flooring (~5,142 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$261,900	Unassigned

Updated: MAR-12

C3020.08 Carpet Flooring**

Carpet flooring is installed in several offices.

Rating	Installed	Design Life	Updated
5 - Good	2005	15	MAR-12

Event: Replace Carpet Flooring (~6,741 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2020	$441,300	Unassigned

Updated: MAR-12

C3020.08 Carpet Flooring** - Carpet Tile

Carpet tile is installed in the library and in several offices and corridors.

Rating	Installed	Design Life	Updated
4 - Acceptable	2001	15	MAR-12

Event: Replace Carpet Tile (~3,316 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$217,100	Unassigned

Updated: MAR-12

C3020.08 Carpet Flooring** - Original

The original carpet remains in some offices and corridors.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	15	MAR-12

Event: Replace Carpet Flooring (~5,204 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$340,700	Unassigned

Updated: MAR-12

C3020.09 Access Flooring**

Access flooring is located in select electronics and server rooms.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

Event: Replace Access Flooring (~72 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$36,700	Unassigned

Updated: MAR-12

C3020.13 Traffic Coating: Interior**

A vehicular traffic coating membrane is located on the suspended slab of the upper basement parking area.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	25	MAR-12

Event: Repair Traffic Bearing Membrane (~100m2).

Concern:
The traffic coating membrane is deteriorating around drains and in select other locations on the suspended slab of the upper basement floor.

Recommendation:
Repair the traffic coating membrane.

Type	Year	Cost	Priority
Repair	2012	$15,300	Low

Updated: MAR-12

Event: Replace Traffic Coating Membrane (~3750 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$572,900	Unassigned

Updated: MAR-12

C3030.01 Concrete Ceiling Finishes (Unpainted)*

Within nonpublic rooms such as mechanical rooms, exposed concrete is unpainted.

Rating	Installed	Design Life	Updated
5 - Good	1981	100	MAR-12

C3030.06 Acoustic Ceiling Treatment (Susp. T-Bar)**

Acoustic ceiling tile is located is most areas throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

Event: Replace Acoustic Ceiling Tiles (~45,489 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$1,985,300	Unassigned

Updated: MAR-12

C3030.07 Interior Ceiling Painting*

Gypsum board ceilings and bulkheads are finished with paint. Select locations of minor ceiling damage due to water staining etc. were observed, and appear to be due to condensation of perimeter radiant panel (repair <$1000).

Rating	Installed	Design Life	Updated
4 - Acceptable	0	20	MAR-12

D1010.01.01 Electric Traction Passenger Elevators**

Several electric traction elevators are located throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Elevator Upgrade (4,5,6) (Phase 3 of 4)

Concern:

Continued upgrading of existing elevators to improve performance. With increased usage and site development there is a need to improve the existing elevators. Elevators continue to operate at less than optimal. There is an increasing frequency of elevator incidents trapping passengers that is elevating our liability risk of potential injury. Upgrades will improve but not correct waiting times. All elevators require better assistive devices (Braille, aural etc.) Note project may require contractor deposit. (year1/ 30%). The "industry acceptable callback rate" is less than or equal to six calls per car per year. These seven elevator cars currently experience an average of over 23 maintenance callbacks per unit per year (as per Otis report, October 3, 2008).

NOTE: Comments, recommendations and costing provided by Client user.

Recommendation:

Continued upgrading of existing elevators to improve performance. This work includes control and operational upgrades along with improved barrier-free provisions for mobility and sight/hearing impaired usage. Scope of work relates to modernize elevators 4,5 and 6 in phase 4. Also included is to separate the functions of 8 and 9.

Type	Year	Cost	Priority
Program Functional Upgrade	2011	$1,150,000	High

Updated: MAR-12

Event: Elevator Upgrade (7,8,9) (Phase 4 of 4)

Concern:

Continued upgrading of existing elevators to improve performance. With increased usage and site development there is a need to improve the existing elevators. Elevators continue to operate at less than optimal. There is an increasing frequency of elevator incidents trapping passengers that is elevating our liability risk of potential injury. Upgrades will improve but not correct waiting times. All elevators require better assistive devices (Braille, aural etc.) Note project may require contractor deposit. (year1/ 30%). The "industry acceptable callback rate" is less than or equal to six calls per car per year. These seven elevator cars currently experience an average of over 23 maintenance callbacks per unit per year (as per Otis report, October 3, 2008).

NOTE: Comments, recommendations and costing provided

by Client user.

Recommendation:
Continued upgrading of existing elevators to improve performance. This work includes control and operational upgrades along with improved barrier-free provisions for mobility and sight/hearing impaired usage. Scope of work relates to modernize elevators 4,5 and 6 in phase 5. Also included is to separate the functions of 8 and 9

Type	Year	Cost	Priority
Program Functional Upgrade	2012	$1,500,000	High

Updated: MAR-12

Event: Replace Traction Passenger Elevators 1, 2 and 3

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$1,302,000	Unassigned

Updated: MAR-12

Event: Replace Traction Passenger Elevators 10, 11 and 12

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$1,350,000	Unassigned

Updated: MAR-12

Event: Replace Traction Passenger Elevators 13, 14 and 15

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$1,350,000	Unassigned

Updated: MAR-12

Event: Replace Traction Passenger Elevators 16, 17 and 19

Type	Year	Cost	Priority
Lifecycle Replacement	2018	$1,350,000	Unassigned

Updated: MAR-12

Event: Replace Traction Passenger Elevators 4, 5 and 6

Type	Year	Cost	Priority
Lifecycle Replacement	2019	$1,350,000	Unassigned

Updated: MAR-12

Event: Replace Traction Passenger Elevators 7 and 8

Type	Year	Cost	Priority
Lifecycle Replacement	2020	$900,000	Unassigned

Updated: MAR-12

D1010.01.02 Hydraulic Passenger Elevators**

Elevator 18 - original hydraulic passenger elevator is provided in the library and provides access to the ground and second floor only.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Hydraulic Passenger Elevator 18

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$148,000	Unassigned

Updated: MAR-12

D1010.01.04 Hydraulic Freight Elevators**

Elevator 9 - original hydraulic freight elevator provided with stops between main and sub-basement floor levels.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Hydraulic Freight Elevator 9

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$175,000	Unassigned

Updated: MAR-12

D1020 Escalators and Moving Walks**

An escalator provides circulation between the main and second floors at the east entrance to the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

Event: Replace Escalators (2 ea).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$494,700	Unassigned

Updated: MAR-12

D1090 Other Conveying Systems*

A telelift transport system is installed within the hospital to transport and distribute goods throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

Event: Telelift Control system Upgrade and Car Retrofit. (Phase 2 of 2)

Concern:

System controls are not supported. The ability to monitor the performance and operation of the telelift system is currently very limited, which affects the ability to proactively maintain the system. The telelift system is heavily depended upon to deliver materials throughout the hospital. It is original technology (installed late 1970's, early 1980's) and has a significant maintenance cost.

Recommendation:

Existing system controls require upgrade to a digital Control System and consequently the car transport system requires retrofit.

Type	Year	Cost	Priority
Operating Efficiency Upgrade	2012	$2,000,000	High

Updated: MAR-12

S4 MECHANICAL

D2010.04 Sinks** - Laboratory Sinks

Chemical resistant stainless steel sinks in laboratories throughout the building.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

Event: Replace Lab Sinks (~60 ea)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$97,000	Unassigned

Updated: MAR-12

D2010.04 Sinks** - Mop Sinks

Moulded floor mounted mop sinks provided throughout.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

Event: Replace Mop Sinks (~20 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$45,500	Unassigned

Updated: MAR-12

D2010.04 Sinks** - Stainless Steel Service Sinks

Single and double basin stainless steel service sinks are provided throughout. Mostly original with isolated replacement due to attrition.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

Event: Replace Service Sinks (~50 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$97,000	Unassigned

Updated: MAR-12

D2010.05 Showers**

Through-wall shower heads and mixing valves in staff change rooms throughout.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

Event: Replace Shower Fixtures (~30 ea.)

Concern:
Single and dual handled faucets, enclosure and shower head. Lifecycle replacement cost does not include wall tile (refer to C3010.06 in the Architectural report).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$15,000	Unassigned

Updated: MAR-12

D2010.06 Bathtubs**

Enameled steel bathtubs complete with valve sets in random areas.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

Event: Replace Bathtubs (~10 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$21,100	Unassigned

Updated: MAR-12

D2010.08 Drinking Fountains/Coolers**

Refrigerated drinking fountains provided in corridors throughout.

Rating	Installed	Design Life	Updated
5 - Good	1981	35	MAR-12

Event: Replace Drinking Fountains (~15 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$50,200	Unassigned

Updated: MAR-12

D2010.09 Other Plumbing Fixtures*

Therapeutic baths and sitz baths provided,

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

D2010.10 Washroom Fixtures (WC, Lav, Urnl)**

Mostly original fixtures with some replacement due to attrition.

Wall-mounted china toilets with manual and proximity sensor flushometers.
Wall-mounted urinals with manual and proximity sensors flushometers.
Mixture of stainless steel, enamel steel and china countertop lavatories with standard and barrier free faucet sets.

Rating	Installed	Design Life	Updated
5 - Good	1981	35	MAR-12

Event: Replace Lavatories (~ 1,541 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$2,488,500	Unassigned

Updated: MAR-12

Event: Replace Toilets (~ 718 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$1,253,500	Unassigned

Updated: MAR-12

Event: Replace Urinals (~ 41 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$73,200	Unassigned

Updated: MAR-12

D2020.01.01 Pipes and Tubes: Domestic Water* - Deionized Water

Rating	Installed	Design Life	Updated
2 - Poor	1981	40	MAR-12

Event: Domestic Water Distribution System Upgrades (Phase 4 of 6)

Concern:

Further to deficiencies identified in the consultants report under Phase1, this project will address the domestic water systems that has deteriorated at a rapid rate as a result of component age, erosion, corrosion, etc. This project will rectify known and potential critical failures. Piping systems are subject to major leaks which could result in major damage to the building. Some system components (valves, etc.) are corroded and inoperable eliminating required systems isolation thereby impacting scheduled maintenance procedures.

Recommendation:

Continued replacement of domestic water systems and piping components Examples of components that require urgent replacement include building crossover systems, major and minor valves, specific risers (High and Low pressure), and piping distribution etc. Refer to Consultants report dated July 2006 (Hemisphere Engineering).

Replacement cost and phasing is based on information provided by the Facility Operators.

Type	Year	Cost	Priority
Failure Replacement	2011	$1,930,000	High

Updated: MAR-12

Event: Domestic Water Distribution System Upgrades (Phase 5 of 6)

Concern:

Further to deficiencies identified in the consultants report under Phase1, this project will address the domestic water systems that has deteriorated at a rapid rate as a result of component age, erosion, corrosion, etc. This project will rectify known and potential critical failures. Piping systems are subject to major leaks which could result in major damage to the building. Some system components (valves, etc.) are corroded and inoperable eliminating required systems isolation thereby impacting scheduled maintenance procedures.

Recommendation:

Replacement of domestic water systems and piping components Examples of components that require urgent replacement include building crossover systems, major and

minor valves, specific risers (High and Low pressure), and piping distribution etc. Refer to Consultants report dated July 2006 (Hemisphere Engineering).

Replacement cost and phasing is based on information provided by the Facility Operators.

Type	Year	Cost	Priority
Failure Replacement	2012	$1,813,227	High

Updated: MAR-12

Event: Replace Deionized Water Distribution (Phase 6 of 6)

Concern:

Further to deficiencies identified in the consultants report under Phase1, this project will address the domestic water systems that has deteriorated at a rapid rate as a result of component age, erosion, corrosion, etc.

Recommendation:

Replacement of domestic water systems and piping components Examples of components that require urgent replacement include building crossover systems, major and minor valves, specific risers (High and Low pressure), and piping distribution etc.

Replacement cost and phasing is based on information provided by the Facility Operators.

Type	Year	Cost	Priority
Failure Replacement	2013	$2,102,860	High

Updated: MAR-12

Event: Replace Dionized Water Distribution System Piping & Valves (~8,000 m2/gfa)

Concern:

Further to deficiencies identified in the consultants report under Phase1, this project will address the domestic water systems that has deteriorated at a rapid rate as a result of component age, erosion, corrosion, etc. This project will rectify known and potential critical failures. Piping systems are subject to major leaks which could result in major damage to the building. Some system components (valves, etc.) are corroded and inoperable eliminating required systems isolation thereby impacting scheduled maintenance procedures.

Recommendation:

Continued replacement of domestic water systems and piping components Examples of components that require urgent replacement include building crossover systems, major and minor valves, specific risers (High and Low pressure), and

piping distribution etc. Refer to Consultants report dated July 2006 (Hemisphere Engineering).

Replacement cost and phasing is based on information provided by the Facility Operators.

Type	Year	Cost	Priority
Failure Replacement	2012	$85,000	High

Updated: MAR-12

D2020.01.01 Pipes and Tubes: Domestic Water* - Domestic Hot and Cold

Standard copper piping.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

Capacity Size	Capacity Unit
Sta	N/A

D2020.01.02 Valves: Domestic Water**

Ball and gate isolation valves provided throughout.

Rating	Installed	Design Life	Updated
2 - Poor	1981	40	MAR-12

Event: Replace Domestic Water Valves (~400 ea.)

Concern:
Isolation valves are failing, have mostly ceased and the operator is unable to isolate areas to carryout repairs when needed.

Recommendation:
Replace isolation valves.

Type	Year	Cost	Priority
Failure Replacement	2012	$91,500	High

Updated: MAR-12

D2020.01.03 Piping Specialties (Backflow Preventers)**

Domestic water double check valves, fire protection double check valves and domestic water process double check valves (chemical feed, mechanical equipment feed).
A few BFP have been replaced due to attrition but >90% are reported as being original.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	MAR-12

Event: Replace Backflow Preventers (~40 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$693,000	Unassigned

Updated: MAR-12

D2020.02.02 Plumbing Pumps: Domestic Water** - 1986

Rating	Installed	Design Life	Updated
3 - Marginal	1981	20	MAR-12

Event: Replace Domestic Water Pumps (~8 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$57,900	Unassigned

Updated: MAR-12

Event: Replace Domestic Water Pumps (~8 ea.)

Concern:
Approximately 50% of domestic water pumps exhibit signs of advanced wear and are failing.
Recommendation:
Replace 50% of pumps on the domestic water distribution system.

Type	Year	Cost	Priority
Failure Replacement	2013	$57,900	High

Updated: MAR-12

D2020.02.03 Water Storage Tanks**

Domestic hot water supplied by steam-to-hot water heat exchangers (see D3040.05).
Four original storage tanks, approx. 300 imp.gal each.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

Event: Replace Hot Water Storage Tanks (4 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$50,500	Unassigned

Updated: MAR-12

D2020.03 Water Supply Insulation: Domestic*

Yellow jacket glass fibre insulation, where visible.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

D2030.01 Waste and Vent Piping*

A combination of ABS and cast iron where reviewed.

Rating	Installed	Design Life	Updated
5 - Good	1981	50	MAR-12

D2030.02.04 Floor Drains*

Cast and ABS piping complete with cast or nickel bronze grates

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	50	MAR-12

D2030.03 Waste Piping Equipment*

Grease interceptors/traps on kitchen sanitary drainage systems.
Sanitary lifting stations/sump pits on the lower parkade level.

Rating	Installed	Design Life	Updated
2 - Poor	1981	30	MAR-12

Event: Replace Grease Interceptors (2 ea.)

Concern:
Facility operator reported that two of three grease traps had failed and are not in-service.
Recommendation:
Replace failed grease traps.

Type	Year	Cost	Priority
Failure Replacement	2012	$5,400	High

Updated: MAR-12

D2040.01 Rain Water Drainage Piping Systems*

Original cast iron piping where viewed.

Rating	Installed	Design Life	Updated
5 - Good	1981	50	MAR-12

D2040.02.04 Roof Drains*

Roof drains are cast iron and are complete with cast iron grates.

Rating	Installed	Design Life	Updated
5 - Good	1981	40	MAR-12

D2040.02.06 Area Drains*

Area drains located in washrooms, mechanical rooms, parkade and lab areas. Cast-in construction with cast and stainless grates.

Rating	Installed	Design Life	Updated
5 - Good	1981	40	MAR-12

D2090.02 Deionized Water Systems**

Specialized filtration plant includes charcoal filters, reverse osmosis and dedicated water softening system.

Rating	Installed	Design Life	Updated
2 - Poor	1995	30	MAR-12

Event: Replace Type II Water System (Cost Provided by Facility Management)

Concern:

Systems serving the renal dialysis and lab areas has been in service for approximately 15 years. Equipment and piping has continued to deteriorate resulting in high maintenance costs and has impacted system reliability.

Systems have achieved use expectancy. Operator reports replacement and upgrade is required.

Recommendation:

Type II water piping, valves and head end equipment are subject to progressive deteriorating.

Type	Year	Cost	Priority
Failure Replacement	2012	$1,000,000	High

Updated: MAR-12

D2090.10 Nitrous Oxide Gas Systems**

Cylinders complete with pigtails, check valves and pressure reducing valves (PRV). Cost for replacement of components provided by Praxair.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

Event: Replace Nitrous Oxide Gas Systems (1 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$11,300	Unassigned

Updated: MAR-12

D2090.11 Oxygen Gas Systems**

Oxygen system consists of cylinders complete with pigtails, check valves and a PRV.

Rating	Installed	Design Life	Updated
5 - Good	1981	30	MAR-12

Event: Replace Oxygen Gas System (1 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$11,300	Unassigned

Updated: MAR-12

D2090.13 Vacuum Systems (Medical and Lab)**

Four (4) medical vacuum system present.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Medical Vacuum Systems (4 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$62,100	Unassigned

Updated: MAR-12

D2090.14 Acid Waste Systems** - Interceptor

Acid neutralizing sump replaced in 2010.

Rating	Installed	Design Life	Updated
5 - Good	2010	30	MAR-12

Event: Replace Acid Neutrilizer (1 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2040	$20,300	Unassigned

Updated: MAR-12

D2090.14 Acid Waste Systems** - Piping & Fittings

Mixture of Pyrex glass and iron alloy corrosion resistant piping.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Piping Systems (~800 m)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$139,700	Unassigned

Updated: MAR-12

D2090.16 Medical Air System*

Medical air compressor air systems (engineered Electric Controls Ltd) complete with 50 Hp motors and two Jeks air driers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

D3010.01 Oil Supply Systems (Fuel, Diesel)*

Fuel oil system for generator. Two fuel pumps complete with 1-1/2Hp motors, one double wall "Northern Steel' holding tank with the associated fuel level controls.

Rating	Installed	Design Life	Updated
5 - Good	2005	60	MAR-12

D3020.01.01 Heating Boilers & Accessories: Steam**

Two (2) Bryan steam boilers with 1,450 MBH input each provided in standby if needed. Steam for mechanical systems is generated of-site at the UofA physical plant.
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Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	MAR-12

Event: Replace Two Heating Boilers

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$54,600	Unassigned

Updated: MAR-12

D3020.01.03 Chimneys (& Comb. Air): Steam Boilers**

Separate insulated (externally) chimneys and breeching on boilers. Tempered combustion air supply for all systems in the mechanical penthouse.

Rating	Installed	Design Life	Updated
5 - Good	1981	35	MAR-12

Event: Replace Chimneys (& Comb. Air) (~20 m)

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$12,400	Unassigned

Updated: MAR-12

D3020.02.01 Heating Boilers and Accessories: H.W.**

Hot water heating boilers were removed in 2011.

Rating	Installed	Design Life	Updated
5 - Good	2011	35	MAR-12

Event: Completed 2011. Replace Hot Water Boiler.

Concern:
Boiler heat exchangers is reaching end of life expactecny
Recommendation:
Replace boler soonest
Consequences of Deferral:
Unreliable heating for patients.Unreliable heating for patients.

Type	Year	Cost	Priority
Failure Replacement	2011	$42,000	Low

Updated: MAR-12

Event: Replace Hot Water Boilers

Type	Year	Cost	Priority
Lifecycle Replacement	2046	$42,000	Unassigned

Updated: MAR-12

D3030.03 Reciprocating Water Chillers**

Chiller package is obsolete and has been abandoned in-situ.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	25	MAR-12

Event: Remove Reciprocating Water Chiller (1 ea.)

Concern:
Chiller package is no longer is service. Utilizes R-11 refrigerant.
Recommendation:
Removal of chiller package required. Refrigerant is a known ozone-depleting substance and must be recovered by a licensed professional prior to dismantling the system.

Type	Year	Cost	Priority
Failure Replacement	2014	$6,000	Medium

Updated: MAR-12

D3030.05 Cooling Towers**

Cooling tower located on 6th floor mechanical room. The cooling tower is no longer in service. Removal of tower required.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	25	MAR-12

Event: Remove Cooling Tower (1 ea.)

Concern:
Cooling tower no longer in service.
Recommendation:
Remove equipment.

Type	Year	Cost	Priority
Failure Replacement	2014	$5,000	Medium

Updated: MAR-12

D3040.01.01 Air Handling Units: Air Distribution** - CACU1 to CACU26

Built-up central station HVAC units, approximately 60,000 cfm each. Glycol heating and chilled water cooling with wet cell humidification.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Air Handling Units (26 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$5,512,800	Unassigned

Updated: MAR-12

D3040.01.01 Air Handling Units: Air Distribution** - CACU27 and CACU45

Built-up central station HVAC units, approximately 20,000 cfm each. Glycol heating and chilled water cooling. These units were in the process of commissioning at the time of the site review.

Rating	Installed	Design Life	Updated
6 - Excellent	2011	30	MAR-12

Event: Replace Air Handling Units (2 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2041	$168,100	Unassigned

Updated: MAR-12

D3040.01.01 Air Handling Units: Air Distribution** - CACU28, 29, 30, 35 and 36

Built-up central station HVAC units, approximately 40,000 to 50,000 cfm each. Glycol heating and chilled water cooling. CACU29, 30, 35 and 36 equipped with heat recovery wheels.

Rating	Installed	Design Life	Updated
5 - Good	1999	30	MAR-12

Event: Replace Air Handling Units (4 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2029	$336,100	Unassigned

Updated: MAR-12

D3040.01.01 Air Handling Units: Air Distribution** - Parkade Make-up Air

Packaged make-up air units with glycol heating coils provided in the parkade. Approximately 10,000 to 15,000 cfm each.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	30	MAR-12

Event: Replace MUA (2 ea.)

Concern:
Units have achieved or surpassed their service life and exhibit corroded casings, leaky coils, bearings worn.
Recommendation:
Replace MUAs.

Type	Year	Cost	Priority
Failure Replacement	2014	$24,500	Medium

Updated: MAR-12

Event: Replace MUAs (4 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$48,900	Unassigned

Updated: MAR-12

D3040.01.01 Air Handling Units: Air Distribution** - Supply Air Units

Original (1981) indoor packaged HVAC units, approximately 2,000 to 10,000 cfm each.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	30	MAR-12

Event: Replace Air Handling Units (6 ea.)

Concern:
Units have achieved or surpassed their service life and exhibit corroded casings, leaky coils, bearings worn.

Recommendation:
Replace supply air AHUs.

Type	Year	Cost	Priority
Failure Replacement	2014	$73,400	Medium

Updated: MAR-12

Event: Replace Air Handling Units (~49 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$598,800	Unassigned

Updated: MAR-12

D3040.01.03 Air Cleaning Devices: Air Distribution*

Mixture of high efficiency bag filters, roll-media filters and disposible filter packs, as required.

Rating	Installed	Design Life	Updated
5 - Good	2011	30	MAR-12

D3040.01.04 Ducts: Air Distribution*

Galvanized and insulated ducts throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	50	MAR-12

Event: Pharmacy HVAC Systems Upgrade (Phase 2 of 2)

Concern:

The Pharmacy area impacted by the air systems has been subject to renovations as have areas in proximity to Pharmacy. All of which have had a direct impact on system performance. Controls serving distribution systems require upgrade to digital control. Air handlers and ductwork require redesign, overhaul and replacement.

Recommendation:

Continued upgrade of systems and controls as per consultants report referenced in Phase 1.

Replacement cost and phasing is based on information provided by the Facility Operators.

Type	Year	Cost	Priority
Indoor Air Quality Upgrade	2012	$500,000	High

Updated: MAR-12

Event: Pharmacy HVAC Upgrade (Phase 1 of 2)(Study)

Concern:

The Pharmacy area and related air systems have been subject to renovations as have areas in proximity to Pharmacy. All of which have had a direct impact on system performance. Pneumatic controls serving distribution systems require upgrade to digital control. Air handlers and ductwork require redesign, overhaul and replacement.

Recommendation:

A consultants report is required to identify the shortfalls related to air handling units and distribution systems serving the "0" level pharmacy. Upgrade of systems and controls components is required.

Replacement cost and phasing is based on information provided by the Facility Operators.

Type	Year	Cost	Priority
Indoor Air Quality Upgrade	2012	$20,000	Medium

Updated: MAR-12

D3040.01.06 Air Terminal Units: Air Distribution (VAV/CV Box)**

Variable air volume (VAV) and constant volume (CV) boxes distributed throughout. Approximately 2,000 units in total.

Some replacements (<5%) in recent years due to attrition.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	30	MAR-12

Event: Replace VAV/CV Box (~1,900 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$2,833,200	Unassigned

Updated: MAR-12

Event: Replace VAV/CV Box (~100 ea.)

Concern:
Units are at or near end of life and experiencing increasing failure and higher maintenance costs.
Recommendation:
Replace VAV/CV boxes.

Type	Year	Cost	Priority
Failure Replacement	2013	$149,200	Medium

Updated: MAR-12

D3040.01.07 Air Outlets & Inlets: Air Distribution*

Original metal grills, louvers and diffusers throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

D3040.02 Steam Distribution Systems: Piping/Pumps**

Cast iron distribution piping from utility entrance to associated heat exchangers in the mechanical penthouse.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	40	MAR-12

Event: MR-1 Steam Valve Relocation (1 ea.)

Concern:
The current steam station is inaccessible and is hazardous for maintenance purposes due to extreme temperature and tight quarters.
Recommendation:
Steam Station in MR-1 requires relocation and modification.

Cost estimate and phasing provided by Facility Management.

Type	Year	Cost	Priority
Code Repair	2012	$100,000	High

Updated: MAR-12

Event: Steam Valve Replacement/Refurbishment (1 ea.)

Concern:
Valves for all systems are currently failing at an accelerated rate. Failure is a result of age & accessibility. The program needs to coincide with seasonal restraints.
Recommendation:
Includes for the replacement & overhaul of low, medium and high pressure steam valves.

Cost estimate and phasing provided by Facility Management.

Type	Year	Cost	Priority
Failure Replacement	2012	$250,000	High

Updated: MAR-12

D3040.04.01 Fans: Exhaust**

Roof mounted exhaust fans. Exhaust fans located in mechanical rooms.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Exhaust Fans (~45 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$480,900	Unassigned

Updated: MAR-12

D3040.04.03 Ducts: Exhaust*

Ceiling spaces used as return air with galvanized duct risers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	50	MAR-12

D3040.04.05 Air Outlets and Inlets: Exhaust*

Air intake grills and metal discharge grills.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

D3040.05 Heat Exchangers**

Plate heat exchangers steam to water and steam to glycol.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Heat Exchangers (~24 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$100,400	Unassigned

Updated: MAR-12

D3050.01.01 Computer Room Air Conditioning Units**

Four "Llierbert" computer room A/C units complete with humidification feature. (A/C 113, 114, 115, 116). Units are using refrigerant R-407C.

Rating	Installed	Design Life	Updated
5 - Good	2007	30	MAR-12

Event: Replace Computer Room A/C Systems (4 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2037	$196,400	Unassigned

Updated: MAR-12

D3050.01.02 Packaged Rooftop Air Conditioning Units (& Heating Units)**

Roof mounted Carrier heat / cool units. Operational capacities unknown.

Rating	Installed	Design Life	Updated
4 - Acceptable	1990	25	MAR-12

Event: Replace Packaged Rooftop HVAC Units (4 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$126,000	Unassigned

Updated: MAR-12

D3050.03 Humidifiers**

Primarily wet cell media humidifiers with some steam grid humidifiers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

Event: Replace Humidifiers (~33 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$356,000	Unassigned

Updated: MAR-12

D3050.05.02 Fan Coil Units**

Air distribution units located in mechanical rooms, service areas and sub levels.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Fancoil Units (~ 17 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$85,400	Unassigned

Updated: MAR-12

D3050.05.03 Finned Tube Radiation**

Fin tube radiation, wall mounted

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Finned Tube Radiation [~250m]

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$107,300	Unassigned

Updated: MAR-12

D3050.05.06 Unit Heaters**

Suspended hot water unit heaters provided in the parkade, service rooms, storage areas, etc.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Unit Heaters (~20 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$62,600	Unassigned

Updated: MAR-12

D3050.05.08 Radiant Heating (Ceiling & Floor)**

Ceiling mounted hot water radiation heating panels

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	MAR-12

Event: Replace Radiant Heating [~3,750]

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$3,136,900	Unassigned

Updated: MAR-12

D3060.02.02 Pneumatic Controls**

Rating	Installed	Design Life	Updated
3 - Marginal	1981	40	MAR-12

Event: Ductwork Controls Digital Refurbishment (Phase 3 of 3)

Concern:
Areas served by pneumatic ductwork components and control devices are not able to be monitored or controlled by the central building controls system. Space temperatures are difficult to maintain. Components require extended maintenance.

Cost estimate and phasing provided by facility management
Recommendation:
Several areas of the building still incorporate pneumatic controls and ductwork devices. Continuation of conversion to digital is required.

Type	Year	Cost	Priority
Operating Efficiency Upgrade	2013	$1,000,000	Medium

Updated: MAR-12

D3060.02.05 Building Systems Controls (BMCS, EMCS)**

Honeywell BMCS
43,000sqm

Rating	Installed	Design Life	Updated
6 - Excellent	2011	25	MAR-12

Event: Completed 2011 BMCS replacement

Concern:
computer based electronics is slow
approaching obsolescence
lacks energy efficiency strategies

Cost estimate and phasing provided by facility management

Recommendation:
Replace BMCS to meet current standraeds and facilityo requdiremtns.

Consequences of Deferral:
Poor building performance
Incresed risk of system failure

Type	Year	Cost	Priority
Lifecycle Replacement	2011	$55,000	High

Updated: MAR-12

Event: Replace BMCS

Concern:
Cost estimate and phasing provided by facility management

Type	Year	Cost	Priority
Lifecycle Replacement	2036	$52,000	Unassigned

Updated: MAR-12

D3060.02.05 Building Systems Controls (BMCS, EMCS)**

Rating	Installed	Design Life	Updated
2 - Poor	1986	25	MAR-12

Event: Building Management Control System Replacement - Head End Equipment, Field Devices & Software

Concern:

Original BMS system is a Micon-D CCMS. Replacement and service devices for some of the head end equipment and field devices (Program cards and Remote Terminal Unit) no longer available. Inventory stocks are depleted. Software is subject to obsolescence and lack of support.

Cost estimate and phasing provided by facility management

Recommendation:

Some hardware and software associated with central control management system requires upgrade.

Consequences of Deferral:

Failure of system could put key systems at risk

Type	Year	Cost	Priority
Failure Replacement	2012	$500,000	High

Updated: MAR-12

D4010 Sprinklers: Fire Protection*

Schedule 40 black iron piping complete with pendant heads, fire booster pumps and storage tanks.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	60	MAR-12

D4020 Standpipes*

Stand pipes and hose connections where reviewed were 4" to 6" in diameter and were complete with fire hose connections.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	60	MAR-12

D4030.01 Fire Extinguisher, Cabinets and Accessories*

ABC fire extinguishers located inside fire hose connection cabinets.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

D4090.04 Dry Chemical Fire Extinguishing Systems (Kitchen Hood)**

Dry fire systems for main kitchens are complete with piping, canister with chemical and distribution nozzles

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Dry Fire Systems [~5]

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$61,900	Unassigned

Updated: MAR-12

D4090.05 Halon Extinguishing Systems**

Planned recommendations for change out and replacement is required to comply with codes and protocols. Halon-based systems in Alberta cannot be refilled effective 2010, and therefore need to be replaced with a Halon-substitute or an alternative system.

Rating	Installed	Design Life	Updated
2 - Poor	0	40	MAR-12

Event: Halon System Upgrade (Phase 2 of 5)

Concern:
Planned recommendations for change out and replacement is required to comply with codes and protocols. Halon-based systems in Alberta cannot be refilled effective 2010, and therefore need to be replaced with a Halon-substitute or an alternative system.

Cost estimate and phasing provided by facility management
Recommendation:
Implementation phase of Halon components replacement resulting from initial study.

Replacement phasing and costs provided by Facilities Management.

Type	Year	Cost	Priority
Code Repair	2011	$250,000	High

Updated: MAR-12

Event: Halon System Upgrade (Phase 3 of 5)

Concern:
Planned recommendations for change out and replacement is required to comply with codes and protocols. Halon-based systems in Alberta cannot be refilled effective 2010, and therefore need to be replaced with a Halon-substitute or an alternative system.

Cost estimate and phasing provided by facility management
Recommendation:
Continued Implementation phase of Halon components replacement resulting from initial study.

Replacement phasing and costs provided by Facilities Management.

Type	Year	Cost	Priority
Code Repair	2011	$250,000	High

Updated: MAR-12

Event: Halon System Upgrade (Phase 4 of 5)

Concern:
Planned recommendations for change out and replacement is

required to comply with codes and protocols. Halon-based systems in Alberta cannot be refilled effective 2010, and therefore need to be replaced with a Halon-substitute or an alternative system.

Cost estimate and phasing provided by facility management
Recommendation:
Implementation phase of Halon components replacement resulting from initial study.

Replacement phasing and costs provided by Facilities Management.

Type	Year	Cost	Priority
Code Repair	2012	$250,000	High

Updated: MAR-12

Event: Halon System Upgrade (Phase 5 of 5)

Concern:
Planned recommendations for change out and replacement is required to comply with codes and protocols. Halon-based systems in Alberta cannot be refilled effective 2010, and therefore need to be replaced with a Halon-substitute or an alternative system.

Cost estimate and phasing provided by facility management
Recommendation:
Implementation phase of Halon components replacement resulting from initial study.

Replacement phasing and costs provided by Facilities Management.

Type	Year	Cost	Priority
Code Repair	2013	$250,000	High

Updated: MAR-12

D4090.06 Smoke Protection & Exhaust Fans**

Smoke exhaust fans tagged EA 273 and EA 274 for smoke removal.

Rating	Installed	Design Life	Updated
5 - Good	1981	40	MAR-12

Event: Replace Smoke Protection & Exhaust Fans (~2 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$43,000	Unassigned

Updated: MAR-12

D4090.07 Fire Pumps & Water Storage Tanks*

Two water storage tanks located in 6th floor mechanical room. Fire booster pumps located in parkade and in mechanical rooms

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

S5 ELECTRICAL

D5010.01 Main Electrical Transformers (Facility Owned)**

The main power (13.8kV) is supplied by the U of A campus. Power is stepped down in 8 sub-stations throughout the hospital.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Main Electrical Transformers (18 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$798,700	Unassigned

Updated: MAR-12

D5010.02 Secondary Electrical Transformers (Interior)**

Secondary transformers located in the electrical rooms on every floor and spread throughout the interstitial space are fed from the 8 main sub-stations through distribution risers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Secondary Transformers (~165 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$1,665,800	Unassigned

Updated: MAR-12

D5010.03 Main Electrical Switchboards (Main Distribution)**

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

Event: Replace Main Electrical Switchgear (18 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$759,500	Unassigned

Updated: MAR-12

D5010.05 Electrical Branch Circuit Panelboards (Secondary Distribution)**

Secondary panelboards are located in the electrical rooms in the interstitial space, as well as throughout the interstitial floor space and the 6th floor mechanical penthouse.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Secondary Distribution Panels (~250 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$1,127,500	Unassigned

Updated: MAR-12

D5010.07.01 Switchboards, Panelboards, and (Motor) Control Centers**

Motor Control Centers are located in the 6th floor mechanical penthouse and the 4th floor mechanical room, consisting of both normal & emergency power.

Rating	Installed	Design Life	Updated
4 - Acceptable	1986	30	MAR-12

Event: Replace Motor Control Centers (~32 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$791,400	Unassigned

Updated: MAR-12

D5010.07.02 Motor Starters and Accessories**

Motor starters and disconnects are located throughout the hospital but are mainly located on the 4th and 6th floor mechanical rooms/penthouse.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Motor Starters & Accessories (~75 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$112,500	Unassigned

Updated: MAR-12

D5010.07.03 Variable Frequency Drives**

Variable frequency drives are located in the mechanical rooms, penthouses and interstitial spaces.

Rating	Installed	Design Life	Updated
5 - Good	2006	30	MAR-12

Event: Replace All Variable Frequency Drives (~120 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2036	$1,265,700	Unassigned

Updated: MAR-12

D5020.01 Electrical Branch Wiring*

Electrical branch wiring is located throughout the entire building, and is in acceptable condition with 50% of its expected life remaining.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	50	MAR-12

D5020.02.01 Lighting Accessories: Interior (Lighting Controls)*

The hospital's low voltage (LV) lighting system is managed through the main control center. Common areas and interstitial spaces are are both controlled from the central control center. All other rooms are controlled by occupancy sensors (OC) and line voltage switches.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

D5020.02.02.01 Interior Incandescent Fixtures*

Incandescent fixtures are being phased out in the entire building, due to better lamp technology.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

D5020.02.02.02 Interior Fluorescent Fixtures** - T-12 Fluorescent

Interior fluorescent fixture are located in approximately 75% of the building. With about 55% of the fixtures upgraded to T8.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Interior Lighting (~60,750 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$5,302,890	Unassigned

Updated: MAR-12

D5020.02.02.02 Interior Fluorescent Fixtures** - T-8 Fluorescent

Replacement of T-12 fixtures using energy saving T-8 fixtures and electronic ballasts has been on-going since 2007. For the purpose of this study, an average install year of 2009 has been used in calculating lifecycle replacement events.

Rating	Installed	Design Life	Updated
5 - Good	2009	30	MAR-12

Event: Replace T-8 Fluorescent Lighting (~ 74,250 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2039	$6,481,310	Unassigned

Updated: MAR-12

D5020.02.02.03 Interior Metal Halide Fixtures*

Metal halide fixtures located in the shipping and receiving area and the lower level mechanical rooms.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

D5020.02.02.05 Other Interior Fixtures*

The common corridors consist of mercury vapor light fixtures. All the lights are still in use but the technology is out dated.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

D5020.02.03.01 Emergency Lighting Built-in*

Emergency lighting fed from the emergency generators is located throughout the building. Approximately 25% of the buildings lighting is on emergency power.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	MAR-12

D5020.02.03.02 Emergency Lighting Battery Packs**

In addition to the emergency lighting from the generator, there are emergency battery packs and remote heads in all the mechanical rooms and mechanical penthouse.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	MAR-12

Event: Replace Emergency Lighting Battery Packs (~24 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$26,400	Unassigned

Updated: MAR-12

D5020.02.03.03 Exit Signs*

Exit lights are located in all the paths of egress, and all appear to be in working condition.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Energy Efficiency Upgrade (~400 ea.)

Concern:
Incandescent fixtures require higher energy use and more frequent maintenance than the modern LED type fixtures.

Type	Year	Cost	Priority
Energy Efficiency Upgrade	2014	$203,700	Low

Updated: MAR-12

D5020.02.11 Operating Room Lighting*

Operating room lighting consists of recessed fluorescent T8 fixtures.

Rating	Installed	Design Life	Updated
5 - Good	2006	0	MAR-12

D5020.03.01.03 Exterior Metal Halide Fixtures*

Metal halide fixtures are located in the front entrance canopy. Appear to be in working condition.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

D5020.03.02 Lighting Accessories: Exterior (Lighting Controls)*

Exterior lighting controls consist of a time clock in the main control center.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

D5030.01 Detection and Fire Alarm**

The entire FA system including 30 panels, 60 nodes, and the main control center was replaced in 2010 with a Simplex system.

Rating	Installed	Design Life	Updated
5 - Good	2010	25	MAR-12

Event: Replace Detection & Fire Alarm Systems (~180,000 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2035	$5,237,100	Unassigned

Updated: MAR-12

D5030.02.02 Intrusion Detection**

The building's intrusion detection system was replaced in 2010 with a Linnel system.

Rating	Installed	Design Life	Updated
5 - Good	2010	25	MAR-12

Event: Replace Intrusion Detection Systems (~180,000 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2035	$2,618,550	Unassigned

Updated: MAR-12

D5030.02.03 Security Access**

The building's security access system was upgraded in 2010 with a Linnel system including card readers and door access. System includes public address functionality.

Rating	Installed	Design Life	Updated
5 - Good	2010	25	MAR-12

Event: Replace Security Access (~180,000 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2035	$2,618,550	Unassigned

Updated: MAR-12

D5030.02.04 Video Surveillance**

Video servalience system provided throughout the hospital. System includes interior and exterior cameras tied into the head end security office manned 24/7.

Rating	Installed	Design Life	Updated
4 - Acceptable	2010	25	MAR-12

Event: Replace Video Surveillance System (~35 cameras)

Type	Year	Cost	Priority
Lifecycle Replacement	2035	$208,800	Unassigned

Updated: MAR-12

D5030.03 Clock and Program Systems*

Clock system for the entire building is original.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

D5030.04.01 Telephone Systems*

Phone system for the building is taken care of by Telus. Provides internal/external calling and paging functions.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

D5030.04.03 Call Systems**

Rating	Installed	Design Life	Updated
3 - Marginal	1981	25	MAR-12

Event: Nurse Call System Replacement (Phase 2 of 2)

Concern:

The "Executone" nursing call system is original to the building. The system frequently fails and is subject to high maintenance. Spare parts are difficult to acquire. It is expected the system will become obsolete within the next few years.

Recommendation:

The current nurse call system is reaching obsolescence. Implementation phase as related to the phase 1 Study.

Replacement cost estimate provided by Facility Management.

Type	Year	Cost	Priority
Failure Replacement	2012	$208,800	Medium

Updated: MAR-12

D5030.04.04 Data Systems*

Cat 5 and Cat 5e running throughout the building in raceways in the interstitial spaces.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

D5030.04.05 Local Area Network Systems*

The LAN system located throughout the building is in working order.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	15	MAR-12

D5030.06 Television Systems*

Patient room entertainment systems throughout with CATV supplied by Shaw Communications.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	MAR-12

D5090.01 Uninterruptible Power Supply Systems**

UPS systems located throughout the entire building, mainly on the 6th floor mechanical penthouse are in good working order and well maintained.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace UPS Syatems (~11 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$440,100	Unassigned

Updated: MAR-12

D5090.02 Packaged Engine Generator Systems (Emergency Power System)**

6 diesel generators located in two generator rooms are well maintained, with weekly full-load tests.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	MAR-12

Event: Replace Standby Generators (6 ea.)

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$3,395,400	Unassigned

Updated: MAR-12

D5090.06 Lightning Protection Systems*

Lightning protection located on the roof of the building tied into ground rods throughout the entire building are in good condition.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

S6 EQUIPMENT, FURNISHINGS AND SPECIAL CONSTRUCTION

E1030.02 Parking Control Equipment*

Parking control arms are located near the public parkade ramp; however, it was reported that they have not been in use since the installation.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	MAR-12

Event: Remove Parking Controls (2 ea).

Type	Year	Cost	Priority
Program Functional Upgrade	2012	$5,000	Low

Updated: MAR-12

E1090.03 Food Service Equipment*

A full service institutional kitchen is located on the upper basement level, including gas ranges, grills, walk-in coolers, etc.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	MAR-12

E1090.07 Athletic, Recreational, and Therapeutic Equipment*

A sports gym is located on the lower basement floor, complete with various athletic equipment. Sitz baths, therapeutic baths, etc. are located throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	15	MAR-12

E2010.02 Fixed Casework**

Fixed casework includes washroom, laboratory, and storage cabinetry. Minor repairs required include replacement of plastic-laminate finishes in washroom facilities (repair <$1,000).

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	MAR-12

Event: Replace Fixed Casework (~132,041 m2 / GFA).

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$11,525,200	Unassigned

Updated: MAR-12

E2010.03.01 Blinds**

Various window blinds cover exterior windows throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	MAR-12

Event: Replace Blinds (~4,079 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2015	$415,400	Unassigned

Updated: MAR-12

E2010.05 Fixed Multiple Seating**

Various fixed multiple seating groups are located within the auditorium and classrooms.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	MAR-12

Event: Replace Fixed Multiple Seating (~523 m2).

Type	Year	Cost	Priority
Lifecycle Replacement	2016	$216,900	Unassigned

Updated: MAR-12

E2010.06 Fixed Interior Landscaping*

Both artificial and live plantings are located in planter boxes next to windows and bridges within the atrium space, and as design features at other locations throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	10	MAR-12

F1040.01 Aquatic Facilities*

Abandoned, an unused water feature is located in the west atrium area.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	MAR-12

S7 SITE

G2030.03 Pedestrian Unit Pavers**

Rating	Installed	Design Life	Updated
N/A	0	20	MAR-11

Event: 112 Street Quarry Tile Replacement

Concern:

The paving stones have been subject to weather conditions and high pedestrian traffic resulting in frequent failures and settlements. Stones and bedding are required to be replaced and reset.

Recommendation:

Paving stones installed at the 112th Street entrance on the footpath require replacement

Type	Year	Cost	Priority
Failure Replacement	2011	$100,000	Medium

Updated: MAR-11

S8 SPECIAL ASSESSMENT

K4010.01 Barrier Free Route: Parking to Entrance*

Curb cuts allow for barrier free access between parking areas and entrances.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

K4010.02 Barrier Free Entrances*

Automatic doors provide barrier free access at entrances. Door thresholds are flush with interior and exterior finished grades.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

K4010.03 Barrier Free Interior Circulation*

All public areas provide barrier free circulation between entrances, elevators, and throughout floor circulation areas.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

K4010.04 Barrier Free Washrooms*

Public washrooms with multiple stalls are provided with a single wheelchair accessible stall. Universal single washrooms through follow barrier-free design.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

K4020.01 Safety Code (Fall Prevention)*

Roof anchors were noted on several roofing areas.

Rating	Installed	Design Life	Updated
4 - Acceptable	2000	0	MAR-12

Event: Test and Recertify Fall Restraint Systems (Lump Sum Allowance).

Concern:

Several structural anchors were noted on the roof that appear to be intended for use as part of a fall arrest/fall protection system.

Recommendation:

Assessment and certification is required for use of all fall protection anchors.

Type	Year	Cost	Priority
Preventative Maintenance	2012	$5,000	High

Updated: MAR-12

K4030.01 Asbestos*

No suspect friable asbestos were observed; however, there may be friable materials concealed in walls and ceilings.

Rating	Installed	Design Life	Updated
4 - Acceptable	1985	0	MAR-12

Event: Hazardous Material Management Upgrade - Asbestos (lump sum allowance).

Concern:

No suspect friable asbestos-containing materials were observed during the site review. However, operations personnel could not confirm whether a comprehensive study has been completed.

Recommendation:

Conduct a Hazardous Material survey of the facility. If asbestos is proven present, implement an asbestos management plan in accordance with regulated requirements.

Type	Year	Cost	Priority
Hazardous Material Management Upgrade	2013	$25,000	Medium

Updated: MAR-12

K4030.02 PCBs*

No elements containing PCBs were observed within the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

K4030.03 Mercury*

Older T-12 fluorescent lamps contain small amounts of mercury vapour.

Rating	Installed	Design Life	Updated
5 - Good	1981	0	MAR-12

K4030.04 Mould*

No suspect visible mould was identified during the site review.

Rating	Installed	Design Life	Updated
4 - Acceptable	0	0	MAR-12

K4030.06 Radioactive Compounds*

No elements containing radioactive compounds were observed as part of the base building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

K4030.07 Ozone Depleting Substances (CFC's, HCFC's, Halon)*

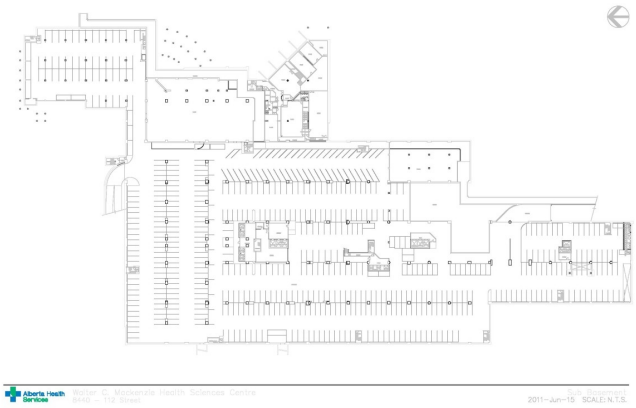
A disused halon fire suppression system was noted in the interstitial spaces.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	MAR-12

K5010.02 Building Documentation*

A facility condition evaluation survey was completed by Morrison Hershfield between November 7 and 9, 2011.

Rating	Installed	Design Life	Updated
4 - Acceptable	2011	0	MAR-12



Floor plan of lower basement.