RECAPP Facility Evaluation Report

Alberta Health Services-North

Queen Elizabeth II Hospital - Power Plant

B1064D

Grande Prairie

Report run on: April 3, 2014 11:31 AM

Facility Details

Building Name: Queen Elizabeth II Hospital
Address: 10409 - 98 Street
Location: Grande Prairie

Building Id: B1064D
Gross Area (sq. m): 2,015.00
Replacement Cost: $0
Construction Year: 1981

Most Recent Consultant Evaluation

Evaluation Company: Golder Associates Ltd.
Evaluation Date: January 14 2014
Evaluator Name: Karel Derkzen van Angeren
Evaluation FCR: 0%

Total Maintenance Events Next 5 years: **$5,364,300**
Current 5 year Facility Condition Index (FCI): **0%**

General Summary:

The Queen Elizabeth II Hospital: Power Plant building is a one storey structure with a basement level and mezzanine located at 10409 98th Street, in the City of Grande Prairie, Alberta. The building provides utilities, heat/cooling to all the buildings on Site. The building is primarily a steel framed structure.

The building has a gross floor area of approximately 2,015m².

Structural Summary:

Structural drawings were not provided or reviewed. It is assumed that the substructure consists of cast-in-place (CIP) concrete piles and strip/pad footings supporting the CIP concrete basement walls and interior concrete or steel columns and beams. The basement level is provided with a CIP concrete slab-on-grade. The main floor is a CIP concrete slab. The mezzanine level floor consists of CIP concrete topping on steel deck and a portion of steel grate. The superstructure consists of steel framed exterior walls with steel columns and beams or CMU load bearing interior walls supporting the roof and mezzanine level. The roof structure consists of metal deck supported by OWSJs and steel purlins.

The structural elements are generally in acceptable overall condition.

Envelope Summary:

Exterior cladding for the building consists of prefinished horizontal and vertical metal panels. Exterior windows consist of fixed aluminum framed insulating glazing units (IGUs). The main entrance to the building is provided via an aluminum framed storefront door. Painted metal utility doors set in painted metal frames are provided throughout the building. A painted metal blast proof door is provided on the south elevation of the building. A built up asphaltic membrane roof (BUR) is provided for the building with a gravel coating for ultra violet (UV) protection.

Capital expenditures with respect to the joint sealers, south-west entrance door, roof membrane, and skylights are anticipated within the next five years.

The envelope elements are generally in acceptable overall condition.

Interior Summary:

The majority of the interior partitions consist of painted CMUs. Flooring of the facility is primarily painted concrete with the exception of the office and vestibule which are provided with sheet vinyl flooring. The majority of the ceilings are exposed roof structure. The office/lab and entrance vestibule are provided with acoustic ceiling tile set in prefinished metal t-bar grids. Laminate base and upper cabinets with plam countertoops are provided within the office/lab area.

Capital expenditures with respect to the visual display boards, resilient flooring, acoustic ceiling tiles, floor paint, fixed casework, and blinds are anticipated within the next five years.

The interior elements are generally in acceptable overall condition.

Mechanical Summary:

Two 42,000MBH natural gas steam boilers provide heating for the facility (queen Elizabeth Hospital Campuns) via multiple steam-water/glycol heat exchangers. Hydronic unit heaters and fan coil units are provided throught the building. Hot water storage tanks are also provided.

Two air handling units (AHU) providing make-up-air, are located on the mezzanine. The tags were not accessible, therefore information is based off of capacity for building size. Building controls are a combination of compressor driven pneumatic controls and a building management control system (BMCS) which has panels located in the office.

Fire protection is provided with portable ABC dry-type fire extinguishers, and locked fire hose cabinets throughout the facility.
Plumbing fixtures in the office consist of two stainless steel sinks in the lab. Domestic water distribution is copper throughout. Waste piping is cast iron with soldered connections; PVC and ABS plastic has been installed where the cast piping was replaced. Internal rain water leader piping is cast iron. Natural gas piping is painted steel to the heating units.

Capital expenditures with respect to the sinks, backflow preventors, pumps, boilers, chimneys, chillers, cooling towers, air handling units, exhaust fans, heat exchangers, fan coil units, and unit heaters are anticipated within the next five years.

The mechanical systems are generally in overall acceptable condition.

Electrical Summary:

Electrical service is provided to the building (and the Queen Elizabeth hospital campus) via buried conductors to the building from a utility transformer to a facility owned Federal Pioneer 4160v 2000A transformer. Main distribution is provided from Federal Pioneer 4160V 1200A main distribution panel board and 2 step-down transformers. Multiple Federal Pioneer secondary distribution panel boards are provided throughout the building. Multiple motor control centers (MCCs) are provided in the MCC room. Interior lighting throughout the building is typically fluorescent T12 with electronic ballasts with H.P. Sodium high bay fixtures for the boiler area and surface mounted incandescent fixtures under the mezzanine. Exterior lighting are wall pack HID fixtures on the perimeter of the building. Emergency lighting is provided by a combination of fluorescent fixtures connected to emergency power and battery pack lighting, and lit exit signs throughout. Emergency power is provided to the building from an on-Site generator located in the mechanical room.

Capital expenditures with respect to the secondary distribution panel boards, MCCs, motor starters, interior fluorescent lighting, battery packs, detection and fire alarms, and the emergency generator are anticipated within the next five years.

The electrical systems in this facility are in acceptable condition overall.

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*

Structural drawings were not reviewed as part of the assessment, however, the foundation for the building reportedly consists of a combination of cast-in-place concrete foundation walls and strip/pad footings.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

A1030 Slab on Grade*

The basement floor of building consist of concrete slabs-on-grade.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

A2020 Basement Walls (& Crawl Space)*

Basement walls in the building consist of CIP concrete.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1010.01 Floor Structural Frame (Building Frame)*

Structural drawings were not reviewed during the assessment, however, the structural frame of the building is believed to consist mainly of CIP concrete perimeter walls columns and beams.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1010.02 Structural Interior Walls Supporting Floors (or Roof)*

Load-bearing interior walls throughout the above-grade levels of the building consist of CMUs.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1010.03 Floor Decks, Slabs, and Toppings*

Structural drawings were not reviewed as part of the assessment, however, the suspended at grade floor of the building appears to be constructed of a cast-in-place concrete slab.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1010.05 Mezzanine Construction*

Mezzanines in the building are constructed of structural steel framing (columns, beams). Floors consist of both steel grating or a concrete topping over metal decking.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1010.09 Floor Construction Fireproofing*

The suspended floor slabs is CIP concrete. The underside of portions of the mezzanine contain spray-on-fireproofing material.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1010.10 Floor Construction Firestopping*

The majority of the floor penetrations are fire caulked.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1020.01 Roof Structural Frame*

The roof consists of metal decking supported by open web steel joists and structural steel.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1020.02 Structural Interior Walls Supporting Roofs*

Load-bearing interior walls supporting roofs consist of CMU.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1020.06 Roof Construction Fireproofing*

The undersides of the steel deck and framing at several roof areas in the building are treated with a spray-on fireproofing material.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B1020.07 Roof Construction Firestopping*

Roof penetrations are provided with fire caulking.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

S2 ENVELOPE

B2010.01.06.03 Metal Siding**

Horizontal and vertical prefinished metal siding is provided for the building exterior cladding.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace siding (~1,175m²)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$448,700	Unassigned

Updated: APR-14

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

Joint sealant is provided at all material transitions and around to windows/doors.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	APR-14

Event: Replace sealant (~600m)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$21,900	Unassigned

Updated: APR-14

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

Architectural drawings were not reviewed as part of the assessment, however, it is believed that the exterior walls of the building consist of an air/vapor barrier and batt or rigid insulation.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B2010.04 Exterior Wall Interior Skin*

The interior faces of the exterior walls primarily consist of prefinished metal panels.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B2010.05 Parapets*

Parapets are located along the perimeter of the roof and internally along building construction joints. Architectural drawings were not reviewed as part of the assessment, however, it is believed that the parapets are constructed of steel framing. The parapets range in height and are covered with flashing and prefinished metal coping.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B2010.06 Exterior Louvers, Grilles, and Screens*

Prefinished metal louvers and grilles are provided throughout the building perimeter.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

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

Exterior windows consist of insulating glazing units (IGU's) set in bronze finish aluminum frames.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace windows (~37m²)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$44,500	Unassigned

Updated: APR-14

B2030.01.01 Aluminum-Framed Storefronts: Doors**

An aluminum framed storefront door with glazed inserts is provided at the main entrance to the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace entrance door. (1 unit)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$4,200	Unassigned

Updated: APR-14

B2030.02 Exterior Utility Doors**

Painted metal utility doors set in painted metal frames are provided throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace doors (2 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$2,200	Unassigned

Updated: APR-14

B2030.03 Large Exterior Special Doors (Overhead)*

A painted metal overhead telescopic blast proof door is provided on the south elevation.

The door is in need of refinishing at a cost less than the Capital Threshold.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B3010.01 Deck Vapour Retarder and Insulation*

Architectural drawings were not reviewed as part of the assessment, however, it is believed that the roofs of the building incorporate a vapor retarder and insulation.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

B3010.04.01 Built-up Bituminous Roofing (Asphalt & Gravel)**

An asphaltic membrane BUR with pea gravel UV coating is provided for the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	APR-14

Event: Replace roofing (~950m²)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$164,200	Unassigned

Updated: APR-14

B3020.01 Skylights**

Acrylic dome circular skylights are provided for the stairwells of the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	APR-14

Event: Replace skylights (~10m²)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$28,700	Unassigned

Updated: APR-14

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

Prefinished metal roof hatches with painted metal guard railings are provided for access to the roof.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

S3 INTERIOR

C1010.01 Interior Fixed Partitions*

The majority of the interior partitions are painted CMUs.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C1010.04 Interior Balustrades and Screens, Interior Railings*

Painted steel tube railings are provided for the mezzanine.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C1010.05 Interior Windows*

Interior glazing set in painted metal frames are provided for the building

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C1010.07 Interior Partition Firestopping*

The interior partition penetrations are fire caulked.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C1020.01 Interior Swinging Doors (& Hardware)*

The interior doors consist of painted metal units set in painted metal frames with standard commercial grade hardware.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C1020.03 Interior Fire Doors*

The majority of the interior fire doors are painted metal units set in painted metal frames with closer hardware.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C1020.07 Other Interior Doors*

There are multiple floor openings with operable hatches and access panels throughout the building providing access to the basement.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C1030.01 Visual Display Boards**

Tackboards and white boards are provided in the office/lab.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	APR-14

Event: Replace (1) Tackboard and (1) Whiteboard.

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

Updated: APR-14

C1030.08 Interior Identifying Devices*

Plastic room numbers are provided for the majority of the buildings rooms.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C1030.12 Storage Shelving*

Painted wood shelving is provided in the office area.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C2010 Stair Construction*

The stair structure consists of steel frame with steel pan and CIP concrete fill.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C2020.08 Stair Railings and Balustrades*

Painted steel tube, wall mounted hand rails and floor mounted balustrades are provided in the stairwells.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C3010.01 Concrete Wall Finishes (Unpainted)*

The majority of the interior walls consist of CMUs.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C3010.11 Interior Wall Painting*

The majority of the interior walls are painted.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

C3020.01.02 Painted Concrete Floor Finishes*

The floors consist of painted concrete for the majority of the building.

Rating	Installed	Design Life	Updated
3 - Marginal	1981	0	APR-14

Event: Repaint Concrete Floor (~ 1000 m²)

Concern:
Portions of the floor paint is worn off.
Recommendation:
Repaint affected floor sections.
Consequences of Deferral:
Failing to repaint the floor might result in harder cleaning these sections.

Type	Year	Cost	Priority
Repair	2015	$20,000	Medium

Updated: APR-14

C3020.07 Resilient Flooring**

Sheet vinyl flooring is provided in the office/lab area and entrance vestibule/link..

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	APR-14

Event: Replace flooring (~95m²)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$9,600	Unassigned

Updated: APR-14

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

Acoustic tile set in prefinished metal t-bar grid is provided in the office/lab area and entrance vestibule/link..

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	APR-14

Event: Replace ceiling tiles (~95m²)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$5,600	Unassigned

Updated: APR-14

C3030.07 Interior Ceiling Painting*

The basement ceiling and some exposed structure of the mezzanine and roof are painted concrete.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

S4 MECHANICAL

D2010.04 Sinks**

Two double basin stainless steel sinks are provided in the lab.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace sinks (2 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$3,800	Unassigned

Updated: APR-14

D2020.01.01 Pipes and Tubes: Domestic Water*

Domestic water is provided via insulated copper piping.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D2020.01.02 Valves: Domestic Water**

Isolation valves are provided throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace valves (~ 35 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$7,000	Unassigned

Updated: APR-14

D2020.01.03 Piping Specialties (Backflow Preventers)**

Backflow prevention valves are provided on the main water line to the Site as well as for the boiler feed lines and various other equipment.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	APR-14

Event: Replace backflow preventors (~5 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$34,600	Unassigned

Updated: APR-14

D2020.02.02 Plumbing Pumps: Domestic Water**

Multiple circulator pumps are provided in the building to provide domestic water to the buildings on Site.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	APR-14

Event: Replace pumps (~3 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$120,000	Unassigned

Updated: APR-14

D2020.03 Water Supply Insulation: Domestic*

Fibreglass insulation is provided for the domestic water distribution lines.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D2030.01 Waste and Vent Piping*

Generally waste and vent piping is original and consists of cast iron and PVC and ABS plastic.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D2030.02.04 Floor Drains*

Floor draines are provided throughout the main and basement level.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D2040.01 Rain Water Drainage Piping Systems*

Cast iron internal drains from the roof discharge to the municipal storm system.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D2040.02.04 Roof Drains*

The internal roof drains are provided with dome gravel strainers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D2090.12 Reverse Osmosis Systems**

A reverse osmosis (RO) system is provided in the basement of the building and provides purified water for the hospital and labs.

Rating	Installed	Design Life	Updated
5 - Good	2011	30	APR-14

Event: Replace the RO system. (1 unit)

Type	Year	Cost	Priority
Lifecycle Replacement	2041	$73,700	Unassigned

Updated: APR-14

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

An above grade mounted 11,000 liter diesel storage tank is located adjacent to the plant complete with a fuel pipe distribution system to the two boilers and emergency generator. Each piece is equipped with its own fuel pump.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D3010.02 Gas Supply Systems*

Natural gas steel piping is distributed from the meter room in the building to the two heating boilers in the plant.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D3020.01.01 Heating Boilers & Accessories: Steam**

Two - 42,000 MBH input B&W high pressure steam boilers for building heating of the Services, Acute Care and MacKenzie Place buildings, domestic hot water heating, and medical process loads. The boilers operate on natural gas and are equipped to burn diesel fuel, for backup purposes. A common control system controls both boilers' operation and safety functions, including air and fuel mixture, based on flue gas combustion products, to optimize fuel consumption. The control system has been replaced in 2011.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	APR-14

Event: Replace expansion tanks (~3 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$20,000	Unassigned

Updated: APR-14

Event: Replace heat exchangers (2 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$111,800	Unassigned

Updated: APR-14

Event: Replace the boilers and accessories (2 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$2,832,300	Unassigned

Updated: APR-14

D3020.01.02 Feedwater Equipment*

A single feed water tank feeds both boilers. Individual base mounted feed water pumps, feed each boiler with a common back-up pump for both boilers.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

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

Chimney venting is galvanized metal through the roof.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	APR-14

Event: Replace chimneys (~23m)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$18,900	Unassigned

Updated: APR-14

D3020.01.04 Water Treatment: Steam Boilers*

Pre-mixed chemicals located in the chemical feed tanks, are pumped automatically into the boiler feed water system to provide corrosion and scaling control in the boilers and steam pipe distribution system

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D3030.02 Centrifugal Water Chillers**

Three - 1,406 kw cooling capacity, centrifugal water chillers, located in the plant, provide chilled water for Acute Care, MacKenzie Place and the Services buildings. The replacement chillers are equipped with HCF-134a refrigerant, variable speed drives, with no oil, and magnetic bearings.

Rating	Installed	Design Life	Updated
4 - Acceptable	2008	25	APR-14

Event: Replace chillers (3 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2033	$2,405,300	Unassigned

Updated: APR-14

D3030.05 Cooling Towers**

Two 325kW cooling towers provide cooling for the refrigerant in the centrifugal chillers. The centrifugal counterflow cooling towers are located inside on the west side of the mezzanine floor, with a west building louver intake and a roof level discharge. Condenser water is stored inside the sump of each tower. The interior baffles were reportedly replaced in 2008, as part of the chiller replacement project.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	25	APR-14

Event: Replace cooling towers (2 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$488,400	Unassigned

Updated: APR-14

D3040.01.01 Air Handling Units: Air Distribution**

Two air handling units are provided for make up air on the north elevation of the mezzanine. Units were not readily accessible and identification tags were not visible.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace AHUs (2 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$35,400	Unassigned

Updated: APR-14

D3040.01.04 Ducts: Air Distribution*

Prefinished and partially insulated sheet metal ducting is provided for the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D3040.01.07 Air Outlets & Inlets: Air Distribution*

There are prefinished ceiling-mounted diffusers, and inlet and outlet grills throughout the builsing.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

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

Steel insulated piping is provided for steam distribution throughout the building and to the adjacent buildings on Site. Control valves, condensate pumps, traps and receivers are provided.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace distribution piping and pumps (~2,000 m²/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$240,000	Unassigned

Updated: APR-14

D3040.03.01 Hot Water Distribution Systems**

Heating hot water is fed from the steam-to-water heat exchangers located in the boiler room, and is distributed to radiation heaters, unit heaters, forced flow units and reheat coils via insulated steel piping. Circulation pumps are located in the mechanical rooms and include hot water pumps and radiation pumps.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace distribution piping (~2,000 m²/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$236,400	Unassigned

Updated: APR-14

D3040.03.02 Chilled Water Distribution Systems**

Chilled water is distributed from the central chiller plant, by a primary-secondary pumping system via insulated and jacketed steel piping.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace distribution piping (~2,000m²/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$127,400	Unassigned

Updated: APR-14

D3040.03.03 Condenser Water Distribution Systems Pumps*

Condenser water piping is distributed between the chillier, two cooling towers and the heat exchanger. The system includes pumps, piping, and valves.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D3040.03.04 Glycol Distribution Systems**

Heating glycol is fed from the steam-to-glycol heat exchangers, and is distributed to air handling coils. Circulation pumps are located in the mechanical rooms and include radiation pumps and glycol pumps.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace distribution system (~1,000m²/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$70,100	Unassigned

Updated: APR-14

D3040.04.01 Fans: Exhaust**

Through roof exhaust fans are provided for the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace exhaust fans (~5 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$31,300	Unassigned

Updated: APR-14

D3040.04.03 Ducts: Exhaust*

Galvanized sheet metal ducting is provided for the building exhaust system.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D3040.04.05 Air Outlets and Inlets: Exhaust*

Prefinished metal grilles are provided throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D3040.05 Heat Exchangers** - 1981

Three shell and tube heat exchangers are provided on the mezzanine level.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace heat exchangers (3 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$57,100	Unassigned

Updated: APR-14

D3040.05 Heat Exchangers** - 2008

A shell-and-tube heat exchanger is provided in the basement.

Rating	Installed	Design Life	Updated
4 - Acceptable	2008	30	APR-14

Event: Replace heat exchanger (1 unit)

Type	Year	Cost	Priority
Lifecycle Replacement	2038	$19,000	Unassigned

Updated: APR-14

D3050.05.02 Fan Coil Units**

Hydronic fan coil units are provided at all entrances to the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace fan coil units (3 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$19,800	Unassigned

Updated: APR-14

D3050.05.06 Unit Heaters**

Hydronic suspended unit heaters are provided throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace unit heaters (~3 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$12,400	Unassigned

Updated: APR-14

D3060.02.02 Pneumatic Controls**

Located on the mezzanine level of the plant, are the pneumatic system compressors and dryers, with full redundant capacity. Pneumatic end devices serve the steam, glycol, chilled water and radiation systems, and are original.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace pneumatic controls (~2,015m²/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$36,700	Unassigned

Updated: APR-14

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

A Reliable Controls BMCS is provided in the building, and serves the mechanical equipment for the majority of the Site.

Rating	Installed	Design Life	Updated
4 - Acceptable	2000	20	APR-14

Event: Replace BMCS. (2,015m²/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2020	$66,000	Unassigned

Updated: APR-14

D4020 Standpipes*

The building is equipped with standpipes located in the fire hose cabinets.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D4030.01 Fire Extinguisher, Cabinets and Accessories*

The building is provided with fire extinguisher cabinets throughout.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

S5 ELECTRICAL

D5010.01.01 Main Electrical Transformers (Facility Owned)**

A Federal Pioneer 1500/2000kVA integrated transformer is provided in the MCC room.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

Event: Replace transformer (1 unit)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$127,500	Unassigned

Updated: APR-14

D5010.02 Secondary Electrical Transformers (Interior)**

One Marcus 360kVA secondary transformer is provided in the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	2007	40	APR-14

Event: Replace transformer (1 unit)

Type	Year	Cost	Priority
Lifecycle Replacement	2047	$46,400	Unassigned

Updated: APR-14

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

A Federal Pioneer 4160V 1200A main distribution panel board (MDB) is located in the main electrical room of the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	40	APR-14

Event: Replace the MDP (1 unit)

Type	Year	Cost	Priority
Lifecycle Replacement	2021	$20,000	Unassigned

Updated: APR-14

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

Federal pioneer 347/600V secondary panel boards are provided throughout the building. A FPE main secondary switchboard, 600V 1600A and 3000A, located in the main electrical room, feeds transformers and MCC's.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace 347/600V 1600A and 3000A panel boards. (2 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$45,000	Unassigned

Updated: APR-14

Event: Replace 347/600V 600A panel boards (~5 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$48,000	Unassigned

Updated: APR-14

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

An Allen-Bradley 11-section MCC is provided in the MCC room

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace MCCs (11 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$100,000	Unassigned

Updated: APR-14

D5010.07.02 Motor Starters and Accessories**

Various motor starters are provided throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace motor starters (~25 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$30,000	Unassigned

Updated: APR-14

D5020.01 Electrical Branch Wiring*

Insulated copper wiring in rigid conduit is provided throughout the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

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

Low-voltage switches are provided for interior lighting controls.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D5020.02.02.01 Interior Incandescent Fixtures*

Surface mounted incandescent light fixtures are installed on the underside of the mezzanine.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D5020.02.02.02 Interior Fluorescent Fixtures**

T12 fluorescent lighting is provided in the basement, office/lab, utility rooms, and stairwells.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace lighting (~1,500m²/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$158,300	Unassigned

Updated: APR-14

D5020.02.02.04 Interior H.P. Sodium Fixtures*

High bay HPS fixtures are provided in the open boiler area.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D5020.02.03.01 Emergency Lighting Built-in*

Some fluorescent lighting in the building is connected to the emergency generator.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D5020.02.03.02 Emergency Lighting Battery Packs**

Emergency battery packs with integral heads are provided in the office/lab and emergency breaker room.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	20	APR-14

Event: Replace battery packs (2 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$1,400	Unassigned

Updated: APR-14

D5020.02.03.03 Exit Signs*

Illuminated exit signs are provided for the exits.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D5020.03.01.04 Exterior H.P. Sodium Fixtures*

HP sodium wallpack fixtures are provided on the building perimeter.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

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

A timeclock is provided for exterior lighting controls.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

D5030.01 Detection and Fire Alarm**

An EST IRC-3 (1990) system complete with remote control panel is located in the plant control room of the Services building. Smoke/heat rise detectors are provided throughout along with pull stations and strobes/bells.

Rating	Installed	Design Life	Updated
4 - Acceptable	1990	25	APR-14

Event: Replace fire detection system (2,015m²/gfa)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$80,700	Unassigned

Updated: APR-14

D5030.02.04 Video Surveillance**

There is one exterior security camera on the east elevation overlooking the parking lot. Several interior cameras are provided for equipment monitoring.

Rating	Installed	Design Life	Updated
4 - Acceptable	2009	25	APR-14

Event: Replace cameras (5 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2034	$5,000	Unassigned

Updated: APR-14

D5030.03 Clock and Program Systems*

A Simplex master clock system located in the plant control room, serves all buildings.

Rating	Installed	Design Life	Updated
4 - Acceptable	1990	0	APR-14

D5030.04.01 Telephone Systems*

One desktop phone unit is provided in the office.

Rating	Installed	Design Life	Updated
4 - Acceptable	1998	0	APR-14

D5030.04.04 Data Systems*

Alberta "supernet" is provided to data outlets in the office.

Rating	Installed	Design Life	Updated
4 - Acceptable	2005	0	APR-14

D5090.01 Uninterruptible Power Supply Systems**

A 5 KVA UPS unit located in the plant emergency distribution room is used for backup power for boilers and BMS.

Rating	Installed	Design Life	Updated
4 - Acceptable	1995	30	APR-14

Event: Replace UPS (1 unit)

Type	Year	Cost	Priority
Lifecycle Replacement	2025	$17,400	Unassigned

Updated: APR-14

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

One Brown Boveri 1352.5kVA diesel generator is provided in the emergency generator room. A 200L day tank is provided and an exterior main tank is provided. Three FPE 1600A 600V distribution boards are provided for Site emergency power.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	APR-14

Event: Replace Generator (1 unit) and EDPs (3 units)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$843,000	Unassigned

Updated: APR-14

S6 EQUIPMENT, FURNISHINGS AND SPECIAL CONSTRUCTION

E2010.02 Fixed Casework**

Plastic laminate base and upper cabinets with chemical resistant plastic laminate counter tops are provided in the office/lab area.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	35	APR-14

Event: Replace fixed casework (~10m)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$10,000	Unassigned

Updated: APR-14

E2010.03.01 Blinds**

Roll-up vinyl shades are provided for the external windows. Metal mini blinds are provided for teh office/lab interior windows.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	30	APR-14

Event: Replace blinds (~50m²)

Type	Year	Cost	Priority
Lifecycle Replacement	2017	$6,900	Unassigned

Updated: APR-14

S8 SPECIAL ASSESSMENT

K4010.01 Barrier Free Route: Parking to Entrance*

Barrier free access is not required due to building use.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

K4010.02 Barrier Free Entrances*

Barrier free access is not required due to building use.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

K4010.03 Barrier Free Interior Circulation*

Barrier free access is not required due to building use.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

K4010.04 Barrier Free Washrooms*

No washrooms present in the building.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

K4030.01 Asbestos*

No concerns observed or reported.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

K4030.04 Mould*

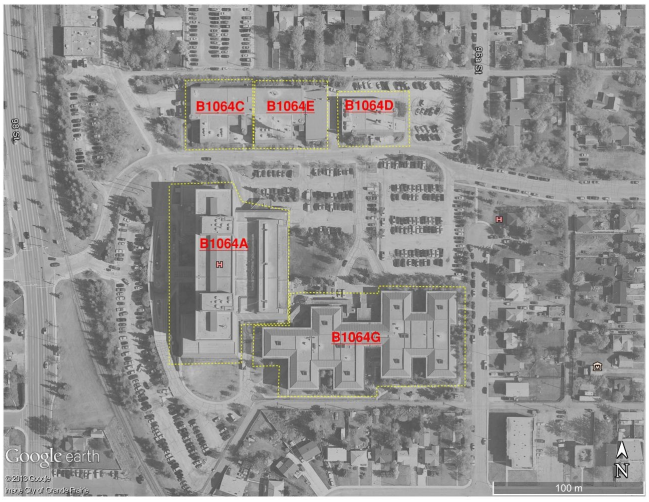
No concerns observed or reported.

Rating	Installed	Design Life	Updated
4 - Acceptable	1981	0	APR-14

K5010.01 Site Documentation*

The Queen Elizabeth II Power Plant building is a one storey facility located at 10409 98th Street in the City of Grande Prairie, Alberta.

Rating	Installed	Design Life	Updated
4 - Acceptable	2014	0	APR-14



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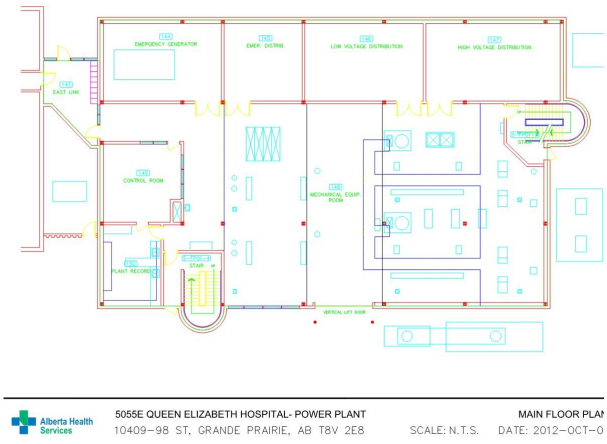
K5010.02 Building Documentation*

Karel Derkzen van Angeren, Golder Associates Ltd.
Date Assessed: 01/13/2014
B1064D

Rating	Installed	Design Life	Updated
4 - Acceptable	2014	0	APR-14



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