RECAPP Facility Evaluation Report

Calgary Health Region

Foothills Medical Centre - Power Plant

B0076B

Calgary

Report run on: April 11, 2011 10:56 AM

Facility Details

Building Name: Foothills Medical Centre - Pc
Address: 1403 - 29 Street N. W.
Location: Calgary

Building Id: B0076B
Gross Area (sq. m): 4,828.00
Replacement Cost: $71,168,582
Construction Year: 0

Evaluation Details

Evaluation Company: Golder Associates Ltd.
Evaluation Date: February 4 2011
Evaluator Name: Zay Anderson

Total Maintenance Events Next 5 years: **$25,116,100**
5 year Facility Condition Index (FCI): **35.29%**

General Summary:

The Foothills Hospital Power Plant is a two-storey mechanical building with service tunnels running to other hospital buildings in the area.
The original two-storey 3803 m2 building and associated service tunnels were reportedly constructed in 1968.
A two-storey 1025 m2 addition was constructed on the west side of the building in 2007.

The building is in acceptable condition overall.

Structural Summary:

Structural drawings were not available for review at the time of this evaluation.
The building likely has a poured foundation consisting of cast in place (CIP) concrete strip footings around the building perimeter; spread footings supporting interior columns and heavy equipment; and slab on grade concrete floors.
The superstructure of the building is primarily constructed using steel with concrete masonry unit (CMU) curtain walls.
The interior floors of the building consist of concrete suspended slab supported by CIP concrete beams and a combination of steel and CIP concrete columns.
The roof structure consists primarily of open web steel joists (OWSJ) and metal Q-Deck with a concrete topping. Other roof systems include precast concrete T-beam panels supported by concrete masonry unit (CMU) columns in the cooling tower and 2-Way suspended concrete slab supported by CIP concrete joists and beams in the 2007 Addition.

The building structure is in acceptable condition overall.

Envelope Summary:

The exterior walls are a combination of brick veneer and horizontal metal siding.
The exterior windows are aluminum framed glazed curtain walls on the east and west sides of the building.
Exterior doors consist of steel utility doors in steel frames and large steel overhead doors.
The roofing on all building sections consists of modified bituminous membrane (SBS) assemblies.

The building envelope is generally in acceptable condition.

Interior Summary:

Interior flooring finishes consist mainly of painted and unpainted concrete. Mezzanine floors consist of grated steel.
Interior wall finishes consist mainly of painted CMU. Other wall finishes include painted CIP concrete and unpainted gypsum wall board (GWB).
Ceiling finishes are typically unconcealed OWSJ and Q-Deck. Other ceiling finishes include painted and unpainted concrete.
Interior windows consist of glazed units in aluminum frames.
Interior door typically consist of steel doors in steel frames with lever style handsets or panic hardware. Solid wood doors in steel frames with glazed sections at the central control office.

Interior finishes are in acceptable condition overall.

Mechanical Summary:

Domestic water, natural gas, sanitary sewer and storm sewer are connected to city mains. River water is obtained by special permit from the Bow River for closed loop heating and cooling systems.

Steam, chilled water, natural gas, domestic cold water, and pneumatics are all provided from the power plant building via service tunnels to the rest of the site.

Domestic water distribution provided is typically insulated black iron and copper and waste water piping is a combination of black iron and ABS.

Heating is generated by four steam boilers. Heating is provided from steam to river water and steam to glycol heat exchangers for air handling units, fan coil units and unit heaters throughout.

Cooling for various systems is produced by steam absorption chillers, centrifugal chillers and cooling towers. Cooling distribution is by chilled water to river water and chilled water to glycol heat exchangers to air handling units throughout.

Ventilation is provided by air handling units located throughout the building and on the roof. General exhaust is provided by several rooftop exhaust fans.

The mechanical systems are generally in acceptable overall condition.

Electrical Summary:

Electrical service to the site can be supplied by up to four separate city utility connections referred to as; A1, A2, B and C; although typically only one to two of these connections is used. The power plant building makes use of up to four boilers, two emergency generators and two turbines to cogenerate power for the site.

Power to the ring main distribution for the site is controlled from three power boards on the main floor of the power plant, Board 'A,' Board 'B' and Board 'C.' Tie breakers interconnect the Boards for back-up/redundancy.

Board 'A' (2010)
One Eaton/Cutler-Hammer 13.2 kV, 600 amp, 3-phase, 3-wire main switchgear; incoming city supply 'A1' (13.2 kV, 600 amp, 3-phase, 3-wire); one tie breaker (generator #4 and turbine).

System 'B' (1966)
One Westinghouse 13.2 kV, 600 amp, 3-phase, 3-wire main switchgear; SSB load shed; City 'B' metering; City Supply 'B' (preferred) 13.2 kV, 600 amp, 3-phase, 3-wire; Tie B-D; Power Plant 'C' (alternate); chiller plant switchboard; Turbine 3 switchboard and Tie A-A.

System 'C' (2008)
One Federal Pioneer 13.2 kV, 1200 amp, 3-phase, 3-wire main switchgear; City supply bus (1200 amp, 3-phase, 3-wire(; transformer; metering.

Main disconnects on all three boards provide service to CDPs, MCCs, motor starters and VFDs throughout.

Motor Control Centers and multiple individual motor starters provide service for various mechanical equipment throughout.

Interior lighting is provided by T8 fluorescent lamps with electronic ballasts and metal halide lamps throughout. Exterior lighting is provide by high pressure sodium fixtures around the building perimeter. Emergency lighting is provided by emergency power supplied to a portion of the fluorescent lighting throughout and emergency battery packs with integral and remote heads. Emergency exit signs are a combination of incandescent and LED fixtures.

A UPS system provides limited emergency power to sensitive equipment throughout. Emergency power is supplied from three emergency generators.

The electrical systems are generally in acceptable overall 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*

Likely CIP concrete strip footings around building perimeter and below vertical tunnel walls.
Likely CIP concrete spread footings under structural steel columns, concrete columns, and heavy power plant components.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

A1030 Slab on Grade*

CIP concrete slab on grade throughout the lower level of the power plant and tunnel floors.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

A2020 Basement Walls (& Crawl Space)*

Service tunnels running from the Power Plant to various other buildings on hospital property consist of cast in place concrete.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

B1010.01 Floor Structural Frame (Building Frame)*

Suspended 2-way concrete slab on CIP concrete beams and joists supported by CIP concrete and structural steel columns.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

B1010.03 Floor Decks, Slabs, and Toppings*

CIP concrete slab throughout.
Grated steel floors on mezzanines.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

B1010.05 Mezzanine Construction*

Various steel framed mezzanines with grated steel floors throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

B1010.07 Exterior Stairs*

Galvanized steel staircase provides access between roof levels.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	40	APR-11

B1010.09 Floor Construction Fireproofing*

Floor construction is comprised of non-combustible materials.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

B1010.10 Floor Construction Firestopping*

ULC rated firestops at all penetrations.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

B1020.01 Roof Structural Frame*

Structural steel framing supporting open web steel joists (OWSJ) and steel Q-Deck in the 1968 Section.
Precast concrete T-beam panels supported by concrete masonry units (CMU) columns in the cooling tower.
2-Way suspended concrete slab supported by CIP concrete joists and beams in the 2007 Addition.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

B1020.03 Roof Decks, Slabs, and Sheathing*

Metal Q-Deck with concrete topping in the 1968 Section.
Suspended slab in the 2007 Addition.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

B1020.06 Roof Construction Fireproofing*

Roof construction is comprised of non-combustible materials.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

S2 ENVELOPE

B2010.01.02.01 Brick Masonry: Ext. Wall Skin*

The majority of the building exterior is clad with brick veneer.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	75	APR-11

B2010.01.06.03 Metal Siding**

Large areas of pre-finished metal siding at various locations on the buildings exterior.

Rating	Installed	Design Life	Updated
5 - Good	2007	40	APR-11

Event: Replace Metal Siding (~600m2)

Type	Year	Cost	Priority
Lifecycle Replacement	2047	$77,500	Unassigned

Updated: APR-11

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

Polyurethane joint sealer at all material transitions.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	20	APR-11

Event: Replace Joint Sealers (~700 m)

Type	Year	Cost	Priority
Lifecycle Replacement	2027	$21,000	Unassigned

Updated: APR-11

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

CIP concrete walls make up a portion of the 2007 Addition.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

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

CMUs provide structural backing for the exterior brick veneer.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

B2010.02.04 Load-Bearing-Metal Studs: Ext. Wall*

Structural steel framing with lateral stabilizers throughout the 1968 Section.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

B2010.06 Exterior Louvers, Grilles, and Screens*

Large metal louvers and grilles on all sides of the building exterior.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

B2020.03 Glazed Curtain Wall**

Large sections of steel framed glazing with small operable units on the east and west sides of the 1968 Section of the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

Event: Replace Curtain Wall (~130 m2)

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$188,700	Unassigned

Updated: APR-11

B2030.02 Exterior Utility Doors**

Painted steel utility doors in steel frames with standard hardware around the building exterior.

Rating	Installed	Design Life	Updated
3 - Marginal	2007	40	APR-11

Event: Replace Steel Utility Door (1 unit)

Concern:
Utility door at the southeast corner of the building is heavily damaged.
Recommendation:
Replace southeast utility door.

Type	Year	Cost	Priority
Failure Replacement	2011	$1,000	Medium

Updated: APR-11

Event: Replace Utility Doors (~10 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2047	$9,000	Unassigned

Updated: APR-11

B2030.03 Large Exterior Special Doors (Overhead)*

Three steel overhead doors at the south end of the 1968 Section.

Rating	Installed	Design Life	Updated
3 - Marginal	1968	30	APR-11

Event: Replace Overhead Door (1 unit)

Concern:
Overhead door on the southwest corner of the building is damaged.
Recommendation:
Replace overhead door.

Type	Year	Cost	Priority
Failure Replacement	2013	$6,700	Low

Updated: APR-11

Event: Replace Overhead Doors (2 Units)

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$13,000	Unassigned

Updated: APR-11

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

Modified bituminous membrane roofing (SBS) on all building sections.

Rating	Installed	Design Life	Updated
5 - Good	2007	25	APR-11

Event: Replace SBS Roofing (~3226 m2)

Type	Year	Cost	Priority
Lifecycle Replacement	2032	$592,100	Unassigned

Updated: APR-11

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

Soil vents, mechanical curbs, and roof drains in all roof sections.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	25	APR-11

S3 INTERIOR

C1010.01 Interior Fixed Partitions*

The majority of the fixed partitions in the building consist of painted CMU.
The central control office likely consists of steel stud with painted GWB.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

C1010.04 Interior Balustrades and Screens, Interior Railings*

Painted steel pipe railings and balustrades throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

C1010.05 Interior Windows*

Aluminum framed single glazed units in the central control office.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	80	APR-11

C1010.07 Interior Partition Firestopping*

ULC approved firestops at all interior partition penetrations.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

C1020.01 Interior Swinging Doors (& Hardware)*

Solid wood doors in painted metal frames with glazing and standard hardware at the central control office.
Hollow steel doors in steel frames with either lever type handsets or panic hardware throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	40	APR-11

C1020.03 Interior Fire Doors*

ULC rated fire doors throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	50	APR-11

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

One toilet compartment located in the washroom.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace 1 Fabricated Compartment

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$1,400	Unassigned

Updated: APR-11

C1030.08 Interior Identifying Devices*

Illuminated EXIT signs at all emergency escape routes.

Rating	Installed	Design Life	Updated
5 - Good	2007	20	APR-11

C1030.14 Toilet, Bath, and Laundry Accessories*

Mirrors and toilet paper, and paper towel dispensers in the washroom.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	20	APR-11

C2010 Stair Construction*

Steel framed or CIP concrete stairs throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

C2020.08 Stair Railings and Balustrades*

Painted steel pipe handrails at all staircases.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

C2020.10 Stair Painting*

Painted steel and concrete stairs throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

C3010.01 Concrete Wall Finishes (Unpainted)*

Unpainted concrete walls in tunnels.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

C3010.11 Interior Wall Painting*

Painted interior walls throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	10	APR-11

C3020.01.02 Paint Concrete Floor Finishes*

The majority of the floors in the building are painted concrete.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	10	APR-11

C3030.01 Concrete Ceiling Finishes (Unpainted)*

Localized areas of unpainted concrete ceilings throughout the building.
Sections of service tunnels have unpainted concrete finishes.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	100	APR-11

C3030.07 Interior Ceiling Painting*

Areas of painted concrete ceiling finishes throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	20	APR-11

C3030.09 Other Ceiling Finishes*

Unpainted OWSJ and metal Q-Deck ceilings throughout most of the 1968 Section.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

D1090 Other Conveying Systems*

Overhead crane rails with hoists in the 1968 Section.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

S4 MECHANICAL

D2010.04 Sinks** - Enamel Iron

2 enamel iron service sinks are provided.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace 2 Enamel Iron Service Sink

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$5,000	Unassigned

Updated: APR-11

D2010.04 Sinks** - Stainless Steel

1 stainless steel service sink in the control room.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace 1 Stainless Steel Service Sink

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$1,900	Unassigned

Updated: APR-11

D2010.05 Showers**

Two wall mounted shower heads and valves provided in the locker room off of the maintenance shop.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace 2 Shower Valves

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$1,100	Unassigned

Updated: APR-11

D2010.08 Drinking Fountains/Coolers**

1 chilled water drinking fountain is provided on the catwalk just below the control room.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	35	APR-11

Event: Replace 1 Drinking Fountain

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$3,700	Unassigned

Updated: APR-11

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

~2 vitreous china lavatories
~2 flush tanks toilets
~1 flush valve urinal

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	35	APR-11

Event: Replace ~2 Lavatories, ~2 Toilets and ~3 Urinals

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$9,200	Unassigned

Updated: APR-11

D2020.01.01 Pipes and Tubes: Domestic Water*

Black iron main distribution from the power plant through service tunnels to the rest of the site. Black iron and copper distribution piping throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

D2020.01.02 Valves: Domestic Water**

Domestic water circulation and distribution isolation valves are provided throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

Event: Replace ~30 Domestic Isolation Valves

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$105,900	Unassigned

Updated: APR-11

D2020.01.03 Piping Specialties (Backflow Preventors)** - 1986

A double check valve is installed on the fire main to the SSB/South Tower service tunnel. It has been reported that the irrigation system does not get used anymore (has not been used for several years) for energy conservation.

Rating	Installed	Design Life	Updated
4 - Acceptable	1986	20	APR-11

Event: Replace 1 Double-Check Valve

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$11,300	Unassigned

Updated: APR-11

D2020.01.03 Piping Specialties (Backflow Preventors)** - 2006

Backflow preventors are provided on the boiler feed water, domestic cold water supply, and sprinkler mains. It has been reported that the irrigation system does not get used anymore (has not been used for several years) for energy conservation.

Rating	Installed	Design Life	Updated
4 - Acceptable	2006	20	APR-11

Event: Replace ~9 Backflow Preventors

Type	Year	Cost	Priority
Lifecycle Replacement	2026	$129,800	Unassigned

Updated: APR-11

D2020.02.04 Domestic Water Conditioning Equipment**

A domestic water softener is provided next to the reverse osmosis (RO) system.

Rating	Installed	Design Life	Updated
5 - Good	2005	20	APR-11

Event: Replace 1 Domestic Water Softener

Type	Year	Cost	Priority
Lifecycle Replacement	2025	$2,100	Unassigned

Updated: APR-11

D2020.02.06 Domestic Water Heaters**

An electric John Wood 184L domestic hot water tank is provided next to the RO system.

Rating	Installed	Design Life	Updated
5 - Good	2005	20	APR-11

Event: Replace 1 Domestic Water Heater

Type	Year	Cost	Priority
Lifecycle Replacement	2025	$1,500	Unassigned

Updated: APR-11

D2020.03 Water Supply Insulation: Domestic*

Domestic water distribution piping is insulated with glass fibre or cementitious (possibly asbestos) insulation throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

D2030.01 Waste and Vent Piping*

The building's black iron and ABS waste piping is connected to the main sewer lines to the site which are connected to the municipal system. Vent piping is through the roof.

It was reported that a section of the sewer line piping broke and was replaced in 2003, with no further problems since this repair.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

D2030.02.04 Floor Drains*

Black iron main rain water leaders from roof drains to municipal sanitary sewer main.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

D2030.03 Waste Piping Equipment*

Two Goulds vertical sump pumps located near the cooling tower wash bays.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

D2040.01 Rain Water Drainage Piping Systems*

Black iron main rain water leaders from roof drains to municipal sanitary sewer main.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

D2040.02.04 Roof Drains*

Roof drains with strainers connect to internal rain water leaders.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

D2090.01 Compressed Air Systems (Non Controls)** - 1968

A Broomwade air compressor system is provided.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace 1 Compressed Air System

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$14,600	Unassigned

Updated: APR-11

D2090.01 Compressed Air Systems (Non Controls)** - 2008

A new Ingersoll Rand compressor system provides the ring main high pressure compressed air for the site at ~125 psi.

Rating	Installed	Design Life	Updated
5 - Good	2008	30	APR-11

Event: Replace 1 Packaged Air Compressor System

Type	Year	Cost	Priority
Lifecycle Replacement	2038	$20,000	Unassigned

Updated: APR-11

D2090.12 Reverse Osmosis Systems**

Two US Filter reverse Osmosis water treatment systems are provided with two US Filter storage tanks; one overflow tank; one clean-in-place pump & RO isolate storage tank; Two Grundfos 5.0 HP RO pumps (ROP7 & ROP8) and two Grundfos 5.0 HP RO pumps (ROPA & ROPB).

Rating	Installed	Design Life	Updated
5 - Good	2001	30	APR-11

Event: Replace 2 RO Systems and Associated Equipment

Type	Year	Cost	Priority
Lifecycle Replacement	2031	$131,000	Unassigned

Updated: APR-11

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

Two, 45,000L underground fuel storage tanks provide the emergency fuel supply for emergency generators throughout the site.
One, 1135 L day tank for the Kohler generator complete with spill protection.
Six fuel pumps (3 circa 1999 and 3 circa 2005) provide fuel oil from the undeground storage to the Kohler generator and the boilers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	60	APR-11

D3010.02 Gas Supply Systems*

Natural gas is provided to the boilers and rooftop air handling units (AHUs).

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	60	APR-11

D3020.01.01 Heating Boilers & Accessories: Steam**

Four dual fuel natural gas fired (fuel oil back-up) steam boilers provide steam for heating system throughout the site. Exhaust from the boilers provides heat for the cogen power systems. The boilers systems are furnished with de-aerators, expansion tanks, air separator and chemical feed system. The boilers and cogen system are reportedly capable of providing 100% standard operating power to the site.

Boiler #1 (1971) - Patterson Kelly 550 psi steam; 10,132 sq.ft.heating surface; two burners; 240,000,000 BTU input. Burners and controls were replaced ~2007.
Boiler #2 (1964) - Babcock & Wilcox 550 psi steam; 8924 sq.ft. heating surface; two burners; burners and controls were replaced ~2007.
Boiler #3 (1966) - Foster Wheeler 65 psi; 7138 sq.ft heating surface, single-burner.
Boiler #4 (1966) - Foster Wheeler 200 psi; 7138 sq.ft heating surface, single-burner.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	35	APR-11

Event: Replace 4 Steam Boilers & Accessories

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$19,300,000	Unassigned

Updated: APR-11

D3020.01.02 Feedwater Equipment*

~6 boiler feed water pumps and ~3 de-aerator feed pumps provided.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

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

Combustion air is provided by two boiler feed fans. Exhaust to cogen system.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	35	APR-11

Event: Replace 2 Fans & ~75 m Chimneys/Combustion Air Shaft

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$59,500	Unassigned

Updated: APR-11

D3020.01.04 Water Treatment: Steam Boilers*

~6 chemical tanks with two feed pumps and feed control system provide treatment to de-aerators. Four GE Betz chemical storage tanks (not hospital owned) with two chemical pumps and chemical mixer provide water treatment to the boiler feed water along with a 42 ton brine tank.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	35	APR-11

Event: Install Spill Containment

Concern:
Two floor drains are <1m from chemical storage tanks. Based on the observed condition of the floor around the tanks and condition of the tanks and piping, there appears to be ongoing and long-term leaks or spills that can flow to the floor drains. The root cause or source of the leaks/spills was not evident.

Recommendation:
Have a certified technician do a general service inspection of the equipment. Install spill containment curbs around the chemical tanks.

Type	Year	Cost	Priority
Preventative Maintenance	2011	$5,000	High

Updated: APR-11

D3030.01 Absorption Water Chillers** - 1968

Two original custom built Trane steam absorption water chiilers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	25	APR-11

Event: Replace 2 Absorption Water Chillers

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$2,592,000	Unassigned

Updated: APR-11

D3030.01 Absorption Water Chillers** - 2002

Two custom built Trane steam absorption water chiilers.

Rating	Installed	Design Life	Updated
5 - Good	2002	25	APR-11

Event: Replace 2 Absorption Water Chillers

Type	Year	Cost	Priority
Lifecycle Replacement	2027	$2,292,000	Unassigned

Updated: APR-11

D3030.02 Centrifugal Water Chillers**

Two new Trane 2500 ton centrifugal water chillers are provided in the 2007 Addition.

Rating	Installed	Design Life	Updated
5 - Good	2007	25	APR-11

Event: Replace 2 Centrifugal Water Chillers

Type	Year	Cost	Priority
Lifecycle Replacement	2032	$2,592,000	Unassigned

Updated: APR-11

D3030.05 Cooling Towers**

Two glass fiber cooling towers are provided.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	25	APR-11

Event: Replace 2 Cooling Towers

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$270,000	Unassigned

Updated: APR-11

D3040.01.01 Air Handling Units: Air Distribution** - 1983

1-16,000 cfm Engineered Air air handling unit (AHU) (BSF1)

Rating	Installed	Design Life	Updated
4 - Acceptable	1983	30	APR-11

Event: Replace 1 Air Handling Unit

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$29,500	Unassigned

Updated: APR-11

D3040.01.01 Air Handling Units: Air Distribution** - 2007

AHUs located at the 2007 Addition:
4 - Engineered Air 8,000 cfm AHU in the chiller pump room and transformer room.
1 - unlabelled AHU in the chiller room, estimate ~6000 cfm.
1 - Carrier RTU, estimate ~6000 cfm.
1 - unlabelled RTU, estimate ~8000 cfm.
1 - Engineered Air RTU - 12750 cfm

Rating	Installed	Design Life	Updated
5 - Good	2007	30	APR-11

Event: Replace ~8 Air Handling Units

Type	Year	Cost	Priority
Lifecycle Replacement	2037	$233,800	Unassigned

Updated: APR-11

D3040.01.01 Air Handling Units: Air Distribution** - 2009

AHUs provided in the 1968 Section:
1 - Engineered Air 30,000 cfm AHU.
1 - Engineered Air 6,000 cfm AHU.

Rating	Installed	Design Life	Updated
5 - Good	2009	30	APR-11

Event: Replace 2 Air Handling Units

Type	Year	Cost	Priority
Lifecycle Replacement	2039	$123,900	Unassigned

Updated: APR-11

D3040.01.03 Air Cleaning Devices: Air Distribution*

Disposable cellulose fiber filters throughout reported to be changed ~quarterly or as required throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	0	30	APR-11

D3040.01.04 Ducts: Air Distribution*

The air distribution system includes ducting for fresh air, return air, supply air and exhaust air.

Rating	Installed	Design Life	Updated
4 - Acceptable	1963	50	APR-11

D3040.01.07 Air Outlets & Inlets: Air Distribution*

The air outlets and inlets are of varying types and include air diffusers, dampers and supply and return air grilles.

Rating	Installed	Design Life	Updated
4 - Acceptable	1963	30	APR-11

D3040.02 Steam Distribution Systems: Piping/Pumps** - 1968

Insulated steam distribution and circulation piping throughout.
4 condensate receivers.
~9 condensate and receiver pumps.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

Event: Replace Steam Distribution Systems (~4828 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$449,100	Unassigned

Updated: APR-11

D3040.02 Steam Distribution Systems: Piping/Pumps** - 2004

Two condensate lift station pumps.

Rating	Installed	Design Life	Updated
5 - Good	2004	40	APR-11

Event: Replace 2 Condensate Pumps

Type	Year	Cost	Priority
Lifecycle Replacement	2044	$19,600	Unassigned

Updated: APR-11

D3040.03.01 Hot Water Distribution Systems**

Insulated heating water distribution provided throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

Event: Replace Hot Water Distribution Systems (~4828 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$449,100	Unassigned

Updated: APR-11

D3040.03.02 Chilled Water Distribution Systems** - 1968

Insulated chilled water pipes, booster pumps and circulation provide distribution from chillers, cooling tower and heat exchangers throughout.
2 - Goulds 75 HP pumps (PCH5 & PCH-6)
1 - 7.5 HP cooling water pump (CWP4)
1 - Weg 7.5HP chilled water pump (CHWP1)
2 - Magnetek 10.0 HP river water back-up pumps

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

Event: Replace Chilled Water Distribution Systems (~4828 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$245,800	Unassigned

Updated: APR-11

D3040.03.02 Chilled Water Distribution Systems** - 2002

2 - Bell & Gossett 50.0 HP chilled water pumps (PCH7, PCH8)
2 - Bell & Gossett 25.0 HP chilled water pumps (PCH11, PCH12)
1 - chilled water pump - no data
2 - Bell & Gossett 30.0 HP chilled water pumps (PCH10, PCH13)

Rating	Installed	Design Life	Updated
5 - Good	2002	40	APR-11

Event: Replace 7 Chilled Water Pumps

Type	Year	Cost	Priority
Lifecycle Replacement	2042	$189,800	Unassigned

Updated: APR-11

D3040.03.02 Chilled Water Distribution Systems** - 2007

1 - 20.0 HP cooling water pump (CWP3)
4 - Gould 250 HP cooling tower pumps (CDP1, CDP2, CDP3, CDP4)
2 - 5.0 HP cooling tower circulation pumps (CT-CP-1, CT-CP-2)

Rating	Installed	Design Life	Updated
5 - Good	2007	40	APR-11

Event: Replace 7 Chilled Water Pumps

Type	Year	Cost	Priority
Lifecycle Replacement	2047	$522,000	Unassigned

Updated: APR-11

D3040.03.03 Condenser Water Distribution Systems Pumps*

~16 condenser pump varying from 40 HP to 125HP throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	0	40	APR-11

D3040.03.04 Glycol Systems*

Glycol hydronic heating and cooling is provided by a glycol reservoir with fill pump, expansion tank and two circulation pumps.

Rating	Installed	Design Life	Updated
5 - Good	2001	0	APR-11

D3040.04.01 Fans: Exhaust**

Axial rooftop and interior exhaust fans throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace Exhaust Fans (~4828 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$77,300	Unassigned

Updated: APR-11

D3040.04.03 Ducts: Exhaust*

Exhaust air ducting includes general building exhausts as well as local exhausts. The duct systems include duct work, dampers, diffusers and other related components.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

D3040.04.05 Air Outlets and Inlets: Exhaust*

Assorted prefinished metal louver and grille style outlets throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

D3040.05 Heat Exchangers** - 1969

3 - steam to river water shell-and-tube style heat exchangers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1969	30	APR-11

Event: Replace 3 Heat Exchangers

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$44,600	Unassigned

Updated: APR-11

D3040.05 Heat Exchangers** - 1997

1 - chilled water to river water plate style heat exchanger (RWX1).
1 - steam to glycol shell-and-tube style heat exchanger.

Rating	Installed	Design Life	Updated
5 - Good	1997	30	APR-11

Event: Replace 3 Heat Exchangers

Type	Year	Cost	Priority
Lifecycle Replacement	2027	$29,700	Unassigned

Updated: APR-11

D3040.05 Heat Exchangers** - 2007

1 - chilled water to glycol plate style heat exchanger.
1 - chilled water to river water plate style heat exchanger (RWX2).

Rating	Installed	Design Life	Updated
5 - Good	2007	30	APR-11

Event: Replace 2 Heat Exchangers

Type	Year	Cost	Priority
Lifecycle Replacement	2037	$29,700	Unassigned

Updated: APR-11

D3050.01.04 Unit Air Conditioners**

Two Emerson DX through-wall packaged air conditioning units provide cooling for the UPS room.

Rating	Installed	Design Life	Updated
4 - Acceptable	2000	30	APR-11

Event: Replace 2 Air Conditioing Units

Type	Year	Cost	Priority
Lifecycle Replacement	2030	$4,000	Unassigned

Updated: APR-11

D3050.05.02 Fan Coil Units** - 2004

Hydronic fan coil units provided at building entrances.

Rating	Installed	Design Life	Updated
5 - Good	2004	30	APR-11

Event: Replace 4 Fan Coil Units

Type	Year	Cost	Priority
Lifecycle Replacement	2034	$21,700	Unassigned

Updated: APR-11

D3050.05.06 Unit Heaters**

Hydronic unit heaters suspended from the ceiling provided throughout.

Rating	Installed	Design Life	Updated
5 - Good	2007	30	APR-11

Event: Replace ~12 Unit Heaters

Type	Year	Cost	Priority
Lifecycle Replacement	2037	$40,400	Unassigned

Updated: APR-11

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

A Johnson Controls building management system is installed throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1997	25	APR-11

Event: Replace the BMCS (~4828 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2022	$100,400	Unassigned

Updated: APR-11

D4030.01 Fire Extinguisher, Cabinets and Accessories*

Dry chemical wall mounted fire extinguishers are provided throughout. Fire hoses in wall cabinets throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

S5 ELECTRICAL

D5010.01 Main Electrical Transformers** - 1968

1 - Transformer A1; Rex Manufacturing 150 kVa, 13.2kV to 248/143 volt.
1 - Transformer B; 1000 kVa, 13.2 kV to 575/332 volt.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

Event: Replace 2 Transformers

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$72,700	Unassigned

Updated: APR-11

D5010.01 Main Electrical Transformers** - 2006

1 - 100 kVa, 13.2kV to 248/143 volt.
2 - 3.0/4.0 mVa, 13.2kV to 600/347 volt.

Rating	Installed	Design Life	Updated
5 - Good	2006	40	APR-11

Event: Replace 3 Transformers

Type	Year	Cost	Priority
Lifecycle Replacement	2046	$223,100	Unassigned

Updated: APR-11

D5010.02 Secondary Electrical Transformers (Interior)**

1 - 45 kVa transformer.
3 - Hammond Electric 145 kVa, 575 volt to 466/266 volt.

Rating	Installed	Design Life	Updated
5 - Good	2006	40	APR-11

Event: Replace 4 Secondary Electrical Transformers

Type	Year	Cost	Priority
Lifecycle Replacement	2046	$101,800	Unassigned

Updated: APR-11

D5010.03 Main Electrical Switchboards (Main Distribution)** - Board 'A'

One Eaton/Cutler-Hammer 13.2 kV, 600 amp, 3-phase, 3-wire main switchgear; incoming city supply 'A1' (13.2 kV, 600 amp, 3-phase, 3-wire); one tie breaker (generator #4 and turbine). Eight main disconnects provide service to CDPs, MCCs, motor starters and VFDs throughout.

Rating	Installed	Design Life	Updated
5 - Good	2010	40	APR-11

Event: Replace 3 Switchboards & 8 Breakers

Type	Year	Cost	Priority
Lifecycle Replacement	2050	$207,300	Unassigned

Updated: APR-11

D5010.03 Main Electrical Switchboards (Main Distribution)** - Board 'B'

One Westinghouse 13.2 kV, 600 amp, 3-phase, 3-wire main switchgear; SSB load shed; City 'B' metering; City Supply 'B' (preferred) 13.2 kV, 600 amp, 3-phase, 3-wire; Tie B-D; Power Plant 'C' (alternate); chiller plant switchboard; Turbine 3 switchboard and Tie A-A. ~52 main disconnects provide service to CDPs, MCCs, motor starters and VFDs throughout.

It was reported that this Board is scheduled to be replaced in 2011/2012. It is recommended that this schedule is maintained.

Rating	Installed	Design Life	Updated
4 - Acceptable	1966	40	APR-11

Event: Replace 9 Switchboards & 52 Breakers

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$1,017,900	Unassigned

Updated: APR-11

D5010.03 Main Electrical Switchboards (Main Distribution)** - Board 'C'

One Federal Pioneer 13.2 kV, 1200 amp, 3-phase, 3-wire main switchgear; City supply bus (1200 amp, 3-phase, 3-wire); transformer; metering. Seven main disconnects provide service to CDPs, MCCs, motor starters and VFDs throughout.

Rating	Installed	Design Life	Updated
5 - Good	2008	40	APR-11

Event: Replace 3 Switchboards & 8 Breakers

Type	Year	Cost	Priority
Lifecycle Replacement	2048	$224,600	Unassigned

Updated: APR-11

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

Central distribution panels are provided througout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	40	APR-11

Event: Replace ~6 Central Distribution Panels

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$84,900	Unassigned

Updated: APR-11

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

Branch circuit panelboards for normal power and emergency power are provided throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace ~6 Electrical Branch Circuit Panelboards

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$29,300	Unassigned

Updated: APR-11

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

Nine Siemens and Cutler-Hammer Advantage Series 2100 MCCs are provided throughout with a total of ~114 starters.

Rating	Installed	Design Life	Updated
5 - Good	2002	30	APR-11

Event: Replace ~114 MCC Starters

Type	Year	Cost	Priority
Lifecycle Replacement	2032	$776,100	Unassigned

Updated: APR-11

D5010.07.02 Motor Starters and Accessories** - 1968

Motor starters are located in mechanical and electrical rooms throughout the building, providing service for various mechanical equipment throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace ~12 Motor Starters

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$15,100	Unassigned

Updated: APR-11

D5010.07.02 Motor Starters and Accessories** - 2002

Motor starters are located in mechanical and electrical rooms throughout the building, providing service for various mechanical equipment throughout. Replacements have occurred since the original construction due to attrition and ongoing renovations.

Rating	Installed	Design Life	Updated
5 - Good	2002	30	APR-11

Event: Replace ~12 Motor Starters

Type	Year	Cost	Priority
Lifecycle Replacement	2032	$15,100	Unassigned

Updated: APR-11

D5010.07.03 Variable Frequency Drives**

Culler-Hammer variable frequency drives are provided for mechanical equipment throughout.

Rating	Installed	Design Life	Updated
5 - Good	2002	30	APR-11

Event: Replace ~9 Variable Frequency Drives

Type	Year	Cost	Priority
Lifecycle Replacement	2032	$100,000	Unassigned

Updated: APR-11

D5020.01 Electrical Branch Wiring*

Electrical branch wiring in the building is standard wire in conduit. Flexible conduit and cable are provided for final connections to mechanical equipment.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	50	APR-11

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

Line voltage switches provided throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1963	30	APR-11

D5020.02.02.02 Interior Fluorescent Fixtures**

T8 fluorescent lamps with electronic ballasts ballasts are provided throughout.

Rating	Installed	Design Life	Updated
5 - Good	2007	30	APR-11

Event: Replace T8 Fluorescent Fixtures (~4828 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2037	$421,500	Unassigned

Updated: APR-11

D5020.02.02.03 Interior Metal Halide Fixtures*

Suspended metal halide fixtures are provided over the main floor only.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

D5020.02.03.01 Emergency Lighting Built-in*

A portion of the fluorescent lighting throughout the building is on the back-up electrical power circuit.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	35	APR-11

D5020.02.03.02 Emergency Lighting Battery Packs**

Emergency battery packs with integral and remote heads have limited use throughout.

Rating	Installed	Design Life	Updated
5 - Good	2007	20	APR-11

Event: Replace ~8 Emergency Lighting Battery Packs

Type	Year	Cost	Priority
Lifecycle Replacement	2027	$9,300	Unassigned

Updated: APR-11

D5020.02.03.03 Exit Signs*

Assorted incandescent and LED emergency exit signs are provided throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	0	30	APR-11

Event: Replace ~10 Incandescent Emergency Exit Signs With LED Units

Concern:
Incandescent fixtures are less efficient than LED units and require more frequent maintenance.

Recommendation:
Replace incandescent emergency exit signs with LED units.

Type	Year	Cost	Priority
Energy Efficiency Upgrade	2012	$5,700	Low

Updated: APR-11

D5020.03.01.04 Exterior H.P. Sodium Fixtures*

Wall mounted high pressure sodium (HPS) light fixtures are provided at building entrances.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

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

Photocell controls are provided for HPS on the building exterior.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

D5030.01 Detection and Fire Alarm**

The building is provided with an EST3 fire alarm system with fire one alarm power booster panel, bells, strobes and pull stations throughout. It was reported that heat and smoke detectors are not provided in the 1968 Section because of the high risk of accidental fire alarm activation due to the nature of the indoor environment of the building and sensitivity of the equipment therein. Smoke detectors, heat detectors and sprinklers are provided in the 2007 Addition.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	25	APR-11

Event: Replace Detection and Fire Alarm (~4828 m2/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2032	$132,800	Unassigned

Updated: APR-11

D5030.02.04 Video Surveillance**

Limited video surveillance of the building is monitored in the control room.

Rating	Installed	Design Life	Updated
5 - Good	2002	25	APR-11

Event: Replace 1 Video Surveillance Panel and ~12 Cameras

Type	Year	Cost	Priority
Lifecycle Replacement	2027	$10,600	Unassigned

Updated: APR-11

D5030.04.01 Telephone Systems*

Nortel Meridian telephone system provided throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	25	APR-11

D5030.04.05 Local Area Network Systems*

Category 5 cabling is provided throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	15	APR-11

D5090.01 Uninterruptible Power Supply Systems**

Two Powerware UPS cabinets and one Powerware bypass control are provided with an Alstom generator protection switch and Alstom turbine controller.

Rating	Installed	Design Life	Updated
5 - Good	2002	30	APR-11

Event: Replace 2 Uninterruptible Power Supply Systems

Type	Year	Cost	Priority
Lifecycle Replacement	2032	$86,500	Unassigned

Updated: APR-11

D5090.02 Packaged Engine Generator Systems (Emergency Power System)** - 2003

A Kohler Power Systems 400 diesel generator furnished with four batteries, battery charging station and transfer switchgear provides 500 kVa, 3-phase power to the emergency power systems.

Rating	Installed	Design Life	Updated
5 - Good	2003	35	APR-11

Event: Replace 1 Packaged Engine Generator System

Type	Year	Cost	Priority
Lifecycle Replacement	2038	$61,200	Unassigned

Updated: APR-11

D5090.02 Packaged Engine Generator Systems (Emergency Power System)** - 2008

Two Cummings diesel generators furnished with two batteries each, and transfer switchgear units provide 4.0 megawatt power each to the emergency power cogen systems. Both generators have original (1968) battery charging stations located in the 1968 Section near the turbines.

Rating	Installed	Design Life	Updated
5 - Good	2008	35	APR-11

Event: Replace 2 Packaged Engine Generator Systems

Type	Year	Cost	Priority
Lifecycle Replacement	2043	$1,211,700	Unassigned

Updated: APR-11

D5090.06 Lightning Protection Systems*

Lightning protection cables and rods are provided at the roof perimeter.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	25	APR-11

D5090.08 Power Generation Systems (Co-generation)*

Two Stal-Laval steam turbines are located in the 1968 Section. Each can provide 13.2 kV, 7500 kVa power to the site ring main power system.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

S6 EQUIPMENT, FURNISHINGS AND SPECIAL CONSTRUCTION

E2010.03.01 Blinds**

Venetian blinds at windows in central control office.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	30	APR-11

Event: Replace Blinds (~21 m2)

Type	Year	Cost	Priority
Lifecycle Replacement	2014	$2,300	Unassigned

Updated: APR-11

F1040.05 Liquid and Gas Storage Tanks*

Two 45,000 L diesel tanks for the emergency generator.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	20	APR-11

S8 FUNCTIONAL ASSESSMENT

K4030.01 Asbestos*

Up-to-date asbestos management plan is currently in effect.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

Event: Continue Asbestos Management Program

Concern:
Asbestos is present in various building materials such as joint compounds.

Recommendation:
Continue asbestos management program with periodic survey updates.

Type	Year	Cost	Priority
Preventative Maintenance	2013	$8,500	Medium

Updated: APR-11

K4030.02 PCBs*

PCBs may be present in older electrical equipment such capacitors and liquid filled transformers

Rating	Installed	Design Life	Updated
4 - Acceptable	0	0	APR-11

K4030.03 Mercury*

T-12 Fluorescent light tubes contain small amounts of mercury vapour.

Rating	Installed	Design Life	Updated
4 - Acceptable	0	0	APR-11

K4030.04 Mould*

No visible suspect mould identified.

Rating	Installed	Design Life	Updated
4 - Acceptable	1968	0	APR-11

K4030.09 Other Hazardous Materials*

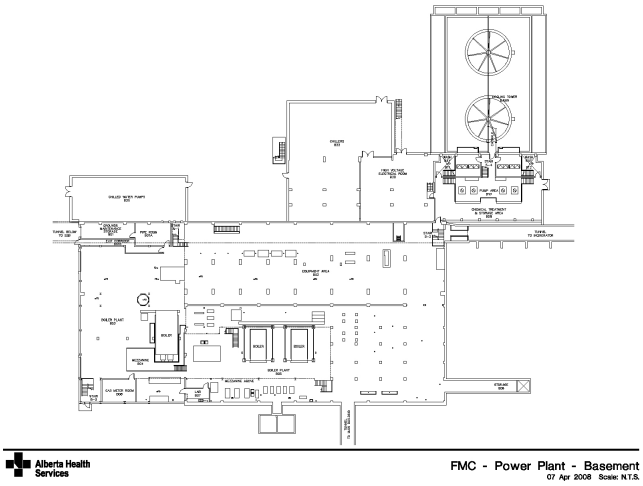
Drums containing used oil and 20 L pails of various cleaning agents located within secondary containment in the lower level of the 1968 Section.

Rating	Installed	Design Life	Updated
4 - Acceptable	0	0	APR-11

K5010 Reports and Studies*

The Foothills Hospital Power Plant was evaluated by Golder Associates Ltd. in 2010.

Rating	Installed	Design Life	Updated
5 - Good	2010	0	APR-11



FMC Power Plant - Basement - 2010 (NTS)