



FINAL **Condition Assessment of the Mechanical and Electrical Systems**

290 Durham Street West,
Walkerton, Ontario

Prepared for:

**Corporation for the Municipality of
Brockton**

Box 68, 100 Scott Street
Walkerton, ON N0G 2V0

Attention: Michael Murphy
Acting Director of Parks and Recreation

July 31, 2019

Pinchin File: 238065.001



Condition Assessment of the Mechanical and Electrical Systems

290 Durham Street West, Walkerton, Ontario
Corporation for the Municipality of Brockton

July 31, 2019

Pinchin File: 238065.001

FINAL

Issued to: Corporation for the Municipality of
Brockton

Contact: Michael Murphy
Acting Director of Parks and
Recreation

Issued on: July 31, 2019

Pinchin File: 238065.001

Issuing Office: Hamilton, ON

Primary Contact: Paul Swioklo P.Eng., Project Manager
905.577.6206 ext. 1716
pswioklo@pinchin.com



Author: Raven Cote, B.Eng.
Senior Project Technologist
289.971.5940
rcote@pinchin.com

Reviewer: Zacharie Doerr, M.A.Sc., P.Eng.
Senior Project Manager
905.363.1390
zdoerr@pinchin.com

Reviewer: Domenico Iermieri, P.Eng.
Senior Technical Manager
905.363.1306
diermieri@pinchin.com



EXECUTIVE SUMMARY

Pinchin Ltd. (Pinchin) was retained by Corporation for the Municipality of Brockton (Client) to conduct a condition assessment of the mechanical and electrical systems of Walkerton Community Centre, subject to the limitations outlined in Section 6.0 of this report. The municipal address for the property is 290 Durham Street West, Walkerton, Ontario (Site). Zacharie Doerr and Raven Cote, of Pinchin conducted a visual assessment of the Site on May 22, 2019, at which time Pinchin interviewed and was accompanied by Eric McDougall and Rick Reich from the Corporation for the Municipality of Brockton (Site Representatives).

Site Description

The Site is located on the north side of Durham Street West and west of Yonge Street North. For the purpose of this report, Durham Street West is considered to be oriented in an east-west direction. The Site covers an area of approximately 11.57 acres. The Site has two (2) access points at the south portion of the site. Fire department access to the Site is through the two (2) private driveways off Durham Street West. Surface parking is provided in asphalt paved parking areas on the east and south sides of the building. There is one (1) public fire hydrant on the South side of Durham Street West, at the corner of May Street. The Site storm water drainage is mostly through natural infiltration and surface runoff. One catch basin was installed at the south end of the west asphalt paved parking area near the main entrance to the Site Building. The storm water collected by the catch basin is directed to the municipal services on Durham Street West.

Facility Description

The Site is developed with one two (2) storey building (hereafter referred to as the "Site Building"). The Site Building was reportedly constructed in 1972. The Site Building reportedly has a gross building area 40,000 square feet ("ft²") and has been divided into an ice rink and community centre. The ice rink occupies the 1st floor of the north portion of the Site Building. The community centre occupies the 1st floor and 2nd floor of the south portion of the Site Building.

Plumbing fixtures consist of manually operated floor mounted tank type toilets, wall mounted and countertop lavatories, shower stalls, shower tubs, and stainless steel kitchen sinks.

The building is serviced by a 2-inch water line that enters the Site Building from the mechanical room on the ground level. The incoming water service is equipped with a water meter and meter bypass line. Where observed, the domestic water distribution was copper pipe and the sanitary lines have been replaced with ABS piping.



Domestic hot water is provided by one (1) domestic hot water boiler and one (1) heat exchanger.

Heating, cooling, and ventilation for the Site Building are provided by a hydronic system with a natural gas-fired boiler with heat exchanger. Additionally, two (2) packaged rooftop HVAC units with natural gas-fired heating and electric powered cooling, located on the roof, provide heating and cooling to the second floor. As well, the Parks and Recreation Administration Office features a split air condenser unit for cooling.

Additional heating in the change rooms, washrooms, and the main entrance is mainly provided by a combination of electric baseboard heaters, electric wall heaters, and electric unit heaters.

Electricity is supplied via one (1) pad-mounted transformer located to the east of the Site Building.

The Site Building is equipped with one (1) exterior connection for a portable generator which is located off the mechanical room on the ground level. In the event of a power failure, all non-essential breaker circuits must be manually turned off prior to manually transferring the load to the portable generator.

Recommendations

Repair/replacement of the following is recommended in the next ten (10) years (2019-2028):

- Allowance to install a backflow preventer in the immediate term;
- Allowance to selectively replace the plumbing fixtures at the end of their PUL;
- Allowance for a scope and assessment of the pipe mains;
- Allowance to replace the packaged rooftop HVAC units;
- Allowance to selectively replace the ventilation systems;
- Allowance to replace the heating boiler and the heat exchangers;
- Allowance to replace the electric unit heaters, the radiant tube heaters, and unit heaters;
- Allowance to replace the dehumidification unit;
- Allowance to replace or repairs the brine pumps;
- Allowance to replace the chiller;
- Allowance to review the ventilation within the mechanical room;
- Allowance for the application of a brine pipe seal;
- Allowance to review the gas monitoring system;
- Allowance to complete an infrared scan of the electrical systems;



Condition Assessment of the Mechanical and Electrical Systems

290 Durham Street West, Walkerton, Ontario
Corporation for the Municipality of Brockton

July 31, 2019
Pinchin File: 238065.001
FINAL

- Allowance to replace the electrical transformers;
- Allowance to replace the electrical disconnects;
- Allowance to replace circuit breaker panels; and
- Allowance to have the wiring, conduits, breaker panels, and disconnects inspected.



TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	NOMENCLATURE	1
3.0	SCOPE OF WORK	1
4.0	OBSERVATIONS AND COMMENTS.....	3
4.1	Plumbing.....	3
4.1.1	Plumbing Fixtures.....	3
4.1.2	Domestic Water Distribution.....	4
4.1.3	Domestic Hot Water Heaters.....	5
4.1.4	Sanitary Waste	6
4.2	Mechanical.....	6
4.2.1	Gas Supply System	6
4.2.2	Heating, Ventilation and Air Conditioning (HVAC)	7
4.2.3	Unit Heaters and Radiant Tube Heater (Infrared Heaters)	8
4.2.4	Direct Expansion Systems.....	9
4.2.5	Air Distribution, Heating & Cooling – Duct System	10
4.2.6	Exhaust System.....	10
4.2.7	Forced Air Heat with HRV	11
4.2.8	Electric Heating	11
4.2.9	Arena Dehumidifier.....	11
4.2.10	Ice Plant System.....	12
4.3	Electrical	15
4.3.1	Main Electrical Service and Switchboards	15
4.3.2	Interior Distribution Transformers.....	16
4.3.3	Branch Wiring	17
4.3.4	Lighting Equipment - Interior Lighting.....	17
4.3.5	Lighting Equipment - Exterior Lighting	18
4.3.6	Other Electrical Systems – Emergency Power.....	18
5.0	CODE COMPLIANCE OVERVIEW	18
6.0	TERMS AND LIMITATIONS	18

LIST OF TABLES

4.2.2.1: Packaged Rooftop HVAC Unit Name Plate Data	7
---	---

APPENDICES

APPENDIX I	Table 1 – Summary of Anticipated Expenditures
------------	---



1.0 INTRODUCTION

Pinchin Ltd. (Pinchin) was retained by Corporation for the Municipality of Brockton (Client) to conduct a condition assessment of the mechanical and electrical systems of Walkerton Community Centre, subject to the limitations outlined in Section 6.0 of this report. The municipal address for the property is 290 Durham Street West, Walkerton, Ontario (Site). Zacharie Doerr and Raven Cote, of Pinchin, conducted a visual assessment of the Site on May 22, 2019, at which time Pinchin interviewed and was accompanied by Eric McDougall and Rick Reich from the Corporation for the Municipality of Brockton (Site Representatives).

2.0 NOMENCLATURE

AHU	- Air Handling Unit
ERV	- Energy Recovery Ventilator
ft ²	- Square Feet
HVAC	- Heating, Ventilation, and Air Conditioning
LPF	- Litres Per Flush
M/N	- Model Number
MAU	- Makeup Air Unit
MBH	- 1000 British Thermal Units per Hour
PUL	- Projected Useful Life
S/N	- Serial Number
YOM	- Year of Manufacture

3.0 SCOPE OF WORK

The condition assessment of the mechanical and electrical systems included a visual assessment of the following components:

- the heating, ventilation, air conditioning, controls, domestic hot water systems, and plumbing; and
- power distribution, lighting systems, and back-up generator connection.

The scope for the specialist reviews included a visual examination (without any intrusive testing or demolition of finishes to observe hidden areas) of the following:

- the mechanical systems; and



- the electrical systems.

The object of the condition assessment of the mechanical, electrical, and fire and life safety systems included the following:

- a visual examination of the property in order to assess the condition of the major elements;
- review of general documentation on the repair/maintenance history of the elements, if available;
- cursory review of previous reports pertaining to the Site Building, if made available by the Site Representative;
- interviews and discussions with on-Site personnel regarding the repair/maintenance conducted on the Site Building;
- documentation of observed existing deficiencies observed within the various elements;
- photographic documentation of various components and observed deficiencies; and
- compilation of Pinchin's findings in a formal written report including observed deficiencies, together with a list of recommendations for repair/replacement with associated estimated costs for both short and long term.

The report provides:

- a basic description of each of the various major components of the Site Building;
- a list of deficiencies noted with respect to the components examined; and
- recommendations and cost estimates for the corrections recommended.

Cost estimates provided in this report are preliminary Class "D" and provided only as an indication of the order of magnitude of the remedial work. These values have been arrived at by determining a representative quantity from the visual observations made at the time of our Site visit and by applying current market value unit costs to such quantities and or a reasonable lump sum allowance for the work. More precise cost estimates would require more detailed investigation to define the scope of work. They are not intended to warrant that the final costs will not exceed these amounts or that all costs are covered. The estimates assume the work is performed at one time and do not include costs for potential de-mobilization and re-mobilization if repairs/replacement are spread out over the term of analysis.

All costs are identified in 2019 Canadian Dollars, and do not include consulting fees or applicable taxes. (For consulting fees, Pinchin typically recommends a budget allowance of 10% to 15% of the costs identified).



All cost estimates assume that regular annual maintenance and repairs will be performed to all building elements at the facility. No cost allowance is carried for this regular maintenance.

The cost estimates provided in this report are based on costs of past repairs at similar buildings, recent costing data such as "RS Means Repair and Remodelling Cost Data – Commercial/Residential" and "Hanscomb's Yardsticks for Costing", or Pinchin's professional judgment.

Unless otherwise stated, the replacement costs identified for an element reflects the cost to remove and replace the existing element with the same type of element.

4.0 OBSERVATIONS AND COMMENTS

The following observations and comments provide an assessment of the current condition of various major components, estimated time frames and opinions of the probable costs for capital repairs or replacement within the next ten years (2019-2028).

4.1 Plumbing

4.1.1 Plumbing Fixtures

Plumbing fixtures are present in the washroom areas, dressing rooms, kitchen areas, janitor rooms and common area of the facility. Dressing room washrooms possess manually operated floor mounted flush valve type toilets, manually operated floor mounted tank type toilets, flush valve manually operated wall mounted urinals, and counter mounted lavatories with manually operated tap sets. Similar fixtures are found in public area washrooms. Also dressing room areas contain showers.

There are sinks of various configurations in the kitchen areas. Stainless steel sinks complete with manually operated taps are provided for the kitchens.

The plumbing fixtures are of various ages and in variable condition. No significant operational deficiencies were reported or observed at the time of the assessment. These styles of toilets, urinals, and lavatories typically have a Projected Useful Life (PUL) of 20 years or more.

The plumbing fixtures that are original to the building construction, in 1972, will reach the end of their PUL during the evaluation period. Based on age, partial replacement of the plumbing fixtures can be expected during the evaluation period. An allowance to selectively replace approximately 1% of the plumbing fixtures is provided in the cost table.



View of a dressing room lavatory and shower.



View of fixtures within a men's dressing room.



View of the second floor kitchen sink.

4.1.2 Domestic Water Distribution

The building is serviced by a 2-inch water line that enters the Site Building from the refrigeration room on the ground level. The incoming water service is equipped with a water meter and meter bypass line. The majority of the domestic water distribution is either concealed under pipe insulation or concealed behind interior finishes or encapsulated behind walls and floors. Where observed, the domestic water distribution was copper pipe, with sink supply lines to faucets noted as braided flexible metal tubing, polybutylene or polyethylene piping with hot and cold shut off valves. It was noted that the domestic water distribution has been replaced as required and no significant deficiencies were reported or observed at the time of the assessment.

At the time of the site assessment, Pinchin did not observe a backflow prevention assembly installed at the main water supply. Pinchin recommends that a backflow prevention device be installed at the main water supply if it is required by the local by-law regulations.

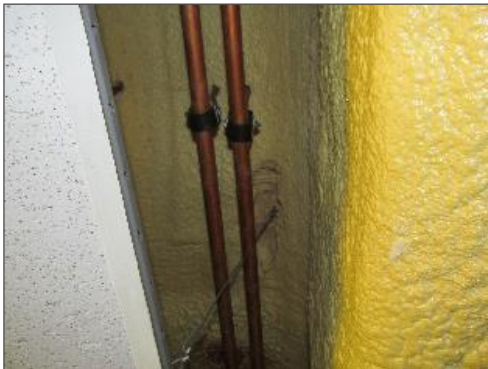
Based on age and observed conditions, no significant capital expenditures other than routine maintenance are anticipated during the evaluation period. However, Pinchin recommends the water lines original to the construction of the building be evaluated (i.e., intrusive pipeline condition assessment).

After the pipe assessment, a planned replacement program of water lines should be considered.

Allowances have been provided to conduct an intrusive pipeline condition assessment.



View of the main water line and water meter.



View of domestic water lines within the Site Building.

4.1.3 Domestic Hot Water Heaters

Domestic water for the Site Building is provided by one (1) gas-fired “Viessmann” domestic hot water boiler (M/N: RS-8; S/N: 8-990368) that was manufactured in 1999 and installed in 2000. The boiler has an input rate of 550 MBH. Additionally, the system features two (2) “Viessmann” tank heat exchangers (M/N: 3003502; S/N: 7219851800235) that have a storage capacity of 350 L. The domestic hot water boiler and tank heat exchanger are located in the mechanical room on the ground level. The domestic hot water and heating systems appear to perform as intended.

Similar domestic hot water boilers are known to have a PUL of approximately 25 years. Normal life cycle replacement of the boiler system and heat exchanger can be expected during the evaluation period. An allowance to replace the storage tanks has been included in the cost table.



View of the domestic hot water boiler in the main mechanical room.

4.1.4 Sanitary Waste

The Site Building is connected to the municipal sanitary system. The majority of the sanitary waste system is either concealed behind interior finishes or encapsulated behind walls and floors. Where exposed, the sanitary waste piping is ABS. The lavatory drain pipes are chrome plated metal. No issues with the sanitary waste was reported by the Site Representatives.

Based on age and observed conditions, no significant capital expenditures other than routine maintenance are anticipated during the evaluation period.



View of the sanitary waste lines from the second floor.

4.2 Mechanical

4.2.1 Gas Supply System

The gas piping provides natural gas to the rooftop HVAC units, domestic hot water boilers, the heat exchanger, unit heaters, and kitchen appliances. The gas meter is located on east elevation of the Site Building. Natural gas is supplied by Union Gas.

No significant deficiencies were reported or observed at the time of the assessment.

Significant replacement of the gas supply system is not anticipated during the evaluation period provided it is well maintained and protected.



View of the Site Building's gas meter on the east elevation.

4.2.2 Heating, Ventilation and Air Conditioning (HVAC)

The Site Building is equipped with two (2) packaged rooftop HVAC units with natural gas-fired heating, electric powered cooling. Discharge air and return air for these units are oriented downward directly into the space below. This units appear to be running properly and no outstanding deficiencies were noted by the Site Representatives.

Unit specifications, based on a review of the data plates, are listed in Table 4.2.2.1.

4.2.2.1: Packaged Rooftop HVAC Unit Name Plate Data

Make	M/N	S/N	YOM	Heating Input (MBH)	Cooling Capacity (Tons)	Factory Charge
Carrier	48TJE008---101QE	1794G30363	1994	180	7.5	R-22
Carrier	48TJE008---101QE	2194G30797	1994	180	7.5	R-22

Rooftop heating/cooling units typically have a PUL of 20 to 25 years but can often operate well past their PUL with regular maintenance and service work as required.

Heating to the perimeter radiators located in the change room areas and compressor room is supplied by a gas-fired atmospheric boiler. The boiler is located in the mechanical room and was noted to be installed in 2000. A provision to replace the boiler and associated equipment (i.e., pump, valves, expansion tank, etc.) has been included in the Cost Table. Consideration should be given to replacing the existing boilers with more energy efficient ones. No boiler water treatment was observed.

Natural gas-fired boilers typically have a PUL of 25 to 30 years.

The inspection of the interior of the boilers, heat exchanger, pressure vessels, equipment, or associated components was beyond the scope of the work.



View of typical packaged rooftop HVAC unit atop the Site Building.

4.2.3 Unit Heaters and Radiant Tube Heater (Infrared Heaters)

Heating throughout the building is provided by unit heaters that are gas-fired infrared or hydronic. There are four (4) gas-fired unit heaters in the grandstand of the arena, while the ice resurfacing room has one (1) infrared heater and one (1) unit heater connected to the hydronic system. Additionally, there are four (4) unit heaters located throughout the corridors and change rooms of the arena on the ground floor.

No significant deficiencies were reported or observed at the time of the assessment.

Unit heaters have an expected PUL of 15 to 20 years. Based on age and observed condition, a provision to replace the unit heaters has been included in the cost table.



View of a typical gas-fired unit heater in the grandstand of the arena.



View of a typical hydronic unit heater within the Site Building.



View of the infrared gas-fired tube heater located in the ice resurfacing room.

4.2.4 Direct Expansion Systems

One (1) split system condensing unit is located on the west side of the Site building. The condensing unit supplies cooling to the Parks and Recreation Administration Office.

Similar condensing units are known to have a PUL of 15 years. Based on age and observed condition, a provision to replace the condensing unit has been included in the cost table.



View of the interior portion of the split A/C unit within the Parks and Recreation Administration Office.



View of the exterior portion of the split A/C unit on the West elevation of the Site Building.

4.2.5 Air Distribution, Heating & Cooling – Duct System

A system of ductwork and air diffusers distributes air to the various areas of the facility served by gas-fired rooftop units. The majority of the ductwork is painted and installed tight to the underside of the ceiling (i.e., roof deck).

Ductwork is known to have a PUL of approximately 47 years. Based on age and reported conditions, no other capital expenditures are expected in the term of analysis.

4.2.6 Exhaust System

The Site Building's exhaust system consists of various exhaust fans for washrooms, change rooms, the kitchen, the storage, the mechanical room, the ice rink arena and some common areas. The exhaust fans are vented to the atmosphere through the exterior walls or through roof exhausters. The fans were observed to be in serviceable condition. Nameplate data was not available at the time of the site visit. Furthermore, the two (2) wall type propeller fans with backdraft dampers and external louvers associated with the ice rink arena, and the one (1) upblast fan associated with the second floor kitchen area. Product information on these fans could not be obtained at time of site visit due to their location as well as age.

Wall-mounted, propeller wall type, upblast and inline exhaust fan units typically have a PUL of 20 to 25 years but can often operate well past their PUL with as-required regular maintenance and service work.

No significant deficiencies were reported or observed with any of the noted systems at the time of the assessment. However, based on age and observed conditions, a provision to replace the exhaust system has been included in the cost table.



View of the second floor kitchen exhaust system.

4.2.7 Forced Air Heat with HRV

The site is equipped with one (1) forced-air ceiling mounted furnace with a heat recovery ventilator (HRV). The furnace serves change rooms no. 5 and 6 on the ground level. No significant deficiencies were reported or observed at the time of the assessment.

Based on age and reported conditions, no significant capital expenditures other than routine maintenance are anticipated during the evaluation period.

4.2.8 Electric Heating

Heating in the change rooms is subsidized by electric baseboard heaters and the main entrance is subsidized with an electric wall heater. No significant deficiencies were reported or observed at the time of the assessment. However, based on age and observed conditions, a provision to replace the electric heating has been included in the cost table.

4.2.9 Arena Dehumidifier

The dehumidification system is designed to remove moisture from the air to control humidity in the arena. The one (1) dehumidification unit is installed on a structural mezzanine located at the southeast corner of the arena and discharging directly into the arena space. The unit is controlled by its own thermostats. The dehumidifying equipment refrigerant type could not be confirmed, but if it is R-22, this means it is part of a group of refrigerants that are due to be phased out as part of the Montreal Protocol on Substances that Deplete the Ozone Layer. This means R-22 refrigerant is becoming more difficult to find, more expensive to purchase, and equipment which operates on R-22 will become more difficult to repair or replace as manufacturers move to equipment using newer refrigerants.

No significant deficiencies were reported or observed at the time of the assessment. Based on age and observed condition, a provision to replace the evaporator has been included in the cost table.



View of the dehumidifier unit within the rink area of the Site Building.

4.2.10 Ice Plant System

The refrigerant system is an indirect system and according to the Site Representative, the brine lines are original to the construction of the building, while the compressors, chillers, and cooling tower have been replaced and vary in age.

The arena floor is comprised of two (2) different heat transfer systems. A “cooling floor” installed in the concrete slab of the arena floor provides appropriate temperatures for the installation and maintenance of the ice surface in the arena. This system utilizes a brine mixture pumped through the system. Upon leaving the ice plant room, the brine is distributed to the branch lines through a header system, or manifold. Another secondary fluid (i.e., ammonia) is used to remove the heat rejected in the condenser of the plant. An evaporative condenser is used for heat rejection (i.e., ammonia side). The existing evaporative condenser was manufactured circa 1990. In addition to components of the direct system, there are secondary fluids, heat exchangers (i.e., brine-ammonia and brine-glycol from the 2 reciprocating compressors), a receiver (i.e., liquid ammonia), tubes, and circulation pumps for these secondary circuits. Additionally, the system features a heating boiler for the water used to flood the ice that was noted to require replacement in the immediate term.

The Site Representative identified that the existing chiller is due for replacement and has been scheduled in the coming year. The replacement budget has been included in the cost table.

Hydronic pumps typically have a life expectancy of approximately 10 to 15 years. Based on the observed conditions and age of the known components, pumps may require replacement within the term of the evaluation. No other capital expenditures are expected beyond routine maintenance.

Due to the age of the building, Pinchin recommends that the current ice plant, compressor room and ice resurfacers room be reviewed in order to confirm if the areas meet the B-52 ventilation and separation requirements for a refrigerant plant. At the time of replacement or renovation/upgrade, review of the B-52 code requirements should be incorporated and adhered to. An allowance for a Code review has been included in the Cost Table. It should be noted that during the site visit, wall-mounted alarm lights located

in arena area for gas monitoring systems and/or wall-mounted alarm light located in the arena office outside the ice resurfacer room for gas monitoring systems, were not observed.

The refrigeration system utilizes two (2) reciprocating compressors located in the mechanical room. Each compressor is connected to an externally mounted electric motor via coupling connecting belt and pulley. Refrigeration piping is connected from the compressor to the outdoor air-cooled condenser. The piping is connected to chiller barrels located on the east side of the ice plant to provide cooling to the ice surface cooling floor via the circulating brine mixture before returning to the compressors. It was reported that the chiller is being replaced in the immediate term.

The refrigeration components and sub systems appear to be operating as intended and no other comments, issues or concerns were expressed by the Site Representative. Reciprocating compressors typically have a life expectancy of approximately 40,000 hours but can operate longer with regular maintenance and service. The current number of operating hours on each compressor was reported to be over 48,000 hours, therefore they are expected to require replacement within the term of the analysis. An allowance is carried for the replacement of the compressors and their electrical components. Chiller barrels typically have a PUL of 25 to 30 years. Condensers typically have a PUL of 20 to 25 years but can often operate longer with regular maintenance. It should be noted that the inspection of the interior of compressors, heat exchanger, pressure vessels, equipment, or associated components, was beyond the scope of the work.

The brine lines serving the ice surface may develop leaks over time, causing the brine to leak onto the slab surface below. Pinchin recommends applying Rink Seal Pro into the brine pipes to prevent future leaks and to extend the PUL of the brine piping. It is recommended that the manufacturer be consulted prior to applying the product.



View of a typical compressor at the Site Building.



View of the ice plant refrigeration system local control within the mechanical room.



View of ice plant chiller barrels.



View of the exterior mounted evaporative condenser.



View of the return tank for the ammonia within the mechanical room.



View of the decommissioned heating boiler for the water used to flood the rink.



View of the refrigerant manifold for the cooling of the rink slab.

4.3 Electrical

4.3.1 Main Electrical Service and Switchboards

The electrical power for the Site Building is supplied from a pad-mounted transformer located on the east elevation of the Site Building and feeds the electrical room on the main floor of the Site Building via underground wires. The main electrical service for the Site Building consists of a 400 Ampere, 600 Volt, 3 Phase service, 4 wire. The main electrical distribution panel feeds various electrical distribution panels within the Site Building: main electrical room, "Hawk's Nest", etc. Branch wiring is provided to sub-panels, lighting, receptacles, and mechanical loads. The majority of the wiring is concealed behind the walls and floors, and other interior finishes.

Based on the age of the building and observed conditions, it is strongly recommended that the electrical distribution service be reviewed in its entirety. It is recommended that an infrared (IR) thermographic scan be completed on the electrical distribution and panels at the facility every three (3) years (or more frequent if required by insurance), as part of regular scheduled maintenance, to check for any issues related to overloading, loose connections or related issues. Preventive maintenance should continue to be carried out as well. This practice of infrared scanning should be carried out as part of routine operation and therefore the cost is not included in this report. It was reported that an IR scan of the electrical system has not been completed at the facility. Allowance to conduct an IR scan of the electrical panels

and distribution panels every 3 years (3 times during the term of analysis) has been included during the term of analysis.

Based on age and reported conditions, no significant capital expenditures, other than routine maintenance, are anticipated during the evaluation period. However, allowances for the upgrading of electrical services, circuit breaker panels and switch gears have been included near the end of the evaluation period. The necessity of replacement shall be confirmed by a qualified electrician.



View of the main disconnect switch and the metering cabinet within the main electrical room.



View of the transformer located at the east elevation of the Site Building.

4.3.2 Interior Distribution Transformers

The Site Building is equipped with two (2) interior distribution transformers located in the electrical room, suspended on the east wall of the room. Additionally, there is a dry-type transformer located in the second floor electrical room that provides power to the electrical panel within the "Hawk's Nest."

Based on age and reported conditions, no significant capital expenditures other than routine maintenance are anticipated during the evaluation period.



View of suspended transformers within the main electrical room.

4.3.3 *Branch Wiring*

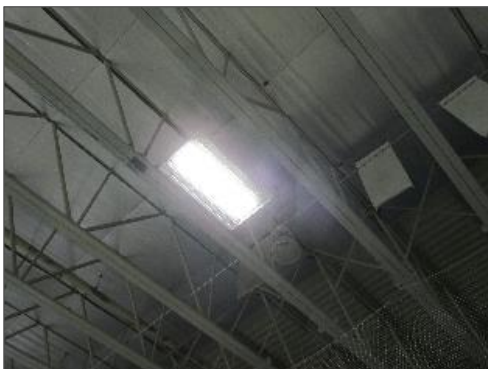
Branch wiring consists of switches, receptacles, equipment connections, conduit and wires. The majority of the branch wiring is concealed behind interior finishes. Where exposed, wiring was observed to be installed in liquid tight flex cables or EMT conduit.

Based on age and reported conditions, significant capital expenditures are anticipated during the evaluation period. Pinchin also recommends that the electrical system be fully inspected.

4.3.4 *Lighting Equipment - Interior Lighting*

The interior lighting is predominantly provided by bi-pin T12 linear fluorescent lamps, while the arena area is lit with bi-pin T8 linear fluorescent lamps. The lamps are housed in various types of fixtures. Interior lighting is controlled manually. The original HID lamps within the rink area have been decommissioned and T8 linear fluorescent lamps were installed. No significant deficiencies were observed at the time of the assessment.

Interior lighting will reach the end of its PUL during the evaluation period. A provision to replace the interior lighting has been included in the cost table. Replacement of the T12 fluorescent lamps with more energy efficient interior lighting should be considered.



View of typical light fixture within the rink area of the Site Building.

4.3.5 Lighting Equipment - Exterior Lighting

Exterior lighting consists of building general lighting. Exterior wall-mounted lighting fixtures are installed along the sides and rear of the building and appear to be equipped with metal halide bulbs.



View of pole mounted parking lot lighting fixture.

Based on observed and reported conditions, it is not anticipated that major expenditures are required, other than routine maintenance and repairs during the term of analysis of this report.

4.3.6 Other Electrical Systems – Emergency Power

There is a manual transfer switch for the connection of a portable emergency power generator located in the Mechanical and Electrical Room on the ground floor. All non-essential breaker circuits must be manually turned off prior to switching the load to the generator. It was reported by the Site Representative that the building is under contract with an emergency power service that provides an emergency power generator when required. When connected, the system provides power for the lighting and heating within the Site Building.

Based on age and observed condition of the main disconnect for the emergency power, no significant capital expenditures other than routine maintenance are anticipated during the evaluation period.

5.0 CODE COMPLIANCE OVERVIEW

It was reported to Pinchin by the Site Representative that no outstanding violations from the Building Department or Fire Department existed pertaining to the property. Compliance with the National Building Code of Canada (“NBCC”) and National Fire Code (“NFC”) in its entirety was not reviewed as was beyond the scope of this survey.

6.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.



Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

In accordance with the proposed scope of work, no physical or destructive testing or design calculations were conducted on any of the components of the building. Assessment of the original or existing building design, or detection or comment upon concealed structural deficiencies and any buried/concealed utilities or components are outside the scope of work. Similarly, the assessment of any Post Tension reinforcing is not included in the scope of work. Determination of compliance with any Codes is beyond the scope of this Work. The Report has been completed in general conformance with the ASTM Designation: E 2018 – 08 Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process.

It should be noted that Pinchin has attempted to identify all the deficiencies required by this Standard associated with this project. Pinchin does not accept any liability for deficiencies that were not within the scope of the investigation.

As indicated above the personnel conducting the building assessment, where applicable, have performed a specialist review of the mechanical and electrical systems.

The intent of Pinchin's comments on these additional systems are for the sole purpose of identifying areas where Pinchin has observed a noteworthy condition and/or where Pinchin would recommend that the Client consider a further, more detailed investigation. The budget costs for remedial work for each specific item has been provided to the best of our ability and will provide an order of magnitude cost for the individual item and the overall possible remedial work. Our experience has shown that the costs that Pinchin have provided are appropriate and of reasonable accuracy for the purpose intended. It should be noted that the budget cost or reserve costs for any specific item may vary significantly based on the fact that the schedule or phasing of the future remedial work is unknown at this time, the impact on building operations of this remedial work is unknown at this time and that no intrusive inspection or detailed design work is included. If a more accurate, detailed or documented reserve cost is required at this time the Client should request Pinchin to provide the additional proposal to provide a more accurate cost estimate.

The assessment is based, in part, on information provided by others. Unless specifically noted, Pinchin has assumed that this information was correct and has relied on it in developing the conclusions.



It is possible that unexpected conditions may be encountered at the Site that have not been explored within the scope of this report. Should such an event occur, Pinchin should be notified in order to determine if we would recommend that modifications to the conclusions are necessary and to provide a cost estimate to update the report.

The inspection of the interior of ductwork or associated components was beyond the scope of work. It should be noted that the heating and cooling duct work within the Site Building may contain interior insulation. The Site Representative was unaware of the presence of insulation within the duct work within the Site Building. It is Pinchin's experience that interior insulation within duct work is prone to deterioration or development of mould which may require removal of the insulation. In the case where interior insulation is present within the duct work, Pinchin recommends that the duct work insulation be inspected for the presence of mould.

Due to the concealed nature of the plumbing system the condition of the risers could not be verified.

Environmental audits or the identification of designated substances, hazardous materials insect/rodent infestation, mould and indoor air quality are excluded from this report.

Further to the aforementioned, determination of the presence of asbestos containing material within the building such as drywall joint compound or the lead content within the older paint finishes was beyond the scope of work.

This report presents an overview on issues of the condition of the Site Building's mechanical electrical, and fire and life safety systems, reflecting Pinchin's best judgment using information reasonably available at the time of Pinchin's review and Site assessment. Pinchin has prepared this report using information understood to be factual and correct and shall not be responsible for conditions arising from information or facts that were concealed or not fully disclosed to Pinchin at the time of the Site assessment.

\\pinchin.com\ham\Job\238000s\0238065.000 CofBrockton,290DurhamSt,Walkerton,BSS,BCA\0238065.001
CofBrockton,290DurhamSt,Walker,BSS,MECH\Deliverables\FINAL\238065.001 FINAL M&E System Cond. Assess., 290 Durham St, Walkerton, ON July 31 2019.docx

Template: Condition Assessment of the Mechanical, Electrical and Fire and Life Safety Systems Report, BSS, July 3, 2018

APPENDIX I

Table 1 – Summary of Anticipated Expenditures

ITEM	Projected Useful Life (yrs)	Effective Age (yrs)	Remaining Projected Useful Life (yrs)	Quantity	Unit	Unit Cost	Total Cost	Immediate Costs	Replacement Reserve Costs										
									2019 1 yr Cost	2020 2 yr Cost	2021 3 yr Cost	2022 4 yr Cost	2023 5 yr Cost	2024 6 yr Cost	2025 7 yr Cost	2026 8 yr Cost	2027 9 yr Cost	2028 10 yr Cost	1 - 10 Year Total
Table 4.1 - Plumbing Systems																			
Domestic Water Distribution - Installation of Backflow Preventer	N/A	N/A	N/A	1	Allowance	\$4,000	\$4,000	\$4,000											
Domestic Water Distribution - General Repairs and Replacement	50+	47	10	1	Allowance	\$30,000	\$30,000											\$30,000	\$30,000
Domestic Hot Water Heater - See Mechanical Systems														\$0					
Scoping and Assessment of Pipe Mains	N/A	N/A	N/A	1	Allowance	\$10,000	\$10,000		\$10,000										\$10,000
Table 4.2 - Mechanical Systems																			
HVAC - RTU Replacement (2)	25	25	2	2	Each	\$40,000	\$80,000			\$80,000									\$80,000
HVAC - Ventillation (General Repairs and Replacement)	Varies	Varies	Varies	1	Allowance	\$6,000	\$6,000				\$6,000								\$6,000
HVAC - Boiler Replacement	25	19	6	1	Allowance	\$30,000	\$30,000							\$30,000					\$30,000
HVAC - Heat Exchanger Replacement	25	19	6	2	Allowance	\$30,000	\$60,000							\$60,000					\$60,000
HVAC - Radiant Tube and Infrared Ceramic Heaters Replacement	20	Unknown	3	1	Allowance	\$15,000	\$15,000				\$15,000								\$15,000
HVAC - Hydronic Heaters Replacement	20	Unknown	6	1	Allowance	\$15,000	\$15,000							\$15,000					\$15,000
HVAC - Electric Force Flow Heaters	15	Unknown	5	2	Each	\$3,500	\$7,000						\$7,000						\$7,000
HVAC - Dehumidification Unit	20	Unknown	10	1	Allowance	\$35,000	\$35,000											\$35,000	\$35,000
HVAC - Brine Pumps - Major Repairs/Replacement	15	Unknown	7	1	Allowance	\$30,000	\$30,000								\$30,000				\$30,000
HVAC - Chiller - Major Repairs/Replacement	15	Unknown	1	1	Allowance	\$70,000	\$70,000		\$70,000										\$70,000
HVAC - Code Review - Ventilation B52/Alarms Sensors for Ammonia	N/A	N/A	0	1	Allowance	\$5,000	\$5,000	\$5,000											
HVAC - Compressor Replacement	15	14	1	2	Allowance	\$60,000	\$120,000		\$120,000										\$120,000
HVAC - Application of Brine Pipe Seal	N/A	N/A	2	1	Allowance	\$9,000	\$9,000			\$9,000									\$9,000
HVAC - Review Gas Monitoring Stations	N/A	N/A	0	1	Allowance	\$4,000	\$4,000	\$4,000											
Table 4.3 - Electrical Systems																			
Electrical Systems (Electrical Panels) - Infrared Scan	N/A	N/A	N/A	4	Allowance	\$3,500	\$14,000	\$3,500				\$3,500			\$3,500			\$3,500	\$10,500
Electrical Systems - Transformers - Replacement	Varies	Unknown	4	2	Each	\$10,000	\$20,000					\$10,000					\$10,000		\$20,000
Electrical Systems - Disconnects - Replacement	20	Unknown	3	1	Allowance	\$7,000	\$7,000				\$7,000								\$7,000
Electrical Systems - Circuit Breaker Panels - Replacement	20	Varies	Varies	3	Allowance	\$6,000	\$18,000				\$6,000		\$6,000		\$6,000				\$18,000
Electrical Systems - Inspection Wiring/Conduits/Breaker Panels/Disconnects	N/A	N/A	N/A	1	Allowance	\$10,000	\$10,000	\$10,000											
Electrical Systems - Interior Lighting	Varies	Varies	Varies	2	Allowance	\$6,000	\$12,000					\$6,000					\$6,000		\$12,000
TOTALS (Uninflated)							\$611,000	\$26,500	\$200,000	\$89,000	\$37,500	\$16,000	\$13,000	\$108,500	\$36,000	\$16,000	\$3,500	\$65,000	\$584,500
Inflation Factor		Inflation Rate	2.5%																
TOTALS (Inflated)									1.00	1.025	1.050	1.075	1.100	1.125	1.150	1.175	1.200	1.225	
									\$200,000	\$91,225	\$39,375	\$17,200	\$14,300	\$122,063	\$41,400	\$18,800	\$4,200	\$79,625	\$628,188

Term of Analysis 10
Total Square Footage within the Site Buildings 40,000 approximate

Average Cost per Sq. Ft. per Year (Uninflated)	\$1.46
Average Cost per Sq. Ft. per Year (Inflated)	\$1.57