ROCKY VIEW COUNTY

RECREATION, PARKS AND COMMUNITY SUPPORT

TO:	Recreation Governance Committee		
DATE:	December 1, 2020	**DIVISION:**	2
FILE:	N/A	**APPLICATION:**	N/A
SUBJECT:	Change of MSI-Funded Project Scope at Springbank Park For All Seasons		

POLICY DIRECTION:

The purpose of the Recreation Governance Committee (RGC) is to act as an approving body regarding matters pertaining to recreation, parks, and cultural services in the County, including grant applications, studies, and master plans, as well as to support recreation, parks, and cultural facility development and programs.

EXECUTIVE SUMMARY:

John Rop and Lisa Skelton from Springbank Park For All Seasons (SPFAS) would like to present an update regarding a proposed change in scope of work for $1.069M of MSI funding approved by Council on April 28, 2020.

ADMINISTRATION RECOMMENDATION:

Administration recommends approval in accordance with Option #1.

BACKGROUND:

In July, 2013, Council passed a motion to earmark a maximum of $2.2 million of Municipal Sustainability Initiative (MSI) funding to the Springbank regional area, to support new recreational and cultural amenities or future expansion of recreational and cultural amenities in the region.

SPFAS is considered a regional recreational facility under the current Recreational Governance model. The facility is located at the junction of Range Road 33 and Springbank Road. It was originally developed circa 1971 and has since expanded in phases to incorporate three building sections. In 2019, the County developed a *Capital Renewal Plan* for the facility to establish an opinion of costs for the renewal requirements of the on-site buildings and related site improvements over a span of 25 years.

At their April 28, 2020, meeting, Council approved $1,069,000 *to implement lifecycle improvements to the Springbank Park For All Seasons facility* as identified in the facility's 2019 Capital Renewal Plan (Attachment A). The near-term lifecycle replacement and repair projects that were approved as part of this funding included:

- Roof Maintenance;
- Building Envelope Fascia;
- Sliding Doors to Arena;
- Insulation & Fire Protection;
- Ceiling Work;
- Paint & Tile;
- Floor Finishing Around Ice Rinks;
- Ice Rink Boards;
- Plumbing;
- Heating & HVAC;
- Ice Making Equipment;
- Interior Electrical;
- Interior Lighting;
- Emergency & Exit Lighting.

Administration Resources
Susan de Caen, Recreation, Parks and Community Support

ROCKY VIEW COUNTY

During the 2019 inspection, the condition of the 1971 Red Dutton Arena concrete floor slabs could not be entirely determined as the ice was in place, but a major crack was observed in the NE corner of the arena. Even so, the *Capital Renewal Plan* determined that the slab would need to be replaced towards the end of the report timeframe (12 years).

As part of the list of projects identified as a priority for the MSI funds, SPFAS engaged MPE Engineering Ltd. to carry out a review of the slab. The primary recommendation provided by this study (Attachment B) is that SPFAS:

> *Plan to replace the Red Dutton Arena slab and header trench, including the installation of a new gravel base, sub-slab weeping tile system and sub-slab heating system as soon as fiscally possible;* and that
>
> *For the Red Dutton Arena, a construction cost allowance of $950,000 is anticipated to replace the slab (including refrigeration piping, insulation, sub-slab heating piping, gravel base and weeping tile), with an allowance of $60,000 for related design costs.*

On November 4, 2020, SPFAS met with Gibbs Gage Architects to begin planning for the Red Dutton Arena Project. Gibbs Gage has since been retained by SPFAS and will be providing SPFAS with a more detailed preliminary cost estimate in advance of the December 1st RGC meeting. The estimate was not available at the time of writing this report.

SPFAS has determined that the condition of the pad is such that its replacement should be the facility's top capital priority. As the arena pad replacement was identified in the 2019 *Capital Renewal Plan*, SPFAS requests that the remaining $968,335.03 MSI funds be reallocated to costs associated with replacement of the Red Dutton Arena slab.

If the Province approves the reallocation of MSI funds, there will remain a significant funding shortfall (preliminary estimates place this in the range of $300,000 to $700,000) to complete the Red Dutton Arena Project. SPFAS requests that the County work with them to address this shortfall through the potential use of additional MSI funds, County funds, and SPFAS funds. Possible scenarios presented by SPFAS to cover this shortfall include:

1. A combination of funding from:
    a. Provincial MSI funds;
    b. Rocky View County - through a Community Recreation Funding (CRF) grant application to cover 50% of the project balance; and
    c. SPFAS – matching the CRF grant allocation.
2. SPFAS applying for a second capital grant under the CRF program, where costs would be shared as follows:
    a. Rocky View County – 50%
    b. SPFAS – 50%
3. SPFAS applying for an emergency grant under the CRF program, where costs would be shared as follows:
    a. Rocky View County – 50%
    b. SPFAS – 50%

BUDGET IMPLICATIONS:

There are no budget implications at this time, as presentations are received as information and MSI funds have already been allocated by Council.

ROCKY VIEW COUNTY

OPTIONS:

Option #1	Motion #1:	THAT the Springbank Park For All Seasons (SPFAS) presentation be received as information;
	Motion #2:	THAT the change in project scope be approved, and that Administration seek Provincial approval for the change in the project scope.
	Motion #3:	THAT once the final project scope and cost is confirmed, Springbank Park For All Seasons be directed to apply for Emergency Funding as per Policy C-317, to fund the gap between the final cost and the approved MSI funds.

Option #2 THAT alternative direction be provided.

Respectfully submitted,

"Theresa Cochran"

Executive Director
Community Development Services

Concurrence,

"Al Hoggan"

Chief Administrative Officer

ATTACHMENTS:

ATTACHMENT 'A' – Stantec Consulting Ltd. Capital Renewal Plan for Springbank Park For All Seasons
ATTACHMENT 'B' – MPE Engineering Ltd. Review of Red Dutton, Joe Phillips, and Curling Rink Slabs
ATTACHMENT 'C' – Summary of Springbank Park For All Seasons Submissions

CAPITAL RENEWAL PLAN

SPRINGBANK PARK FOR ALL SEASONS

32224A Springbank Road
Calgary
Alberta

Prepared for:

Rocky View County

911 – 32 Avenue NE
Calgary, Alberta
T2E 6X6

Prepared by:

Stantec Consulting Ltd.
200, 325 – 25th Street SE
Calgary, Alberta
T2A 7H8

Project No.: 115303279

February 1, 2019

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

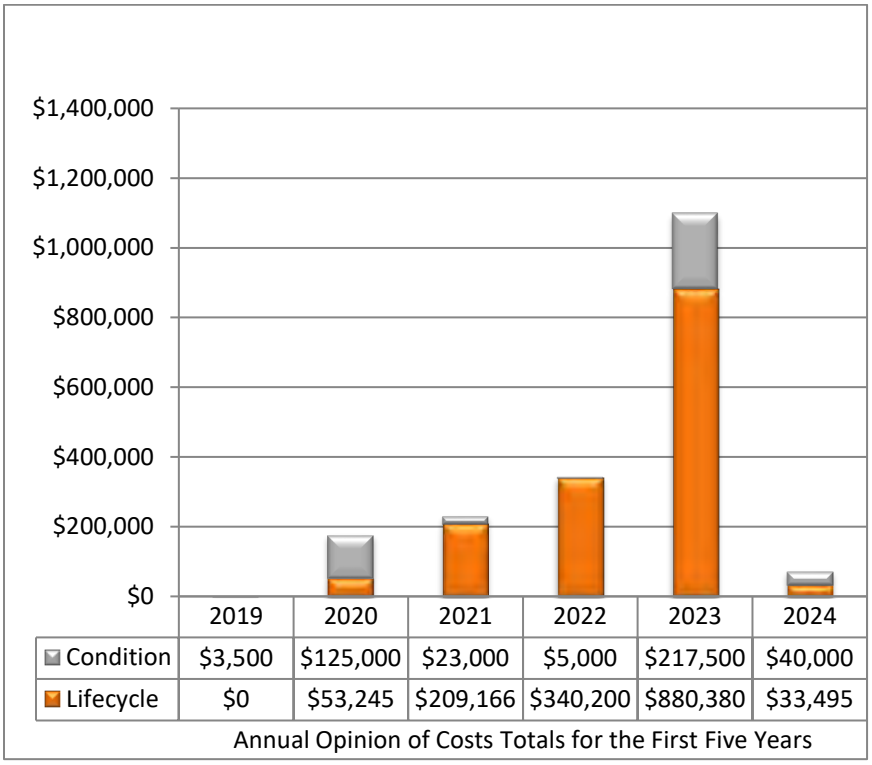
Stantec Consulting Ltd. (Stantec) was retained by Rocky View County (the "Client"), to complete a Capital Renewal Plan (CRP) for the property located at 32224A Springbank Road, in Calgary, Alberta (the "Site" or "Property"). We understand that the Client will use the CRP for infrastructure renewal planning purposes.

The purpose of the CRP is to establish a global opinion of costs for the renewal requirements of the on-site buildings and related site improvements over the next 25 years.

1.2 OPINIONS OF COST SUMMARY

Opinions of cost were developed for the CRP for actions that are required to account for the current and future anticipated repair or replacement requirements of systems and components.

The figure presented below graphically and numerically illustrates the total opinions of costs (in current dollar values) for condition ratings of actions that are anticipated over the first five years of the evaluation period separated by the "Reason for Action". The definition of the "Reason for Action" is described in Table A, located in section 2.4 of this report.



	2019	2020	2021	2022	2023	2024
Condition	$3,500	$125,000	$23,000	$5,000	$217,500	$40,000
Lifecycle	$0	$53,245	$209,166	$340,200	$880,380	$33,495

Annual Opinion of Costs Totals for the First Five Years

For a full breakdown of costs, broken down by major systems, for the entire evaluation period, refer to Section 8 of this report. For a full break down of the uninflated and inflated costs, using an annual compound inflation rate of 0.38% refer to **Appendix A**, Table A and Table B.

2.0 PURPOSE, SCOPE OF WORK, AND LIMITATIONS

2.1 SCOPE OF WORK

The primary purpose of the CRP is to visually assess and document the existing condition of the on-site buildings and related site improvements. Based on this assessment, physical deficiencies in materials or systems that have exceeded their expected useful life (EUL), or are expected to require major repair or replacement, are identified and quantified.

The assessment of the on-site buildings and site improvements was performed using methods and procedures that are consistent with standard commercial and customary industry practice, and was generally based on the American Society for Testing and Materials (ASTM) Standard E2018-15, "Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process".

The assessment consisted of the following:

Review available documentation, where provided by the Client, and interviews conducted with site representatives to obtain information relevant to the physical condition of building systems and site improvements

- A non-specialist walk-through site visit to visually review building systems and site improvements, collect pertinent data, and record observations related to physical conditions at the Site.
- Preparation of a CRP report, which outlines findings, opinions, and recommendations, complete with photographs of salient observations and other pertinent information obtained during the assessment. The CRP report also presents opinions of cost (in present dollar values) to remedy or further investigate physical deficiencies and to replace components which will exceed their EUL over a 25 year evaluation period.

The assessment was based on a visual walk-through review of the visible and accessible components of the Site, buildings and related structures. The roof surfaces, interior and exterior wall finishes, and floor and ceiling finishes of the on-site buildings and related structures were visually assessed to check their general condition and to identify physical deficiencies where observed.

The non-specialist review of the mechanical systems, electrical systems, and fire & life safety systems at the Site included discussions with the site representatives and a review of pertinent maintenance records that were made available. A visual walk-through assessment of the mechanical systems, electrical systems, and fire & life safety systems was conducted to determine the type of systems present, age, and aesthetic condition.

The CRP includes an assessment of existing building systems and site components that are currently in place at the Site; however, the CRP does not include comments, recommendations or opinions of cost for potential upgrades or future installation of components that are not currently in existence at the Site, or other extraneous amenities.

2.2 EXCLUSIONS

- Entry of “confined spaces” or spaces deemed in Stantec’s or the site assessor’s opinion to be hazardous.
- Vaults that are owned by the utility providers.

- Entry of concealed or inaccessible areas of the property that would require measures beyond that identified in the scope of work to assess.
- Verifying pressures, flow rates, sizes, actual numbers of units (e.g., counting parking stalls), etc.
- A hazardous materials assessment or subsurface investigation.
- A barrier-free access assessment of the property.
- A seismic evaluation of the facility.
- An energy audit / assessment of the facility.
- Testing, starting, or operating of equipment and systems.
- Work requiring specialty consultants, contractors, suppliers, manufacturers, etc. However, we have provided an optional cost in this proposal to have the building's refrigeration plant and equipment assessed by a specialized third-party contractor (ThermoCarb).
- Assessment of furniture and "moveable" fixtures and equipment.
- Assessment of any computers, software and any other information technology equipment.
- Identification of potential "upgrades" for the site.
- Intrusive observations, destructive testing, sampling and quantitative measurements.
- As-built "take-off" or physical area measurements/calculations of the site or confirmation of reported gross or net usable areas of the site.

An evaluation (detailed or otherwise) of the site's compliance with provincial Building Codes and Fire Codes or with local ordinances, requirements, etc. (including those related to life safety and fire protection) is not part of the scope of this project. However, applicable codes may be used by Stantec during the assessment as a reference in determining appropriate recommendations. We have assumed that the existing structures and property developments were reviewed and approved by the appropriate authority having jurisdiction at the time of development, and during any subsequent additions, renovations and/or inspections.

Additional items to be excluded from the scope of work for the CRP, and deviations from ASTM E2018-15 are as follows:

- Obtaining and reviewing public records (including zoning classification, zoning compliance, flood-plain analysis/evaluation, certificate of occupancy, outstanding building/fire code violations, etc.).
- Obtaining and reviewing municipally-held documentation for the site (building department records).

2.3 DEVIATIONS

This CRP was prepared in accordance with the scope of services outlined in our proposal dated July 23, 2018, with the following exceptions:

- Building specifications were not reviewed since such documents were not made available by the Client
- Maintenance contractors were not contacted
- A visual review of some rooftop and pavement surfaces was impeded due to concealment by snow cover

The major deviations from ASTM E2018-15 for this project were as follows:

- No reviews of municipal/public records for zoning, building, and/or fire & life safety code/regulatory compliances were conducted. However, a site representative was asked to confirm whether there were any such compliance issues. No compliance issues were reported
- Verification of the Site's compliance with barrier-free accessibility requirements
- Investigation of whether the Site resides in a flood plain
- Verification of the number of parking spaces
- Verification of gross and net usable areas of the site buildings

2.4 REPORTING METHODOLOGY

ASTM defines a physical deficiency as a conspicuous defect or significant deferred maintenance of a site's material systems, components, or equipment as observed during the site assessor's walk-through site visit. Included within this definition are material systems, components, or equipment that are approaching, have reached, or have exceeded their typical EUL or whose remaining useful life (RUL) should not be relied upon in view of actual or effective age, abuse, excessive wear and tear, exposure to the elements, lack of proper or routine maintenance, etc. This definition specifically excludes deficiencies that may be remedied with routine maintenance, miscellaneous minor repairs, normal operating maintenance, etc., and excludes conditions that generally do not constitute a material physical deficiency of the site.

The EUL of major building systems and site improvements located at the Site was used to determine a renewal schedule, based on their reported age or RUL. Where this information was unavailable, the age and RUL of major building systems and site improvements was estimated based on their overall reported or observed condition.

The EUL of the major building systems presented in this report is mainly a function of the quality of materials used, manufacturing and installation, as well as the degree of maintenance afforded to the system, and local weather conditions. Also, the realization of a system’s EUL does not necessarily constitute its replacement. Risk, including safety or the cost of damage to the asset and its use, was considered in estimating the RUL and the schedule for major repairs or replacements.

Some building and site components have been assumed to have “indefinite” life expectancy as compared to the relative life of other components (e.g., building structure, domestic plumbing and electrical systems). From time to time localized repairs may be required due to deterioration or vandalism, which are assumed to be handled as part of ongoing maintenance. In some instances, a provisionary cost has been applied to a component in order to provide for foreseeable future repairs for which an actual cost cannot be applied at this time.

2.5 COSTING METHODOLOGY

Replacement and repair costs are based on unit rates published by Means Publishing and/or Marshall & Swift Valuation Service, combined with local experience gained by Stantec. The quantities associated with each item have been estimated during a walk-through site assessment and do not represent exact measurements or quantities. The opinions of cost are accurate to ±25%. At the time of replacement, specific "scope of work" statements and quotations should be determined and the budgetary items revised to reflect actual expenditures.

Not included in the CRP are items that would be normally addressed as routine maintenance. However, the capital costs may include items which are currently managed under the Operations and Maintenance budget for the Site. A cost threshold of $3,000 has generally been used in reporting deficiencies observed at the Site. Opinions of costs for deficiencies that are individually less than this amount are generally not included in the CRP. However, these deficiencies may be mentioned in the report. Also, deficiency costs relating to life safety or observed code infractions may be included regardless of this cost threshold.

2.6 CAPITAL RENEWAL COSTS TABLES

Opinions of costs (in current dollars) have been provided in the Capital Renewal Cost Tables (attached in **Appendix A**) for physical deficiencies observed during the assessment which are considered beyond normal routine operational maintenance expenditures, and for base-building components that will exceed their EUL over a 25 year evaluation period.

The Capital Renewal Costs Tables are comprised of two separate tables:

- Table A – Component Listing and Repair/Replacement Cost
- Table B – Component Event Cost Summary.

Table A is a summary of the components reviewed at the Site, organized by discipline for building components. Table A also indicates the anticipated year for repair or replacement and the adjusted replacement costs in present dollar values.

The following table provides a description of each column present in Table A:

Column #	Column Name	Definition
1	Property Component	The name of the subject component
2	Component Location or Descriptor	Details specifying the type or location of the subject component

Column #	Column Name	Definition
3	Year of Construction or Renewal	Year of installation or major repair of the subject component
4	Expected Useful Life	The theoretical design life of the subject component
5	Anticipated Time Before Next Action	The number of years anticipated before work is required
6	Observed Condition	Details the deficiencies encountered during the assessment
7	Recommended Action	Details the type of work that is anticipated to address deficiencies that are immediate* in nature, and those that are the result of deferred maintenance**
8	Frequency of Action to Occur	Indicates the expected time between recommended actions
9	Reason for Action	Details whether the Recommended Action is due to deficiency (“Condition”) or realization of EUL (“Lifecycle”)
10-13	Unit, Unit Cost, Quantity, Event Cost	Calculates the opinion of cost to repair or replace the subject component
14-15	Number of Events in 25 Year Period and Total Opinion of Cost	Calculates the number of event occurrences for each component over the next 25 years, and the total cost

* Immediate repairs are for deficiencies that require action to prevent further deterioration to the component, to review a component further to confirm its status, to prevent possible injury due to an unsafe condition and/or code violation, or to address deferred maintenance items that may not warrant immediate attention, but require action on a priority basis, in addition to routine preventative maintenance.

** Deferred maintenance items are deficiencies observed during the assessment that are not considered immediate in nature, and are considered beyond normal routine maintenance.

Table B displays in tabular format the anticipated year and opinion of cost for replacement / repair work for components identified under Table A, in present dollar values, for the current year, and years one through five. The remaining 20 years are organized into four groupings of five years apiece.

3.0 LIMITING CONDITIONS

Exclusive Use

This report, including its information and opinions, has been prepared for the exclusive and sole use of Rocky View County (the “Client”).

Reliance Purposes

This report shall not be relied upon for any purpose other than intended for the Client within the scope of services negotiated between Stantec Consulting Ltd. (Stantec) and the Client without the express prior written consent of Stantec.

Third Party Reliance

This report may not be relied upon by any other person or entity without the express written consent of Stantec and the Client. Any reliance on this report by a third party, any decisions that a third party makes based on this report, or any use at all of this report by a third party without the prior written consent of Stantec is the sole responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report.

Distribution

No party shall distribute this report, in its final form or in draft form, or any portion or copy thereof without the express written permission of Stantec, except that the Client may make copies of this report as are reasonable for its own use and consistent with the intended purposes of this report.

Cost Opinions

Any opinions of costs expressed in this report are partially based on consultation with industry-recognized publications on probable costs for materials and labour. While Stantec uses information available to us combined with our judgment and past experience, the specific rationale and conditions forming the basis of contractors’ bids, material or equipment pricing are beyond our knowledge and control. Stantec can therefore not be held responsible if the final costs vary from these opinions of cost.

As well, any opinions of costs are intended for global budgeting purposes only. The scope of work and the actual costs of the work recommended can only be determined after a detailed examination of the site element in question, understanding of the site restrictions, understanding of the effects on the ongoing operations of the site/buildings, definition of the construction schedule, and preparation of tender documents. Stantec expressly waives any responsibilities for the effects of any action taken as a result of these endeavors unless Stantec is specifically advised of prior to, and participate in the action, at which time, Stantec’s responsibility will be negotiated.

Physical Limitations to Scope

Stantec’s work did not include intrusive testing/investigation, destructive testing, testing of life safety systems or quantitative testing. As such, any recommendations and opinions of costs associated with these recommendations,

as presented in this report, are based on walk-through non-invasive observations of the parts of the buildings which were readily accessible during a visual review. Conditions may exist that are not as per the general condition of the system being observed and reported in this report.

Opinions of costs presented in this report are also based on information received during interviews with site representatives, operations and/or maintenance staff. Stantec cannot be held responsible for incorrect information received during the interview process. Should additional information become available with respect to the condition of the buildings and/or site elements, Stantec requests that this information be brought to our attention so that Stantec may reassess the conclusions presented herein.

Assessments

No legal surveys, soil tests, environmental assessments, geotechnical assessments, detailed barrier-free compliance assessments, seismic assessments, detailed engineering calculations, or quantity surveying compilations have been made. No responsibility, therefore, is assumed concerning these matters. Stantec did not design or construct the buildings or related structures and therefore will not be held responsible for the impact of any design or construction defects, whether or not described in this report. No guarantee or warranty, expressed or implied, with respect to the property, building components, building systems, property systems, or any other physical aspect of the property is made.

Standard of Care

The assessment outlined in this report generally captured conditions that existed at the time of the site visit. Stantec's opinions and recommendations presented in this report are rendered in accordance with generally accepted professional standards for like services under like circumstances for similar locales. The opinions and recommendations are not to be construed as a warranty or guarantee regarding existing or future physical conditions or regarding compliance of systems/components and procedures/operations with the various regulating codes, standards, regulations, ordinances, etc.

4.0 ASSESSMENT TEAM

The Stantec personnel listed below were used during the assessment of the Site, and preparation of this report.

Stantec Staff Name	Facility Systems Assessed	Date of Site Visit
David Farkas, CET	Project Manager	N/A
Tobias Link, Dipl.-Ing. (FH)	Architectural and Structural Systems	November 22, 2018
Tim Hobson, CEM	Mechanical and Electrical Systems	November 22, 2018

The qualifications of each Stantec team member are included in this report under **Appendix E**.

The following sub-consultant was used in the preparation of the CRP:

Subconsultant name	Staff Name	Project Role	Date of Site Visit
ThermoCarb Ltd.	Craig Weller	Ice Plant Systems Assessment	November 22, 2018

5.0 DOCUMENTS REVIEWED

The following documents were made available to Stantec at the time of the assessment:

- Site Drawings titled “Site Drainage Study Existing Conditions And Proposed Improvements”, prepared by MPE engineering Ltd. (Job No. 29170-004-00), and dated April 2015;
- Structural Roof Report titled “SPFAS Roof Assessment Report”, prepared by MPE Engineering Ltd. (File: N:\29170\006-00\L01-1.0), and dated April 9, 2018; and
- Memorandum titled “Red Dutton Arena Slab”, prepared by MPE Engineering Ltd. (File No. 29170-002-00 M02), and dated May 19, 2015.

6.0 FACILITY DESCRIPTION

Springbank Park for All Seasons (SPFAS) is a recreational complex that extends across two sites that offers both indoor and outdoor recreational facilities. The complex is situated on the northern side of Springbank Road and is sub-divided into two sites (“Main Site”, and “Lions Soccer Park”) by Range Road 33. Refer to **Appendix C** for a layout of the site.

The Main Site was originally developed circa 1971 and has since expanded in phases to incorporate three building sections. These structures are referred to in this report as the Main Facility. The Fieldhouse and Garage are both located to the north of the Main Facility as well as the Outdoor Rink (ODR) which is located north of the Fieldhouse and Garage. There is a scoring tower for the football field and three skid mounted storage sheds which provide additional storage throughout the site.

The Main Facility has been progressively expanded upon and upgraded over the years and incorporates three ice surfaces: Red Dutton Arena, Shane Homes Curling Rink (Curling Rink), and Joe Phillips Arena. Two-storey sections built along the western side and between the Red Dutton and Joe Phillips arenas facilitate public access through a large hallway. These sections also host a concession, a licensed lounge, a playschool, dressing rooms, administrative offices, a kitchen, and washrooms. Mechanical rooms and a maintenance courtyard are built along the eastern side. To the west of the Main Facility is the Springbank Community High School whose extension in 1996 filled the remaining space between these two buildings.

The Fieldhouse is a one-storey, wood-framed building built near the football field, and is comprised of two change rooms, coaching offices, a concession area, a mechanical room, washrooms and showers. The Scoring Tower is a two-storey wood structure with a storage garage at ground level. The Garage is a one-storey, wood-framed building that is used to house maintenance vehicles. The ODR covered structure is a pre-engineered, light metal structure that was built as a protective shelter over the skating rink. The Storage Sheds are premanufactured structures mounted on wood and metal skids.

Outdoor recreational facilities on the Main Site include a football field and two baseball diamonds (located to the northwest of the main facility), the ODR (located north of the Fieldhouse and Garage), and two baseball/softball diamonds (located to the west of the main facility), which are referred to as the Don Quinn & Al Fitzsimmons Ball Diamonds.

Access to the Main Site is facilitated from Range Road 33 to the west (via the high school parking lot) and Springbank Road to the south by asphalt-surfaced driveways. The driveways lead to drop-off areas in front of the Main Facility and Springbank Community High School main entrances, and also extends to the south towards a parking lot which is shared by both institutions. A second asphalt-paved driveway (commonly referred to as the “Bus Lane”), extends from the driveway, accessed from Springbank Road, along the east and north sides of the Main Facility, and provides public access to the northerly-located outdoor recreational facilities.

Lions Soccer Park is primarily dedicated to soccer activities, although this facility also accommodates football, rugby, vehicle parking, and other activities. The Lions Soccer Park provides space for three standard sized soccer pitches, a graveled parking lot, and a pump house which shelters a well and irrigation equipment, a lagoon and a storage shed for sports and maintenance equipment. Access to the site’s graveled parking lot is provided from Range Road 33 at its north-east corner.

7.0 MAJOR FACILITY SYSTEMS ASSESSMENT

A site visit was carried out on November 23rd, 2018. The Stantec assessment team was escorted around the Site by Mr. Jeff Schmidt, Operations Supervisor, with SPFAS, and various other facilities staff members. Access to all areas of the Site was available at the time of the site visit. The weather at the time of the site visit was sunny and calm, and temperatures ranging between 0 and -2 degrees Celsius.

The following subsections present descriptions of major building systems, and recommendations to address noted deficiencies, based on the findings of Stantec's visual review of the Property and building systems. A summary breakdown of the condition of various components is provided in the Capital Renewal Costs Tables in Appendix A. Photographs are also included in **Appendix B**.

7.1 SITE COMPONENTS

7.1.1 Paving, Curbing & Parking

Description

Access to the Main Site is facilitated from Range Road 33 to the west and from Springbank Road to the south by an asphalt-surfaced driveway, which is built along the southern elevation of the Main Facility and the Springbank Community High School. One side of the driveway provides drop-off areas in front of the Main Facility and high school, while the other side leads to an asphalt-surfaced parking lot that extends south to the property boundary. A second asphalt-surfaced driveway (the "Bus Lane") runs along the east and north elevations of the Main Facility, providing vehicle access to the outdoor recreational facilities at the northern side of the property. It also provides access to additional parking along the north side of the Main Facility The driveway connects to an asphalt-surfaced fire lane which runs around the adjoining high school (not part of this report).

The above-noted parking lots and driveways are bordered with concrete curbing, which separates asphalt pavement from adjoining landscaped areas. Paint line markings provide stall delineation, with the exception of the area east of the facility, where demarcation is not provided.

A concrete sidewalk borders the above-noted driveway in front of the Main Facility. A concrete walkway also provides public access from the northern entrance of the Main Facility to the rear driveway, and parking stalls. Furthermore, concrete walkways are built around parts of the Fieldhouse and Garage. Additional cast-in-place (CIP) stamped concrete is placed in front of the Fieldhouse.

The ODR slab is built entirely on a concrete surface, which extends eastward to connect with an area that is currently used as a basketball court but will reportedly being used as a storage area for the beach volleyball sand in the future.

Concrete pads are built in front of some overhead doors and service doors on the Main Facility's east elevation. Concrete pads are also used as base supports for two exterior transformers (one at the main parking lot's southwest corner, and one in the maintenance courtyard), and other pieces of equipment installed in the maintenance courtyard. Pre-cast concrete barriers are installed around a propane and fuel above storage tanks located east of the Main Facility as well as along the front of the Fieldhouse.

Concrete unit pavers are installed beside the walkway leading to the main entrance of the Main Facility.

The Lions Soccer Park is accessed from Range Road 33 leading along the east property line. It is provided with a gravel parking lot and driveway.

Findings/Recommendations

No information about the age of the pavement and curbing on the Main Site was provided by the client. Based on the original report prepared by Stantec in 2012 and information found on SPFAS' official website, we believe that the theses elements have been constructed circa 1998.

Local differential settlement, cracks and spalling was observed especially, but not restricted to the drive lanes of the south parking lot and the drive lane leading around the Main Facility. Based on observations made during the assessment and the theoretical EUL of the asphalt elements, the replacement of the asphalt pavement is expected within the short-term period (Year 1 to 5) to maintain driving surfaces on the property. However, with the implementation of a maintenance program the replacement can be deferred to the mid of the long-term period (Year 11 to 15) of the report. Provisions for these items have been included in this report.

Local damage on the CIP concrete curbs, likely caused by snow clearing equipment, was observed throughout the site. As these damages will occur regularly, we recommend replacing damaged curb sections on an as-needed base until the curbs will reach the end of their EUL in year 5 of this report. The ongoing repair costs are considered to be below the threshold of this report and have therefore been excluded from the opinions of costs tables; however, the cost for replacement after the curbs reached the end of their EUL is included in the cost table.

The CIP concrete walkway in front of the main facility, the stamped CIP concrete sections in front of the Fieldhouse and local sections of the remaining CIP concrete sidewalks show strong evidence of spalling and cracking. The walkway sections in at the main facility already reached the end of their EUL. The walkway sections at the main facility should be replaced as they reached already the end of their EUL. For cost efficiency, the damaged sections at the Fieldhouse should be replaced at the same time. The cost for replacement is included in the cost table.

The concrete slab at the ODR and the adjacent basketball field was observed to be in fair condition. However, the majority within the ice rink was covered by the ice sheet and could not be viewed directly during our site visit. The slab under the ODR is understood to be constructed similar to that of an indoor arena refrigerated slab, but the cooling loops were reported to be leaking and therefore can't be used anymore. The Slab will reach the end of its EUL within the time frame of this report and should be replaced. The cost for replacement is included in the cost table.

No issues were observed with the concrete unit pavers near the main entrance of the Main Facility.

The gravel parking lot and driveway at the Lions Soccer Park were observed to be in fair condition; however, they will need to be regraded periodically and provided with new aggregate on an as-needed base. The cost is estimated to be below the threshold of this report and is therefore excluded from the cost table.

7.1.2 Landscaping and Appurtenances

Description

7.1.2.1 Landscaping

Landscaping is mostly limited to grass-covered surfaces on both sites. Landscaping in front of the Main Facility includes mature coniferous trees, shrubs, and three pre-cast concrete planters with exposed aggregate finish. Deciduous trees are located near a storm water retention area, located at the southeast corner of the Main Facility. More conifer trees are located mostly along the property lines of the Main Facility as well as the Lions Soccer Park. Graded and sodded fields occupy large areas on both sites, including the football and soccer play fields, baseball/softball diamonds and the remaining undeveloped zones.

Sections between the Bus Lane and the Main Facility's east elevation are filled with gravel. Crushed shale has been used as a field topping for a portion of the baseball/softball fields. The playground surface is filled with washed pea gravel for impact attenuation.

Former drainage issues were reported; however, in 2015 these were resolved as per the drainage study provided to Stantec and no further drainage issues were reported. Drainage for the main parking lot is provided by two catch basins and culverts discharging into the southern swale. The south swale is also used as an overflow system for the southeast storm water retention area. The large open fields are graded with slow slopes toward swales in order to drain any excess storm water. Swales are built to the north, east and southern perimeters of the Main Site (the swale along the south perimeter is part of the municipal storm water drainage system).

The surface drainage system of Lions Soccer Park is provided by swales which discharge to a local lagoon.

7.1.2.2 Retaining Walls

A concrete retaining wall provides soil stability and protects the concrete walkway leading to the main entrance of the Main Facility. Also, lumber post and beams were used to control soil stability and to provide access to the area behind the baseball/softball fields.

7.1.2.3 Fencing and Guardrails

Chain link fencing is used on a large scale on the east and west side of the Main Site for segregating the baseball/softball play fields, and the playground. Chain link fences are also installed in the ODR area, the football field and around the Fieldhouse and the Garage as well as around the lagoon at the Lions Soccer Park. Barbed wire fencing is installed along parts of the north property line of the Main Site and around parts of the Lions Soccer Park. A wood post and rail fence is installed at the Lions Soccer Park's south and east property line and chain link fencing is installed around the lagoon. The maintenance courtyard is surrounded by fencing consisting of pre-finished metal panels installed on wood frames. Retractable metal gates facilitate service vehicles access to this area. Three-foot high wood posts linked with a galvanized metal cable are installed along the secondary driveway. A painted steel pipe guardrail with chain link infill is installed on top of the concrete retaining wall at the Main Facility's entrance. Three conventional, painted steel gates control vehicle traffic along the secondary driveway.

7.1.2.4 Appurtenances

Improvements of the main parking lot include pole-mounted metal traffic signage, painted metal bollards, plastic poles and metal lamp standards for outdoor illumination. A free-standing pole mounted electronic message sign is installed between the parking lot and Springbank Road to the south of the Main Facility. The baseball/softball fields are provided with metal-framed dugouts and portable metal-framed bleachers. Additional fixed and portable bleachers are located at the football field and at the Lions Soccer Park. Other athletic equipment consists of two metal framed basketball hoops installed on the concrete surface adjacent to the ODR, a score display board and two goal posts at the football field and several goal structures at the Lions Soccer Park. The site furniture include play structures, benches and garbage receptacles throughout the property. The ODR is built under a light metal structure covered with protective fabric. Puck board dasher boards on a metal framework are built around the play area. The transformer installed in the maintenance courtyard is surrounded on two sides by a concrete block masonry wall. Several pedestrian wood bridges are installed over the swales throughout the site.

Findings/Recommendations

Most landscaping throughout the site and fencing around the baseball diamonds and at the lagoon appeared to have been renewed or were installed during the last major site development, which comprised the addition of Joe Phillips Arena and construction of the new outdoor recreational facilities in1997/98 (Lions Soccer Park) and 2005 (ODR). Fencing and landscaping appeared to be in overall good to fair condition; however, these fencing sections will need to be replaced within the timeframe of this report. The cost for replacement is included in the cost table. In addition, periodic repairs are expected in order to maintain the aesthetic appeal of the property. The maintenance of the landscaping fencing and appurtenances is considered to be part of the facilities operational maintenance budget and is therefore excluded from the cost table.

No cracks or signs of distress were observed at the concrete retaining wall. The metal guardrail installed on top of the retaining wall near the main entrance already reached the end of its EUL. The cost for replacement is included in the cost table. The wood retaining walls located behind the baseball/softball diamonds to the west of the Main Facility were observed to be in poor condition. Dismantled wood members, along with, were observed. Repair or partial replacement of the retaining wall structure is required. The cost is estimated to be below the threshold of this report and is therefore excluded from the cost table.

The chain link fencing at the football field, around the ODR, Fieldhouse and Garage was reportedly replaced in 2018. The barbed wire fencing along part of the north property line was reported to be installed as part of the stormwater mitigation work in 2015 and won't need replaced within the time frame of this report. Based on observations made on site, the chain link fencing at the north-west baseball diamonds along Range Road 33 was likely installed before 1998. Widespread rust was evident throughout this section, and the fence reached already the end of its EUL and therefore should be replaced. The cost for replacement is included in this report. Some of the wood posts, located along the east driveway, connected with steel cable were observed to be damaged by snow clearing equipment. They should be repaired and where necessary be replaced. The cost is estimated to be below the threshold of this report and is therefore excluded from the cost table.

The lighting poles, traffic signage and pollards are in good condition and appear to have been replaced in recent years. No cost beyond regular maintenance, which is assumed to be part of the operational maintenance budget, is anticipated in regard to these items. The electronic message sign reportedly installed in 2018 and is in good

condition. It will reach the end of its EUL within the time frame of this report. The replacement cost are included in the cost table. The dasher boards at the ODR are in good to fair condition but will reach the end of their EUL within the report timeframe and should be replaced. The cost for replacement is included in the cost table. The bleachers and the athletic equipment were observed to be in good to fair condition; however, they will reach the end of their EUL within the time frame of this report. The replacement cost for these items are included in the cost table. The site furniture and playground structures were also observed to be in fair to good condition but will reach the end of their EUL as well within the time frame of this report. The replacement cost for these items are included in the cost table.

Weathering and signs of efflorescence were observed on the concrete block wall surrounding the transformer in the maintenance courtyard. Localized repairs are recommended as part of routine maintenance in order to prevent further deterioration. The wood bridges were observed to be in fair condition but will reach the end of their EUL within the time frame of this report. The replacement cost is included in the cost table. Some minor corrosion was noted on the three steel gates along the rear Bus Lane. Repainting of the steel gates is recommended to forestall additional corrosion, costs for which are expected to be below the reporting threshold of this report and have therefore been excluded from the cost table.

7.2 BUILDING STRUCTURE

Description

Based on observations made on site as well as based on the old report, the different sections of the Main Facility are believed to be founded on steel and/or concrete piles with concrete slab-on-grade floor slabs. Cast-in-place (CIP) concrete foundation walls and strip footings are believed to be constructed beneath the two-storey building sections and single-storey mechanical annexes.

The Red Dutton and Joe Phillips Arena structures are made of premanufactured steel frames with I-beams supporting the roof structure. The structure of the Shane Homes Curling Rink is constructed of a load baring CMU wall along the north side (towards Red Dutton Arena) and a structural steel frame along the south and east side. OWSJs support the roof structure above the Shane Homes Curling Rink. The two-storey section between the Joe Phillips and Red Dutton arenas is comprised of steel columns supporting the upper floor. Concrete masonry unit (CMU) infills are used to separate rooms at the ground floor level. The roof structure of this section is comprised of open web steel joists (OWSJ) supporting metal decking. The two-storey section built west of the Red Dutton Arena consists of wood joists and decking for both the suspended roof and floor structures, which are supported by metal columns. The two-storey section built west of the Shane Homes Curling Rink is believed to incorporate steel columns, which support suspended floor and roof decking.

Mechanical annexes on the Main Facility’s east end consist of CMU walls or steel columns which are supporting the steel-framed roofs. The foundations are believed to be comprised of CIP concrete strip footings and CIP slab-on-grade floor structures.

Partition walls in the Main Facility are a mixture of steel or wood studs sheathed on either side with gypsum wall board (GWB) or CMU walls separating major sections within the building.

The Fieldhouse, the Garage, the Storage Sheds and the Scoring Tower are wood framed structures consisting of wood stud walls supporting wood roof trusses and decking. The foundation systems are likely constructed of concrete

frost walls with strip footings, bordering CIP concrete slab-on-grade floors (which excludes the skid-mounted Storage Shed structures).

The ODR is covered with pre-fabricated open-web steel truss frames with a fabric membrane roof and wall coverings. The fabric walls terminate roughly 3 meters above the top of slab leaving the lower portion of the walls open. The bases of the arches are believed to be supported by cast-in-place concrete piers.

Findings/Recommendations

The Main Facility is understood to have been built in phases, beginning with the Red Dutton Arena in 1971, followed by the Shane Homes Curling Rink which was added south of the Red Dutton Arena in 1979. The Joe Phillips Arena was later added on the north end of Red Dutton Arena in 1998. This addition included dressing rooms, washrooms, the second-floor playschool and training rooms as well as mechanical rooms. A new mechanical room was also added east of the Red Dutton Arena at the same time. The ODR and the Garage were reportedly built in 2005. The Lions Soccer Park Storage Shed was reportedly built in 2012. The Fieldhouse was built circa 2011.

The assessment of the building structures was limited due to concealment by interior finishes. Where the structural components were not directly visible, the building finishes were observed for the presence of cracks or distress that might indicate deficiencies in the underlying structure. A visual review of the structural components of the superstructure revealed no evidence of significant distress or suspect movement. However, surface rusting and rusted bolts connections was observed throughout the Curling Rink and the two arenas of the Main facility. A structural study is recommended to be performed to determine if the rust is compromising any of the three building's structural integrity. The cost is included in this report. As the scope of work to carry out the repair/replacement work is depending on the result of the study and would need to be defined further prior to commencing with this work. As such, an opinion of cost to carry out this work has been excluded from this report.

The interior and outdoor ice rinks were operable at the time of assessment, and therefore the floor slabs were mostly covered with ice. Therefore, the condition of the floor slabs could not be entirely determined. However, major slab cracking was observed in the north-east corner of the Red Dutton Arena. This is most likely caused by the weight of the Zamboni as the visible damages were concentrated at the "drive lane" in between the ice sheet and the Zamboni room. Additional damages were also observed in the Red Dutton Arena's header trenches with concrete flaking off its wall and rebar being exposed. A cost for a structural investigation on the slab and header trenches of the Red Dutton Arena is included in the structural study for the steel frames mentioned above. As the scope of work to carry out the repair/replacement work is depending on the result of the study and would need to be defined further prior to commencing with this work. As such, an opinion of cost to carry out this work has been excluded from this report. The floor slabs of the Red Dutton Arena and the Shane Homes Curling Rink are currently 48 and 40 years old and therefore nearing the end of their EUL. A report prepared by MPE Engineering Ltd. in 2015 estimates that the floor slab of the Red Dutton Arena can be assumed to be in fair working condition for another 15 years (at the time of the report in 2015) provided the operating season not to exceed 200 days/year, the proposed drainage upgrades (see different MPE report) being executed (were reported to be done) and the refrigeration piping in the slab to be air pressure tested at the end of each ice season. The cost for the pressure testing is estimated to be below the threshold of this report and is therefore excluded from the cost table. Based on the report above and the limited observations made on site we assume the slab will need to be replaced in the middle of the time frame of this report provided the recommendations are followed. We recommend using the same level of care for the slab of the Shane Homes Curling Rink. By doing this, the slab will need replacement towards the end of the report timeframe. The cost

for replacing the slabs are included in the cost table. The concrete floor slab in the Joe Phillips Arena is currently 20 years old and no replacement is anticipated within the time frame of this report. Therefore, no cost for its replacement is included in the cost table.

7.3 ROOFING

Description

Roofing over the Main Facility was observed to vary from section to section, and consists of the following roof types:

- Low sloped standing seam metal panels on the Red Dutton Arena and the adjacent maintenance shop as well as the low sloped section of the Joe Phillips Arena.
- Modified bitumen membrane assembly (SBS) on the one-storey annexes to the Curling Rink and the (flat) transition area between Red Dutton and Joe Phillips arenas
- Ballasted, single-ply ethylene, propylene, diene monomer (EPDM) roofing membrane on the Shane Homes Curling Rink and over the south entrance
- Un-ballasted, single ply EPDM roofing membrane over the north entrance vestibule

Except on the Joe Phillips Arena, roofing assemblies are understood to have been replaced in phases over the years. The SBS roofing in between the Red Dutton and the Joe Phillips arenas was reported to be replaced in 2017. No information was provided regarding the metal roofing above the Red Dutton Arena and the EPDM roofing membrane over the Curling Rink; however, the old report states that they were replaced in 2002, while the EPDM membrane over the north entrance vestibule was replaced in 2005.

The roof covers of the wood-framed buildings (Fieldhouse, Garage, Scoring Tower Storage Shed) consist of asphalt shingles that are original to their building's respective construction dates.

Weather protection for the ODR is provided by a replaceable, single-ply, polyethylene-based membrane installed on arched structural members of the structure.

The sloped metal roofs either drain into pre-finished metal gutters and downspouts, which discharge onto surrounding surfaces at ground level or onto the adjacent EPDM or SBS roof areas. A particular built-in gutter, 2.4m wide and lined with an SBS membrane, is constructed between the Red Dutton Arena and the adjoining two-storey section of the Joe Phillips Arena. The gutter collects storm water from the adjacent roofs and discharges into a culvert downspout located on the east façade. Storm water drainage on the Shane Homes Curling Rink is achieved via internal roof drains that are equipped with debris strainers.

Findings/Recommendations

Apart from the occasional minor roof leaks, which are being repaired as needed at a cost below the threshold of this report, no accounts of recurring or significant roof leakage were reported for all site buildings.

Based on the limited information available, the Main Facility's SBS roof sections (year 9 & 24) as well as the EPDM roof sections (year 20 & 23) will reach the end of their EUL within the reporting time frame and should then be replaced. The replacement costs are included in the cost table. Some bubbling and delamination of the SBS membrane at the vertical areas of the drainage trench in between the Red Dutton and Joe Phillips arenas was observed. These sections should be inspected periodically and if the condition worsens the failing sections should be replaced as needed. The cost for these repairs are included in the allowance for periodic roof maintenance mentioned below. The metal roof sections are in fair to good condition and will surpass the time frame of this report with no replacement expected.

The asphalt shingles for the Storage Shed at the Lions Soccer Park, the Fieldhouse, the Garage and the Scoring Tower are in overall fair condition and will need, based on their EUL, replacement within the time frame of this report. Most replacement cost by themselves are estimated to be below the report threshold; therefore, a combined replacement cost based on the average age of the buildings, for these four buildings is included in the cost table.

The ODR membrane was observed to be in fair condition; however, it will reach the end of its EUL within the time frame of this report. The replacement cost is included in the cost table. In addition, it was reported that snow accumulation occurs at the south side of the roof structure. According to a memo, prepared by MPE Engineering Ltd, dated April 9, 2018, snow loading of less than 12" (305 mm) is of no concern. If more snow accumulates to a depth of more than 12" (305 mm), it recommends to clear the snow off the roof first before the ODR can be used by the public again.

The gutters and downspouts will reach the end of their EUL within the time frame of this report and should be replaced. A combined replacement cost, based on their average age, for the Fieldhouse, the Garage and the Scoring Tower and the Storage Shed at the Lions Soccer Park is included in the cost table. Several downspouts installed on the Main Facility's mechanical rooms' exterior walls, the Fieldhouse, the Garage, the Scoring Tower and the Storage Shed at the Lions Soccer Park were noted missing rain water leaders at the bottom to direct rain water flow away from the buildings. The addition of proper rain water leaders is recommended, although provisions for this work have been excluded from herein as repair costs are expected to be minor and can be supported through the facility's regular maintenance budget. A damaged section of rain water gutters was observed at the ODR's north elevation. It should be replaced to avoid water damage to the foundation and water intrusion to the structure. The cost is estimated to be below the threshold of this report and has therefore been excluded from the cost table. The scupper draining the north entrance roof section is likely the cause of water infiltration to the entrance vestibule because of water spray and seeping down the exterior wall. A downspout should be installed at this roof section to ensure storm water is being kept off the wall and drained away from the building. The cost for the installation of a downspout is estimated to be below the threshold of this report and therefore excluded.

General roof repairs and maintenance is expected periodically over the next 25 years to address miscellaneous roofing deficiencies as they occur. A periodical allowance for this work is included in the cost table.

7.4 BUILDING EXTERIOR

Description

The Main Facility is primarily clad with corrugated, pre-finished sheet metal siding. The lower portion of the west and south elevations (corresponding to the Shane Homes Curling Rink), and the wall separation between the Springbank Community High School and Main Facility on the north side, consist of exposed standard or split face CMU construction. The mechanical rooms attached to Main Facility's east elevation have exposed standard CMU or are clad with corrugated, pre-finished sheet metal siding. The main entrance is fitted with a pre-finished metal soffit.

The exterior walls of the Fieldhouse, the Garage and the Score Tower are clad with cement fiberboard siding and the exterior walls of the Storage Shed at the Lions Soccer Park are clad with standard vinyl siding.

The only exterior windows installed at the Main Facility are along the west façade, in connection with the upper floor lounge, and along the north façade in connection with the upper level playschool. The exterior windows have insulating glazing units (IGUs), which are set in aluminum frames. Four windows consisting of sliding IGUs in steel frames are installed on the west and east façades of the Garage and the Scoring Tower is provided with IGUs set in vinyl plastic frames.

The main entrance doors of the Main Facility are located on the south façade and consist of sliding (automatic), fully-glazed units set in anodized aluminum framing. A single pivot-type, painted metal door, set in a painted metal frame is located on the south façade and provides direct public access to the upper floor lounge. The north entrance is provided with a paired, painted exterior metal door, set in a painted metal frame. These doors are provided with glazing panels. Egress and utility doors on the Main Facility are hinge-mounted, painted steel units that are set into painted steel frames. Four pre-finished, sectional metal overhead doors are installed along the east elevation of the Main Facility. One of these overhead door serves the Shane Homes Curling Rink, one serves the new mechanical room attached to the Red Dutton Arena, and two serve the Joe Phillips Arena. Three pre-finished, sectional metal overhead doors are installed on the south elevation of the Garage and one pre-finished, sectional metal overhead door is installed in the Storage Shed at the Lions Soccer Park.

Several wall mounted metal or plastic signs are installed around the buildings. One back-lit sign is installed along the south façade of the Main Facility, displaying its logo, name and address. A second smaller sign is installed above the lounge entrance door, on the same façade.

Findings/Recommendations

Exterior cladding was reported to be original to the buildings throughout and generally appeared to be in good to fair condition overall. Based on age, the metal cladding of the Red Dutton Arena and the Shane Homes Curling Rink will reach the end of their EUL within the time frame of this report. These sections should be replaced, and the replacement cost are included in the cost table. Impact damages were observed throughout the metal cladding, but it is considered minor and should be repaired under the facility's normal maintenance budget as required. The exterior CMU walls were observed to be in good condition, but several step cracks were observed in CMUs on the Main Facility's south elevation. While the cracking was considered normal, and likely the result of soil/foundation settlement, further monitoring of these areas should be conducted to observe signs of crack propagation, widening, etc. A qualified structural engineer would be required to perform follow-up investigative work only if additional

cracking etc. is identified. As this work is not required in the current state, no cost for an additional structural study, investigating the causes of the cracking, is included in the cost table. The exterior paint at the CMU walls will reach the end of its EUL within the time frame of this report. The cost for repainting is included in the cost table.

The windows are believed to be the same age as the buildings they are installed in. Based on their age, and depending on their location, the windows located in the Shane Homes Curling Rink and Joe Phillips Arena will reach the end of their EUL during the evaluation period of this report. The replacement cost are included in the cost table. No major concerns were observed or reported associated with the exterior windows.

Most exterior access doors are understood to be original to the construction of their respective buildings and it was reported that about 20% of the doors were replaced since the original buildings were built. According to the old report, the overhead door serving the Shane Homes Curling Rink was installed in 2002 and the main entrance door on the south side was replaced in 2001. Generally, the exterior doors appeared to be functioning as intended, but one door in the Shane Homes Curling Rink was observed to be sealed up with plastic ply, likely due to drafts caused by failed door sealings. Localized denting was observed on the utility doors around the building. The cost for the repair is assumed to be below the cost threshold of this report and therefore excluded from the cost table. In addition, some reached already the end of their EUL. Replacement with more energy efficient doors is recommended. The cost to replace approximately 80%, still original, utility doors in two phases (due to the different building ages) is provided in the cost table. The sliding main entrance doors at the south side will reach the end of their EUL in year 15 of this report and should be replaced based on its age. The replacement cost is included in the cost table. All four overhead doors will reach the end of their EUL within the time frame of this report at different times and should be replaced. Additional impact damage and loose/damaged weather stripping was observed at the overhead doors but is considered minor and can be repaired under the facility's maintenance budget. The cost for a phased replacement of the overhead doors are included in the cost table.

One emergency exit door in the Shane Homes Curling Rink was observed to be blocked by plastic poly, reportedly to avoid the melting of the ice surface at that location during warm outdoor weather conditions. It was also observed that there are trip and fall hazards present in front of some emergency exit exterior doors around the Main Facility. These include missing concrete pads and/or rough ground as well as storage items within the escape way in some locations. The emergency doors should be kept unobstructed (e.g. plastic poly), items blocking the escape way should be removed and ground conditions close to the emergency exit doors should be improved where necessary. Based on the reported issues, We recommend that the existing emergency exit door, which is currently blocked by plastic poly, to employ appropriate weather stripping (needs to meet current code for emergency exit doors) and if necessary, replace the door slabs with one's offering a higher insulation value, to reduce the effect of the outdoor weather conditions on the ice surface. The cost to carry out these recommendations are assumed to be below the threshold of this report and are therefore not included in the cost table.

Most interior building signage are estimated to be installed in recent years and are therefore in good working condition. No replacement is expected to be required within the time frame of this report. However, some of the wall mounted signs showed normal signs of aging. Replacement over the years is expected in order to maintain the commercial appeal of the facility. The cost for replacement are estimated to be below the threshold of this report and are therefore excluded from the cost table.

7.5 BUILDING INTERIOR

7.5.1 Floor, Wall & Ceiling Finishes

Description

Main Facility – Joe Phillips Arena

The exterior walls and ceiling of the Joe Phillips Arena are lined with blanket type insulation that includes a vinyl backing material. The lower portions of these walls are covered with painted plywood panels. The partition wall between the arena and the adjacent dressing rooms consists of painted concrete masonry block approximately 8' in height. Painted gypsum board are used for the remaining wall finishes up to the ceiling (second floor). The ice rink is surrounded by dasher board assembly supported by a galvanized steel structure. Protective plexiglass and retaining nets are installed above the dasher board assembly. The concrete floor around the rink is left unfinished. This floor is provided with a rubberized resilient sheet material in publicly accessible areas. Plywood panels cover the header trenches along the east wall.

Main Facility - Section between Joe Phillips and Red Dutton Arenas

It is understood that the main structure of this section was built as part of Joe Phillips Arena's expansion project (1998). However, the upper floor partition walls and the interior finishes were added as a result of a later development in 2009.

A painted wood stair leads from the Zamboni room to the staff office on the second floor. Painted steel framed stairs lead from the main floor to the second floor, from the second floor down to the emergency exit on the east side of the building as well as from the staff office to the roof.

Dressing rooms provided with washrooms and showers are located on the main floor on both sides of a central corridor. An extension of the main hallway, which leads to the north entrance, is located at the west end of the corridor. Public washrooms are also located off that hallway. The east end of the building section is occupied by the Zamboni room and a mechanical room. The upper floor of this section is currently occupied by a weight room, a playschool (reportedly including two washrooms), an office, a former dry training area (reportedly currently not used) and corridors. The weight room, the playschool and the office were not accessible at the time of the assessment. Some office space for the maintenance personnel is located above part of the Zamboni room.

Painted roof structural members and metal decking are exposed to view on the upper floor's former dry training area, the Zamboni room and corridors. The public washroom ceilings consist of suspended acoustic ceiling tiles. Paint finishes applied to the remaining ceilings throughout the main floor.

The main floor walls are painted CMU throughout and the second-floor walls are standard stud walls sheathed with gypsum wall board. Both wall types are finished with paint. The former dry training area walls are finished with protective plastic paneling. Portions of wall surfaces in the washrooms are finished with ceramic tile.

Flooring on both floor level's public areas consists of rubberized resilient flooring. The Zamboni room, maintenance office (2nd floor) and mechanical room floors are unfinished concrete.

The storage area located along the west side of the fitness training facility is without any finishes. A chain link fencing with chain link gates separates the storage area from the rest of the former dry training area.

Main Facility - Red Dutton Arena

The ceiling in this area is lined with blanket type insulation with reflective a foil backing. The south, north and east walls are finished with painted wood paneling installed on metal frames. A shaft behind the south wall separates Red Dutton Arena from the Shane Homes Curling Rink and is used as a storage area. No finishes are provided in the shaft area. The west wall is common with the two-storey section and is comprised mostly of fixed IGU's built on two rows that correspond to the two floors of the adjoining section. Wall sections above and below the windows are finished with painted gypsum board and concrete block masonry, respectively.

The ice rink is surrounded by steel-framed dasher boards lined with puck board on both sides. Protective plexiglass and retaining nets are installed on top of the dasher board assembly. The concrete floor around the rink is left unfinished, except in public areas and the team boxes where it is covered with rubberized sheet material. Wood panels cover header trenches along the east wall.

Main Facility - Section West of Red Dutton Arena

The section is comprised of the main public hallway on the ground floor, and offices, a board room, a kitchen, locker rooms, washrooms and a corridor on the upper floor. It is understood that the upper floor has been subject to a total retrofit as part of the upgrading project completed in 2009.

Suspended acoustic tile ceilings are installed on the entire upper floor. Painted gypsum board ceilings are installed in the main floor hallway.

Walls are typically finished with painted gypsum board on the upper floor and painted CMUs on the ground floor. The walls in the board room are finished with wallpaper and wood panel wainscoting, respectively.

Most of the flooring on both levels consists of rubberized resilient flooring, although hardwood flooring is installed in the boardroom and the kitchen is provided with VCT flooring.

Main Facility - Shane Homes Curling Rink

The ceiling in the area is exposed to the building's roof structural frame and metal decking. The north wall consists of painted concrete block masonry. The lower portion of the east and south walls are interior painted wood panels. The upper portions of these walls have exposed, blanket insulation.

The west wall has interior wire glass IGU's installed on two separate rows, which correspond to each floor of the adjoining two-storey section (lounge on the second floor). The west wall finish is comprised of painted gypsum board.

Walkways around the ice surfaces are provided with sheet rubber floor covering.

Main Facility - Section West of Shane Homes Curling Rink

The section is comprised of a licensed lounge on the upper floor (including washrooms) and a concession area with a kitchen, a serving area, a mechanical room, an RCMP office and washrooms on the ground floor.

Stairs are leading off the hallway and concession area on the main floor to the second floor's hallway (in Red Dutton Arena) and to the lounge. An additional set of stairs is leading directly from the outside to the lounge. The structure of all these stairs were covered by architectural finishes, but they are assumed to be constructed out of wood.

Suspended acoustic tile ceilings are installed on the entire ground floor and in the washrooms at the upper floor. The licensed lounge has painted roof structural members exposed to view and the mechanical room is provided with a painted drywall ceiling which is taped, but otherwise unfinished. Generally, a paint finish is applied to the gypsum board walls. Ceramic tile are applied in the washrooms and on portions of the kitchen area walls. The lower wall sections in the Lounge are provided with wall paneling. The CMU walls in the mechanical rooms are unfinished.

Flooring on the ground floor consists mostly of rubberized sheet surfaces (according to the old report installed circa 2011), except in the kitchen where vinyl tile flooring is installed. Carpet flooring is provided within the RCMP office. Flooring at the upper level consists of laminated wood décor flooring throughout. The mechanical flooring consists of unfinished concrete.

Main Facility - East Mechanical Rooms

Generally, the mechanical rooms are provided with paint finishes on walls and ceilings. No finish is applied to the concrete floors; however, rubber tile mats and three-foot high ceramic tile finish were observed in one of the mechanical rooms.

Fieldhouse

Fieldhouse finishes are limited to painted composite panels applied to walls and ceilings, and rubberized resilient flooring installed throughout the dressing and washrooms. The urinals are surrounded by ceramic wall tile. Additional ceramic floor, wall and ceiling tiles are applied in the shower.

Garage

The Garage is limited to finished and unfinished plywood paneling applied to walls and the ceiling. The concrete floor is left unfinished.

Scoring Tower

The Scoring Tower's main floor garage is provided with a taped, but otherwise unfinished drywall ceiling and painted drywall walls. The concrete floor is left unfinished. The upper floor is provided with painted drywall ceilings and walls with a resilient sheet floor.

Storage Shed

No interior finishes are installed in the Storage Shed.

Findings/Recommendation

Interior finishes were observed to be in overall good to fair condition, although several areas will require repair or replacement due to their age or observed condition.

The wood and steel stair frames in the section in between the Red Dutton and Joe Phillips Arena were observed to be in fair condition. They will need to be repainted within the time frame of this report; however, the cost for refinishing is estimated to be below the threshold of this report and therefore the cost is excluded from the cost table. The rubber treads on the stairs in between the Red Dutton and Joe Phillips Arena leading up to the playschool were observed to be in fair condition and are assumed they were installed at the same time as the surrounding rubber flooring. The rubber tread finish will need to be replaced within the time frame of this report. The cost is included in the replacement cost for the flooring. The age of the resilient treads of the stairs located in the Shane Homes Curling Rink is unknown, but were observed to be in fair condition, but will reach the end of their EUL within the time frame of this report. An allowance to replace the treads is included in the cost table.

The blanket insulation installed on the walls and ceiling of the Joe Phillips Arena and the Shane Homes Curling Rink showed punctures on the vinyl backing due puck impact. The vinyl backing should be repaired to prevent moisture penetration into the insulation. An allowance for ongoing repair is included in the cost table. Some mechanical room walls in the Shane Homes Curling Rink and Red Dutton Arena were observed having damaged sections of drywall or CMUs resulting in a non-code conform of fire separation. Additional missing fire sealant was observed in some of these rooms as well. These damages are likely caused by past renovations and should be repaired. An allowance to repair missing or damaged fire stopping and wall sections is included in the cost table. The acoustic ceiling tile ceilings were observed to be in between good to poor condition. Some staining from water leaks and misaligned ceiling grid were observed in different locations. The repairs for these minor damages are believed to be below the threshold of this report and therefore excluded from this report. Most of the acoustic ceiling sections, however, are believed to be original to the building sections they are located in and already reached the end of their EUL or will reach it within the time frame of this report. The cost to replace the acoustic ceiling tiles in phases is included in the cost. The painted hallway and locker room ceilings on the ground floor were observed to be in fair condition; but will need to be repainted during the timeframe of the report based on their EUL. It was unknow when these ceilings were painted the last time. Based on our observations an allowance for periodical repainting of these ceilings throughout the facility is included in the cost table.

The protective plastic wall paneling in the dry training area shows major impact damage throughout. To ensure it protects the walls of the training area as indented, it should be replaced based on its current condition in year three of this report. The cost for replacement is included in the cost table. The locker rooms and adjacent hallway walls were observed to be in good to fair condition. They were reported to be repainted every two to three years due to high traffic causing scuffing, scratching and general wear. An allowance to periodically repaint these “high wear areas” is included in the cost table. The remaining walls in the facility are a mixture of painted drywall, CMU and plywood. They are in overall good to fair condition and were reported to be repainted on an as-needed base. An allowance for periodical repainting of the “normal wear areas” is included in the cost table. The ceramic wall tile provided in most washrooms and in some kitchen areas are believed to be original to the building sections they are located in. They are in overall fair condition, but the ceramic wall tile located in the Shane Homes Curling Arena’s main and second floor washrooms will reach the end of their EUL within the report time frame. The replacement cost is included in the cost table. The walls in the Fieldhouse, the Garage and the Scoring Tower are in good to fair condition where

finished. Their painted wall finishes will reach the end of their EUL within the time frame of this report. The cost for repainting is included in the periodical repainting allowances mentioned above.

The dasher boards in the Red Dutton Arena were reportedly replaced in 2015. The dasher boards in the Joe Phillips Arena are assumed to be original to the building (1998). The dasher boards in the Red Dutton Arena and the ones in the Joe Phillips Arena will reach the end of their EUL within the time frame of this report and should be replaced. The cost for replacement of both arena's dashboards is included in the cost table. As the floor slab of the Red Dutton Arena needs likely to be replaced in year 12 of this report and as the dasher boards were reported to be demountable and reusable, it is assumed that the dasher boards would be re-used once the slab has been replaced, therefore a cost allowance for the disassembling and reassembling is included in the cost table.

The rubber flooring is currently in fair condition throughout but will need to be replaced in the "heavy wear areas" like locker rooms, certain hallways (which access the change rooms) around the ice sheets etc. within the next five years. These areas will need a more frequent replacement than the other more "low wear areas" like hallways, washrooms, concession areas etc. The cost for replacing the rubber flooring is included in the cost table. The quarry tiles installed in the southern entrance vestibule are in fair condition and no action is required during the reporting timeframe. The laminate flooring is in fair condition; but will need to be replaced based on its age and EUL within the time frame of this report. An allowance for its replacement is included in the cost table. The vinyl tile flooring in the kitchens were observed to be in good condition; however, the VCT flooring in the pantries showed heavily worn tiles and lifting corners and should be replaced in the near future. Also, the carpet in the RCMP office will reach the end of its EUL within the time frame of this report. The replacement of both items is estimated to be below the threshold of this report and is therefore excluded from this report.

7.5.2 Base Building Equipment & Accessories

Description

Interior swinging doors throughout the Main Facility are typically painted, hollow metal units that are hinge-mounted into painted, pressed steel frames. Mechanically operated overhead doors are installed in between the arenas and the Zamboni bay. A mechanically operated, overhead fire shutter is also installed in the main hallway, separating the Red Dutton and Joe Phillips arenas. Fixed casework, vanities and display cases are located in the main hallway, kitchens, and washrooms, and are generally constructed of wood.

Washrooms are equipped with floor and wall-mounted, pre-finished metal partitions. Other washroom accessories typically include wall-mounted mirrors, stainless steel grab bars, soap/paper towel/toilet paper dispensers, and metal garbage receptacles. Hand sanitizers are also installed in hallways and corridors. Other fittings and equipment identified include wall-mounted white boards and cork/tack boards, wall-mounted metal coat hooks on wood back-boards, and manually-operated vinyl shades on exterior/interior windows and glazed doors.

The concession kitchen is equipped with several commercial-grade stainless steel appliances, including a dishwasher, a natural gas-fired oven/stove, and a fume hood equipped with a wet chemical fire suppression system. The staff kitchen near the boardroom is equipped with several residential grade appliances.

Four up-right display coolers, a walk-in cooler and a freezer are also installed in the kitchen area. Smaller, residential-grade appliances are installed in the kitchens located in the office and playschool areas.

Metal framed bleachers are installed in the Joe Phillips Arena, while the Red Dutton Arena is provided with wood-framed bleachers. Electronic display boards are located in the ice arenas, curling rink and in the main hallway.

Wood benches and lockers are installed in the dressing rooms of the Main Facility and in the Fieldhouse. A floor-mounted seating bench of wood and steel construction is installed adjacent to the main entrance.

Findings/Recommendations

Interior swinging doors throughout the Main Facility appeared to be in acceptable condition. Some units show denting (especially in the second-floor training area), chipping, delaminating surfaces; however, no cost allowances for repair are provided as the repair costs for this work are likely below the threshold of this report and can be handled as part of routine maintenance.

The kitchen equipment in the concession kitchen was reported to be of different age. For the purpose of this report, it is assumed that the equipment has an average installation date of 1998. A phase allowance to replace the commercial kitchen equipment in the concession kitchen is included in the cost table. The kitchen near the boardroom is believed to be original to the 2009 development of this area. It is believed that it is not heavily used and therefore will reach its EUL towards the end of this report. An allowance for replacement and upgrading is included in the cost table.

The benches, lockers as well as the display cases were observed to be in good to fair condition throughout the entire facility. Most of the casework will reach the end of its EUL within the timeframe of this report. Because of the different ages of the components, phased replacement costs are included in the cost table.

7.6 MECHANICAL SYSTEMS

7.6.1 Site Services

Description

The Site is fed by a natural gas service from the adjacent roadway with the meter located on the outside of the northwest corner of the Joe Phillips arena. The building is serviced by two water lines, a potable water service, which is fed from the Calaway Park water treatment system, and by a non-potable water service fed from the Lions soccer filed pond line, located adjacent to Range road 33 (on the west side of the high school), which is sourced from Calaway Park. Both water services are metered.

Sanitary waste generated at the Site is reported to drain directly to the high school's sanitary lift station, located on the north side of the school building. Storm water collected from paved surfaces and the building roof is collected at catch basins and then piped to a ditch located along Springbank Road

Findings/Recommendations

Utilities provided to the Site are understood to be adequate for their intended use. Metering systems, where observed, appeared to be in good condition. The replacement of natural gas lines is expected over the next 25 years as these utilities realize their expected useful life. Sections of the natural gas piping serving HVAC equipment on the roof were beginning to show signs of corrosion and should be painted as part of routine maintenance.

The SPFAS is serviced with a potable water supply from Calaway Park to the north of the site, which is understood to include a plant for water treatment prior to distribution throughout the facility. The current supply of potable water to SPFAS was reportedly provided in approximately 2013 and appeared to be operating as intended.

The sanitary service to the site was also reported to be operating as intended with no back-ups or concerns and based on an expected useful life of 50 years replacement is not anticipated during the 25-year evaluation period. The storm water catch-basins, weeping tile drain, and drainage swales were upgraded in 2016 and were observed to be in good condition. Replacement is not anticipated during the evaluation period.

7.6.2 Plumbing Systems

Description

The potable water, raw water and sanitary waste distribution lines, where observed to consist of plastic, copper, galvanized steel and cast-iron piping. De-ionized water, stored in bottles, provides flood water for the curling rink only. The non-potable system consists of a 37,800 litre (10,000 U.S. gal), underground storage tank complete with an immersion pump to pressurize the system and was installed in approximately 1991. The tank is located east of the Red Dutton arena and the non-potable water is distributed through a copper piping system to the flood room and is used for arena flooding and condenser tower cooling.

In 2003, a potable water fill line, fed from the Springbank High School water treatment system was installed. The project also included the installation of two - 7,938 litre (2,100 U.S. gal) fiberglass potable water storage tanks (located in the old Red Dutton refrigeration plant room) and a skid mounted, dual booster pressure pumps complete with controller, and bladder type pressure tanks. This system has now been abandoned since the provision of the new water supply from Calaway Park. Potable water is distributed throughout the building to the plumbing fixtures through a copper piping distribution system original to the construction of each building.

A snow melt pit complete with sump pump is provided between the two Arenas adjacent the Ice resurfacing room. There is a sanitary lift station complete with pump located in the Curling Rink concession mechanical room, plus a sump pump in the old Red Dutton refrigeration plant room.

Plumbing fixtures in the facility are located in public washrooms in the Curling Rink (main and upper floors), Joe Phillips Arena, second floor for the Joe Phillips Arena, and the Fieldhouse. They are generally comprised of floor mounted water closets of vitreous china construction, wall mounted urinals in the men’s washrooms, and counter set or wall mounted lavatories of vitreous china, enameled steel, or stainless-steel construction. Showers with push button or single handle faucets and wall mounted shower heads are provided in the change room facilities located in the Joe Phillips and Red Dutton Arenas. The showers are complete with a tiled surround.

The building's domestic hot water is produced in three locations within the main building, plus two other locations in the Fieldhouse and garage. The Curling Rink concession mechanical room is equipped with a 225 MBH, 100 US gallon, natural gas fired tank type heater. The Red Dutton mechanical room is equipped with a 76 MBH, 50 US gallon, 90% efficient gas fired tank type heater, manufactured by State. The upper mechanical room is equipped with a 179 MBH, 76 US Gallon natural gas fired hot water heater paired with an 80 US Gallon domestic hot water storage tank. Both the hot water heater and storage tank are manufactured by AO Smith. In addition, a natural gas fired domestic hot water heating boiler rated at 750 MBH, manufactured by Raypak, is provided in the Joe Phillips Arena second floor Mechanical Room for generating domestic hot water. The boiler is paired with a 180 US gallon storage tank manufactured by AO Smith used for the flood water for the two arenas. The domestic hot water services in the upper level mechanical room are complete with expansion tanks and circulation pumps.

The garage is equipped with a 179 MBH, 100 US gallon tank type hot water heater, combined with an 80 US Gallon storage tank, used for the ODR flood water. Both the heater and storage tank are manufactured by AO Smith. The system is complete with expansion tank and circulation pumps.

The Fieldhouse is equipped with two glass lined 119 US gallon hot water storage tanks each with immersion coils heated from the hot water boiler circulation system. The two tanks are manufactured by AO Smith and Advance Metal Press Inc., respectively. The system is complete with expansion tank and circulation pumps.

Additional plumbing fixtures in the facility include refrigerated drinking fountains located in hallways, and stainless-steel sinks in the concession kitchen, upper level lounge, and the second-floor offices of the Joe Phillips Arena.

Findings/Recommendations

The building's non-potable water distribution systems were observed to be in acceptable condition. The potable water pumping system and tanks was reported to be no longer in use since the new supply from Calaway Park was added in 2013. The site staff reported that although the tanks and pumping equipment are to remain as stand-by they are not likely to be re-used. Replacement of the disused equipment is therefore not anticipated, although an allowance has been provided in the cost table for removal, should the site choose this course of action. Based on age replacement of the non-potable water system is anticipated over the next 25 years as the plumbing components realize their expected useful life, and an allowance has been provided in the cost table. However, no provision has been provided to replace the tanks and pumping equipment associated with the potable water system as it is no longer in use.

It was reported by site staff that there is a long run of domestic water piping through the Red Dutton Arena serving the Concession kitchen and washrooms. Flushing lavatories or running water in sinks or lavatories causes a significant pressure drop, resulting in poor water flow to the concession. The piping should to be rationalized and for this purpose an allowance for a study has been provided in the cost table which also includes any piping modifications necessary for the rationalization, although based on the findings of the study, the scope of work may vary.

The sanitary and storm water distribution piping was mostly concealed; however, no issues were reported during our assessment. The sanitary sump, located in the curling rink mechanical room, was observed during the previous report of 2013 to be venting sewer gas into the room as the lid is not sealed to the top of the sump. It was observed that the grate over the sump pump was partially corroded although no issues of sewer gases venting was reported

during the site assessment. The sump pump in the water treatment room appeared to be operating as intended, however the snow melt sump pump, although operational, is no longer connected to the panel resulting in any high-water alarm not being registered. It is recommended that the pump and panel, which dates back to 1998, should be replaced in the short-term, and an allowance has been provided in the cost table. In addition is was observed when the snow melt pit cover was removed there was exposed electrical wiring which should be repaired or removed as part of routine maintenance.

The replacement of all remaining components (sanitary and storm piping), except for the sanitary and storm water distribution piping in the Joe Phillips arena and second floor areas, is expected over the next 25 years as the plumbing components realize their expected useful life expectancy. Allowances have been provided in the cost table.

The plumbing fixtures in the main floor washrooms appear to be in acceptable condition, with no reported issues or concerns. Water closets and urinals date back to 1998, while the lavatories have been replaced between 2010 and 2018. Replacement of the water closets and urinals is anticipated during the evaluation period while replacement of lavatories not expected. Allowances have been provided in the cost tables.

All of the plumbing fixtures in the Curling Rink were replaced in 2017 and were observed to be in good condition, apart from a single urinal which dates back to 1979 which was in fair condition. However, it was reported by facility staff that the new low flush water closets do not function well with the sanitary sump pump and lift station. The facility staff are considering replacing the low flush water closets with power assisted water closets as per the remainder of the facility. As this is not a lifecycle event no costs are provided, apart from the urinal which should be replaced as part of routine maintenance (cost below reporting threshold).

The sinks in the concession kitchen, upper level bar appeared to be original and were in fair condition. The sink located on the second floor of the Joe Phillips Arena was reportedly installed in approximately 2009. Based on age replacement of the sinks in the Curling Rink is anticipated within the next 4 years and allowances are provided in the cost table. Replacement of the sink in the upper level of the Joe Phillips Arena is not anticipated during the evaluation period.

The majority of the plumbing fixtures in the Joe Phillips Arena date back to 1998 and were observed to be in fair condition. A few water closets, urinals, and lavatories have been replaced in 2010 and were observed to be in good condition. Replacement of the majority of the plumbing fixtures (except those replaced in 2010) is anticipated during the evaluation period and allowances have been provided.

Plumbing fixtures on the second floor of the Joe Phillips Arena and Fieldhouse were all observed to be in good condition, and based on installation between 2009 and 2011, replacement is not anticipated.

The refrigerated drinking fountains appear to be in good condition and will require replacement towards the end of the evaluation period. The domestic hot water heaters, and storage tanks all appeared to be in acceptable condition with no reported issued or concerns. The domestic hot water heater in the garage will reach its expected useful life expectancy within 4 years and will require replacement due to age. The replacement of all remaining components is expected over the next 25 years as the plumbing components realize their expected useful life expectancy.

7.6.3 Heating, Ventilation and Air Conditioning

Description

Suspended, gas fired infrared heaters provide spectator heating in the Joe Phillips and Red Dutton arenas, and in the Red Dutton old refrigeration room. Suspended, gas fired unit heaters provide heating in the Curling Rink, Joe Phillips Arena, Red Dutton Arena, garage, Zamboni room, mechanical rooms, and the Refrigeration Plant Room. Additional supplemental electric force flow units are located at building entrance locations, the main Refrigeration Room and the Red Dutton old refrigeration room. There is also a ceiling mounted fan coil heater in the main entrance hallway.

Natural gas fired furnaces are provided in the Curling Rink Mechanical Room, each rated at approximately 100 MBH, which heat the main floor concession and eating area. There is also a furnace located in the Joe Phillips Arena West Mechanical Room, rated at 125 MBH which heats the main floor entry lobby located along the west side of the Arenas.

Heating in the Fieldhouse is provided by an in-slab heating system heated by a single boiler, rated at 720 MBH. There are seven fractional horsepower circulation pumps associated with the in-slab heating system.

A heating coil is provided in the snow melt pit for melting the ice shavings from the ice resurfacing machine.

Six, roof mounted, natural gas fired and mechanically cooled roof top units (RTU), manufactured by Lennox, provide heating, ventilation and cooling for the 2nd floor office areas, lounge, playschool and the 2nd floor fitness training areas. The units vary in size from 5 to 7.5 tons cooling capacity.

Three, indirectly, gas fired air handling units, manufactured by Engineered Air, provide heating and ventilation for the change rooms, Joe Phillips arena, and main floor lobby areas.

A roof mounted natural gas fired, desiccant wheel dehumidification unit, manufactured by Engineered Air, provides humidity control for the Red Dutton and Joe Phillips Arenas.

A direct fired, air handling unit, manufactured by Engineered Air, and roof mounted exhaust fans ventilate the refrigeration plant room. Roof mounted Washroom and kitchen exhaust fans provides supplemental ventilation for the buildings including the Fieldhouse. A ventilation hood is installed in the concession kitchen.

Conditioned air to the Fieldhouse is provided by four heat pumps located in the Mechanical Room. The heat pumps are manufactured by Advanced Distributor Products and have a cooling capacity of 5 tons each.

Conditioned air (heated and/or cooled) is distributed through a sheet metal duct system to the occupied spaces for all ventilation systems located on the roof. The ductwork is manufactured from a mixture of spiral and rectangular galvanized steel. Exhaust air is removed through a galvanized steel sheet metal duct system from the occupied spaces for all exhaust systems

The building HVAC equipment is controlled by standalone electric and low voltage controls and thermostats except for the refrigeration plant which is equipped with a refrigerant detection system complete with a refrigerant gas concentration level digital readout, required horns, visual strobes manual fan controls and signage.

Findings/Recommendations

The building's heating; ventilation and cooling equipment appeared to be in acceptable condition throughout with no reported deficiencies, with the majority of systems having been replaced in the past 10 years. It was reported that regular scheduled maintenance is being performed on all of the HVAC equipment. No known deficiencies were observed or reported for the remaining building's heating, ventilation and cooling systems. Lifecycle replacement of many of the systems is expected over the next 25 years as the heating ventilation and cooling components realize their expected useful life expectancy. Allowances have been provided in the cost tables.

While generally performing as intended, it is anticipated that five of the Lennox RTUs will require replacement or significant refurbishment within the 25-year evaluation period. The RTUs use R22-type refrigerant as part of the cooling cycle. This refrigerant type is being phased out in accordance with the Montreal Accord which will ban the import and manufacture of 99.5% of R-22 by the year 2020. Re-charging with R-22 type refrigerant during future repair work (if necessary) will then become cost prohibitive or non-permissible and will only be reserved for facilities with large commercial chiller applications. Furthermore, retrofitting these units with a chlorofluorocarbon (CFC) free refrigerant may result in a reduction in cooling performance, which could ultimately affect space conditions in the building. While no action is warranted at this time, this issue may dictate the size, location, timing and cost of future product replacement. For the purpose of this report, "normal" cost allowances and timing have been assumed for the replacement or overhaul of the impacted equipment.

The systems not anticipated to require replacement during the 25-year evaluation period include the Fieldhouse in slab heating piping, the boiler located in the Joe Phillips second floor Mechanical Room, the suspended natural gas fired unit heaters in the Arenas and Curling Rink, the Lennox RTU serving Childcare, and most of the sheet metal ductwork other than that in the Curling Rink.

7.6.4 Ice Plant Equipment

Description

A detailed refrigeration plant equipment review was conducted on November 22, 2018, by ThermoCarb Ltd. The descriptions and recommendations below are a summary of the ThermoCarb report, which can be found in **Appendix D**.

Springbank Park for All Seasons (SPFAS) includes the Joe Phillips and Red Dutton hockey arenas, a six-sheet Curling Rink and a refrigerated ice surface at the ODR. An ammonia refrigeration system with a capacity of 187 tons provides the cooling for the two indoor arenas and Curling Rink. The refrigeration system uses three Vilter reciprocating compressors, two evaporative condensers, and two shell and tube chillers and ancillary pumps and controls to provide cold calcium chloride brine to the refrigerated slabs. In addition there is a warm brine heat exchanger (heated by the compressor jacket water cooling system) and circulation pump (for Joe Phillips arena only); a warm brine closed loop circulation system under the Curling Rink cooling floor; warm and cold brine expansion tanks; cooling tower condenser water circulation pump, condenser water storage tank and treatment system serving CT-2 only; two outdoor mounted, cooling towers with ammonia evaporative coils.

The ODR is provided with a seasonal mat piping system (which is laid out over-top of the concrete surface) coupled with an outdoor pad mounted, Trane air cooled helical rotary glycol chiller rated at 170 tons cooling capacity.

Findings/Recommendations

The refrigeration system has been consolidated and upgraded over the years with the most recent upgrades being the Joe Phillips steel brine mains replacement in 2018, PLC in 2017, Curling Rink compressor in 2015, and Arena chiller in 2013. Upgrades also include upgrading the system and mechanical room to B52-13 mechanical refrigeration standards. A comprehensive maintenance program is in place for all pieces of refrigeration system by a respected refrigerant contractor.

The system and mechanical room envelope have been continually upgraded for code compliancy. Many architectural, mechanical and electrical B52 code requirements (including some listed below) fall outside of our scope of expertise and should be reviewed by qualified personnel. The following is a list of minor code deficiencies that should be remedied. (Some of these items may have already been addressed).

- Power wiring to CM-201 Mypro is temporary and should be replaced. (Subsequent to the site visit It was reported by site staff that the work is scheduled to be completed during the summer shut-down (2019).

- PSV 12 on PV-401 Curling Rink chiller oil pot requires replacement. (Subsequent to the site visit it was reported by site staff that this work had been completed).

The current layout of the room creates access restrictions to some of the equipment. The warm brine pump for Joe Phillips, the snowmelt pit exchanger, expansion tank and pump, and the cold and warm brine expansion tanks are the most negatively impacted by the layout, making servicing and maintenance checks more difficult and potentially hazardous. Over the years there have been brine leaks from the cold brine expansion tank that have accelerated corrosion on pumps, piping and structural supports that were exposed to the brine. The system seems to have balanced out as there have not been any recent leaks. Operations has recently repainted these surfaces to help prevent further corrosion and have updated line labelling for code compliancy.

The glycol cooling supplies to CM-101/201 do not have a control solenoid installed which allows cold glycol to circulate on the heads of the compressors whenever the pump is on. When the pump is on and only one compressor running, this could lead to condensing of ammonia on the stopped compressor, which could lead to damage when it is turned on. Solenoids should be considered at the next shutdown.

The ODR was upgraded in 2016 with the addition of a TRANE chiller package using R-134a refrigerant to provide consistent ice conditions over a longer operating season. The equipment has performed well and has only required minor repairs to this point. The original floor piping had several leaks last season which led to SPFAS installing a new seasonal matt system to provide the glycol cooling to the floor.

Based on age lifecycle replacement of the condenser pump, cold brine pump, warm brine and snow melt heat exchangers, warm brine pump, snow melt glycol pump, and relief valve system can be anticipated within the next 4 years. Allowances are provided in the cost table. Many of the other components of the ice plant system are also anticipated to require replacement in the longer term and allowances have been provided in the cost table. The exception to this are the refrigeration compressors, and piping headers for the Arenas and the new seasonal matt system to provide the glycol cooling to the floor of the ODR.

Note that ThermoCarb has reduced the recommended EUL used for chillers from 25 to15 years based on recent failures of older brine chillers, hence earlier replacement is recommended then was previously reported. Brine Expansion Tank TX101 is undersized for the application and there have been brine leaks over the years that have led to corrosion and equipment damage. Replacement is recommended with an appropriately sized unit.

The ammonia piping, piped in series with the cooling tower CT-2 and is in poor condition, with surface corrosion caused by outdoor weather elements. The piping should be cleaned of any surface corrosion and repainted as part of routine maintenance.

The evaporative cooling tower CT201 located on the flat roof of the Joe Phillips Arena Evaporative is being used for air cooling only. Evaporative portion of the tower has been disabled due to proximity to air handling unit equipment, and the resulting corrosion incurred. As a result, the life expectancy of the cooling tower has been extended, although replacement is still anticipated during the evaluation period. As recommended by ThermoCarb, at the time of replacement, install one cooling tower to serve all three Arenas. An allowance has been provided in the cost tables.

7.7 ELECTRICAL SYSTEMS

7.7.1 Electrical Distribution

Description

The building's electrical feed enters electrical room through an electrical meter prior to servicing a main distribution panel with a main switch rated at 1200A, 277/480 Volt electrical supply. The adjacent circuit distribution panel (CDP) distributes power to circuit breaker panels, secondary transformers, and three motor control centres. Secondary transformers provide 120/208V power to circuit breaker panels. 277/480 V and 120/208V power is distributed to various locations throughout the building. Power from the main switch gear feeds the garage, ODR, football field scoreboard, and the Fieldhouse.

The distribution panels supply power to feed to various mechanical equipment, refrigeration plant, lighting, receptacles, etc. through wiring that is understood to be copper installed in metal and plastic conduit.

Findings/Recommendations

The main electrical equipment and wiring in the Joe Phillips Arena, change rooms, and Refrigeration Room are understood to be installed the same years as the construction of the Arena in 1998. Wiring and electrical equipment in the Curling Rink and Red Dutton arena are understood to have been installed in 1971/1979, with some more recent renovation work occurring in the Red Dutton and Joe Phillips Arenas (such as work associated with the lighting retrofit which took place in 2018).

The electrical service is reported to be adequate for the building and is reported to be functioning as intended. Corrosion at the base of the main distribution panel and switchgear was observed and suggests that in the past there may have been frequent exposure to moisture or occasion exposure to brine (refer to refrigeration plant finding and recommendations for additional information), although it was reported that there have been no recent leaks. Both liquids are present in the room as the room also houses the ice plant refrigeration system.

Distribution panelboards were observed to have 25-30% additional capacity for new circuits, although some of the older panelboards dating back to 1979 were observed to be almost at maximum capacity. Labelling of some of the older panelboards was observed to be poor with circuits either not labelled or crossed out making it hard to read. It is recommended that all panelboards with poor labeling, be relabeled inclusive of testing to ensure circuit labeling is accurate, to safely facilitate future servicing and isolation. This work is expected to be completed as part of routine maintenance and therefore excluded from the cost table. Electrical components were observed to be in acceptable condition except for panelboard HA which had missing circuit breaker covers and based on an installation date of 1971 should be replaced immediately as part of routine maintenance and therefore not cost has been included in the cost table.

Based on age, the following components are anticipated to require replacement in the short term as they have surpassed or will reach their expected useful life in the next 1-2 years. The 600A, 277-480V Main disconnect switch in the Red Dutton old refrigeration room, the two secondary transformers in the Joe Phillips Arena west mechanical room and Red Dutton mechanical room, the original 1979 distribution panelboards, and MCC-1 Curling Rink refrigeration equipment motor control centre in the Joe Phillips refrigeration room. Allowances have been provided in the cost table. In addition, most of the remaining electrical components are anticipated to require replacement during the 25-year evaluation period, and again allowances have been provided in the cost table. Exceptions include the electrical components in the Fieldhouse, the 1998 electrical distribution equipment, newer panelboards installed after 2013, and the wiring associated with the 2018 lighting retrofit in the Curling Rink, Red Dutton and Joe Phillips Arenas.

7.7.2 Interior & Exterior Lighting

Description

Lighting throughout the building is provided by a combination of recessed or surface mounted fluorescent fixtures with a mixture of mainly T8 lamps and a few older T12 lighting fixtures. The lounge is illuminated with suspended fluorescent and incandescent track lighting and suspended decorative light fixtures.

The indoor and outdoor arena surfaces (Curling Rink, Joe Phillips and Red Dutton Arenas, plus the ODR) are illuminated by suspended or surface mounted light emitting diode (LED) fixtures. Exterior lighting is provided by wall mounted LED fixtures along the building exterior including the garage and Fieldhouse. Pole mounted LED fixtures illuminate the south parking area. There are a few pot lights illuminating the underside of the soffit on the Fieldhouse building, equipped with compact fluorescent or incandescent lamps.

Findings/Recommendations

Fluorescent fixtures installed since 1998, when the addition of the Joe Phillips arena and change rooms occurred, are equipped with T8 lamps and electronic ballasts and are in acceptable condition. The older fluorescent fixtures in the Curling Rink and Red Dutton Arena portions of the building date back to 1979, although most have been retrofitted with T8 lamps. A few T12 lamps with magnetic ballasts may still remain. These fluorescent fixtures installed before 1998 are in acceptable condition but should be replaced as they have exceeded their EUL and would benefit from newer energy efficient LED technology. However, it was reported that as ballasts fail the fixtures are slowly being retrofitted with LED kits as part of routine maintenance and therefore no costs have been included in the cost table for this work.

The lighting in the two indoor arenas, Curling Rink, and outdoor arena appear to be excellent condition, with all the lighting having been upgraded between 2017 and 2018 with LED fixtures. Incandescent fixtures in the Curling Rink lounge are mostly original to the construction of the building and are in overall fair condition. Replacement of inefficient incandescent lighting fixtures should also be considered. Cost for this work has been included in the cost table.

The majority of the exterior lighting was replaced between 2017 and 2018 and appear to be in good condition with no reported issues or concerns. The only exception is the soffit pot lighting on the exterior of the Fieldhouse which presumably dates back to 2011 and was in acceptable condition. Replacement of the soffit pot lighting fixtures should also be considered. Cost for this work has been included in the cost table.

Replacement of the fluorescent lighting in the facility is expected over the next 25 years as they realize their expected useful life, starting with the older 1979 vintage luminaires as they have surpassed their EUL. The lighting in the Curling Rink lounge has also surpassed its EUL and should be replaced with energy efficient LED lighting. Allowances have been provided in the cost table for the replacement of the lighting.

In addition, all of the exterior lighting will achieve its EUL in the longer term and allowances have been provided in the cost table. The remainder of the lighting in the building should remain serviceable for the duration of the 25-year evaluation period, and no costs are provided.

7.7.3 Communications & Security

Description

A hard-wired communication system, for phone communication is distributed throughout all areas of building. The security intrusion alarm system consists of a DSC panel and exposed contacts. There are 33 video cameras mounted at various interior and exterior locations throughout the building and are monitored and recorded locally. The building is serviced by a fibre optic service for data and television signal (Shaw). A hardwire (Cat 5) data network distribution system is provided in the office areas, and wireless stations are located throughout the building.

Findings/Recommendations

Communication systems were mostly installed in 1998, with a fibre optic service installed in the last five years. Both appear to be in acceptable condition with no reported deficiencies. The intrusion and video security systems are understood to have been installed circa 1998 and 2011, respectively, and appear to be in acceptable condition with no reported deficiencies. The replacement of the communication and the security systems is expected over the next 25 years as they realize their useful life expectancy.

7.8 FIRE AND LIFE SAFETY

7.8.1 Fire Detection & Suppression

Description

The building is partially protected with a wet sprinkler system. Other forms of fire suppression in the building include a wet-chemical fire suppression system installed within the concession kitchen fume hood. Portable ABC fire extinguishers are provided throughout the facility.

A fire detection and alarm system is comprised of smoke and heat detectors that are installed in select locations. Pull stations and fire bells are typically installed near emergency exits and entrances. The main fire panel which is located by the main entrance vestibule is understood to be remotely-monitored.

Findings/Recommendations

Fire detection and suppression equipment are original to the construction of the Joe Phillips Arena in 1998 and appeared to be in fair condition with no reported issues. The testing of the fire alarm system has been completed within the last 12 months (SPFAS reportedly meets annual fire inspection standards for fire alarm monitoring).

Several fire extinguishers were observed to have out-of-date inspection tags. Inspect all fire extinguishers as part of routine maintenance. Replacement of fire extinguishers anticipated on an as needs basis. Subsequent to the site visit it was reported by site staff that the recertification of all fire extinguishers was in progress.

The replacement of the fire alarm system is anticipated within the next 4 years as it realizes its expected useful life. The replacement of the sprinkler system, and concession fume hood fire suppression system (replaced in 2016) is not anticipated during the evaluation period.

7.8.2 Emergency Power & Lighting

Description

Emergency lighting is provided by battery operated light fixtures and illuminated exit LED and incandescent lit signs at various locations throughout the building. The building is not equipped with a backup power generation unit. Illuminated exits signs are provided at exit locations.

Findings/Recommendations

Emergency light fixtures installed since 1998, when the addition of the Joe Phillips arena and change rooms occurred, are in acceptable condition. The 1979 installed emergency light fixtures are 11 years past their expected useful life expectancy, are mostly located in the Curling Rink and Red Dutton arena areas of the building. These emergency lighting and exit lighting fixtures appear to be in acceptable condition with no reported issues or concerns. While no deficiencies were observed or reported, this equipment is expected to require replacement over the next 25 years as its approaches the end of its expected useful life expectancy.

8.0 OPINIONS OF COSTS SUMMARY

The table presented below provides the total opinion of costs (uninflated), organized by building discipline, to address observed immediate deficiencies, deferred maintenance items, and to replace components which may exceed their theoretical useful life over the next 25 years.

The table includes three categories, which are defined as follows:

Immediate Repairs - Deficiencies that require action to prevent further deterioration to the component, to prevent possible injury due to an unsafe condition and/or code violation, or to address deferred maintenance items that may not warrant immediate attention, but require action on a priority basis, in addition to routine preventative maintenance.

Deferred Maintenance and Repairs - Deficiencies observed during the assessment that are not considered immediate in nature, but are considered beyond normal routine maintenance.

Lifecycle Replacements - Components or systems that have already exceeded, or will exceed their theoretical design life over the next 25 years and may require replacement to maintain building performance.

A breakdown of the condition of various components observed during the assessment, and corresponding opinions of costs to address noted deficiencies, is summarized in the Capital Renewal Costs Tables in Appendix A.

Property Component	Immediate Repair Costs*	Deferred Maintenance and Repair Costs**	Lifecycle Replacement Costs***
Site Components	$0	$20,000	$1,485,825
Building Structure	$0	$10,000	$2,065,000
Roofing	$0	$25,000	$906,143
Building Exterior	$0	$0	$398,880
Building Interior	$0	$512,500	$1,653,629
Mechanical Systems	$0	$206,000	$2,005,000
Electrical Systems	$3,500	$40,000	$890,900
Fire & Life Safety Systems	$0	$24,000	$284,000
TOTALS	**$3,500**	**$837,500**	**$9,689,377**

GRAND TOTAL	**$10,530,377**

* Immediate repairs are for deficiencies that require action to prevent further deterioration to the component, to review a component further to confirm its status, to prevent possible injury due to an unsafe condition and/or code violation, or to address deferred maintenance items that may not warrant immediate attention, but require action on a priority basis, in addition to routine preventative maintenance.

** Deferred maintenance items are deficiencies observed during the assessment that are not considered immediate in nature, and are considered beyond normal routine maintenance.

*** Lifecycle Replacement Costs are costs incurred when components reach the end of their EUL and need to be replaced.

A table presenting our opinion of costs, which includes uninflated and inflated values (using an annual compound inflation rate of 0.38%), to address observed immediate deficiencies, deferred maintenance items, and to replace components which may exceed their theoretical useful life over the next 25 years is included in **Appendix A**, Table A and Table B below.

The total opinion of cost presented above represents an average, annual (un-inflated) cost of $421,215 over the next 25 years for recommended capital investment. The total opinion of cost presented above represents an average, annual (inflated) cost of $441,059 over the next 25 years for recommended capital investment. For a more detailed cost break down for a specific year, please refer to Appendix A, Table A and Table B below.

Note that the opinions of costs presented in this report are intended to be exclusive of renewal / repair work that would normally be considered part of ongoing site operations and maintenance. Unless indicated otherwise over the course of this assessment, Stantec has assumed that costs for renewal / repair events presented herein are to be classified as capital replacement costs, although there may be costs presented that are currently managed under the operations and maintenance budget for the Site.

The opinions of costs presented in this report are intended for global budgeting purposes only, and are exclusive of inflationary costs. No physical measurements or area calculations were performed, and no quotations or estimates were obtained to perform the work recommended. The scope of work and the actual costs of the work recommended can only be determined after a detailed examination of the site element in question, understanding of the site restrictions, understanding of the effects on the ongoing operations of the site/buildings, definition of the construction schedule, and preparation of tender documents. Note that this preliminary work may be required in advance of the anticipated timeframe for each capital renewal event as recommended in this report, and could also entail additional costs that are above and beyond the events' corresponding opinion of cost.

Furthermore, the EUL of major building systems and site improvements located at the Site, and their observed condition, were used as the basis in determining a renewal schedule. However, the timing of renewal / repair work, as recommended in this report, may be subject to change depending on several contributing factors, among which could include the quality of materials used, manufacturing and installation, the intensity and frequency of service, the degree of maintenance afforded to the system, local weather conditions, etc.

This report, its opinions and recommendations, are intended to be used as a reference in performing general capital renewal work and component lifecycle planning at the Site and are not meant to substitute or supersede existing capital plans, funding contributions, scheduled repair events, etc. that currently exist for the facility. The report is also not meant to act as a mandate on the proper renewal of capital assets. Smaller or moveable building components have generally been excluded from this assessment and will require consideration when deciding on the future direction for capital re-investment at the Site.

9.0 ADDITIONAL INVESTIGATIVE WORK

As indicated throughout this report under section 7.0 (“Assessment Summary”), several building components and site improvements are recommended for further investigation to confirm or establish their condition and remaining useful life, or to initiate a framework that will maintain the subject element into the foreseeable future. This includes the following:

- Combined structural investigation to determine if the structural steel members and bolt connections located in the two hockey arenas and the Curling Rink are compromised due to the surface rust observed and investigate on the slab cracking and flaking header trench of the Red Dutton Arena.

- Plumbing study to rationalize the domestic water piping in the facility.

Opinions of costs to carry out the aforementioned investigations or improvements have been excluded from this assessment, as further defining of the required scope of work and methodologies to be used is necessary prior to commencement. The costs of any follow-up work that stem from these investigations or improvements have also been excluded from this report, as they would be considered speculative and would depend greatly on the outcome of the preliminary investigation work.

10.0 CONCLUSION

Stantec Consulting Ltd. has completed a Capital Renewal Plan for the property located at 32224A Springbank Road, in Calgary, Alberta.

The assessment was performed at the request of Rocky View County utilizing methods and procedures generally consistent with ASTM Standard E2018-15 and with standard commercial/customary practice consistent with acceptable industry standards. The independent conclusions represent Stantec's professional judgments based on the conditions that existed and information and data available to Stantec during the course of the assessment. Factual information received has been assumed to be correct and complete.

Respectfully Submitted,

STANTEC CONSULTING LTD.

Tobias Link, Dipl.-Ing. (FH)
Associate
Direct: (403) 781-5463
Cell: (403) 6126154
Tobias.link@stantec.com

Tim Hobson, MSC Tech., CEM
Facility Assessment Consultant
Direct: (403) 750-2449
Cell: (403) 681-5647
tim.hobson@stantec.com

Appendix A Capital Renewal Costs Tables

TABLE A - COMPONENT LISTING AND REPAIR / REPLACEMENT COST

Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Year of Construction or Renewal	Expected Useful Life (Years)	Anticipated Time Before Next Action (Years)	Observed Condition	Recommended Action	Frequency of Action to Occur (Years)	Reason for Action	Unit	Unit Cost (2019 Dollars)	Quantity	Event Cost (2019 Dollars)	Number of Events in 25 Year Period	Total Opinion of Probable Cost (25 Years)
7.1	**SITE COMPONENTS**														
7.1.1	**Paving, Curbing & Parking**														
A01	Asphalt Paving (Parking Lot)	South of Shane Homes Curling Rink and north of Joe Philips Arena	1998	20	10	The north and south asphalt paved parking lots had depressed areas, spalling and cracking. No other major damage or deficiencies were observed or reported.	Replacement of the component is anticipated, as it has reached the end of its useful life.	20	Lifecycle	M2	$ 38	7,180	$ 272,840	1	$ 272,840
A01	Asphalt Paving (Drive Lanes)	Throughout the site	1998	20	10	The asphalt drive lanes had depressed areas, spalling and cracking. No other major damage or deficiencies were observed or reported.	Replacement of the component is anticipated, as it has reached the end of its useful life.	20	Lifecycle	M2	$ 38	2,160	$ 82,080	1	$ 82,080
A01	Asphalt Maintenance Program	Throughout the site	1998	N/A	1	N/A	Repair the component to preserve its useful life, until such time as it is put back into service.	5	Condition	Lump Sum	$ 20,000	1	$ 20,000	1	$ 20,000
A01	Concrete Curbs	Throughout the site	1998	25	4	Mostly in fair condition, but some local damages were observed	Replacement of the component is anticipated, as it will reached the end of its useful life.	25	Lifecycle	M	$ 105	650	$ 68,250	1	$ 68,250
A01	Concrete Walkways	North and south of the Main Facility, near Fieldhouse	1979	25	4	Extensive Spalling was observed along the front of the Main Facility, the stamped concrete surface at the Fieldhouse shows extensive cracking and more localized cracking was observed at the remaining concrete sidewalk components.	Replacement of the component is anticipated, as it has reached the end of its useful life already.	25	Lifecycle	M2	$ 26	550	$ 14,300	1	$ 14,300
A01	Concrete Surfaces	Outdoor Rink (ODR) / Basketball Field	2005	25	11	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reach the end of its useful life. Replacement cost is based on a conventional concrete slab with no built in refrigeration piping, based on the continued use of chilled glycol mat system (refer to Ice Plant Equipment section for additional information on the glycol mat system).	25	Lifecycle	M2	$ 129	2,375	$ 306,375	1	$ 306,375
7.1.2	**Landscaping and Appurtenances**														
A01	Guardrail	Near main entrance	1979	35	4	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it has reached the end of its useful life already.	35	Lifecycle	Lump Sum	$ 5,500	1	$ 5,500	1	$ 5,500
A01	Dasher Boards	ODR	2005	25	11	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	25	Lifecycle	Lump Sum	$ 200,000	1	$ 200,000	1	$ 200,000
A01	Electronic Message Sign	South Parking Lot	2018	20	19	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	20	Lifecycle	Each	$ 6,500	1	$ 6,500	1	$ 6,500
A01	Bleachers	Throughout the sports fields	2005	25	11	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	25	Lifecycle	Lump Sum	$ 45,000	1	$ 45,000	1	$ 45,000
A01	Athletic Equipment (basketball hoops, goal structures, scoring board etc.)	Throughout the sports fields	2005	25	11	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	25	Lifecycle	Lump Sum	$ 35,000	1	$ 35,000	1	$ 35,000
A01	Site Furniture/Playground structures	Throughout the site	2005	25	11	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	25	Lifecycle	Lump Sum	$ 37,500	1	$ 37,500	1	$ 37,500
A01	Pedestrian Bridges	Throughout the site	2008	20	9	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	20	Lifecycle	Lump Sum	$ 10,000	1	$ 10,000	1	$ 10,000
A01	Chain-link Fencing	Baseball diamonds, lagoon	1997	30	8	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	30	Lifecycle	M	$ 344	1,000	$ 344,000	1	$ 344,000

TABLE A - COMPONENT LISTING AND REPAIR / REPLACEMENT COST

Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Year of Construction or Renewal	Expected Useful Life (Years)	Anticipated Time Before Next Action (Years)	Observed Condition	Recommended Action	Frequency of Action to Occur (Years)	Reason for Action	Unit	Unit Cost (2019 Dollars)	Quantity	Event Cost (2019 Dollars)	Number of Events in 25 Year Period	Total Opinion of Probable Cost (25 Years)
A01	Chain-link Fencing	North-east corner of Main Property (near baseball diamonds) along Range Road 33	1984	30	4	The fencing was rusted throughout.	Replace the component to ensure performance and enhance the overall appearance of the facility.	30	Lifecycle	Metre	$ 344	170	$ 58,480	1	$ 58,480
7.2	**BUILDING STRUCTURE**														
S99	Structural Investigation	Main Facility	1971/1979/1998	100	1	Surface rust and rusted bolt connection on structural steel members throughout. Concrete damages on floor slab and header trenches in Red Dutton Arena.	Structural Investigation	100	Condition	Lump Sum	$ 10,000	1	$ 10,000	1	$ 10,000
S02	Ice arena floor slab	Red Dutton Arena	1971	60	12	Except the cracked slab section near the north-east corner and the spalling header trench walls , no major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	60	Lifecycle	Lump Sum	$ 1,400,000	1	$ 1,400,000	1	$ 1,400,000
S02	Curling Rink floor slab	Shane Homes Curling Rink	1979	60	20	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	60	Lifecycle	Lump Sum	$ 665,000	1	$ 665,000	1	$ 665,000
7.3	**Roofing**														
R01	Roofing material	Modified bituminous roofing at water room	2002	25	8	Apart from occasionally smaller leaks, which are repaired on a as needed base, no other major damage or deficiencies were observed or reported.	Lifecycle replacement is anticipated in year 9 of this report. The roof study recommended might modify the year of replacement depending on the findings.	25	Lifecycle	M2	$ 194	75	$ 14,526	1	$ 14,526
R01	Roofing material	Modified bituminous roofing in between Red Dutton and Joe Phillips arenas	2017	25	23	Apart from occasionally smaller leaks, which are repaired on a as needed base, no other major damage or deficiencies were observed or reported.	Lifecycle replacement is anticipated in year 24 of this report. The roof study recommended might modify the year of replacement depending on the findings.	25	Lifecycle	M2	$ 194	960	$ 185,933	1	$ 185,933
R01	Roofing material	Ethylene, propylene, diene monomer (EPDM) roofing membrane above Shane Homes Curling Rink	2002	35	18	Apart from occasionally smaller leaks, which are repaired on a as needed base, no other major damage or deficiencies were observed or reported.	Lifecycle replacement is anticipated in year 20 of this report. The roof study recommended might modify the year of replacement depending on the findings.	35	Lifecycle	M2	$ 215	1,760	$ 378,400	1	$ 378,400
R01	Roofing material	Ethylene, propylene, diene monomer (EPDM) roofing membrane above the north and south entrances	2005	35	21	Apart from occasionally smaller leaks, which are repaired on a as needed base, no other major damage or deficiencies were observed or reported.	Lifecycle replacement is anticipated in year 23 of this report. The roof study recommended might modify the year of replacement depending on the findings.	35	Lifecycle	M2	$ 215	77	$ 16,555	1	$ 16,555
R01	Roofing material	Asphalt shingles at the Fieldhouse, the Garage, the Scoring Tower and Storage Shed	2008	25	14	Apart from occasionally smaller leaks, which are repaired on a as needed base, no other major damage or deficiencies were observed or reported.	Lifecycle replacement is anticipated in year 23 of this report. The roof study recommended might modify the year of replacement depending on the findings.	25	Lifecycle	M2	$ 59	550	$ 32,549	1	$ 32,549
R01	Roofing material	Membrane at ODR	2005	20	6	No major damage or deficiencies were observed or reported.	Replacement of the component is anticipated, as it will reached the end of its useful life.	20	Lifecycle	Lump Sum	$ 275,000	1	$ 275,000	1	$ 275,000
R01	Roofing material	Roof maintenance	2002	5	1	N/A	Conduct periodic preventative roof maintenance.	5	Condition	Lump Sum	$ 5,000	1	$ 5,000	5	$ 25,000
R01	Metal Gutters	Fieldhouse, the Garage, the Storage Shed at the Lions Soccer Park and the Scoring Tower	2008	25	14	No major deficiencies were observed or reported	Replacement of the component is anticipated, as it will reached the end of its useful life.	25	Lifecycle	M	$ 12	265	$ 3,180	1	$ 3,180
7.4	**BUILDING EXTERIOR**														

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Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Year of Construction or Renewal	Expected Useful Life (Years)	Anticipated Time Before Next Action (Years)	Observed Condition	Recommended Action	Frequency of Action to Occur (Years)	Reason for Action	Unit	Unit Cost (2019 Dollars)	Quantity	Event Cost (2019 Dollars)	Number of Events in 25 Year Period	Total Opinion of Probable Cost (25 Years)
A02	Prefinished metal	Shane Homes Curling Rink	1979	50	10	Prefinished metal panels are installed on the upper portion of the building. No other major damage or deficiencies were observed or reported.	Conduct lifecycle replacement	50	Lifecycle	M2	$ 150	700	$ 105,000	1	$ 105,000
A02	Prefinished metal	Red Dutton Arena	1971	50	4	Prefinished metal panels are installed on the upper section of the west elevation (roof gable) and along the east elevation throughout. No other major damage or deficiencies were observed or reported.	Replacement is anticipated as the component reaches its expected useful life.	50	Lifecycle	M2	$ 150	450	$ 67,500	1	$ 67,500
A02	Exterior Paint	Exterior block walls	2018	10	9	The painted exterior walls are in good condition.	Replacement of the component is anticipated, as it reaches its expected useful life.	10	Lifecycle	M2	$ 32	900	$ 28,890	2	$ 57,780
A04	Entrance doors	South main entrance at Shane Homes Curling Rink	1998	35	14	Two main entrances sliding doors are provided on the south building elevation, consisting of glazed, metal framed doors. No major damage or deficiencies were observed or reported.	Replacement of the component is anticipated, as it reaches its expected useful life.	35	Lifecycle	Each	$ 15,000	2	$ 30,000	1	$ 30,000
A04	Utility doors	Shane Homes Curling Rink and Red Dutton arenas	1971/1979	35	2	Utility doors are painted metal hinged units. Localized impact damage was observed. No other major damage or deficiencies were observed or reported.	Replacement of the component is anticipated, as it reached already its expected useful life.	35	Lifecycle	Each	$ 2,000	6	$ 12,000	1	$ 12,000
A04	Utility doors	Joe Phillips Arena	1998	35	14	Utility doors are painted metal hinged units. Localized impact damage was observed. No other major damage or deficiencies were observed or reported.	Replacement of the component is anticipated, as it reaches its expected useful life.	35	Lifecycle	Each	$ 2,000	6	$ 12,000	1	$ 12,000
A04	Overhead doors	Joe Phillips Arena	2002	25	8	Localized impact damage was observed. No other major damage or deficiencies were observed or reported.	Replacement of the components is anticipated, as they reaches its expected useful life.	25	Lifecycle	Each	$ 13,400	2	$ 26,800	1	$ 26,800
A04	Overhead doors	Shane Homes Curling Rink	2010	25	16	Localized impact damage was observed. No other major damage or deficiencies were observed or reported.	Replacement of the component is anticipated, as it reaches the end of its expected useful life.	25	Lifecycle	Each	$ 13,400	1	$ 13,400	1	$ 13,400
A04	Overhead doors	Garage and Storage Shed at Lions Soccer Park	2008	25	14	No other major damage or deficiencies were observed or reported.	Replacement of the component is anticipated, as they reach the end of their expected useful life.	25	Lifecycle	Each	$ 13,400	4	$ 53,600	1	$ 53,600
A03	Windows	Shane Homes Curling Rink	1979	40	4	No major damage or deficiencies were observed or reported; however, the windows already reached the end of their EUL.	Replacement of the components is anticipated, as they reaches its expected useful life.	40	Lifecycle	Each	$ 2,800	5	$ 14,000	1	$ 14,000
A03	Windows	Joe Phillips Arena	1998	40	19	No major damage or deficiencies were observed or reported; however, the windows will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as it reaches its expected useful life.	40	Lifecycle	Each	$ 3,400	2	$ 6,800	1	$ 6,800
7.5	**BUILDING INTERIOR**														
7.5.1	**Floor, Wall & Ceiling Finishes**														
A09	Resilient Stair Finishes	Shane Homes Curling Rink	1998	25	4	No other major damage or deficiencies were observed or reported.	Replacement of the component is recommended, as it reaches its expected useful life.	25	Lifecycle	Lump Sum	$ 6,500	1	$ 6,500	1	$ 6,500
A02	Blanket Insulation	Joe Phillips Arena	1998	5	1	The vinyl backing of the blanked insulation showed punctures from puck impact throughout.	Repair impact damages. Periodic repairs are expected over the evaluation period and are included over the evaluation period.	5	Condition	Lump Sum	$ 5,000	1	$ 5,000	5	$ 25,000
A06	Fire Stopping	Red Dutton Arena/Joe Phillips Arena	1971/1998	N/A	1	Damaged CMU and drywall section as well as missing fire sealant in some mechanical rooms	Repair damaged wall sections and install fire sealant where necessary	1	Condition	Lump Sum	$ 5,000	1	$ 5,000	1	$ 5,000

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Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Year of Construction or Renewal	Expected Useful Life (Years)	Anticipated Time Before Next Action (Years)	Observed Condition	Recommended Action	Frequency of Action to Occur (Years)	Reason for Action	Unit	Unit Cost (2019 Dollars)	Quantity	Event Cost (2019 Dollars)	Number of Events in 25 Year Period	Total Opinion of Probable Cost (25 Years)
A08	Acoustic Ceiling Tiles	Throughout facility	1971/1978/1998	30	1	No major damage or deficiencies were observed or reported; however, most acoustic ceiling sections will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as it reaches its expected useful life and is being phased over the 25 year planning period.	30	Lifecycle	M2	$ 81	350	$ 28,245	3	$ 84,735
A08	Ceiling painting	Ground floor hallways and locker rooms.	2005	15	2	No major damage or deficiencies were observed or reported; however, most acoustic ceiling sections will reach the end of their EUL within the report time frame.	Repaint ceilings where needed. Costs are being phased over the 25 year planning period.	15	Lifecycle	M2	$ 32	950	$ 30,666	2	$ 61,332
A06	Wall Finishes (protective boards)	Protective plastic paneling in dry training area	2009	15	3	The protective plastic paneling in the training area showed impact damage throughout.	Replace completely.	15	Condition	Lump Sum	$ 5,000	1	$ 5,000	2	$ 10,000
A06	Wall Finishes (paint)	Interior wall painting in locker rooms and hallways (high wear areas)	2017	2	2	Scuffing, scratching etc., caused by skates, hockey sticks, duffle bags etc. was observed throughout those areas.	Periodic repainting is expected over the evaluation period and are included over the evaluation period.	2	Condition	Lump Sum	$ 5,000	1	$ 5,000	12	$ 60,000
A06	Wall Finishes (paint)	General interior painting throughout (normal wear areas)	2013	10	2	No other major damage or deficiencies were observed or reported.	Periodic repainting is expected over the evaluation period and are included over the evaluation period.	10	Lifecycle	Lump Sum	$ 30,000	1	$ 30,000	3	$ 90,000
A06	Wall Finishes (ceramic tiles)	Shane Homes Curling Rink, Joe Phillips Arena and Fieldhouse	1979	40	2	No other major damage or deficiencies were observed or reported; however, the tiles will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as it reaches its expected useful life. Phasing of work is expected over the evaluation period.	40	Lifecycle	Lump Sum	$ 16,000	1	$ 16,000	2	$ 32,000
A09	Floor Finishes (rubber flooring - heavy wear areas)	Around ice sheets, locker rooms, some hallways and Fieldhouse	2010	10	4	No other major damage or deficiencies were observed or reported; however, the flooring will need replacement sooner than on average due to the additional wear caused by skates.	Replace where needed.	10	Condition	M2	$ 125	1,100	$ 137,500	3	$ 412,500
A09	Floor Finishes (rubber flooring - low wear areas)	Some hallways, concession area, washrooms etc.	2010	20	11	No other major damage or deficiencies were observed or reported; however, the rubber floor will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as it reaches its expected useful life.	20	Lifecycle	M2	$ 125	2,050	$ 256,250	1	$ 256,250
A09	Floor Finish (laminate flooring)	Lounge and boardroom	2016	20	17	No other major damage or deficiencies were observed or reported; however, the laminate floor will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as it reaches its expected useful life.	20	Lifecycle	M2	$ 91	325	$ 29,562	1	$ 29,562
7.5.2	**Base Building Equipment & Accessories**														
A07	Interior Metal Doors	Shane Homes Curling Rink	1979	50	10	No other major damage or deficiencies were observed or reported; however, the doors will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as it reaches its expected useful life.	50	Lifecycle	Each	$ 1,250	20	$ 25,000	1	$ 25,000
A07	Interior Metal Doors	Red Dutton Arena	1971	50	4	No other major damage or deficiencies were observed or reported; however, the doors will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as it reaches its expected useful life.	50	Lifecycle	Each	$ 1,250	5	$ 6,250	1	$ 6,250
A07	Interior Fire Shutters and Overhead Doors	Red Dutton Arena	1998	25	4	No other major damage or deficiencies were observed or reported; however, the overhead door and the fire shutter will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	25	Lifecycle	Lump Sum	$ 40,000	1	$ 40,000	1	$ 40,000
A06	Interior Windows	Red Dutton Arena	1971	50	3	No other major damage or deficiencies were observed or reported; however, the windows will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	50	Lifecycle	Each	$ 1,600	27	$ 43,200	1	$ 43,200

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A06	Interior Windows	Shane Homes Curling Rink	1979	50	10	No other major damage or deficiencies were observed or reported; however, the windows will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	50	Lifecycle	Each	$ 1,400	27	$ 37,800	1	$ 37,800
A10	Metal Bleachers	Joe Phillips Arena	1998	40	19	No other major damage or deficiencies were observed or reported; however, the bleachers will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	40	Lifecycle	Seat	$ 290	300	$ 87,000	1	$ 87,000
A10	Wood Bleachers	Red Dutton Arena	2005	35	21	No other major damage or deficiencies were observed or reported; however, the bleachers will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	35	Lifecycle	Seat	$ 225	180	$ 40,500	1	$ 40,500
A99	Electronic Display Boards	Shane Homes Curling Rink and Red Dutton Arena	2005	20	6	No other major damage or deficiencies were observed or reported; however, the display boards will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	20	Lifecycle	Each	$ 12,500	3	$ 37,500	1	$ 37,500
A10	Dasher Boards	Red Dutton Arena	2015	25	21	No other major damage or deficiencies were observed or reported; however, the dasher boards will reach the end of their EUL	Replacement of the component is recommended, as it reaches the end of its expected useful life.	25	Lifecycle	Lump Sum	$ 250,000	1	$ 250,000	1	$ 250,000
A10	Dasher Boards (disassemble and reassemble)	Red Dutton Arena	2015	25	12	No other major damage or deficiencies were observed or reported; however, the dasher boards will need to be disassembled and reassembled at the same time the floor slab is replaced	Disassemble, repair and reassemble the dasher boards when the floor slab is being replaced	25	Lifecycle	Lump Sum	$ 50,000	1	$ 50,000	1	$ 50,000
A10	Dasher Boards	Joe Phillips Arena	1998	25	3	No other major damage or deficiencies were observed or reported; however, the dasher boards will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	25	Lifecycle	Lump Sum	$ 250,000	1	$ 250,000	1	$ 250,000
A10	Locker Room Casework	Fieldhouse/Figure Skating Changeroom	2011	25	17	No other major damage or deficiencies were observed or reported; however, these elements will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	25	Lifecycle	M	$ 550	120	$ 66,000	1	$ 66,000
A10	Wood Casework	Main Facility	1979	25	3	No other major damage or deficiencies were observed or reported; however, these elements will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	25	Lifecycle	M	$ 1,100	70	$ 77,000	1	$ 77,000
A10	Kitchen Appliances	Red Dutton Arena (staff kitchen)	2009	15	5	No other major damage or deficiencies were observed or reported; however, these elements will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	15	Lifecycle	Lump Sum	$ 1,750	3	$ 5,250	2	$ 10,500
A10	Kitchen Appliances	Shane Homes Curling Rink (concession kitchen)	1998	25	4	No other major damage or deficiencies were observed or reported; however, these elements will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	30	Lifecycle	Lump Sum	$ 50,000	1		1	$ -
A10	Toilet Partitions	Main Facility	1995	30	6	No other major damage or deficiencies were observed or reported; however, these elements will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	30	Lifecycle	Lump Sum	$ 27,500	1	$ 27,500	1	$ 27,500
A99	Washroom Accessories	Main Facility	1995	30	6	No other major damage or deficiencies were observed or reported; however, these elements will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	30	Lifecycle	Lump Sum	$ 20,000	1	$ 20,000	1	$ 20,000

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A10	Other Fittings	Main Facility	1995	30	6	No other major damage or deficiencies were observed or reported; however, these elements will reach the end of their EUL within the report time frame.	Replacement of the component is recommended, as they reach the end of their expected useful life.	30	Lifecycle	Lump Sum	$ 25,000	1	$ 25,000	1	$ 25,000
7.6	**MECHANICAL SYSTEMS**														
7.6.1	**Site Services**														
M01	Site Services	Natural gas	1971	50	4	Natural gas service was mostly concealed but was reported to be in acceptable condition, with some corrosion of piping on the roof of the buildings.	Replacement is anticipated as the component reaches its expected useful life. Repaint the natural gas piping on the roof. Cost for painting is below the reporting cost threshold and expected to be completed as part of routine maintenance.	50	Condition	M2	$ 75,000	1	$ 75,000	1	$ 75,000
M01	Site Services	Water Supply Piping (Potable)	2013	50	44	Potable water service was mostly concealed but was reported to be in acceptable condition, with no reported issues or concerns. The supply of potable water is from Callaway Park.	Replacement is not anticipated.	50					$ -	0	$ -
M01	Site Services	Raw Water	1998	50	29	Raw water service from the Lions soccer field pond was mostly concealed but was reported to be in acceptable condition, with no reported issues or concerns.	Replacement is not anticipated.	50					$ -	0	$ -
M01	Site Services	Sanitary	1998	50	29	Sanitary water service was mostly concealed but was reported to be in acceptable condition, with no reported issues or concerns.	Replacement is not anticipated.	50					$ -	0	$ -
M01	Site Services	Storm	2016	50	47	Storm water service was mostly concealed but was reported to have been upgraded in 2016.	Replacement is not anticipated.	50					$ -	0	$ -
7.6.2	**Plumbing Systems**														
M02	Plumbing	Non-potable water 37,800 litre underground Storage tank, 2 bladder pressure tanks, immersion pump, and deionized water bottles.	1991	40	12	Tank and pump is reported to be in acceptable condition, with no reported issues or concerns.	Replacement is anticipated as the component reaches its expected useful life.	40	Lifecycle	Lump Sum	$50,000	1	$ 50,000	1	$ 50,000
M02	Plumbing	Potable water 2- 7938 litre storage tank, dual pressure pump and pressure tanks	2003	40	1	The two tanks and pump set were reportedly no longer in use since the new potable water supply was replaced in approximately 2013.	The tanks and pumping equipment should be decommissioned and removed. An allowance has been provided.	40	Condition	Lump Sum	$10,000	1	$ 10,000	1	$ 10,000
M02	Plumbing	In the Curling rink, the main and second floor public washrooms, concession area include copper domestic water distribution and cast iron and copper sanitary and storm piping. A sanitary sump and lift station is located in the curling rink concession mechanical room.	1979	40	4	The Piping and sanitary sump and lift station was mostly concealed however no issues or concerns were reported and is in acceptable condition, although corrosion was observed on the cover plate.	Replace plumbing piping and sump and lift station as these components reach their expected useful life.	40	Lifecycle	Lump sum	$ 40,000	1	$ 40,000	1	$ 40,000

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M02	Plumbing	Player, officials, misc. change rooms, public washrooms and baby sitting area, include copper domestic water distribution and cast iron and copper sanitary and storm piping	1998	40	19	The Piping was mostly concealed however no issues or concerns were reported and is in acceptable condition.	Replace the water distribution piping	40	Lifecycle	Lump Sum	$50,000	1	$ 50,000	1	$ 50,000
M02	Plumbing	Sanitary - Snow melt pit sump pump	1998	25	2	Snow melt sump pump was operational but no longer connected to the panel. High water alarm will not operate, plus exposed wiring observed in pit.	Replace pump and panel	25	Condition	Lump Sum	$ 3,000	1	$ 3,000	1	$ 3,000
M02	Plumbing	Sump Pump - Mechanical Room (Water Treatment)	1979	25	4	Sump pump was operational and observed to be in acceptable condition.	Replace pump and panel	25	Lifecycle	Lump Sum	$ 3,000	1	$ 3,000	1	$ 3,000
M02	Plumbing	Main floor public washrooms includes 6 water closets, 3 urinals, and 4 lavatories.	1998	35	14	Fixtures appear to be in acceptable condition, with no reported issues or concerns. Water closets and urinals 1997, lavatories 2010 to 2018.	Replace the water closets and urinals. Replacement of lavatories not anticipated	35	Lifecycle	Lump Sum	$16,200	1	$ 16,200	1	$ 16,200
M02	Plumbing	2nd floor development of Joe Phillips Arena, includes 2 water closets, 1 urinals, 2 lavatories and 2 showers and 1 double sink type plumbing fixtures.	2009	35	25	Fixtures appear to be in acceptable condition, with no reported issues or concerns.	Replacement is not anticipated.	35		0	$0	1	$ -	1	$ -
M02	Plumbing	Fieldhouse, includes 2 water closets, 2 urinals, 4 lavatories and 10 showers and 1 sink in the concession type plumbing fixtures.	2011	35	27	Fixtures appear to be in good condition, with no reported issues or concerns.	Replacement is not anticipated.	35		0	$0	1	$ -	0	$ -
M02	Plumbing	Joe Philips Arena - Player, officials, misc. change rooms, include 5 water closets, 4 urinals, 5 lavatories, 16 showers.	1998	35	14	Fixtures appear to be in acceptable condition, with no reported issues or concerns.	Replace plumbing fixtures (sinks, toilets, fountains, and urinals)as the components reach their expected useful life.	35	Lifecycle	Lump sum	$ 54,000	1	$ 54,000	1	$ 54,000
M02	Plumbing	Joe Philips Arena - Player, officials, misc. change rooms, include 3 water closets, 2 urinals, and 5 lavatories.	2010	35	26	Fixtures appear to be in good condition, with no reported issues or concerns.	Replacement is not anticipated.	35		0	$ -	1	$ -	0	$ -

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M02	Plumbing	Domestic water distribution piping serving the concession - Study	1998	40	1	There is a long run of piping through the Red Dutton Arena serving the Concession. Piping needs to be rationalized as flushing water closets in Concession causes loss of water pressure in building.	Study to rationalize the domestic water piping in the facility. Cost includes allowance for repairs / replacement.	40	Condition	Lump Sum	$20,000	1	$ 20,000	1	$ 20,000
M02	Plumbing	Curling rink concession area and upper level bar, includes one larger commercial sink, on hand sink a bar sink, and twin bowl sink.	1979	35	4	Fixtures appear to be in good condition.	Replace the sinks	35	Lifecycle	Lump Sum	$ 5,500	1	$ 5,500	1	$ 5,500
M02	Plumbing	Curling rink, the main floor public washrooms, concession area, includes 3 water closets, 1 urinal, and 2 lavatories.	2017	35	33	Fixtures appear to be in good condition. However it was reported that the low flush water closets do not function well with the sanitary sump pump and lift station. The site are considering replacing the low flush water closets with power assisted water closets as per the remainder of the facility.	Replacement is not anticipated, apart from water closets.	35				1	$ -	0	$ -
M02	Plumbing	Curling rink, second floor public washrooms, concession area, include 3 water closets, 1 urinal, 4 lavatories and 2 sinks type plumbing fixtures.	2017	35	33	Fixtures appear to be in good condition, with no reported issues or concerns.	Replacement is not anticipated, apart from urinal which is 1980.	35				1	$ -	0	$ -
M02	Plumbing	DWH-1, gas fired, tank type domestic water heater, Concession mechanical room, Curling rink.	2013	15	9	Domestic water heater appears to be in good condition.	Replace domestic water heater as the component reaches its expected useful life.	15	Lifecycle	Lump sum	$14,000	1	$ 14,000	2	$ 28,000
M02	Plumbing	DWH-2, gas fired, tank type domestic water heater, Red Dutton mechanical room	2008	15	4	Domestic water heater appears to be in fair condition.	Replace domestic water heater as the component reaches its expected useful life.	15	Lifecycle	Lump sum	$5,000	1	$ 5,000	2	$ 10,000
M02	Plumbing	Two 119 gallon storage tanks for domestic hot water, Fieldhouse mechanical room	2011	15	7	Domestic water tanks appear to be in good condition.	Replace domestic water heater as the component reaches its expected useful life.	15	Lifecycle	Lump sum	$7,000	1	$ 7,000	2	$ 14,000
M02	Plumbing	2nd floor mechanical room, Joe Phillips Arena - DWH-3, gas fired, tank type domestic water heater, expansion tank, and pump.	2016	15	12	Domestic water heater appears to be in good condition.	Replace domestic water heater as the component reaches its expected useful life.	15	Lifecycle	Lump sum	$15,000	1	$ 15,000	1	$ 15,000
M02	Plumbing	2nd floor mechanical room, Joe Phillips Arena - Domestic hot water storage tanks (80 gallon and 180 gallon)	2016	15	12	Domestic water storage tanks appears to be in good condition.	Replace domestic hot water storage tanks as the component reaches its expected useful life.	15	Lifecycle	Lump sum	$14,000	1	$ 14,000	1	$ 14,000

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M02	Plumbing	DWH-4, gas fired, tank type domestic water heater, garage building	2007	15	4	Domestic water heater appears to be in good condition.	Replace domestic water heater as the component reaches its expected useful life.	15	Lifecycle	Lump sum	$12,000	1	$ 12,000	2	$ 24,000
M02	Heating	Joe Phillips Arena 2nd Floor Mechanical Room - Heating boiler and circulation pump for domestic hot water	2016	15	12	Gas fired boiler is in good condition with no reported or observed concerns.	Replace the domestic hot water boiler and circulation pump as the component reaches its EUL	15	Lifecycle	Lump sum	$20,000	1	$ 20,000	1	$ 20,000
M02	Plumbing	DWH - glass lined 80 gallon storage tank, garage building	2018	15	14	Domestic water storage tank appears to be in good condition.	Replace domestic water storage tank as the component reaches its expected useful life.	15	Lifecycle	Lump sum	$3,000	1	$ 3,000	1	$ 3,000
M02	Plumbing	There are three refrigerated drink fountains located in the facility	2006	35	22	Fixtures appear to be in acceptable condition, with no reported issues or concerns.	Replace the drinking fountains	35	Lifecycle	0	$1,500	3	$ 4,500	1	$ 4,500
7.6.3	**Heating, Ventilation and Air Conditioning**														
M03	Heating	The Fieldhouse floor is equipped with an in-slab heating system heated by a single boiler.	2011	35	27	The boiler and in-slab heating are in good condition with no reported or observed concerns.	Replacement is not anticipated.	35		0	$0	1	$ -	0	$ -
M03	Heating	The Fieldhouse heating system is circulated by seven pumps	2011	25	17	The pumps are in good condition with no reported or observed concerns.	Replace seven circulation pumps	25	Lifecycle	Each	$1,500	7	$ 10,500	1	$ 10,500
M03	Heating	Joe Phillips Arena 2nd Floor Mechanical Room - gas fired unit heater	1998	30	9	Gas fired unit heater is in good condition with no reported or observed concerns.	Replace the unit heater as the component reaches its expected useful life.	30	Lifecycle	Each	$2,700	1	$ 2,700	1	$ 2,700
M03	Heating	Joe Phillips Arena - suspended gas fired unit heaters	2018	30	29	Gas fired unit heaters are in good condition with no reported or observed concerns.	Replacement is not anticipated.	30		0	$0	1	$ -	0	$ -
M03	Heating	Curling rink - suspended gas fired unit heaters	2017	30	28	Four gas fired unit heaters are in good condition with no reported or observed concerns.	Replacement is not anticipated.	30		0	$0	1	$ -	0	$ -
M03	Heating	Flood Room & Workshop and garage - suspended gas fired unit heaters	2008	30	19	Gas fired unit heaters are in fair condition, some minor corrosion on heat exchanger in Flood Room	Replace the gas fired unit heater	30	Lifecycle	Each	$3,500	3	$ 10,500	1	$ 10,500
M03	Heating	Refrigeration Room - suspended electric unit heater	1998	30	9	Electric unit heater is in acceptable condition	Replace the electric unit heater	30	Lifecycle	Each	$3,000	1	$ 3,000	1	$ 3,000
M03	Heating	Mechanical Room (Water Treatment) - suspended electric unit heater	2007	30	18	Two electric unit heaters are in good condition	Replace the electric unit heaters	30	Lifecycle	Each	$3,000	2	$ 6,000	1	$ 6,000
M03	Heating	Red Dutton Arena - suspended gas fired unit heaters	2018	30	29	Gas fired unit heaters are in excellent condition with no reported or observed concerns.	Replacement of 2 gas fired unit heaters is not anticipated.	30	Lifecycle	0	$0	1	$ -	0	$ -
M03	Heating	Main Hallway - ceiling mounted forced flow heater	1971	30	1	Glycol supplied hydronic forced flow heater with active leak	Replacement of heater in short term . No shut-off valves, contains glycol, with active leak. Additional pipework to be removed. RUL reduced to one year, based on site conditions.	30	Condition	Each	$3,000	1	$ 3,000	1	$ 3,000

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M03	Heating	Red Dutton Arena - Spectator Infrared heaters	2018	20	19	Infrared heaters are in excellent condition with no reported or observed concerns.	Replace 2 Radiant heaters as the components reach their expected useful life.	20	Lifecycle	Each	$4,000	2	$ 8,000	1	$ 8,000
M03	Heating	Mechanical Room - Water Treatment, infrared heater	1998	20	2	Infrared heater was in poor condition with corrosion on tube and damaged.	Replace Infrared heater. RUL reduced based on site conditions.	20	Condition	Each	$3,000	1	$ 3,000	2	$ 6,000
M03	Heating	Spectator Infrared heaters - Joe Phillips Arena	1993	20	4	Infrared heaters are in acceptable condition with minor corrosion on the tubes.	Replace 4 infrared heaters as the components reach their expected useful life.	20	Lifecycle	Each	$4,000	1	$ 4,000	2	$ 8,000
M03	Heating	Flood Room - snow melt pit	2018	20	19	Replace the snow melt pit coil	Replace the snow melt pit coil as the components reach their expected useful life.	20	Lifecycle	Lump sum	$40,000	1	$ 40,000	1	$ 40,000
M03	Heating	2013 Furnaces, located in Curling rink mechanical room	2013	25	19	Furnaces F-1 and F-2 heat the main floor concession and eating area, and appear to be in good condition with no reported problems.	Replace 2 furnaces as the components reach their expected useful life.	25	Lifecycle	Each	$5,000	2	$ 10,000	1	$ 10,000
M03	Heating	Furnace, located in Joe Phillips Arena west, mechanical room	2009	25	15	Furnace F-3 heats the main floor entry lobby located along the west side of the Curling, Red Dutton Arena and Joe Phillips Arena and appears to be in acceptable condition with no reported problems. Approximately 125 MBH	Replace the Lennox furnace as the component reaches the end of its lifecycle.	25	Lifecycle	Lump sum	$4,500	1	$ 4,500	1	$ 4,500
M03	Heating	Electric Entrance Heaters	1998	25	4	Two entrance heaters are located by exit doors in the Joe Phillips Arena	Replace the entrance heaters. Cost below reporting threshold.	25	Lifecycle	0	$0	2	$ -	1	$ -
M04	Ventilation	Four heat pump units, located in the Fieldhouse	2011	30	22	Heat pump units are in good condition with no reported or observed concerns.	Replace the heat pumps	30	Lifecycle	Each	$6,000	4	$ 24,000	1	$ 24,000
M04	Ventilation	2 - 2008 Lennox packaged roof top units, Curling rink roof	2008	30	19	Roof top units are in good condition apart from hail damage to condenser coils. Both units employ R-22 refrigerant which is a known ozone depleting substance.	Replace the roof top units. Comb out the damaged condenser coils and install hail guards.	30	Lifecycle	Each	$9,000	2	$ 18,000	1	$ 18,000
M04	Ventilation	2016 Lennox packaged roof top unit (Childcare)	2016	30	27	Roof top unit is in good condition with no reported concerns.	Replacement is not anticipated.	30	Lifecycle	0	$0	1	$ -	0	$ -
M04	Ventilation	3 - 2009 Lennox packaged roof top units	2009	30	20	Roof top units are in acceptable condition with no reported concerns. Hail impact was observed on the condenser. The repair to these fins should be included in regular maintenance. No costs have been included for this recommended repair. The units employ R-22 refrigerant which is a known ozone depleting substance.	Replace 3 roof top units as they achieve their EUL.	30	Lifecycle	Lump sum	$30,000	1	$ 30,000	1	$ 30,000

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M04	Ventilation	Refrigeration room Engineered Air Ventilation unit - MAU-1	2007	30	18	Ventilation unit appears to be in good condition with no reported issues or concerns.	Replace the MAU serving the Refrigeration Room as the component reached its EUL.	30	Lifecycle	1	$24,000	1	$ 24,000	1	$ 24,000
M04	Ventilation	2 - 2011 Engineered Air Ventilation make-up air units for change rooms	2011	30	22	Ventilation unit appears to be in good condition with no reported issues or concerns.	Replace 2 make-up air units as the components reach their expected useful life.	30	Lifecycle	1	$28,000	2	$ 56,000	1	$ 56,000
M04	Ventilation	2013 Engineered Air Unit	2013	30	24	Ventilation unit appears to be in good condition with no reported issues or concerns.	Replace the air handling unit as the components reach their expected useful life.	30	Lifecycle	1	$44,000	1	$ 44,000	1	$ 44,000
M04	Ventilation	1997 Exhaust fans, Joe Phillips Arena flat roof	1998	30	9	EF1,2,3,4,5,6 appear to be in acceptable condition	Replace 6 general exhaust fans as the components reach their expected useful life.	30	Lifecycle	Each	$3,500	6	$ 21,000	1	$ 21,000
M04	Ventilation	1980 Exhaust fans, Curling Rink flat roof	1979	30	4	EF9,10,11,12,& 13 appear to be in fair condition	Replace 5 general exhaust fans as the components reach their expected useful life.	30	Lifecycle	Each	$3,500	5	$ 17,500	1	$ 17,500
M04	Ventilation	Exhaust fans on roof of Field House	2011	30	22	Three exhaust fans appear to be in good condition	Replace 3 general exhaust fans as the components reach their expected useful life.	30	Lifecycle	Each	$3,500	3	$ 10,500	1	$ 10,500
M04	Ventilation	Red Dutton/Joe Phillips Arena Dehumidification unit, located on Joe Phillips flat roof	2005	30	16	A gas fired, 5300cfm, desiccant wheel dehumidification roof mounted unit provides humidity control for the Red Dutton and Joe Philips Arenas.	Replace dehumidification unit	30	Lifecycle	Lump sum	$130,000	1	$ 130,000	1	$ 130,000
M04	Ventilation	Red Dutton Arena Dehumidification Ductwork	2018	30	29	Spiral wound ductwork is mounted in the ceiling for dehumidification	Replacement is not anticipated.	30	Lifecycle	Linear Foot	$60	1	$ -	0	$ -
M04	Ventilation	2007 Exhaust fans	2007	30	18	EF-7, 8 appear to be in acceptable condition	Replace the exhaust fans as they achieve their EUL.	30	Lifecycle	Each	$3,500	2	$ 7,000	1	$ 7,000
M04	Ventilation	Curling Rink Concession kitchen ventilation hood	1979	30	4	The kitchen hood appeared to be in good condition	Replace the kitchen ventilation hood	30	Lifecycle	Each	$15,600	1	$ 15,600	1	$ 15,600
M04	Ventilation	Sheet metal ductwork Curling Rink	1979	50	10	Sheet metal ductwork was mostly concealed however no issues or concerns were reported and is in acceptable condition.	Replace sheet metal ductwork as the component reaches the end of its lifecycle.	50	Lifecycle	Lump sum	$50,000	1	$ 50,000	1	$ 50,000
M04	Ventilation	Sheet metal ductwork Joe Phillips Arena	1998	50	29	Sheet metal ductwork was mostly concealed however no issues or concerns were reported and is in acceptable condition.	Replacement is not anticipated.	50			$0	1	$ -	0	$ -
M04	Ventilation	Sheet metal ductwork Field House	2011	50	42	Sheet metal ductwork was mostly concealed however no issues or concerns were reported and is in acceptable condition.	Replacement is not anticipated.	50			$0	1	$ -	0	$ -

TABLE A - COMPONENT LISTING AND REPAIR / REPLACEMENT COST

Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Year of Construction or Renewal	Expected Useful Life (Years)	Anticipated Time Before Next Action (Years)	Observed Condition	Recommended Action	Frequency of Action to Occur (Years)	Reason for Action	Unit	Unit Cost (2019 Dollars)	Quantity	Event Cost (2019 Dollars)	Number of Events in 25 Year Period	Total Opinion of Probable Cost (25 Years)
M07	Controls	Refrigeration room gas detection system	2007	20	8	Refrigeration gas detection system appears to be in good condition with no reported issues or concerns.	Replace refrigeration room gas detection system as the components reach their expected useful life.	20	Lifecycle	Lump sum	$12,000	1	$ 12,000	1	$ 12,000
M07	Controls	Refrigeration plant PLC control system	2017	15	13	The refrigeration plant control system is in good condition	Replace refrigeration control system as the components reach their expected useful life.	15	Lifecycle	Lump sum	$50,000	1	$ 50,000	1	$ 50,000
M07	Controls	Field House boiler and in-slab heating controls	2011	20	12	Boiler and in-slab heating controls appear to be in good condition with no reported issues or concerns.	Replace the control system as the components reach their expected useful life.	20	Lifecycle	Lump sum	$4,000	1	$ 4,000	1	$ 4,000
7.6.4	**Ice Plant Equipment**														
M08	Ice Plant Equipment	Minor Code Deficiencies	N/A	N/A	0	The following minor code deficiencies should be remedied. (Some of these items may have already been addressed).	Power wiring to CM-201 Mypro is temporary and should be replaced. PSV 12 on PV-401 curling chiller oil pot requires replacement All as part of routine maintenance.	0	Condition				$ -	1	$ -
M08	Ice Plant Equipment	2007/8 Ice refrigeration plant for 2 arenas: 2 - reciprocating compressors Vilter, CM-101 and CM-201	2008	40	29	Compressors appear to be in good condition with no reported problems or concerns. A comprehensive maintenance program is in place being completed by a third party contractor.	Replacement is not anticipated other than replacement of temporary wiring to CM-201 as mentioned above.	40					$ -	0	$ -
M08	Ice Plant Equipment	2015 Ice refrigeration plant for Curling Club: 1 - reciprocating compressors Vilter, CM-301	2015	40	36	Compressor appears to be in good condition with no reported problems or concerns. A comprehensive maintenance program is in place being completed by a third party contractor.	PSV 12 on PV-401 curling chiller oil pot requires replacement	40				1	$ -	0	$ -
M08	Ice Plant Equipment	Oil Separators OS101, 201, 301	2007	30	18	Oil Separators are in good condition with no reported problems or concerns.	Replace the oil separators as the component reaches end of useful life	30	Lifecycle	Each	$5,000	3	$ 15,000	1	$ 15,000
M08	Ice Plant Equipment	Chiller CH101 Refrigeration room, Joe Phillips and Red Dutton Arenas	2013	15	9	Chiller is in good condition with no reported problems or concerns.	Replace the chiller as it achieves it expected useful life. Note Thermocarb has reduced the recommended EUL used for chillers from 25-15 years based on recent failures of brine chillers	15	Lifecycle	Lump sum	$120,000	1	$ 120,000	2	$ 240,000
M08	Ice Plant Equipment	Chiller CH201 Refrigeration room, Curling Centre	2007	15	4	Chiller is in good condition with no reported problems or concerns.	Replace the chiller as it achieves it expected useful life. Note Thermocarb has reduced the recommended EUL used for chillers from 25-15 years based on recent failures of brine chillers	15	Lifecycle	Lump sum	$90,000	1	$ 90,000	2	$ 180,000
M08	Ice Plant Equipment	Glycol Jacket Cooling Pump PU801	2006	20	7	The pump is located under the brine expansion tank for the hockey arenas and is corroded due to a brine leak. The performance of the pump does not appear to be impacted	Replace the pump as it achieves its expected useful life. The pump and associated piping should be cleaned and repainted as part of routine maintenance to prevent further corrosion.	20	Condition	Lump sum	$5,000	1	$ 5,000	1	$ 5,000

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M08	Ice Plant Equipment	Glycol Jacket Cooling Pump supply piping	2006	20	1	The glycol cooling supplies to CM-101/201 do not have a control solenoid installed. When the pump is on and only one compressor running, this could lead to condensing of ammonia on the stopped compressor, which could lead to damage when it is turned on	Solenoids should be considered at the next shutdown as part of routine maintenance.	20	Condition		$0	1	$ -	2	$ -
M08	Ice Plant Equipment	Condenser Dolphin Water Treatment WT101	2006	20	7	The water treatment system is in good condition with no problems or concerns	Replace the water treatment system as the components reach their expected useful life.	20	Lifecycle	Lump sum	$30,000	1	$ 30,000	1	$ 30,000
M08	Ice Plant Equipment	Condenser Pump - PU701	1998	20	1	The pump is undersized for the design flow rate for CT-101 of 600 GPM.	The pressure at the condenser spray nozzles should be tested to determine if there is sufficient flow. The pump has reached the end of its EUL and should be considered for replacement.	20	Condition	Lump sum	$8,000	1	$ 8,000	2	$ 16,000
M08	Ice Plant Equipment	Cold Brine Pump - Red Dutton PU101	2013	20	14	The pump is in in good condition with no reported problems or concerns.	Replace the pump as the component reaches its expected useful life.	20	Lifecycle	Each	$10,000	1	$ 10,000	1	$ 10,000
M08	Ice Plant Equipment	Cold Brine Pump - Joe Phillips PU201	1998	20	1	The pump is in acceptable condition with some corrosion.	Pump PU201 has reached the end of its useful life and should be replaced	20	Lifecycle	Lump sum	$10,000	1	$ 10,000	2	$ 20,000
M08	Ice Plant Equipment	Cold Brine Pump - Curling rink PU301	2007	20	8	The pump is in in good condition with no reported problems or concerns.	Replace the pump as the component reaches its expected useful life.	20	Lifecycle	Each	$10,000	1	$ 10,000	1	$ 10,000
M08	Ice Plant Equipment	Warm Brine (HX101) and Snow Melt (HX301) Heat Exchangers	1998	15	1	The heat exchangers were in acceptable condition with no problems reported, however based on Thermocarb's comments/concerns regarding reduced life of heat exchangers	Replace the heat exchangers as they have reached the end of their expected lives would be a "lifecycle based reason for replacement, however based on Thermocarb's comments/concerns regarding reduced life expectancies of heat exchangers used in a ammonia service application, it is recommended to be replaced based on Condition	15	Condition	Each	$12,000	2	$ 24,000	2	$ 48,000
M08	Ice Plant Equipment	Warm Brine Pump PU401	1998	20	1	The pump was in acceptable condition with some corrosion	Replace the pump as it has reached its expected useful life	20	Lifecycle	Each	$7,500	1	$ 7,500	2	$ 15,000
M08	Ice Plant Equipment	Warm Brine Mains Piping	1998	40	19	The warm brine mains piping was in good condition with no issues or concerns	Replace the warm brine mains piping as the component reaches its expected useful life.	40	Lifecycle	Lump sum	$20,000	1	$ 20,000	1	$ 20,000
M08	Ice Plant Equipment	Snow Melt Glycol Pump PU601	1998	20	1	The pump was in acceptable condition with some corrosion	Replace the pump as it has reached its expected useful life	20	Lifecycle	Lump sum	$7,500	1	$ 7,500	2	$ 15,000
M08	Ice Plant Equipment	Brine Expansion Tanks TK201, TK301, TK401, & TK501	1998	30	9	The tanks are in good condition with no deficiencies observed or reported	Replace expansion tanks as they reach their EUL	30	Lifecycle	Lump sum	$3,000	4	$ 12,000	1	$ 12,000
M08	Ice Plant Equipment	Brine Expansion Tank TK101	1998	30	1	The tank is undersized for the application and there have been brine leaks over the years that have led to corrosion and equipment damage.	Replace tank TX101 with appropriately sized unit to remove any future potential operational difficulties	30	Condition	Lump sum	$20,000	1	$ 20,000	1	$ 20,000
M08	Ice Plant Equipment	Red Dutton Arena Cold Brine mains piping	1989	40	10	The header piping was concealed, but no issues or concerns were reported therefore the header piping is in acceptable condition. The remaining exposed piping is missing some insulation resulting in frosting and surface corrosion.	Replace the header piping as the component reaches its expected useful life. To prevent further corrosion, the exposed metal piping should be painted and re-insulated. The cost for this repair will be below reporting threshold and expected to be completed as part of routine maintenance.	40	Lifecycle	Lump sum	$50,000	1	$ 50,000	1	$ 50,000

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Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Year of Construction or Renewal	Expected Useful Life (Years)	Anticipated Time Before Next Action (Years)	Observed Condition	Recommended Action	Frequency of Action to Occur (Years)	Reason for Action	Unit	Unit Cost (2019 Dollars)	Quantity	Event Cost (2019 Dollars)	Number of Events in 25 Year Period	Total Opinion of Probable Cost (25 Years)
M08	Ice Plant Equipment	Arenas and curling rink brine charge	2013	50	44	New brine installed in 2013. Annual testing and treatment recommended.	Replacement not anticipated. The cost for testing and treatment to be completed as part of routine maintenance.	50				1	$ -	0	$ -
M08	Ice Plant Equipment	Joe Phillips Arena Cold Brine mains piping	2018	40	39	The header piping was concealed, but no issues or concerns were reported therefore the header piping is in very good condition. The remaining exposed piping is missing some insulation resulting in frosting and surface corrosion.	Replacement not anticipated. To prevent further corrosion, the exposed metal piping should be painted and re-insulated. The cost for this repair will be below reporting threshold and expected to be completed as part of routine maintenance.	40				1	$ -	0	$ -
M08	Ice Plant Equipment	Curling rink header piping	2007	40	28	The header piping was concealed, but no issues or concerns were reported therefore the header piping is in acceptable condition.	Replacement not anticipated	40				1	$ -	0	$ -
M08	Ice Plant Equipment	Ammonia Piping	2007	40	28	The ammonia piping within the refrigeration room was replaced with the upgrades in 2007 and 2013. The piping is in good condition.	Replacement not anticipated	40				1	$ -	0	$ -
M08	Ice Plant Equipment	Ammonia Piping	2007	40	1	Ammonia piping piped in series with the cooling tower CT-2 and is in poor condition, with surface corrosion caused by outdoor weather elements.	Repaint the ammonia piping as part of routine maintenance. The cost for this repair will be below reporting threshold and expected to be completed as part of routine maintenance.	40	Condition			1	$ -	1	$ -
M08	Ice Plant Equipment	Relief Valve System	2007	40	1	Changes to the relief capacity requirements have been made since the system was installed that make the 4" header and ¾" branch lines undersized for the size of relief valves used on some equipment.	The relief system should be considered for a full review for installed valves and pipe branch lengths	40	Condition			1	$ -	1	$ -
M08	Ice Plant Equipment	Cooling tower CT201, Flat roof, Joe Phillips Arena	1998	25	14	Evaporative tower only being used for air cooling only. Evaporative portion of the tower has been disabled due to proximity to air handling unit equipment, and the resulting corrosion incurred.	Replace cooling tower (64.5 tons) as the component reaches its expected useful life. RUL extended due to the cooling tower only being used in fan cooling mode. Note that the cost allowance is for replacing both towers with one unit as recommended by Thermocarb.	25	Lifecycle	Lump sum	$120,000	1	$ 120,000	1	$ 120,000
M08	Ice Plant Equipment	Cooling tower CT101, free standing steel structure, SE of the refrigeration plant, includes pump, distribution piping, tank and treatment system.	2006	25	14	Evaporative tower used for air and evaporative cooling. Ammonia piping piped in series with the cooling tower CT-1.	Replace cooling tower (150 tons) as the component reaches its expected useful life. Cost allowance provided above under CT201.	25	Lifecycle	Lump sum	$0	0	$ -	1	$ -
M08	Ice Plant Equipment	Packaged chiller for ODR and pumping (PU901)	2016	20	17	The chiller appeared to be in good condition with no issues or concerns reported. The pump (PU901) was operating as intended.	Replace the chiller (170 tons) as the component reaches its expected useful life.	20	Lifecycle	Each	$150,000	1	$ 150,000	1	$ 150,000

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M08	Ice Plant Equipment	Plastic refrigerant piping mat for ODR	2016	15	12	Although not visible the plastic piping should last 15 years.	Replace the plastic refrigerant piping mat for the ODR	15	Lifecycle	Each	$150,000	1	$ 150,000	1	$ 150,000
7.7	**ELECTRICAL SYSTEMS**														
7.7.1	**Electrical Distribution**														
E01	Incoming Services	Underground conductors from the utility owned transformer connect to main distribution panel located in Joe Phillips arena refrigeration room.	1998	50	29	The incoming service is mostly concealed, however it is reported that are no concerns.	Replacement is not anticipated.	50		0	$0	1	$ -	0	$ -
E02	Distribution Equipment	1200A, 277-480V Main Panel and circuit distribution panel, Joe Phillips refrigeration room	1998	40	5	Main distribution panel and circuit distribution panels appear to be in acceptable condition, however corrosion was observed along the bottom portion of the cabinet, suggesting exposure to moisture	Replace the main 1200Amp breaker, CT cabinet, and Central Distribution Panel. RUL reduced from 19 years to 4 years, due to exposure to water.	40	Condition	Lump Sum	$40,000	1	$ 40,000	1	$ 40,000
E02	Distribution Equipment	600A, 277-480V Main Panel and circuit distribution panel, Red Dutton old refrigeration room	2005	40	26	Dutton and curling rink main distribution panel and circuit distribution panel appears to be in good condition.	Replacement is not anticipated.	40		0	$0	0	$ -	0	$ -
E02	Distribution Equipment	600A, 277-480V Main Panel and circuit distribution panel, Red Dutton old refrigeration room	1979	40	2	Disconnect switch 1980 and observed to be in fair condition	Replacement of disconnect switch.	40	Lifecycle	1	$8,000	1	$ 8,000	1	$ 8,000
E02	Distribution Equipment	Secondary transformer, Joe Phillips refrigeration room	1998	40	19	Secondary transformer appear to be in acceptable condition, with no reported issues or concerns.	Replace the 112.5 Kva Transformer	40	Lifecycle	Each	$7,500	1	$ 7,500	1	$ 7,500
E02	Distribution Equipment	Secondary transformer, Fieldhouse mechanical room	2011	40	32	Secondary transformer appear to be in good condition, with no reported issues or concerns.	Replacement is not anticipated.	40		0	$0	1	$ -	0	$ -
E02	Distribution Equipment	2 Secondary transformers, Joe Phillips Arena west, mechanical room and Red Dutton mechanical room (water treatment).	1979	40	2	Secondary transformers appear to be in acceptable condition, with no reported issues or concerns.	Replace 2 secondary transformers as the components reach their expected useful life.	40	Lifecycle	Lump sum	$15,000	1	$ 15,000	1	$ 15,000
E02	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	1971	30	0	Circuit breaker panel HA appears to be in poor condition with missing circuit breaker covers and poor labelling.	Replace the circuit breaker panel as it has surpassed it EUL.	30	Condition	Each	$3,500	1	$ 3,500	1	$ 3,500
E02	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	1979	30	2	Circuit breaker panels appear to be in acceptable condition. Labelling poor in some cases.	Replace 5 circuit breaker panels as the components have surpassed their expected useful life.	30	Lifecycle	Each	$3,500	5	$ 17,500	1	$ 17,500
E02	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	1998	30	9	Circuit breaker panels appear to be in acceptable condition. Some breaker cover plates missing.	Replace 3 circuit breaker panels as the components reach their expected useful life.	30	Lifecycle	Each	$3,500	3	$ 10,500	1	$ 10,500

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E02	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	2006	30	17	Circuit breaker panels appear to be in good condition.	Replace 6 circuit breaker panels as the components reach their expected useful life.	30	Lifecycle	Each	$3,500	6	$ 21,000	1	$ 21,000
E02	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	2016	30	27	Circuit breaker panels appear to be in good condition.	Replacement is not anticipated.	30		0	$0	6	$ -	0	$ -
E02	Distribution Equipment	MCC-1 Curling rink refrigeration equipment motor control centre, Joe Phillips refrigeration room	1980	30	2	Motor Control centre appears to be in acceptable condition.	Replace 4 section motor control centre as the component has surpassed its expected useful life.	30	Lifecycle	Lump sum	$25,000	1	$ 25,000	1	$ 25,000
E02	Distribution Equipment	MCC-2 Curling rink refrigeration equipment motor control centre, Joe Phillips refrigeration room	2007	30	18	Motor Control centre appears to be in good condition.	Replace 1 section motor control centre as the component reaches its expected useful life.	30	Lifecycle	Lump sum	$15,000	1	$ 15,000	1	$ 15,000
E02	Distribution Equipment	CT-2 variable frequency drive (VFD), Joe Phillips refrigeration room	2007	30	18	VFD appears to be in good condition with no reported issues or concerns.	Replace the VFD for the Cooling Tower fan motor	30	Lifecycle	Each	$6,000	1	$ 6,000	1	$ 6,000
E02	Distribution Equipment	Ice arena refrigeration equipment motor control centre (MCC), Joe Phillips refrigeration room	1998	30	9	Motor Control centre appears to be in acceptable condition. Thermocarb report states "2007 or prior".	Replace 9 section motor control centre as the component reaches its expected useful life.	30	Lifecycle	Lump sum	$50,000	1	$ 50,000	1	$ 50,000
E99	Electrical - Other	Cabling and conduit located in the curling rink and Red Dutton arena.	1979	50	10	Wiring and conduit was mostly concealed however their was no reported issues or concerns.	Replace wiring and conduit as the components reach their expected useful life serving a gross floor area of 2848m2	30	Lifecycle	Lump sum	$250,000	1	$ 250,000	1	$ 250,000
E99	Electrical - Other	Cabling and conduit located in the Joe Phillips arena	1998	50	29	Wiring and conduit was mostly concealed however their was no reported issues or concerns.	Replacement is not anticipated.	50		0	$0	1	$ -	0	$ -
E99	Electrical - Other	Cabling and conduit located in the Field House	2011	50	42	Wiring and conduit was mostly concealed however their was no reported issues or concerns.	Replacement is not anticipated.	50		0	$0	1	$ -	0	$ -
7.7.2	**Interior & Exterior Lighting**														
E03	Interior Lighting	Florescent fixtures	1998	30	9	The fixtures appear to be in acceptable condition with no reported issues or concerns. Gradually being replaced with LED fixtures	Replace florescent fixtures serving Joe Phillips Arena areas with new LED fixtures	30	Lifecycle	Each	$ 300	300	$ 90,000	1	$ 90,000
E03	Interior Lighting	Florescent fixtures	1979	30	2	The fixtures appear to be in acceptable condition with no reported issues or concerns, however some fixtures may still contain T12 lamps which are no longer commercially available and replacement is recommended.	Replace the fluorescent lighting in the Curling rink and Red Dutton Arenas with new LED fixtures	30	Lifecycle	Each	$ 300	150	$ 45,000	1	$ 45,000
E03	Interior Lighting	Florescent fixtures - Field House and Garage/Workshop	2011	30	22	The fixtures appear to be in good condition with no reported issues or concerns.	Replace the fluorescent lighting in the in the Field House and Garage/Workshop with new LED fixtures	30	Lifecycle	Each	$ 300	70	$ 21,000	1	$ 21,000

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E03	Interior Lighting	Incandescent fixtures Curling Rink Lounge Area	1979	30	2	The fixtures appear to be in acceptable condition with no reported issues or concerns, however these fixtures are not energy efficient and replacement is recommended.	Replace incandescent fixtures in the lounge with LED fixtures.	30	Lifecycle	lump sum	$ 10,000	1	$ 10,000	1	$ 10,000
E03	Interior Lighting	LED fixtures in Red Dutton arena.	2018	30	29	The fixtures appear to be in excellent condition with no reported issues or concerns.	Replacement is not anticipated.	30		0	$0	1	$ -	0	$ -
E03	Interior Lighting	LED fixtures in Joe Phillips arena.	2018	30	29	The fixtures appear to be in excellent condition with no reported issues or concerns.	Replacement is not anticipated.	30		0	$0	50	$ -	0	$ -
E03	Interior Lighting	LED fixtures in Curling rink.	2017	30	28	The fixtures appear to be in excellent condition.	Replacement is not anticipated.	30		0	$0	0	$ -	0	$ -
E03	Exterior Lighting	LED fixtures in ODR.	2017	25	23	The fixtures appear to be in good condition	Replace LED fixtures	25	Lifecycle	each	$400	15	$ 6,000	1	$ 6,000
E03	Exterior Lighting	Pole mounted LED fixtures	2017	15	13	The fixtures appear to be in good condition	Replace pole mounted fixtures	15	Lifecycle	Each	$ 1,200	7	$ 8,400	1	$ 8,400
E03	Exterior Lighting	Building LED fixtures in Outdoor Rink	2018	25	24	The fixtures appear to be in excellent condition	Replace LED fixtures	25	Lifecycle	lump sum	$ 12,000	1	$ 12,000	1	$ 12,000
E03	Exterior Lighting	Field House soffit pot lights	2011	25	17	The fixtures appear to be in acceptable condition	Replace building mounted pot lights	25	Lifecycle	Each	$ 200	20	$ 4,000	1	$ 4,000
7.7.3	**Communications & Security**														
E06	Communications	Telephone systems	1998	25	4	Telephone systems appear to be in acceptable condition	Replace telephone systems as the component reaches its expected useful life.	25	Lifecycle	Lump sum	$ 20,000	1	$ 20,000	1	$ 20,000
E06	Communications	Sound System with 4 speakers and Amplifier in Red Dutton, and 6 speakers and amplifier in Joe Phillips Arena	2008	25	14	Sound systems appeared to be in good condition.	Replace Sound systems as the components reach their expected useful life.	25	Lifecycle	Lump sum	$ 8,000	1	$ 8,000	1	$ 8,000
E06	Communications	Public Address System - Whole Building	2018	25	24	PA system for Arena	Replace PA system as the component reaches its expected useful life.	25	Lifecycle	Lump sum	$ 21,000	1	$ 21,000	1	$ 21,000
E06	Security	Intrusion Alarm system	1998	25	4	Intrusion alarm system appears to be in acceptable condition	Replace intrusion alarm system as the component reaches its expected useful life.	25	Lifecycle	Lump sum	$ 120,000	1	$ 120,000	1	$ 120,000
E06	Security	Video monitoring	2005	25	11	Video monitoring system appears to be in acceptable condition	Replace Video monitoring system as the component reaches its expected useful life.	25	Lifecycle	Lump sum	$ 100,000	1	$ 100,000	1	$ 100,000
7.8	**FIRE AND LIFE SAFETY SYSTEMS**														
7.8.1	**Fire Detection & Suppression**														
E05	Fire Alarm system	Fire Alarm system	1998	25	4	Fire alarm system appears to be in acceptable condition. Simplex Fire Panel in entrance vestibule.	Replace Fire Alarm System as the component reaches its expected useful life serving a gross floor area of 9556m2.	25	Lifecycle	Lump sum	$250,000	1	$ 250,000	1	$ 250,000
M99	Dry Chemical / Fire suppression system	Curling rink concession	2016	40	37	Dry chemical / fire suppression system for grease hoods appear to be in acceptable condition.	Replacement is not anticipated.	40		0	$0	1	$ -	0	$ -

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M06	Wet sprinkler system	Main floor Player, officials, misc. change rooms, public washrooms and 2nd floor development of Joe Phillips Arena	1998	50	29	Sprinkler system appears to be in acceptable condition.	Replacement is not anticipated.	50		0	$0	1	$ -	0	$ -
M06	Portable Fire Extinguishers	Whole Building	1998	20	4	Portable ABC type fire extinguishers are located throughout the facility	Replacement is based on as needs basis. Several fire extinguishers found to have out of date inspection certificates. Inspect and test all out of date equipment.	20		0	$0	1	$ -	2	$ -
7.8.2	**Emergency Power & Lighting**														
E03	Emergency Lighting and Exit lighting	Battery pack emergency lighting and exit fixtures	1998	20	4	Fixtures appear to be in acceptable condition,	Replace battery operated emergency lighting.	20	Lifecycle	Lump Sum	$ 17,000	1	$ 17,000	2	$ 34,000
E03	Emergency Lighting and Exit lighting	Battery pack emergency lighting and exit fixtures	1979	20	2	Fixtures appear to be in acceptable condition,	Replace battery operated emergency lighting.	20	Condition	Lump Sum	$ 12,000	1	$ 12,000	2	$ 24,000
		Col 1	*Col 2*	*Col 3*	*Col 4*	*Col 5*	*Col 6*	*Col 7*	*Col 8*	*Col 9*	*Col 10*	*Col 11*	*Col 12*	*Col 13*	*Col 14*	*Col 15*
															TOTAL	**$ 10,530,377**

TABLE B - COMPONENT EVENT COST SUMMARY

Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Recommended Action	REPAIR / REPLACEMENT COSTS (2019 DOLLARS)										Total Opinion of Probable Cost (25 Years)
				SHORT TERM (2019 - 2024)						LONG TERM (2025 - 2044)				
				Immediate 2019	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024	Years 6 to 10 2025 - 2029	Years 11 to 15 2030 - 2034	Years 16 to 20 2035 - 2039	Years 21 to 25 2040 - 2044	
7.1	**SITE COMPONENTS**													
7.1.1	**Paving, Curbing & Parking**													
A01	Asphalt Paving (Parking Lot)	South of Shane Homes Curling Rink and north of Joe Philips Arena	Replacement of the component is anticipated, as it has reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 272,840	$ -	$ -	$ -	**$ 272,840**
A01	Asphalt Paving (Drive Lanes)	Throughout the site	Replacement of the component is anticipated, as it has reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 82,080	$ -	$ -	$ -	**$ 82,080**
A01	Asphalt Maintenance Program	Throughout the site	Repair the component to preserve its useful life, until such time as it is put back into service.	$ -	$ 15,000	$ -	$ -	$ -	$ -	$ 5,000	$ -			**$ 20,000**
A01	Concrete Curbs	Throughout the site	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ 68,250	$ -	$ -	$ -	$ -	$ -	**$ 68,250**
A01	Concrete Walkways	North and south of the Main Facility, near Fieldhouse	Replacement of the component is anticipated, as it has reached the end of its useful life already.	$ -	$ -	$ -	$ -	$ 14,300	$ -	$ -	$ -	$ -	$ -	**$ 14,300**
A01	Concrete Surfaces	Outdoor Rink (ODR) / Basketball Field	Replacement of the component is anticipated, as it will reach the end of its useful life. Replacement cost is based on a conventional concrete slab with no built in refrigeration piping, based on the continued use of chilled glycol mat system (refer to Ice Plant Equipment section for additional information on the glycol mat system).	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 306,375	$ -	$ -	**$ 306,375**
7.1.2	**Landscaping and Appurtenances**													
A01	Guardrail	Near main entrance	Replacement of the component is anticipated, as it has reached the end of its useful life already.	$ -	$ -	$ -	$ -	$ 5,500	$ -	$ -	$ -	$ -	$ -	**$ 5,500**
A01	Dasher Boards	ODR	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	**$ 200,000**
A01	Electronic Message Sign	South Parking Lot	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,500	$ -	**$ 6,500**
A01	Bleachers	Throughout the sports fields	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,000	$ -	$ -	**$ 45,000**
A01	Athletic Equipment (basketball hoops, goal structures, scoring board etc.)	Throughout the sports fields	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 35,000	$ -	$ -	**$ 35,000**
A01	Site Furniture/Playground structures	Throughout the site	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 37,500	$ -	$ -	**$ 37,500**
A01	Pedestrian Bridges	Throughout the site	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000	$ -	$ -	$ -	**$ 10,000**
A01	Chain-link Fencing	Baseball diamonds, lagoon	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 344,000	$ -	$ -	$ -	**$ 344,000**

TABLE B - COMPONENT EVENT COST SUMMARY

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				SHORT TERM (2019 - 2024)						LONG TERM (2025 - 2044)				
				Immediate 2019	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024	Years 6 to 10 2025 - 2029	Years 11 to 15 2030 - 2034	Years 16 to 20 2035 - 2039	Years 21 to 25 2040 - 2044	
A01	Chain-link Fencing	North-east corner of Main Property (near baseball diamonds) along Range Road 33	Replace the component to ensure performance and enhance the overall appearance of the facility.	$ -	$ -	$ -	$ -	$ 58,480	$ -	$ -	$ -	$ -	$ -	**$ 58,480**
7.2	**BUILDING STRUCTURE**													
S99	Structural Investigation	Main Facility	Structural Investigation	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 10,000**
S02	Ice arena floor slab	Red Dutton Arena	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,400,000	$ -	$ -	**$ 1,400,000**
S02	Curling Rink floor slab	Shane Homes Curling Rink	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 665,000	$ -	**$ 665,000**
7.3	**Roofing**													
R01	Roofing material	Modified bituminous roofing at water room	Lifecycle replacement is anticipated in year 9 of this report. The roof study recommended might modify the year of replacement depending on the findings.	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,526	$ -	$ -	$ -	**$ 14,526**
R01	Roofing material	Modified bituminous roofing in between Red Dutton and Joe Phillips arenas	Lifecycle replacement is anticipated in year 24 of this report. The roof study recommended might modify the year of replacement depending on the findings.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 185,933	**$ 185,933**
R01	Roofing material	Ethylene, propylene, diene monomer (EPDM) roofing membrane above Shane Homes Curling Rink	Lifecycle replacement is anticipated in year 20 of this report. The roof study recommended might modify the year of replacement depending on the findings.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 378,400	$ -	**$ 378,400**
R01	Roofing material	Ethylene, propylene, diene monomer (EPDM) roofing membrane above the north and south entrances	Lifecycle replacement is anticipated in year 23 of this report. The roof study recommended might modify the year of replacement depending on the findings.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,555	**$ 16,555**
R01	Roofing material	Asphalt shingles at the Fieldhouse, the Garage, the Scoring Tower and Storage Shed	Lifecycle replacement is anticipated in year 23 of this report. The roof study recommended might modify the year of replacement depending on the findings.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 32,549	$ -	$ -	**$ 32,549**
R01	Roofing material	Membrane at ODR	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 275,000	$ -	$ -	$ -	**$ 275,000**
R01	Roofing material	Roof maintenance	Conduct periodic preventative roof maintenance.	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ 5,000	$ 5,000	$ 5,000	$ 5,000	**$ 25,000**
R01	Metal Gutters	Fieldhouse, the Garage, the Storage Shed at the Lions Soccer Park and the Scoring Tower	Replacement of the component is anticipated, as it will reached the end of its useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,180	$ -	$ -	**$ 3,180**
7.4	**BUILDING EXTERIOR**													

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				SHORT TERM (2019 - 2024)						LONG TERM (2025 - 2044)				
				Immediate 2019	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024	Years 6 to 10 2025 - 2029	Years 11 to 15 2030 - 2034	Years 16 to 20 2035 - 2039	Years 21 to 25 2040 - 2044	
A02	Prefinished metal	Shane Homes Curling Rink	Conduct lifecycle replacement	$ -	$ -	$ -	$ -	$ -	$ -	$ 105,000	$ -	$ -	$ -	**$ 105,000**
A02	Prefinished metal	Red Dutton Arena	Replacement is anticipated as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ 67,500	$ -	$ -	$ -	$ -	$ -	**$ 67,500**
A02	Exterior Paint	Exterior block walls	Replacement of the component is anticipated, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 28,890	$ -	$ 28,890	$ -	**$ 57,780**
A04	Entrance doors	South main entrance at Shane Homes Curling Rink	Replacement of the component is anticipated, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ -	**$ 30,000**
A04	Utility doors	Shane Homes Curling Rink and Red Dutton arenas	Replacement of the component is anticipated, as it reached already its expected useful life.	$ -	$ -	$ 12,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 12,000**
A04	Utility doors	Joe Phillips Arena	Replacement of the component is anticipated, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,000	$ -	$ -	**$ 12,000**
A04	Overhead doors	Joe Phillips Arena	Replacement of the components is anticipated, as they reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,800	$ -	$ -	$ -	**$ 26,800**
A04	Overhead doors	Shane Homes Curling Rink	Replacement of the component is anticipated, as it reaches the end of its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,400	$ -	**$ 13,400**
A04	Overhead doors	Garage and Storage Shed at Lions Soccer Park	Replacement of the component is anticipated, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,600	$ -	$ -	**$ 53,600**
A03	Windows	Shane Homes Curling Rink	Replacement of the components is anticipated, as they reaches its expected useful life.	$ -	$ -	$ -	$ -	$ 14,000	$ -	$ -	$ -	$ -	$ -	**$ 14,000**
A03	Windows	Joe Phillips Arena	Replacement of the component is recommended, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,800	$ -	**$ 6,800**
7.5	**BUILDING INTERIOR**													
7.5.1	**Floor, Wall & Ceiling Finishes**													
A09	Resilient Stair Finishes	Shane Homes Curling Rink	Replacement of the component is recommended, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ 6,500	$ -	$ -	$ -	$ -	$ -	**$ 6,500**
A02	Blanket Insulation	Joe Phillips Arena	Repair impact damages. Periodic repairs are expected over the evaluation period and are included over the evaluation period.	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ 5,000	$ 5,000	$ 5,000	$ 5,000	**$ 25,000**
A06	Fire Stopping	Red Dutton Arena/Joe Phillips Arena	Repair damaged wall sections and install fire sealant where necessary	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 5,000**

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				Immediate 2019	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024	Years 6 to 10 2025 - 2029	Years 11 to 15 2030 - 2034	Years 16 to 20 2035 - 2039	Years 21 to 25 2040 - 2044	
A08	Acoustic Ceiling Tiles	Throughout facility	Replacement of the component is recommended, as it reaches its expected useful life and is being phased over the 25 year planning period.	$ -	$ 28,245	$ -	$ -	$ -	$ 28,245	$ 28,245	$ -	$ -	$ -	**$ 84,735**
A08	Ceiling painting	Ground floor hallways and locker rooms.	Repaint ceilings where needed. Costs are being phased over the 25 year planning period.	$ -	$ -	$ 30,666	$ -	$ -	$ -	$ -	$ -	$ 30,666	$ -	**$ 61,332**
A06	Wall Finishes (protective boards)	Protective plastic paneling in dry training area	Replace completely.	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ 5,000	$ -	**$ 10,000**
A06	Wall Finishes (paint)	Interior wall painting in locker rooms and hallways (high wear areas)	Periodic repainting is expected over the evaluation period and are included over the evaluation period.	$ -	$ -	$ 5,000	$ -	$ 5,000	$ -	$ 15,000	$ 10,000	$ 15,000	$ 10,000	**$ 60,000**
A06	Wall Finishes (paint)	General interior painting throughout (normal wear areas)	Periodic repainting is expected over the evaluation period and are included over the evaluation period.	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ 30,000	**$ 90,000**
A06	Wall Finishes (ceramic tiles)	Shane Homes Curling Rink, Joe Phillips Arena and Fieldhouse	Replacement of the component is recommended, as it reaches its expected useful life. Phasing of work is expected over the evaluation period.	$ -	$ -	$ 16,000	$ -	$ -	$ -	$ -	$ -	$ 16,000	$ -	**$ 32,000**
A09	Floor Finishes (rubber flooring - heavy wear areas)	Around ice sheets, locker rooms, some hallways and Fieldhouse	Replace where needed.	$ -	$ -	$ -	$ -	$ 137,500	$ -	$ -	$ 137,500	$ -	$ 137,500	**$ 412,500**
A09	Floor Finishes (rubber flooring - low wear areas)	Some hallways, concession area, washrooms etc.	Replacement of the component is recommended, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 256,250	$ -	$ -	**$ 256,250**
A09	Floor Finish (laminate flooring)	Lounge and boardroom	Replacement of the component is recommended, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 29,562	$ -	**$ 29,562**
7.5.2	**Base Building Equipment & Accessories**													
A07	Interior Metal Doors	Shane Homes Curling Rink	Replacement of the component is recommended, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000	$ -	$ -	$ -	**$ 25,000**
A07	Interior Metal Doors	Red Dutton Arena	Replacement of the component is recommended, as it reaches its expected useful life.	$ -	$ -	$ -	$ -	$ 6,250	$ -	$ -	$ -	$ -	$ -	**$ 6,250**
A07	Interior Fire Shutters and Overhead Doors	Red Dutton Arena	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ 40,000	$ -	$ -	$ -	$ -	$ -	**$ 40,000**
A06	Interior Windows	Red Dutton Arena	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ 43,200	$ -	$ -	$ -	$ -	$ -	$ -	**$ 43,200**

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A06	Interior Windows	Shane Homes Curling Rink	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 37,800	$ -	$ -	$ -	**$ 37,800**
A10	Metal Bleachers	Joe Phillips Arena	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 87,000	$ -	**$ 87,000**
A10	Wood Bleachers	Red Dutton Arena	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,500	**$ 40,500**
A99	Electronic Display Boards	Shane Homes Curling Rink and Red Dutton Arena	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 37,500	$ -	$ -	$ -	**$ 37,500**
A10	Dasher Boards	Red Dutton Arena	Replacement of the component is recommended, as it reaches the end of its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000	**$ 250,000**
A10	Dasher Boards (disassemble and reassemble)	Red Dutton Arena	Disassemble, repair and reassemble the dasher boards when the floor slab is being replaced	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	$ -	**$ 50,000**
A10	Dasher Boards	Joe Phillips Arena	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 250,000**
A10	Locker Room Casework	Fieldhouse/Figure Skating Changeroom	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 66,000	$ -	**$ 66,000**
A10	Wood Casework	Main Facility	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ 47,000	$ -	$ -	$ 15,000	$ -	$ 15,000	$ -	**$ 77,000**
A10	Kitchen Appliances	Red Dutton Arena (staff kitchen)	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ 5,250	$ -	$ -	$ 5,250	$ -	**$ 10,500**
A10	Kitchen Appliances	Shane Homes Curling Rink (concession kitchen)	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
A10	Toilet Partitions	Main Facility	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,500	$ -	**$ 27,500**
A99	Washroom Accessories	Main Facility	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000	$ 10,000	$ -	$ -	**$ 20,000**

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A10	Other Fittings	Main Facility	Replacement of the component is recommended, as they reach the end of their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000	$ 10,000	$ -	$ -	**$ 25,000**
7.6	**MECHANICAL SYSTEMS**													
7.6.1	**Site Services**													
M01	Site Services	Natural gas	Replacement is anticipated as the component reaches its expected useful life. Repaint the natural gas piping on the roof. Cost for painting is below the reporting cost threshold and expected to be completed as part of routine maintenance.	$ -	$ -	$ -	$ -	$ 75,000	$ -	$ -	$ -	$ -	$ -	**$ 75,000**
M01	Site Services	Water Supply Piping (Potable)	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M01	Site Services	Raw Water	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M01	Site Services	Sanitary	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M01	Site Services	Storm	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
7.6.2	**Plumbing Systems**													
M02	Plumbing	Non-potable water 37,800 litre underground Storage tank, 2 bladder pressure tanks, immersion pump, and deionized water bottles.	Replacement is anticipated as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	$ -	**$ 50,000**
M02	Plumbing	Potable water 2- 7938 litre storage tank, dual pressure pump and pressure tanks	The tanks and pumping equipment should be decommissioned and removed. An allowance has been provided.	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 10,000**
M02	Plumbing	In the Curling rink, the main and second floor public washrooms, concession area include copper domestic water distribution and cast iron and copper sanitary and storm piping. A sanitary sump and lift station is located in the curling rink concession mechanical room.	Replace plumbing piping and sump and lift station as these components reach their expected useful life.	$ -	$ -	$ -	$ -	$ 40,000	$ -	$ -	$ -	$ -	$ -	**$ 40,000**

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M02	Plumbing	Player, officials, misc. change rooms, public washrooms and baby sitting area, include copper domestic water distribution and cast iron and copper sanitary and storm piping	Replace the water distribution piping	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	**$ 50,000**
M02	Plumbing	Sanitary - Snow melt pit sump pump	Replace pump and panel	$ -	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 3,000**
M02	Plumbing	Sump Pump - Mechanical Room (Water Treatment)	Replace pump and panel	$ -	$ -	$ -	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ -	**$ 3,000**
M02	Plumbing	Main floor public washrooms includes 6 water closets, 3 urinals, and 4 lavatories.	Replace the water closets and urinals. Replacement of lavatories not anticipated	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,200	$ -	$ -	**$ 16,200**
M02	Plumbing	2nd floor development of Joe Phillips Arena, includes 2 water closets, 1 urinals, 2 lavatories and 2 showers and 1 double sink type plumbing fixtures.	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M02	Plumbing	Fieldhouse, includes 2 water closets, 2 urinals, 4 lavatories and 10 showers and 1 sink in the concession type plumbing fixtures.	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M02	Plumbing	Joe Philips Arena - Player, officials, misc. change rooms, include 5 water closets, 4 urinals, 5 lavatories, 16 showers.	Replace plumbing fixtures (sinks, toilets, fountains, and urinals)as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 54,000	$ -	$ -	**$ 54,000**
M02	Plumbing	Joe Philips Arena - Player, officials, misc. change rooms, include 3 water closets, 2 urinals, and 5 lavatories.	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**

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M02	Plumbing	Domestic water distribution piping serving the concession - Study	Study to rationalize the domestic water piping in the facility. Cost includes allowance for repairs / replacement.	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 20,000**
M02	Plumbing	Curling rink concession area and upper level bar, includes one larger commercial sink, on hand sink a bar sink, and twin bowl sink.	Replace the sinks	$ -	$ -	$ -	$ -	$ 5,500	$ -	$ -	$ -	$ -	$ -	**$ 5,500**
M02	Plumbing	Curling rink, the main floor public washrooms, concession area, includes 3 water closets, 1 urinal, and 2 lavatories.	Replacement is not anticipated, apart from water closets.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M02	Plumbing	Curling rink, second floor public washrooms, concession area, include 3 water closets, 1 urinal, 4 lavatories and 2 sinks type plumbing fixtures.	Replacement is not anticipated, apart from urinal which is 1980.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M02	Plumbing	DWH-1, gas fired, tank type domestic water heater, Concession mechanical room, Curling rink.	Replace domestic water heater as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,000	$ -	$ -	$ 14,000	**$ 28,000**
M02	Plumbing	DWH-2, gas fired, tank type domestic water heater, Red Dutton mechanical room	Replace domestic water heater as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ 5,000	$ -	**$ 10,000**
M02	Plumbing	Two 119 gallon storage tanks for domestic hot water, Fieldhouse mechanical room	Replace domestic water heater as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,000	$ -	$ -	$ 7,000	**$ 14,000**
M02	Plumbing	2nd floor mechanical room, Joe Phillips Arena - DWH-3, gas fired, tank type domestic water heater, expansion tank, and pump.	Replace domestic water heater as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000	$ -	$ -	**$ 15,000**
M02	Plumbing	2nd floor mechanical room, Joe Phillips Arena - Domestic hot water storage tanks (80 gallon and 180 gallon)	Replace domestic hot water storage tanks as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,000	$ -	$ -	**$ 14,000**

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M02	Plumbing	DWH-4, gas fired, tank type domestic water heater, garage building	Replace domestic water heater as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ 12,000	$ -	$ -	$ -	$ 12,000	$ -	**$ 24,000**
M03	Heating	Joe Phillips Arena 2nd Floor Mechanical Room - Heating boiler and circulation pump for domestic hot water	Replace the domestic hot water boiler and circulation pump as the component reaches its EUL	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	**$ 20,000**
M02	Plumbing	DWH - glass lined 80 gallon storage tank, garage building	Replace domestic water storage tank as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000	$ -	$ -	**$ 3,000**
M02	Plumbing	There are three refrigerated drink fountains located in the facility	Replace the drinking fountains	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,500	**$ 4,500**
M05	Heating	The Fieldhouse floor is equipped with an in-slab heating system heated by a single boiler.	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M05	Heating	The Fieldhouse heating system is circulated by seven pumps	Replace seven circulation pumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,500	$ -	**$ 10,500**
M03	Heating	Joe Phillips Arena 2nd Floor Mechanical Room - gas fired unit heater	Replace the unit heater as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,700	$ -	$ -	$ -	**$ 2,700**
M03	Heating	Joe Phillips Arena - suspended gas fired unit heaters	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Heating	Curling rink - suspended gas fired unit heaters	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Heating	Flood Room & Workshop and garage - suspended gas fired unit heaters	Replace the gas fired unit heater	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,500	$ -	**$ 10,500**
M03	Heating	Refrigeration Room - suspended electric unit heater	Replace the electric unit heater	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000	$ -	$ -	$ -	**$ 3,000**
M03	Heating	Mechanical Room (Water Treatment) - suspended electric unit heater	Replace the electric unit heaters	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,000	$ -	**$ 6,000**
M03	Heating	Red Dutton Arena - suspended gas fired unit heaters	Replacement of 2 gas fired unit heaters is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Heating	Main Hallway - ceiling mounted forced flow heater	Replacement of heater in short term . No shut-off valves, contains glycol, with active leak. Additional pipework to be removed. RUL reduced to one year, based on site conditions.	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 3,000**

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M03	Heating	Red Dutton Arena - Spectator Infrared heaters	Replace 2 Radiant heaters as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ -	**$ 8,000**
M03	Heating	Mechanical Room - Water Treatment, infrared heater	Replace Infrared heater. RUL reduced based on site conditions.	$ -	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000	**$ 6,000**
M03	Heating	Spectator Infrared heaters - Joe Phillips Arena	Replace 4 infrared heaters as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ 4,000	$ -	$ -	$ -	$ -	$ 4,000	**$ 8,000**
M03	Heating	Flood Room - snow melt pit	Replace the snow melt pit coil as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,000	$ -	**$ 40,000**
M05	Heating	2013 Furnaces, located in Curling rink mechanical room	Replace 2 furnaces as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000	$ -	**$ 10,000**
M05	Heating	Furnace, located in Joe Phillips Arena west, mechanical room	Replace the Lennox furnace as the component reaches the end of its lifecycle.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,500	$ -	$ -	**$ 4,500**
M05	Heating	Electric Entrance Heaters	Replace the entrance heaters. Cost below reporting threshold.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M05	Ventilation	Four heat pump units, located in the Fieldhouse	Replace the heat pumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 24,000	**$ 24,000**
M05	Ventilation	2 - 2008 Lennox packaged roof top units, Curling rink roof	Replace the roof top units. Comb out the damaged condenser coils and install hail guards.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18,000	$ -	**$ 18,000**
M05	Ventilation	2016 Lennox packaged roof top unit (Childcare)	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M05	Ventilation	3 - 2009 Lennox packaged roof top units	Replace 3 roof top units as they achieve their EUL.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,000	$ -	**$ 30,000**

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M05	Ventilation	Refrigeration room Engineered Air Ventilation unit - MAU-1	Replace the MAU serving the Refrigeration Room as the component reached its EUL.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 24,000	$ -	**$ 24,000**
M05	Ventilation	2 - 2011 Engineered Air Ventilation make-up air units for change rooms	Replace 2 make-up air units as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 56,000	**$ 56,000**
M05	Ventilation	2013 Engineered Air Unit	Replace the air handling unit as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 44,000	**$ 44,000**
M04	Ventilation	1997 Exhaust fans, Joe Phillips Arena flat roof	Replace 6 general exhaust fans as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,000	$ -	$ -	$ -	**$ 21,000**
M04	Ventilation	1980 Exhaust fans, Curling Rink flat roof	Replace 5 general exhaust fans as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ 17,500	$ -	$ -	$ -	$ -	$ -	**$ 17,500**
M04	Ventilation	Exhaust fans on roof of Field House	Replace 3 general exhaust fans as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,500	**$ 10,500**
M05	Ventilation	Red Dutton/Joe Phillips Arena Dehumidification unit, located on Joe Phillips flat roof	Replace dehumidification unit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 130,000	$ -	**$ 130,000**
M05	Ventilation	Red Dutton Arena Dehumidification Ductwork	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M05	Ventilation	2007 Exhaust fans	Replace the exhaust fans as they achieve their EUL.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,000	$ -	**$ 7,000**
M05	Ventilation	Curling Rink Concession kitchen ventilation hood	Replace the kitchen ventilation hood	$ -	$ -	$ -	$ -	$ 15,600	$ -	$ -	$ -	$ -	$ -	**$ 15,600**
M05	Ventilation	Sheet metal ductwork Curling Rink	Replace sheet metal ductwork as the component reaches the end of its lifecycle.	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	$ -	$ -	**$ 50,000**
M05	Ventilation	Sheet metal ductwork Joe Phillips Arena	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M05	Ventilation	Sheet metal ductwork Field House	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**

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M05	Controls	Refrigeration room gas detection system	Replace refrigeration room gas detection system as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,000	$ -	$ -	$ -	**$ 12,000**
M05	Controls	Refrigeration plant PLC control system	Replace refrigeration control system as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	$ -	**$ 50,000**
M05	Controls	Field House boiler and in-slab heating controls	Replace the control system as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,000	$ -	$ -	**$ 4,000**
7.6.4	**Ice Plant Equipment**													
M08	Ice Plant Equipment	Minor Code Deficiencies	Power wiring to CM-201 Mypro is temporary and should be replaced. PSV 12 on PV-401 curling chiller oil pot requires replacement All as part of routine maintenance.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M08	Ice Plant Equipment	2007/8 Ice refrigeration plant for 2 arenas: 2 - reciprocating compressors Vilter, CM-101 and CM-201	Replacement is not anticipated other than replacement of temporary wiring to CM-201 as mentioned above.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M08	Ice Plant Equipment	2015 Ice refrigeration plant for Curling Club: 1 - reciprocating compressors Vilter, CM-301	PSV 12 on PV-401 curling chiller oil pot requires replacement	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M08	Ice Plant Equipment	Oil Separators OS101, 201, 301	Replace the oil separators as the component reaches end of useful life	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000	$ -	**$ 15,000**
M08	Ice Plant Equipment	Chiller CH101 Refrigeration room, Joe Phillips and Red Dutton Arenas	Replace the chiller as it achieves it expected useful life. Note Thermocarb has reduced the recommended EUL used for chillers from 25-15 years based on recent failures of brine chillers	$ -	$ -	$ -	$ -	$ -	$ -	$ 120,000	$ -	$ -	$ 120,000	**$ 240,000**
M08	Ice Plant Equipment	Chiller CH201 Refrigeration room, Curling Centre	Replace the chiller as it achieves it expected useful life. Note Thermocarb has reduced the recommended EUL used for chillers from 25-15 years based on recent failures of brine chillers	$ -	$ -	$ -	$ -	$ 90,000	$ -	$ -	$ -	$ 90,000	$ -	**$ 180,000**
M08	Ice Plant Equipment	Glycol Jacket Cooling Pump PU801	Replace the pump as it achieves its expected useful life. The pump and associated piping should be cleaned and repainted as part of routine maintenance to prevent further corrosion.	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	**$ 5,000**

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M08	Ice Plant Equipment	Glycol Jacket Cooling Pump supply piping	Solenoids should be considered at the next shutdown as part of routine maintenance.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M08	Ice Plant Equipment	Condenser Dolphin Water Treatment WT101	Replace the water treatment system as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ -	**$ 30,000**
M08	Ice Plant Equipment	Condenser Pump - PU701	The pressure at the condenser spray nozzles should be tested to determine if there is sufficient flow. The pump has reached the end of its EUL and should be considered for replacement.	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 16,000**
M08	Ice Plant Equipment	Cold Brine Pump - Red Dutton PU101	Replace the pump as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000	$ -	$ -	**$ 10,000**
M08	Ice Plant Equipment	Cold Brine Pump - Joe Phillips PU201	Pump PU201 has reached the end of its useful life and should be replaced	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 20,000**
M08	Ice Plant Equipment	Cold Brine Pump - Curling rink PU301	Replace the pump as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000	$ -	$ -	$ -	**$ 10,000**
M08	Ice Plant Equipment	Warm Brine (HX101) and Snow Melt (HX301) Heat Exchangers	Replace the heat exchangers as they have reached the end of their expected lives would be a "lifecycle based reason for replacement, however based on Thermocarb's comments/concerns regarding reduced life expectancies of heat exchangers used in a ammonia service application, it is recommended to be replaced based on Condition	$ -	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 24,000	$ -	**$ 48,000**
M08	Ice Plant Equipment	Warm Brine Pump PU401	Replace the pump as it has reached its expected useful life	$ -	$ 7,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 15,000**
M08	Ice Plant Equipment	Warm Brine Mains Piping	Replace the warm brine mains piping as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000	$ -	**$ 20,000**
M08	Ice Plant Equipment	Snow Melt Glycol Pump PU601	Replace the pump as it has reached its expected useful life	$ -	$ 7,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 15,000**
M08	Ice Plant Equipment	Brine Expansion Tanks TK201, TK301, TK401, & TK501	Replace expansion tanks as they reach their EUL	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,000	$ -	$ -	$ -	**$ 12,000**
M08	Ice Plant Equipment	Brine Expansion Tank TK101	Replace tank TX101 with appropriately sized unit to remove any future potential operational difficulties	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 20,000**
M08	Ice Plant Equipment	Red Dutton Arena Cold Brine mains piping	Replace the header piping as the component reaches its expected useful life. To prevent further corrosion, the exposed metal piping should be painted and re-insulated. The cost for this repair will be below reporting threshold and expected to be completed as part of routine maintenance.	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	$ -	$ -	**$ 50,000**

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M08	Ice Plant Equipment	Arenas and curling rink brine charge	Replacement not anticipated. The cost for testing and treatment to be completed as part of routine maintenance.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M08	Ice Plant Equipment	Joe Phillips Arena Cold Brine mains piping	Replacement not anticipated. To prevent further corrosion, the exposed metal piping should be painted and re-insulated. The cost for this repair will be below reporting threshold and expected to be completed as part of routine maintenance.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M08	Ice Plant Equipment	Curling rink header piping	Replacement not anticipated	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M08	Ice Plant Equipment	Ammonia Piping	Replacement not anticipated	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M08	Ice Plant Equipment	Ammonia Piping	Repaint the ammonia piping as part of routine maintenance. The cost for this repair will be below reporting threshold and expected to be completed as part of routine maintenance.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M08	Ice Plant Equipment	Relief Valve System	The relief system should be considered for a full review for installed valves and pipe branch lengths	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M08	Ice Plant Equipment	Cooling tower CT201, Flat roof, Joe Phillips Arena	Replace cooling tower (64.5 tons) as the component reaches its expected useful life. RUL extended due to the cooling tower only being used in fan cooling mode. Note that the cost allowance is for replacing both towers with one unit as recommended by Thermocarb.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 120,000	$ -	$ -	**$ 120,000**
M08	Ice Plant Equipment	Cooling tower CT101, free standing steel structure, SE of the refrigeration plant, includes pump, distribution piping, tank and treatment system.	Replace cooling tower (150 tons) as the component reaches its expected useful life. Cost allowance provided above under CT201.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M05	Ice Plant Equipment	Packaged chiller for ODR and pumping (PU901)	Replace the chiller (170 tons) as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ -	**$ 150,000**

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M05	Ice Plant Equipment	Plastic refrigerant piping mat for ODR	Replace the plastic refrigerant piping mat for the ODR	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ -	$ -	**$ 150,000**
7.7	**ELECTRICAL SYSTEMS**													
7.7.1	**Electrical Distribution**													
M03	Incoming Services	Underground conductors from the utility owned transformer connect to main distribution panel located in Joe Phillips arena refrigeration room.	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Distribution Equipment	1200A, 277-480V Main Panel and circuit distribution panel, Joe Phillips refrigeration room	Replace the main 1200Amp breaker, CT cabinet, and Central Distribution Panel. RUL reduced from 19 years to 4 years, due to exposure to water.	$ -	$ -	$ -	$ -	$ -	$ 40,000	$ -	$ -	$ -	$ -	**$ 40,000**
M03	Distribution Equipment	600A, 277-480V Main Panel and circuit distribution panel, Red Dutton old refrigeration room	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Distribution Equipment	600A, 277-480V Main Panel and circuit distribution panel, Red Dutton old refrigeration room	Replacement of disconnect switch.	$ -	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 8,000**
M03	Distribution Equipment	Secondary transformer, Joe Phillips refrigeration room	Replace the 112.5 Kva Transformer	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,500	$ -	**$ 7,500**
M03	Distribution Equipment	Secondary transformer, Fieldhouse mechanical room	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Distribution Equipment	2 Secondary transformers, Joe Phillips Arena west, mechanical room and Red Dutton mechanical room (water treatment).	Replace 2 secondary transformers as the components reach their expected useful life.	$ -	$ -	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 15,000**
M03	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	Replace the circuit breaker panel as it has surpassed it EUL.	$ 3,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 3,500**
M03	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	Replace 5 circuit breaker panels as the components have surpassed their expected useful life.	$ -	$ -	$ 17,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 17,500**
M03	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	Replace 3 circuit breaker panels as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,500	$ -	$ -	$ -	**$ 10,500**

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Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Recommended Action	REPAIR / REPLACEMENT COSTS (2019 DOLLARS)										Total Opinion of Probable Cost (25 Years)
				SHORT TERM (2019 - 2024)						LONG TERM (2025 - 2044)				
				Immediate 2019	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024	Years 6 to 10 2025 - 2029	Years 11 to 15 2030 - 2034	Years 16 to 20 2035 - 2039	Years 21 to 25 2040 - 2044	
M03	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	Replace 6 circuit breaker panels as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,000	$ -	**$ 21,000**
M03	Distribution Equipment	Secondary distribution equipment both 277-480V and 120-208V circuit distribution panels	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Distribution Equipment	MCC-1 Curling rink refrigeration equipment motor control centre, Joe Phillips refrigeration room	Replace 4 section motor control centre as the component has surpassed its expected useful life.	$ -	$ -	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 25,000**
M03	Distribution Equipment	MCC-2 Curling rink refrigeration equipment motor control centre, Joe Phillips refrigeration room	Replace 1 section motor control centre as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000	$ -	**$ 15,000**
M03	Distribution Equipment	CT-2 variable frequency drive (VFD), Joe Phillips refrigeration room	Replace the VFD for the Cooling Tower fan motor	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,000	$ -	**$ 6,000**
M03	Distribution Equipment	Ice arena refrigeration equipment motor control centre (MCC), Joe Phillips refrigeration room	Replace 9 section motor control centre as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	$ -	$ -	**$ 50,000**
M03	Electrical - Other	Cabling and conduit located in the curling rink and Red Dutton arena.	Replace wiring and conduit as the components reach their expected useful life serving a gross floor area of 2848m2	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000	$ -	$ -	$ -	**$ 250,000**
M03	Electrical - Other	Cabling and conduit located in the Joe Phillips arena	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Electrical - Other	Cabling and conduit located in the Field House	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
7.7.2	**Interior & Exterior Lighting**													
M03	Interior Lighting	Florescent fixtures	Replace florescent fixtures serving Joe Phillips Arena areas with new LED fixtures	$ -	$ -	$ -	$ -	$ -	$ -	$ 90,000	$ -	$ -	$ -	**$ 90,000**
M03	Interior Lighting	Florescent fixtures	Replace the fluorescent lighting in the Curling rink and Red Dutton Arenas with new LED fixtures	$ -	$ -	$ 45,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 45,000**
M03	Interior Lighting	Florescent fixtures - Field House and Garage/Workshop	Replace the fluorescent lighting in the in the Field House and Garage/Workshop with new LED fixtures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,000	**$ 21,000**

TABLE B - COMPONENT EVENT COST SUMMARY

Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Recommended Action	REPAIR / REPLACEMENT COSTS (2019 DOLLARS)										Total Opinion of Probable Cost (25 Years)
				SHORT TERM (2019 - 2024)						LONG TERM (2025 - 2044)				
				Immediate 2019	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024	Years 6 to 10 2025 - 2029	Years 11 to 15 2030 - 2034	Years 16 to 20 2035 - 2039	Years 21 to 25 2040 - 2044	
M03	Interior Lighting	Incandescent fixtures Curling Rink Lounge Area	Replace incandescent fixtures in the lounge with LED fixtures.	$ -	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 10,000**
M03	Interior Lighting	LED fixtures in Red Dutton arena.	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Interior Lighting	LED fixtures in Joe Phillips arena.	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Interior Lighting	LED fixtures in Curling rink.	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
M03	Exterior Lighting	LED fixtures in ODR.	Replace LED fixtures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,000	**$ 6,000**
M03	Exterior Lighting	Pole mounted LED fixtures	Replace pole mounted fixtures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,400	$ -	$ -	**$ 8,400**
M03	Exterior Lighting	Building LED fixtures in Outdoor Rink	Replace LED fixtures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,000	**$ 12,000**
M03	Exterior Lighting	Field House soffit pot lights	Replace building mounted pot lights	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,000	$ -	**$ 4,000**
7.7.3	**Communications & Security**													
M03	Communications	Telephone systems	Replace telephone systems as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	**$ 20,000**
M03	Communications	Sound System with 4 speakers and Amplifier in Red Dutton, and 6 speakers and amplifier in Joe Phillips Arena	Replace Sound systems as the components reach their expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ -	$ -	**$ 8,000**
M03	Communications	Public Address System - Whole Building	Replace PA system as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,000	**$ 21,000**
M03	Security	Intrusion Alarm system	Replace intrusion alarm system as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ 120,000	$ -	$ -	$ -	$ -	$ -	**$ 120,000**
M03	Security	Video monitoring	Replace Video monitoring system as the component reaches its expected useful life.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	**$ 100,000**
7.8	**FIRE AND LIFE SAFETY SYSTEMS**													
7.8.1	**Fire Detection & Suppression**													
M03	Fire Alarm system	Fire Alarm system	Replace Fire Alarm System as the component reaches its expected useful life serving a gross floor area of 9556m2.	$ -	$ -	$ -	$ -	$ 250,000	$ -	$ -	$ -	$ -	$ -	**$ 250,000**
M03	Dry Chemical / Fire suppression system	Curling rink concession	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**

TABLE B - COMPONENT EVENT COST SUMMARY

Corporation: Springbank for All Season Recreation Centre Study Year: 2019		Component Location or Descriptor	Recommended Action	REPAIR / REPLACEMENT COSTS (2019 DOLLARS)										Total Opinion of Probable Cost (25 Years)
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				Immediate 2019	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024	Years 6 to 10 2025 - 2029	Years 11 to 15 2030 - 2034	Years 16 to 20 2035 - 2039	Years 21 to 25 2040 - 2044	
M03	Wet sprinkler system	Main floor Player, officials, misc. change rooms, public washrooms and 2nd floor development of Joe Phillips Arena	Replacement is not anticipated.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M03	Portable Fire Extinguishers	Whole Building	Replacement is based on as needs basis. Several fire extinguishers found to have out of date inspection certificates. Inspect and test all out of date equipment.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.8.2	**Emergency Power & Lighting**													
M03	Emergency Lighting and Exit lighting	Battery pack emergency lighting and exit fixtures	Replace battery operated emergency lighting.	$ -	$ -	$ -	$ -	$ 17,000	$ -	$ -	$ -	$ -	$ 17,000	**$ 34,000**
M03	Emergency Lighting and Exit lighting	Battery pack emergency lighting and exit fixtures	Replace battery operated emergency lighting.	$ -	$ -	$ 12,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,000	**$ 24,000**
ANNUAL COST (2019 DOLLARS)				**$ 3,500**	**$ 178,245**	**$ 232,166**	**$ 345,200**	**$ 1,097,880**	**$ 73,495**	**$ 2,094,881**	**$ 3,296,054**	**$ 2,104,468**	**$ 1,056,488**	**$ 10,530,377**
COMPOUNDED INFLATION RATE				0%	0.38%	0.76%	1.14%	1.53%	1.91%	2.30% to 3.87%	4.26% to 5.85%	6.26% to 7.88%	8.29% to 9.95%	
TOTAL INFLATED OPINION OF COST (EXCLUDING OPTIONAL REPAIRS)				$ 3,500	$ 178,922	$ 233,930	$ 349,135	$ 1,114,678	$ 74,899	$ 2,180,371	$ 3,449,961	$ 2,257,834	$ 1,186,752	$ 11,026,483

Appendix B Photographs

Appendix B Site Photographs

Photo 1
Damaged section of post and cable barrier to the east of the Main Facility

Photo 2
Typical condition of the original part of the fencing along Range Road 33

Photo 3
Typical condition of the asphalt paving at the south parking lot

Photo 4
Typical condition of the sidewalk in front of the main facility

Photo 5
Wood retaining wall at the baseball diamonds to the east of the Main Facility

Photo 6
Playground structure to the east of the Main Facility

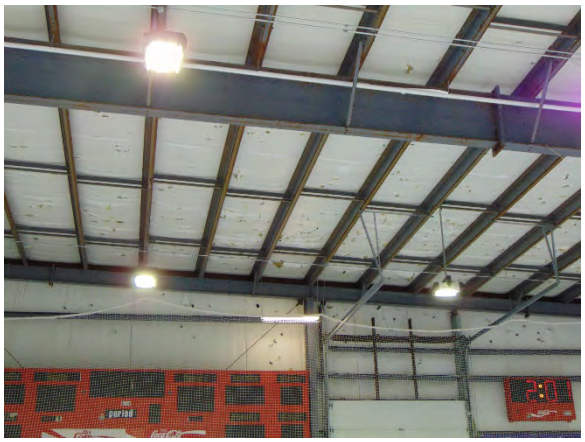


Photo 7
Roof structure of the Joe Phillips Arena

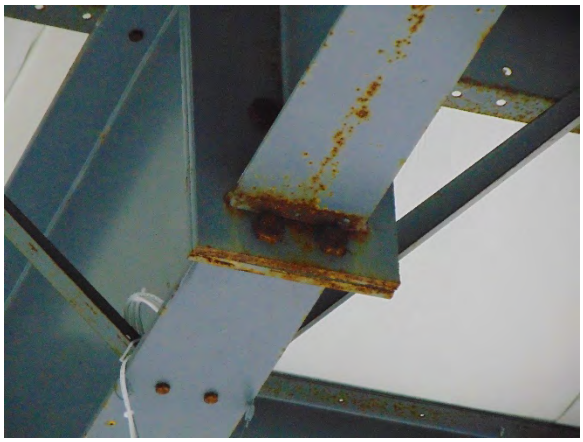


Photo 8
Surface rust and rusty bolt connections and head plates in the Joe Phillips Arena

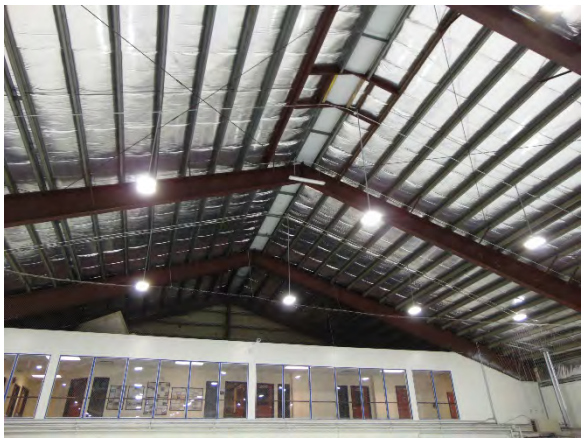


Photo 9
Rood structure of the Red Dutton Arena

Photo 10
Surface rust and rusty bolt connections on the Red Dutton Arena

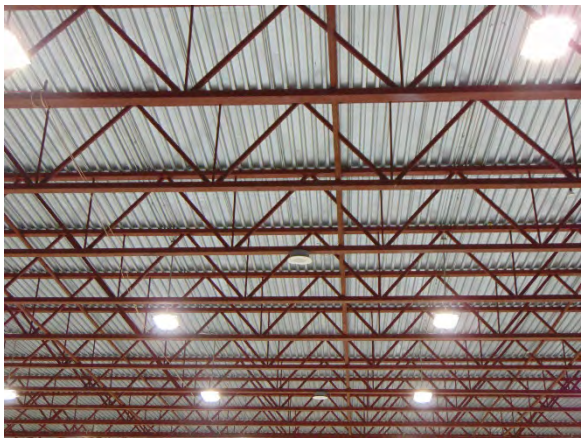


Photo 11
OWSJs in the Shane Homes Curling Rink

Photo 12
Exposed rebar and debris in the Red Dutton Arena header trench

Photo 13
Failed concrete slab section at the Zamboni "driveway" in the Red Dutton Arena

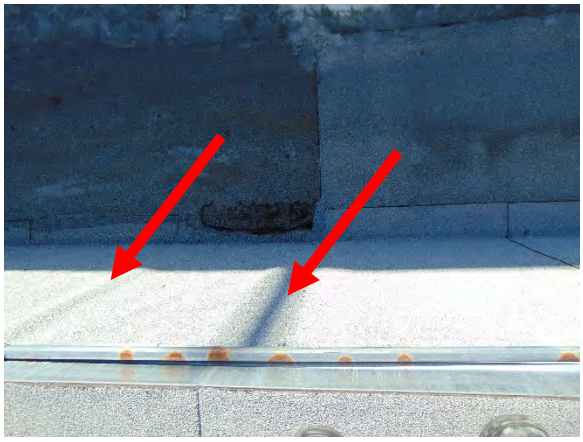


Photo 14
Bubbling SBS membrane at the trench in between Red Dutton and Joe Phillips Arena

Photo 15
Repaired roof section on the Joe Phillips Arena

Photo 16
Missing rain water leader along the east side of the Main Facility

Photo 17
Typical exterior finishes near the north entrance

Photo 18
Impact damage at the exterior metal cladding

Photo 19
Cracking observed along the east side of the Main Facility

Photo 20
Damaged rainwater gutter at the Outdoor Rink

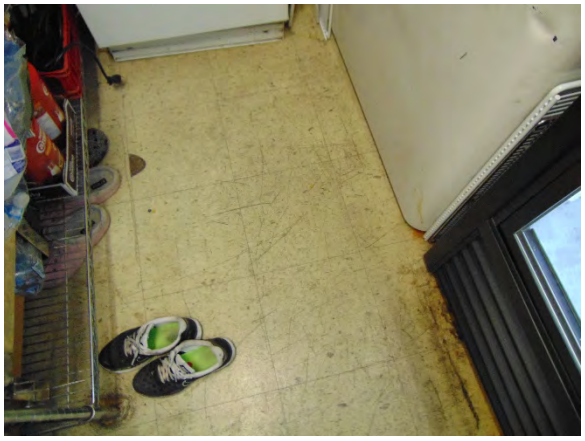


Photo 21
Worn VCT flooring in the concession pantry

Photo 22
Stained ceiling tile in the Shane Homes Curling Rink washrooms

Photo 23
Interior window detail in the Red Dutton Arena

Photo 24
Impact damages in the Shane Homes Curling Rink's plywood siding.

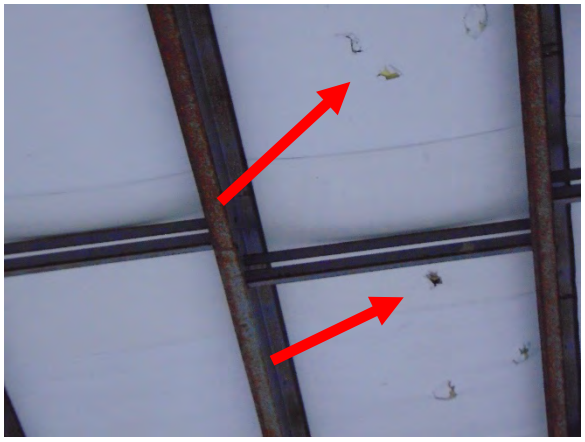


Photo 25
Impact damages at the Joe Phillips Arena's roof insulation

Photo 26
Impact damages at the door to the electrical room near the dry training area

Photo 27
View of previous water leak under lavatory in one of the change rooms

Photo 28
Deteriorated natural gas piping on the roof of the Curling Centre serving a roof top unit

Photo 29

View of corroding and mineral build-up of older style shower head

Photo 30

View of sump pump panel P-2 which is no longer connected to the pump

Photo 31

Sump pump P-2 showing exposed electrical wiring

Photo 32

Glycol fed ceiling mounted unit heater in the main hallway

Photo 33

View of previous leak from the ceiling mounted glycol fed heater

Photo 34

Poor support of natural gas piping on the roof of the Curling Centre

Photo 35
One of several fire extinguishers with an out-of-date inspection certificate

Photo 36
Evidence of previous leak from the chiller pump

Photo 37
View of oil pot showing corrosion

Photo 38
View of corroded cover on sump pump lift station in the Curling Centre mechanical room

Photo 39
View of missing cover plates on panelboard in the Red Dutton Mechanical Room

Photo 40
View of another missing cover plate on circuit breaker in Refrigeration Room

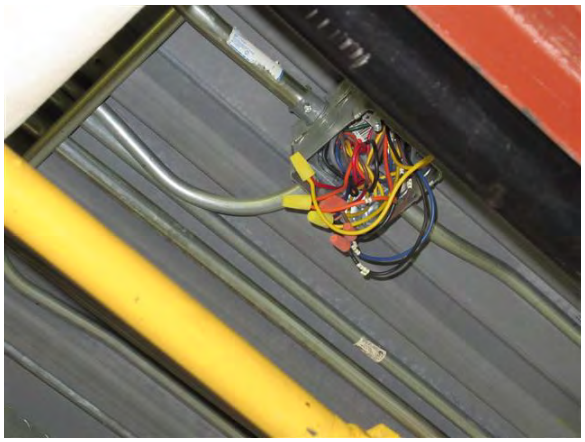


Photo 41
Missing cover plate on junction box in second floor mechanical room

Photo 42
Exposed controls wiring on the roof of the Curling Centre

Photo 43
Missing cover plate on junction box in Red Dutton Mechanical Room

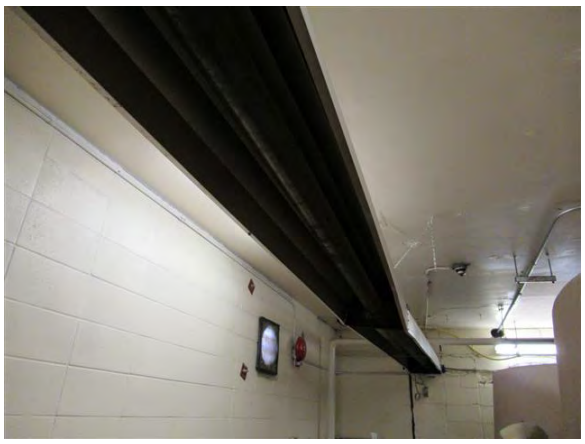


Photo 44
Damaged radiant heater in the old Curling Club refrigeration room

Photo 45

Hail damage to the condenser on one of the Roof Top Units serving the Curling Centre

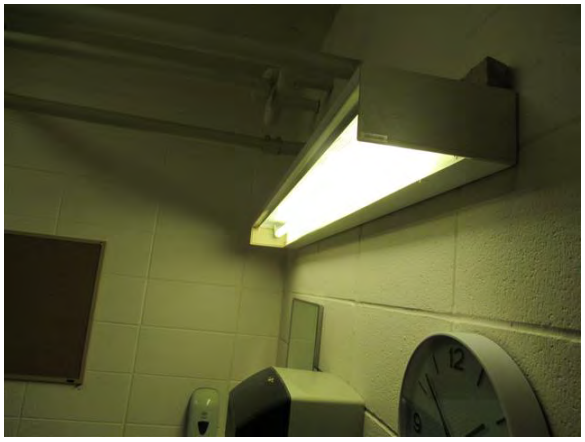


Photo 46

Missing lens cover on light fixture in one of the officials dressing rooms

Photo 47

Loose lens cover on light fixture in the Field House

Appendix C Site Plan

Appendix C Site Plan


Outdoor Rink
Garage
Joe Philips Arena
Red Dutton Arena
Shane Homes Curling Rink
Fieldhouse
Score Tower
Springbank Rd
Lagoon
Storage Shed
Lions Soccer Park
33
244

Appendix D Refrigeration Systems Report

Thermo Carb Ltd.	Springbank Park for All Seasons – Refrigeration BCA THERMOCARB LTD.	ROCKY VIEW COUNTY Cultivating Communities
REV.0	December 17, 2018	TITLE PAGE

CLIENT:	Springbank Park for All Seasons
REVISION NO:	0
CONSULTANT:	THERMOCARB LTD.
RE:	Refrigeration BCA
ATTENTION:	David Farkas, C.E.T. Senior Associate
SUBMISSION DATE:	December 17, 2018
CONTACT:	**ThermoCarb Ltd.** 200, 1204 Kensington Road Calgary, Alberta, Canada T2N 3P5
CHIEF CONTACT:	Craig Weller Ph: (403) 262-1051 Cell: (587) 435-3125 Email: craig.weller@thermocarb.ca

Thermo Carb Ltd.	Springbank Park for All Seasons – Refrigeration BCA THERMOCARB LTD.	ROCKY VIEW COUNTY Cultivating Communities
REV.0	December 17, 2018	LETTER OF INTRODUCTION

December 17, 2018

Stantec Consulting Ltd.
Phone: (403) 781-4138
Cell: (403) 461-7539
David.Farkas@stantec.com

ATTENTION: David Farkas, C.E.T.
Senior Associate

RE: Springbank Park for All Seasons -
Refrigeration BCA

Dear David,

Please find the attached review of the refrigeration system at the Springbank Park for All Seasons facility. The following report is based on visual inspections November 22, 2018, document review and conversation with facility operations. Expected Useable Life (EUL) values are based on industry experience and should be used in conjunction with regular inspections by a certified refrigeration contractor to determine equipment replacement requirements.

Budget cost estimates have been provided to replace equipment at the end of its EUL. Any ancillary structural costs are not included in these estimates. Comments and recommendations assume that regular service and maintenance programs are in place to maintain the brine, ammonia and glycol systems, and that these fluids are in good condition.

The plant was in operation at the time of the visit and no testing of any kind was conducted.

If you require and further information, please do not hesitate to ask.

Sincerely,

Craig Weller

Thermo Carb Ltd.

Thermo Carb Ltd.	Springbank Park for All Seasons – Refrigeration BCA THERMOCARB LTD.	ROCKY VIEW COUNTY Cultivating Communities
REV.0	December 17, 2018	TABLE OF CONTENTS

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Springbank Park for All Seasons (SPFAS) includes the Joe Phillips and Red Dutton hockey arenas, a six-sheet curling center and a refrigerated outdoor rink (ODR). An ammonia refrigeration system with a capacity of 187 TR provides the cooling for the two indoor arenas and curling center. The system uses three Vilter reciprocating compressors, two evaporative condensers, and two shell and tube chillers and ancillary pumps and controls to provide cold calcium chloride brine to the refrigerated slabs. The refrigeration system has been consolidated and upgraded over the years with the most recent upgrades being the Joe Phillips steel brine mains replacement in 2018, PLC in 2017, curling compressor in 2015, and hockey chiller in 2013. The condensers and snow melt heat exchanger are the next major piece of equipment that will require life cycle replacement. Upgrades also include upgrading the system and mechanical room to B52-13 mechanical refrigeration standards.

The current layout of the room creates access restrictions to some of the equipment. The warm brine pump for Joe Phillips, the snowmelt pit exchanger, expansion tank and pump, and the cold and warm brine expansion tanks are the most negatively impacted by the layout, making servicing and maintenance checks more difficult and potentially hazardous. Over the years there have been brine leaks from the cold brine expansion tank that have accelerated corrosion on pumps, piping and structural supports that were exposed to the brine. The system seems to have balanced out as there have not been any recent leaks. Operations has recently repainted these surfaces to help prevent further corrosion and have updated line labelling for code compliancy.

The ODR was upgraded in 2016 with the addition of a TRANE chiller package using R-134a refrigerant to provide consistent ice conditions over a longer operating season. The equipment has performed well and has only required minor repairs to this point. The original floor piping had several leaks last season which led to SPFAS installing a new seasonal matt system to provide the glycol cooling to the floor.

EQUIPMENT REVIEW

Control System (PLC):
The refrigeration system is controlled by a PLC which was upgraded in 2017. The new system provides increased control, trending, remote login capabilities to enhance the operability and efficiency of the system. Operations is working to finalize configuration of the remote log in to the PLC which will allow for faster and more efficient system supervision. The new PLC should not require replacement in the foreseeable future.

Expected EUL:	15 years
EUL Remaining:	14 years
Budget Replacement Cost:	$50,000

Motor Control Centre (MCC):
The motor starters for the installed equipment are located in multiple MCCs. A Telemecanique MMC houses the Red Dutton and Joe Phillips starters, and a Moeller MCC houses the curling starters. The age of the MCCs is unknown but are estimated to be from 2007 or prior. They should not require replacement in the foreseeable future.

Expected EUL:	30 years
EUL Remaining:	19 years
Budget Replacement Cost:	$50,000

Compressors (CM-101/201/301):
The system uses three Vilter 440 series direct drive reciprocating compressors; two 448D eight cylinder with 100 HP motors (CM-101/201), and one 444D four cylinder with 50 HP motor (CM-301). All compressors are installed with Mypro local controllers. The Vilters are excellent machines and with proper maintenance and overhaul schedule will normally exceed their EUL. CM-101 was installed in 2007, CM-201 in 2008 and CM-301 in 2015. All machines should not require replacement in the foreseeable future.

Expected EUL:	40 years
EUL Remaining:	30+ years
Budget Replacement Cost:	$70,000-90,000 / compressor

Oil Separators (OS-101/201/301)):

OS-101/201 are Vilter coalescing separators with replaceable element installed in 2007/2008. OS-301 is a Henry COS-070 installed in 2007. The separators should not require replacement in the foreseeable future.

Expected EUL:	30 years
EUL Remaining:	20 years
Budget Replacement Cost:	$5,000 / separator

Glycol Jacket Cooling Pump (PU-801)

The system has one vertical inline compressor cooling pump which was installed in 2006. The pump is located under the brine expansion tank for the hockey arenas and is corroded due to a brine leak. The performance of the pump does not appear to be impacted but the pump and associated piping should be cleaned and repainted to prevent further corrosion.

The system uses a 3-way thermostatic control valve to regulate the temperature to the compressors. There is no bypass around the valve which if it fails in the wrong position can lead to high oil and head temperatures. A bypass should be considered for the valve at the next shut down.

The glycol cooling supplies to CM-101/201 do not have a control solenoid installed which allows cold glycol to circulate on the heads of the compressors when ever the pump is on. When the pump is on and only one compressor running, this could lead to condensing of ammonia on the stopped compressor, which could lead to damage when it is turned on. Solenoids should be considered at the next shutdown.

The pump should be considered for replacement in the next 8 years. It is recommended that a shelf spare be purchased in case of a premature failure.

Expected EUL:	20 years
EUL Remaining:	8 years
Budget Replacement Cost:	$5,000

Condenser (CT-101/201):

The system uses two Evapco ATC evaporative condensers. CT-101 was installed in 2006 and includes a VFD on the fan motor for capacity control, and a separate glycol circuit for compressor cooling. CT-201 was originally installed in 1997 and was disconnected from the water system in 2006 to provide additional trim cooling capacity for the system. This will increase the expected EUL of the unit by 10 years as it is not in evaporative service. The condensers are in good condition should not require replacement in the immediate future. When due for replacement the two condensers should be replaced with one larger unit.

Expected EUL:	25 years (+10 years for CT-201)
EUL Remaining:	CT-101 13 years
	CT-201 14 years
Budget Replacement Cost:	$120,000

Condenser Water Treatment (WT-101):
The condenser water is treated with a Dolphin ionic water treatment system installed in 2006. The system should not require replacement in the immediate future. Ionic systems require period maintenance to remove the solids that are created while preventing scaling. It is recommended that a side stream solids removal system such as those offered by Lakos is investigated to help maintain the system. An alternative to the Dolphin inline system is a Hydroflow electronic water conditioning solution which can be added to existing piping systems at significant cost reduction.

Expected EUL:	20 years
EUL Remaining:	8 years
Budget Replacement Cost:	$30,000 (Dolphin)
	$15,000 (Hydroflow)

Condenser Pump (PU-701):
The condenser pump is an Armstrong 4030 6x4x8 10 HP end suction pump installed in 1997. The pump nameplate flow of 400 GPM indicates it is undersized for the design flow rate for CT-101 of 600 GPM. The pressure at the condenser spray nozzles should be tested to determine if there is sufficient flow. The pump has reached the end of its EUL and should be considered for replacement.

Expected EUL:	20 years
EUL Remaining:	0 years
Budget Replacement Cost:	$8,000

Cold Brine Chiller (CH-101/CH-201, CS-101/CS-201):
The system uses two (2), two-pass shell and tube cold brine chillers. CH-101 was installed in 2013 and services the two hockey arenas with a capacity of 180 TR. CH-201 was installed in 2007 and services the curling center with a capacity of 35 TR. Both chillers have oversized surge barrels for compressor protection. There have been several shell and tube chillers fail in the past 3 years because of corrosion caused by poor brine monitoring and maintenance. Regular brine testing and maintenance is imperative to protect the chillers from corrosion and a potential leak. Thermocarb has reduced the recommended EUL used for chillers from 25-15 years. The curling chiller is approaching end of the new recommended EUL. It is

recommended that a titanium plate and frame chiller is considered as the replacement for the shell and tube. Plate and frame chillers offer efficiency benefits as well as reduce the amount of ammonia in the system.

Expected EUL:	15 years
EUL Remaining:	CH-101 10 years
	CH-201 4 years
Budget Replacement Cost:	$120,000 / CH-101
	$ 90,000 / CH-201

Cold Brine Pumps (PU-101/201/301):
PU-101 (Red Dutton, 2013) and PU-201 (Joe Phillips, 1997) are Armstrong end suction pumps with 20 HP motors. PU-301 (curling, 2007) is an Armstrong vertical inline pump with 10 HP motor. The pumps are in good condition with some corrosion. PU-201 has reached the end of it's EUL and should be considered for replacement.

Expected EUL:	20 years
EUL Remaining:	PU-101 15 years
	PU-201 0 years
	PU-301 9 years
Budget Replacement Cost:	$10,000/pump

Cold Brine Mains Piping:
The cold brine piping has been upgraded over the years. There is a common 10" steel supply and return header from CH-101. There is some insulation missing around the suction inlets of both pumps leading to frosting and increased corrosion of the piping and pump body. This should be repaired to prevent further corrosion. The Red Dutton 6" steel mains are believed to be from 1989. The metal clad insulation is in very good condition. The headers where replaced in 2012 and individual isolation valves were installed on each floor circuit. The mains should not require replacement in the next 10 years.

Expected EUL:	40 years
EUL Remaining:	11 years
Budget Replacement Cost:	$50,000

The Joe Phillips mains were replaced in 2018 with new steel piping with Styrofoam insulation with aluminum jacket. They should not require replacement in the next 40 years.

Expected EUL:	40 years

EUL Remaining: 40 years
Budget Replacement Cost: $80,000

The steel curling mains were extended to the new plant room in 2007 when the plants were consolidated into one refrigeration system. They are in very good condition and should not require replacement in the immediate future.

Expected EUL: 40 years
EUL Remaining: 29 years
Budget Replacement Cost: $50,000

Phillips Warm Brine Exchanger (HX-101):
The system has a condensing heat exchanger for the underfloor system on the Joe Phillips Arena. The age of the exchanger is undeterminable; however, it is assumed to have been installed in 1997 with the pump. The exchanger should be considered for replacement.

Expected EUL: 15 years
EUL Remaining: 0 years
Budget Replacement Cost: $12,000

Phillips Warm Brine Pump (PU-401):
One new Armstrong end suction pump with 7.5 HP motor was installed in 1997. The pump is poorly located behind the high-pressure receiver making it difficult to service. There is moderate corrosion on the pump. The pump has reached the end of it's EUL and should be considered for replacement. When the pump is replaced it is recommended that it is relocated to a more accessible location.

Expected EUL: 20 years
EUL Remaining: 0 years
Budget Replacement Cost: $7,500

Underfloor Warm Brine Mains Piping:
The warm brine piping is believed to have been installed in 1997. There is a leak on the inlet to the exchanger. The piping in the room should be repaired and considered for replaced with a new pump and exchanger.

Expected EUL: 40 years
EUL Remaining: 19 years
Budget Replacement Cost: $20,000

Snow Melt Heat Exchanger (HX-301):
One condensing snow melt exchanger was installed in 1997 to provide reclaimed heat from the compressor discharge to a coil in the snow melt pit. The snowmelt pit system was isolated and not in service for several years. The system has recently been put back into service. The exchanger has surpassed its EUL and should be scheduled for replacement.

Expected EUL:	15 years
EUL Remaining:	0 years
Budget Replacement Cost:	$12,000

Snow Melt Pit Coil (HX-401):
A new snow melt coil was installed in the pit in 2018. This reclaimed heat from the refrigeration system will help increase the efficiency of the system. The coil should not require replacement in the foreseeable future.

Expected EUL:	15 years
EUL Remaining:	15 years
Budget Replacement Cost:	$40,000

Snow Melt Glycol Pump (PU-601):
One Armstrong vertical inline pump with 1.5 HP motor was installed in 1997. The pump has reached the end of its EUL and should be scheduled for replacement.

Expected EUL:	20 years
EUL Remaining:	0 years
Budget Replacement Cost:	$7,500

Brine:
A new brine charge was installed with the new chiller in 2013. With proper monitoring and maintenance, the brine charges for both systems can last indefinitely. Brine charge maintenance is directly correlated to the EUL of the chillers and header systems. Annual or bi-annual monitoring is recommended to ensure PH, inhibitor, iron and sediment levels are within expected ranges.

Expected EUL:	50 years
EUL Remaining:	45 years
Budget Replacement Cost:	$25,000

Expansion Tanks (TK-101/201/301/401/501):

The poly expansion tanks (TK-101/301) for the hockey arenas were installed in 1997. TK-101 is mounted high above the brine pumps and condenser water system. The tank is undersized for the application and there have been brine leaks over the years that have led to corrosion and equipment damage. The system is currently operating well, however if air is introduced into the system during maintenance or an upgrade there could be more brine leaks. A pressurized bladder tank could be used and installed at floor level, however the large required size of the tank could potentially remove the option. TK-201/301/401 are in good condition. TK-501 was recently put back in service and is poorly located in the room, high above the chiller and heat exchangers. The tanks should not require EUL replacement in the foreseeable future however it may be worthwhile to get a quote for a pressurized expansion tank system to remove the operation difficulties of TK-101.

Expected EUL:	30 years
EUL Remaining:	9 years
Budget Replacement Cost:	$3,000 / tank $20,000 / bladder tank

Ammonia Piping:

The ammonia piping was replaced with the upgrades in 2007 and 2013. The piping is in excellent condition and should not require replacement in the foreseeable future. There are several valves that are not plugged properly. These valves should be identified and plugged immediately to prevent an accidental ammonia release. The system needs to have line labels updated which has been scheduled by operations to be completed this summer.

Expected EUL:	40 years
EUL Remaining:	35 years
Budget Replacement Cost:	$50,000

Relief System:

The relief system was replaced in 2007. Changes to the relief capacity requirements have been made since the system was installed that make the 4” header and ¾” branch lines undersized for the size of relief valves used on some equipment. Some of the relief valves which were oversized have been replaced in 2018 with reduced capacity valves which helps bring the system closer to compliance. The relief system should be considered for a full review for installed valves and pipe branch lengths, which is beyond the scope of this BCA.

Expected EUL:	40 years
EUL Remaining:	29 years

Budget Replacement Cost: $25,000
*Relief valves must be replaced or serviced every five years. Replacement costs of relief valves have been considered as a maintenance cost and as such are not reflected in this life cycle estimate.

Outdoor Rink (ODR) Chiller (TRANE RTAC170):
A TRANE RTAC170 chiller package was installed adjacent to the outdoor rink in 2016. The system is in excellent condition and should not require replacement in the foreseeable future.

Expected EUL: 20 years
EUL Remaining: 18 years
Budget Replacement Cost: $150,000

ODR Pump (PU-901):
One Armstrong 5x4x10 end suction pump with suction strainer and 25 HP motor is installed on the ODR. A new matt system was installed in 2018 and the impeller of the pump was trimmed to adjust the glycol flow. The pump is in excellent condition and should not require replacement in the foreseeable future.

Expected EUL: 20 years
EUL Remaining: 18 years
Budget Replacement Cost: $10,000

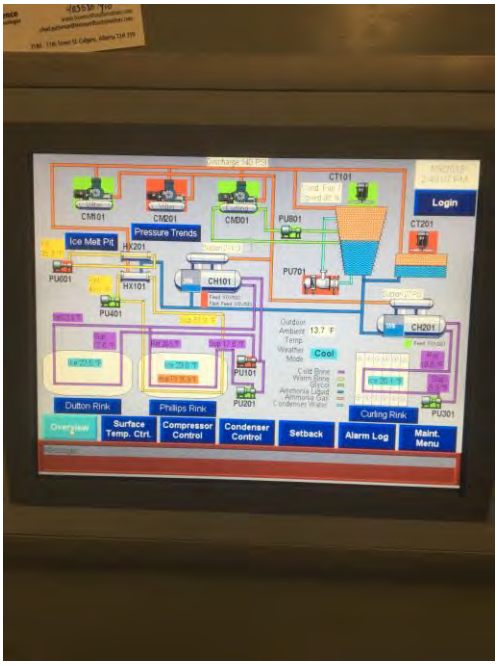
B52-13 Mechanical Refrigeration Code Deficiencies:
The system and mechanical room envelope have been continually upgraded for code compliancy. Many architectural, mechanical and electrical B52 code requirements (including some listed below) fall outside of our scope of expertise and should be reviewed by qualified personnel. The following is a list of minor code deficiencies that should be remedied. (Some of these items may have already have been addressed).

- Power wiring to CM-201 Mypro is temporary and should be replaced
- PSV 12 on PV-401 curling chiller oil pot requires replacement

Thermo Carb Ltd.	Springbank Park for All Seasons – Refrigeration BCA THERMOCARB LTD.	ROCKY VIEW COUNTY Cultivating Communities
REV.0	December 17, 2018	APPENDIX 1

APPENDIX 1: SITE PHOTOS

1.Vestibule door with NH3 detection panel and ventilation fan on switch



2. PLC system flow screen

3. Main arena MCC

4. Curling MCC and PLC Cabinet

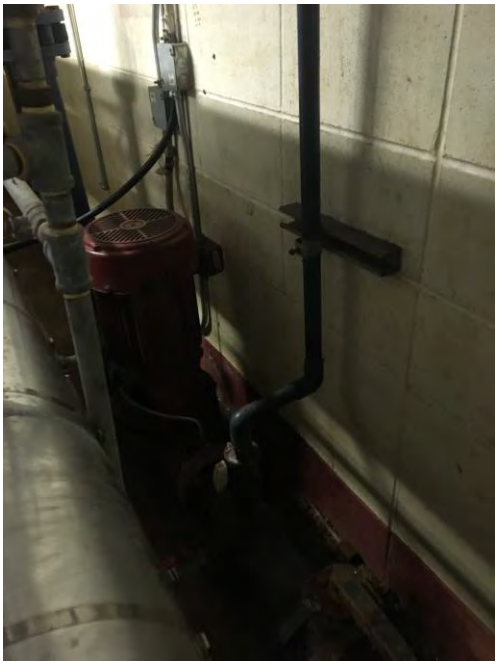
5. Compressor CM-201 showing Mypro temp wiring

6. CT-201

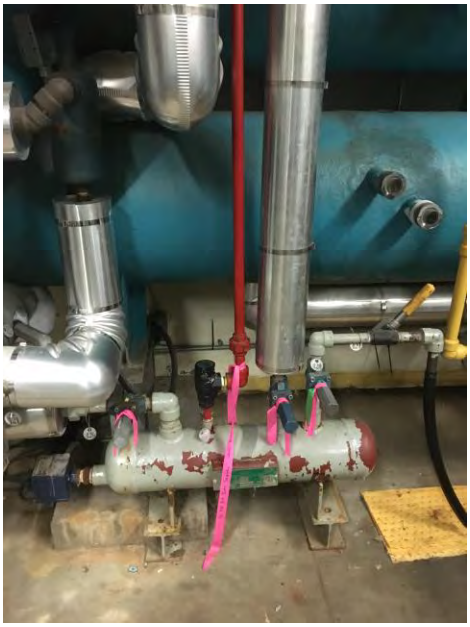
7. Dolphin water treatment, condenser pump and ladder access to expansion tanks

8. CH-101

9. New Joe Phillips mains piping



10. Underfloor pump location behind high pressure receiver.



11. Oil pot showing corrosion and vapor relief valve in liquid service

12. New reduced capacity relief valve

Thermo Carb Ltd.	Springbank Park for All Seasons – Refrigeration BCA THERMOCARB LTD.	ROCKY VIEW COUNTY Cultivating Communities
REV.0	December 17, 2018	APPENDIX 2

APPENDIX 2: LIFE CYCLE/BUDGET ESTIMATE

Springbank Park for All Seasons - Refrigeration/Life Expectancy													
Equipment	**Tag**	**Year Installed/**	**Expected Life**	**Remaining Life**	**Condition**	**2018**	**2019**	**2020**	**2021-**	**2026-**	**2031-**	**2036-**	**2041-**
• PLC Control System		2017	15	14	• Very Good						$50,000		
• Vilter 448D	CM-101	2007	40	29	• Good								
• Vilter 448D	CM-201	2008	40	30	• Good								
• Vilter 44DD	CM-301	2015	40	37	• Good								
• Oil Separators	OS-101/201/301	2007	30	19	• Good							$15,000	
• Glycol Jacket Cooling Pump	PU-801	2006	20	8	• Very Good					$5,000			
• Evapco ATC Condenser - With VFD and water	CT-101	2006	25	13	• Good						$120,000		
• Evapco ATC Condener - fan only	CT-201	1997	35	14	• Good								
• Condenser Dolphin Water Treatment	WT-101	2006	20	8	• Good					$30,000			
• Condenser Pump - CT-101	PU-701	1997	20	0	• Reached EUL				$8,000			$8,000	
• Cold Brine Chiller - Hockey Arenas	CH-101	2013	15	10	• Very Good					$120,000			$120,000
• Cold Brine Chiller - Curling	CH-101	2007	15	4	• Good				$90,000			$90,000	
• Cold Brine Pump - Red Dutton	PU-101	2013	20	15	• Very Good						$10,000		
• Cold Brine Pump - Joe Phillips	PU-201	1997	20	0	• Reached EUL		$10,000					$10,000	
• Cold Brine Pump - Curling	PU-301	2007	20	9	• Very Good					$10,000			
• Cold Brine Mains Piping - Red Dutton		1989	40	11	• Good					$50,000			
• Cold Brine Mains Piping - Joe Phillips		2018	40	40	• Very Good								
• Cold Brine Mains Piping - Curling		2007	40	29	• Very Good								
• Warm Brine Exchanger	HX-101	1997	15	0	• Reached EUL		$12,000				$12,000		
• Warm Brine Pump	PU-401	1997	20	0	• Reached EUL		$7,500					$7,500	
• Warm Brine Mains Piping		1997	40	19	• Good							$20,000	
• Snow Melt Heat Exchanger	HX-301	1997	15	0	• Reached EUL		$12,000				$12,000		
• Snow Melt Pit Coil	HX-401	2018	15	15	• Very Good								$40,000
• Snow Melt Glycol Pump	PU-601	1997	20	0	• Reached EUL		$7,500					$7,500	
• Brine		2013	50	45	• Very Good								
• Brine Expansion Tanks	TK-101/201/301/401/501	1997	30	9	• Good					$15,000			
• Ammonia Piping		2007	40	29	• Good								
• Relief System		2007	40	29	• Good								
• Outdoor Rink Chiller	TRANE RTAC170	2016	20	18	• Very Good						$150,000		
• Cold Brine Pump - ODR	PU-901	2016	20	18	• Very Good						$10,000		
TOTAL						**$0**	**$49,000**	**$0**	**$98,000**	**$230,000**	**$364,000**	**$158,000**	**$160,000**
*Estimates reflect 2018 CAD dollars, and are provided for budgetary purposes only.												Thermocarb 2018	

Appendix E Assessor Qualifications

Tobias Link Dipl.-Ing.(FH)
Associate - Building Conditions Specialist

Stantec

Tobias has more than 15 years of experience in the building and construction industry. He holds a Journeyman ticket as a Carpenter and Cabinetmaker as well as a degree in Architectural Engineering which he both obtained in Germany. The companies that he has subsequently worked with, have allowed him to understand the client's needs for risk management, life cycle costs analysis and capital planning. As a Property Conditions Specialist Tobias has completed complex assessments of residential, commercial, industrial and institutional buildings and facilities by conducting the site review as well as the reporting. These assessments usually included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical systems.

EDUCATION

Dipl.-Ing. (FH) Architectural Engineering
B. Hons. equivalent
University of Applied Science Coburg, Germany
1999 - 2004

Graduate
Engineering Program
State Technical College Bamberg, Germany
1996 - 1998

Schreinergeselle
Journeyman Carpenter & Cabinet Maker equiv.
Berufsschule Lichtenfels, Germany
1993 - 1996

REGISTRATIONS

The Association of Professional Engineers and Geoscientists of Alberta (APEGA) – application in progress

Registered member with The Association of German Engineers (VDI)

PROJECT EXPERIENCE

Building Condition Assessments

AI - Annual Facility Evaluation Program
Alberta Infrastructure, various locations (Project Manager, Field Assessor, Report Writer and Internal Reviewer)
Tobias has been part of this annual project as a project manager, conducting site investigations, preparing reports and being responsible for the quality assurance by being part of the internal review team since 2012. He used ReCAPP® validation software until 2015 and VFA Auditor® going forward to provide the reports. The objects he assessed reached from residential housing via schools and colleges to entire hospitals and other health facilities as well as municipal buildings and maintenance facilities.

** denotes projects completed with other firms*

Tobias Link Dipl.-Ing.(FH)
Associate – Facility Assessment Team

Stantec

Property Condition Assessments
First Capital Asset Management LP (Field Assessor, Report Writer)
Stantec was retained by First Capital Asset Management LP to support them with the property condition assessment of 19 commercial properties, including their parkades, located in Alberta, British Columbia, Ontario and Quebec for the disposal of the properties. Tobias performed the field investigations as well as the report writing for four commercial properties located in British Columbia. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical systems.

Facility Assessment of the Canadian Embassy to the United States, Washington D.C., USA *
Ministry of Foreign Affairs Canada, Ottawa, ON (Field Assessor, Report Writer)
In 2015 Tobias' company was retained by the Ministry of Foreign Affairs to conduct a pilot project to assess the Canadian Embassy to the United States and any other affiliated facilities in Washington D.C., USA. Tobias performed the site visit and reporting on the embassy building, its multi-level underground parkade, the ambassador's residence and staff quarters.

AI Flood Remediation and Relocation Project*
Alberta Infrastructure, various locations in southern Alberta (Lead Field Assessor, Contract Administrator)
After the 2013 flood, Tobias' company was retained by Alberta Infrastructure to evaluate 100 flood damaged buildings for the intent of their disposition or subsequent relocation. As the lead field assessor, Tobias was managing the building and HazMat assessment teams and performing site investigations himself. After the assessments he was responsible for the contract administration and quality assurance for the demolition of the buildings which were not salvageable.

Property Condition Assessment – Wood Buffalo*
Rural Municipality of Wood Buffalo, Fort McMurray, AB (Field Assessor, Report Writer)
In 2013 Tobias' company was retained by the Municipality of Wood Buffalo to conduct property condition assessments at more than 60 buildings owned by the municipality. The facilities he inspected included the local water treatment plant, the water treatment plant, several water and waste water pump stations and community and recreational centres. He was the head field assessor and main report writer. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building systems.

** denotes projects completed with other firms*

Tobias Link Dipl.-Ing.(FH)
Associate – Facility Assessment Team

Stantec

Community and Recreational Facility Lifecycle Assessments*
Yellowhead County, various locations in Yellowhead County, AB (Project Coordinator, Field Assessor, Report Writer)
In between 2013 and 2017 Tobias' company was retained by Yellowhead County to annually evaluate several community halls and recreation facilities as part of their capital planning project. As the project coordinator Tobias worked closely with the client to set up site investigations ensuring timelines and clients expectations were met. He also participated as a field assessor and prepared reports as per the client's requirements. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building systems.

Facility Lifecycle Assessments – Municipal Buildings*
Yellowhead County, various locations in Yellowhead County, AB (Project Coordinator, Field Assessor, Report Writer)
In 2017 Tobias' company was retained by Yellowhead County to evaluate two of its municipal buildings and adjacent maintenance facilities as part of their capital planning project. As the project coordinator, Tobias worked closely with the client to set up site investigations ensuring timelines and clients expectations were met. He also participated as a field assessor and prepared reports as per the client's requirements. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building systems.

Property Condition Assessments for the Municipal Building and Aquatic Centre*
Town of Gillam, MB (Project Coordinator, Site Investigator, Report Writer)
In 2017 Tobias' company was retained by the Town of Gillam to evaluate the municipal building including the attached RCMP detachment as well as the town owned aquatic centre. Tobias was responsible for coordinating and organizing the site investigation, conducting the site assessment and preparing the final reports as per the clients requirements. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building and operation systems.

Facility Lifecycle Assessment – Bulkley Valley Aquatic Centre*
Town of Smithers, BC (Project Coordinator, Site Investigator, Report Writer)
In 2017 Tobias' company was retained by the Town of Smithers, BC to evaluate the municipally owned aquatic centre. Tobias was responsible for coordinating and organizing the site investigation, conducting the site assessment and preparing the final report. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building and operation systems.

** denotes projects completed with other firms*

Tobias Link Dipl.-Ing.(FH)
Associate – Facility Assessment Team

Stantec

Facility Lifecycle Assessment – Oliver Arena*
Oliver Parks and Recreation Society, Oliver, BC (Project Coordinator, Site Investigator, Report Writer)
In 2017 Tobias' company was retained by the Oliver Parks and Recreation Society to evaluate the local ice arena. Tobias was responsible for coordinating and organizing the site investigation, conducting the site assessment and preparing the final report. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building and operation systems.

Facility Lifecycle Assessment – Fort Assiniboine Arena*
Woodlands County, Whitecourt, AB (Site Investigator, Report Writer)
In 2016 Tobias' company was retained by the Woodlands County to evaluate the municipally owned ice arena. Tobias was conducting the site assessment and preparing the final report. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building and operation systems.

Building Condition Assessments – GWL Business Parks*
GWL Reality Advisors Inc., Mississauga, ON (Site Investigator, Report Writer)
In the spring of 2018 Tobias' company was retained by GWL to evaluate several business parks in Ontario for capital planning purposes. Tobias was responsible for the site assessment and reporting of three business parks, with the biggest including 17 buildings offering approximately 1,143,886 square feet of leasable area on a site of approximately 65.61 acres. As the site assessor Tobias was closely working with the client to set up schedules and conducting the assessments. He also prepared the reports as per the client's requirements. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical base building systems.

Property Condition Assessments – Choice Properties/Loblaws*
Choice Properties Real Investment Trust, Toronto, ON (Project Coordinator, Team Lead, Lead Field Assessor, Report Writer)
In between 2014 and 2016 Tobias' company was retained by Choice Properties to evaluate parts of their portfolio located in Ontario, Manitoba, Quebec, Alberta and British Columbia as well as in the North-West and Yukon Territories for property transfer purposes. As the project coordinator and team lead Tobias was closely working with the client to set up site investigations ensuring timelines and clients expectations were met. He also participated as a field assessor and prepared reports as per the client's requirements. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building systems.

** denotes projects completed with other firms*

Tobias Link Dipl.-Ing.(FH)
Associate – Facility Assessment Team

Property Condition Assessment – Sunridge Mall*
Primaris Managemant Inc., Calgary, AB (Project Coordinator, Lead Field Assessor, Report Writer)
In 2016 Tobias' company was retained by Primaris Management Inc. to conduct a property condition assessment at the Sunridge Mall which is offering ~830,000 ft² of retail space in Calgary, AB. As the team lead Tobias was closely working with the client to set up the site investigation ensuring timeline and the client's expectations were met. He was also the lead field assessor and main report writer. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building systems.

Facility Condition Assessments – Fireside Properties*
Fireside Property Group Ltd., Calgary, AB (Project Coordinator, Lead Field Assessor, Report Writer)
In 2018 Tobias' company was retained by Fireside to conduct a facility lifecycle assessment at several of their mid-rise residential apartment and condominium buildings in Calgary, AB. As the team lead Tobias was closely working with the client to set up the site investigation ensuring timeline and the client's expectations were met. He was also the lead field assessor and main report writer. Tobias assessed the mid-rise part of the buildings as well as the adjacent multi-level underground parkades. The assessments included the site and structural elements, the building envelope and architectural components as well as the mechanical and electrical building systems.

Building Envelope Projects

Sunrise Plaza Local Building Envelope Repairs and Upgrades*
Bentall Kennedy, Calgary, AB (Site Investigator, Detail Development, Contract Administrator)
In 2018, Tobias' company was retained by Bentall Kennedy to support them with the investigation on a faulty building envelope and provide solutions and specifications for upgrade and conducting the contract administration and quality control from the project. Tobias performed the initial field investigation und identified several issues with the envelope. He then developed the best valued upgrade solution and specified for the tendering process. Once a contractor was selected, Tobias performed the quality control for the project by conducting regular site visits throughout the project.

Water Testing Sunalta School*
Calgary Board of Education, Calgary, AB (Site Inspector)
Tobias' former company was retained by the Calgary Board of Education to support them with conducting a water test on part of the building envelope of the Sunalta School. Tobias performed the water test and mapping the findings for further processing.

Roof Inspection and Technical Advisory*
Nova Chemicals, Joffre, AB (Site Inspector, Roof Detailer, Report Writer)
Tobias' former company was retained by the Nova Chemical to support them with water penetration issues cause by extensive thermal movement of the roof. Tobias performed the investigative site visit, he developed several technical details including cost estimations and prepared a report to present the findings and solutions to the client.

** denotes projects completed with other firms*

Tobias Link Dipl.-Ing.(FH)
Associate – Facility Assessment Team

Building Envelope Visual Inspections*
Fireside Property Group Ltd., Calgary, AB (Site Inspector, Report Writer)
Tobias' former company was retained by the Fireside to support them with conducting the site inspection as well as preparing and signing the report as per the City of Calgary requirements for several of their mid-rise residential properties. Tobias performed the investigative site visit and prepared a report to document the findings as per city requirements.

Other

Thermography for a legal court case*
Private Client, Calgary, AB (Site Investigator, Report Writer)
In 2017 Tobias' company was retained by a private client to support its legal claim against the builder of the family home. Tobias performed a thermographic investigation on the building to detect areas where insulation has been compromised by moisture intrusion or was not properly installed. He also wrote the official report supporting the claim against the builder.

Quality Assurance and Control*
Internal Client, Lethbridge, AB (Site Investigator, Report Writer)
In 2014/15 Tobias' was retained internally to support the structural group in pertaining the quality assurance and control for an EPDM roofing project at a newly developed retail centre. Tobias performed the site visits where he ensured the roof was built to specifications and on schedule. He also wrote the site reports to document the progress and the quality of the work done.

Preconstruction Assessment for the Downtown Sewage Tunneling Project*
City of Edmonton, Edmonton, AB (Project Coordinator, Field Assessor, Report Writer)
In between 2014 and 2016 Tobias' company was retained by The City of Edmonton to conduct a preconstruction assessment on more than 100 buildings to document the existing condition of the buildings located along the new downtown sewage line alignment which was built using tunneling boring equipment. There he worked as a project manager, site inspector, report writer and peer reviewer. The project included several commercial and residential high and mid-rise buildings with their adjacent multi-level above and underground parkades as well as educational, community, residential, commercial and retail buildings.

Modular Classroom Program Reassessment*
Alberta Infrastructure (Report Writer)
Tobias' former company was retained by Alberta Infrastructure to reassess its Modular Classroom Program to help identify future demand, potential cost savings, current issues and provide program improvement suggestions and potential alternatives. Tobias prepared and executed feasibility and future demand studies, evaluated different alternative construction methodologies, electrical and mechanical systems. To gain more user data he prepared and analyzed the results of a survey amongst the different user groups and stake holders.

** denotes projects completed with other firms*

Tim Hobson MSc. Tech., CEM

Facility Assessment Consultant

Stantec

Tim is a Facility Assessment Consultant within Buildings Engineering. His focus is on facility condition assessments for the purposes of mortgage financing, acquisition/disposition due diligence, and capital renewal. Tim's has an intimate understanding of various building types and their uses, from hospitals to schools, and institutions to industry; he has completed over 350 audits and assessments during his career. His wealth of knowledge of mechanical and electrical systems in buildings, plus his in depth experience of energy efficiency provides a valuable platform to help customers maximize the potential of their buildings. His responsibilities include client management and liaison, project budget and resource management, task scheduling, interpretation of field investigation results of mechanical, electrical, fire and life system assessments. Tim is also a Certified Energy Manager, through the Institute of Energy Engineers.

EDUCATION

MSc. Tech, Master of Technical Science, Sheffield University (UK), Yorkshire, 1985

BSc., Special Honors Degree in Geography, Sheffield University (UK), Yorkshire, 1982

REGISTRATIONS

Certified Energy Manager #11079, Association of Energy Engineers Renewed every 3 years.

MEMBERSHIPS

Member of the Association of Energy Engineers, Association of Energy Engineers

PUBLICATIONS

A New Approach to Energy Management. BUILDEX Calgary, 2013.

PROJECT EXPERIENCE

Building Condition Assessments

Capital Renewal Plans, Calgary, Alberta (Field Assessor)

Stantec is retained by the City of Calgary Recreation Department in Calgary, Alberta, to prepare Capital Renewal Plan reports of their Leisure Centres and Arenas. The reports are prepared using the MasterFormat© system and assist the City to understand the condition of their assets, and to budget for the capital renewal over the next 25 years. Mr. Hobson evaluated the mechanical / electrical, and fire / life safety systems in the facilities including all of the pool equipment.

City of Calgary - Community Association Capital Renewal Plans, Calgary, Alberta (Field Assessor)

Stantec is retained by community associations in Calgary, Alberta, to prepare Capital Renewal Plan reports of their building and site assets. The reports are prepared using internal templates and assist the community associations to understand the condition of their assets, and to apply for infrastructure renewal grants through the City of Calgary's Capital Conservation Grant program.

** denotes projects completed with other firms*

Tim Hobson MSc. Tech., CEM

Facility Assessment Consultant

City of Spruce Grove – TransAlta Tri Leisure Facility Maintenance and Lifecycle Plan Development, Spruce Grove (Field Assessor)
Stantec was retained by The City of Spruce Grove in Spruce Grove, Alberta, to prepare a Maintenance and Lifecycle Plan strategy for the TransAlta Tri Leisure Facility (TLC) focused on preventative maintenance and lifecycle cost and strategy to assure all assets achieve the maximum life expectancy. The key stakeholders in this project not only included the city, but the TLC administration, Board, Parkland County, and the Town of Stony Plain.

Alberta Infrastructure Facility Evaluations* (Field Assessor)
Stantec has been retained by Alberta Infrastructure annually since 2004 to act as a Prime Consultant for their facility evaluation program, which includes the assessment of various government-owned and operated properties located across Alberta for capital planning purposes. Facility Evaluation reports are prepared using ReCAPP® Validation Survey software.

Royal Alexandra Hospital, Edmonton, Alberta (Mechanical Field Assessor)
Stantec was awarded a contract by Alberta Infrastructure to complete building condition assessments for capital planning purposes for 12 buildings at the Royal Alexandra Hospital in Edmonton. Facility Evaluation reports were prepared using ReCAPP® Validation software Survey for the mechanical systems in the facilities.

City of Leduc Aquatic Centre, Leduc, Alberta (Mechanical & Electrical Field Assessor)
Stantec was commissioned by the City of Leduc to conduct a long term master plan for the Aquatic Centre at the Leduc Recreation Centre. Part of this study required a Property Condition Assessment to be undertaken in order to establish requirements with respect to maintenance, repair, and capital replacement over the next 5, 10, and 15 years. The Centre provides full aquatic services for the local community including a lap pool, leisure pool, and community services. Mr. Hobson evaluated the mechanical and electrical systems in the facility including all of the pool equipment.

Due Diligence Assessments

Sun Life Assurance Company of Canada, Yellowhead Distribution Centre, Edmonton, Alberta (Mechanical & Electrical Field Assessor)
Stantec was engaged by Sun Life Assurance Company to conduct a Property Condition Assessment (PCA) for the purposes of disposition due diligence at the Yellowhead Distribution Centre in Edmonton. The site is a light industrial warehouse building, with a floor area of 91,121 ft². Mr. Hobson provided the mechanical and electrical assessment for the study.

** denotes projects completed with other firms*

Tim Hobson MSc. Tech., CEM
Facility Assessment Consultant

Reserve Estimates

Condominium Corporation #0915342, – The Montana Condominiums, Calgary, Alberta (Mechanical & Electrical Field Assessor)

Stantec was commissioned to perform a Capital Replacement Reserve Fund Study (CRRFS) for the Montana Condominium building in Calgary. The facility is a 28-storey condominium high-rise known as 'The Montana', which was constructed in 2008. The building contains 188 condominium units and a multi-level, below-grade parking garage. Common amenities provided in the building include an exercise room and a board room / social room. The study included a review of the building's "common" facility systems, including building structure, roofing, exterior cladding, interiors, mechanical and electrical (M&E) systems, fire/life safety systems, vertical transportation systems, and exterior site improvements. Mr. Hobson provided the M&E assessment, as part of developing a renewal timing / prioritization and recapitalization requirements for the CRRFS, at a major component level, over the next twenty-five (25) years.

** denotes projects completed with other firms*

Suite 320, 6715 - 8 Street NE
Calgary, AB T2E 7H7
Phone: 403-250-1362
1-800-351-0929
Fax: 403-250-1518

MPE Engineering Ltd.

Springbank Park For All Seasons
32224A Springbank Road
Calgary, AB
T3Z 2L9

September 11, 2020
File: N: R01\29170-002-02

Attention: Mr. Jeff Schmidt
Operations Supervisor

Dear Jeff:

Re: Review of Red Dutton, Joe Phillips and Curling Rink Slabs

MPE Engineering Ltd. (MPE) has completed the review of the Red Dutton, Joe Phillips and Curling Rink Slabs at the Springbank Park For All Seasons (SPFAS). Our review is based on the following information and activities:

- Previous Reports
  - MPE Initial Slab Review – September 2014
- Drawings
  - MPE - Site Drainage Upgrades – September 2015
- Photographs
  - SPFAS - Joe Phillips Weeping Tile Scope – June 2020
  - MPE - various Site Visits
- Other
  - MPE Slab Surveys – May/July 2020
  - MPE Slab Review – June 2020
  - MPE - Interviews from various Site Visits
  - SPFAS - 2020 Piezometer Readings

We provide the following summary of our observations and comments based on the information noted above.

SITE CONDITIONS

As noted in MPE's 2014 Initial Slab Review Report, the SPFAS site has notable surface drainage issues. In 2015, SPFAS undertook extensive upgrades to improve the site drainage. These improvements included the replacement of the French drain on the north side of the Joe Phillips Arena, installation of grass, asphalt and concrete swales throughout the site, and installation of and improvements to catch basins.

The following observations are from the site review completed June 4, 2020.

CURLING RINK

Observations

- From discussions with SPFAS staff there does not appear to be displacement occurring with the slab during the slabs operation.
- There are no visual signs that the Curling Rink slab is moving and only minimal cracking was noted during the site investigation.
- As overserved on site the Curling Rink has a sub-slab heating system installed but it was reported by the staff that this system does not operate and it is not known the last time it was operational. It is probable that there is an insulation layer between the sub-slab heating system and the concrete slab as this is typical for this style of construction.
- The Curling Rink does not have any indications that is has a sub-slab weeping tile system.

Discussion

The Curling Rink slab appears to be in excellent condition even without the sub-slab heating system operational. This is likely because it has the ice in for the shortest duration of time which minimizes frost penetration below the slab. Additionally, the Curling Rink is located roughly 1.2 m lower than the Red Dutton Arena, meaning it may have been placed on more stable native soils compared to the other slabs that would have required fill to build up the elevation. If the future operation of the Curling Rink continues as it has in the past and the operating season of the Curling Rink will not be extended beyond 180 days, the anticipated service life for the Curling Rink slab is 15-20 years. The condition and service life of the refrigeration system and piping require additional investigation as this is beyond the scope of this review and is to be completed by a qualified professional.

RED DUTTON ARENA

Observations

- The Red Dutton slab has visible cracking throughout the slab, with the most significant and noteworthy crack running north to south roughly 2 m from the east end of the rink.
- The slab adjacent to the rink and header trench on the north side of the arena has extensive cracking and deteriorated with hollow voids below.
- From the slab surveys conducted, the far east end of the arena slab, adjacent to the hockey boards, dropped between 1.5 cm and 4.8 cm from when the first survey was conducted in May 2020 to when the second survey was completed in July 2020. A few locations of the remainder of the slab had much smaller movement with measured drop of 0.5 to 1.0 cm.
- The concrete base of the header trench is effectively completely deteriorated and there are significant visible cracks in the exterior header trench wall (See Photo 1)
- The Red Dutton arena does not have a sub-slab heating system and does not appear to have a sub-slab weeping tile.
- The provided ground water piezometer readings in the Red Dutton Arena vary from 2.20 m and 1.56 m indicating that there is variance in the ground water depth with the seasons.

Discussion

The main area of movement for the Red Dutton Arena is along the east end parallel to the header trench. As observed on site, the header trench floor is effectively completely deteriorated and this allows for any melt water from the slabs that flows into the trench or water that infiltrates the trench to soak into the soils below the arena slab. Since the Red Dutton arena does not have a sub-slab heating system, when ice is placed on the slab, the ground beneath the slab also becomes frozen. The soil beneath the slab has a high moisture content and ice forms in the soil causing the frost to heave the east end of the arena. This also explains why there is a relatively quick recovery of the slab when the ice is removed, as the soil adjacent to the header trench can thaw and the water will flow away relatively easily. This frost heave issue also explains the damage to the slab adjacent to the rink and header trench on the north side of the arena and possibly be fully responsible or accelerated the cracks and damage that is visible to the foundation wall.

As can be seen in photos 3, when SPFAS placed the slab into operation in August 2020 ice formed under the floor of the slab adjacent to the arena slab around the brine line. As water from the Zamboni and cleaning the area penetrates through the cracks it freezes and expands and this is likely the leading causing the damage observed to the slab in that area.

As there was some settlement of the slab measured along the west end of the arena, there is evidence that groundwater may also be contributing to the frost heave of the slab, but this was a much smaller amount of movement. The groundwater level below the Red Dutton Arena was measured between 2.20 m and 1.56m from the finished floor placing it below the anticipated frost penetrations. This is likely because the header trench, with its deteriorated floor, acts as a sump and drains the area and also lowers the general water table.

To prevent the frost action from heaving the rink slab, the floor of the header trench will need to be replaced and the walls repaired to create a watertight trench as soon as fiscally possible. But as the header for the slab refrigeration system is located in the trench, replacement of the floor and repair of the walls is nearly impossible without disturbing this piping. Additionally, the cracking caused by the frost heave in the slab has created significant damage to the rink slab, which will only continue to get worse. The slab has been in place for 50 years and has reached its service life and should also be replaced at the same time as the header trench. The condition and service life of the refrigeration system and piping was not assessed as part of this review and considering the condition of the concrete a review of the system is not warranted.

Photo 1. Red Dutton header trench floor condition

Photo 2. Red Dutton header trench during operation

Photo 3. Slab condition and ice formation under slab adjacent to Red Dutton Arena

JOE PHILLIPS ARENA

Observations

- Extensive visible cracking throughout slab (see photo 4).
- The Joe Phillips Arena has a weeping tile system and sub-slab heating system. The weeping tile drains into the sum pit located between the Joe Phillips and Red Dutton Arenas.
- Investigation of the weeping tile system found some crushed sections, significant sags with standing water, and some of the lines running the length of the slab appear to have a reverse slope, preventing them from draining properly.
- A waterline observed in the weeping tile indicates that there is regular standing water.
- There is water seeping into the header trench through cracks and pipe holes in both the arena wall and exterior foundation wall (see photo 6). Leaks start roughly 0.6 m below the finished floor elevation.
- Groundwater levels have risen with the piezometer readings varied from 1.44 m at the end of February to 0.64-0.66 m below finished floor at the end of May and start of June 2020.
- From the slab surveys conducted, it was found that the majority of the west end of the slab approximately 0.5 cm higher and some areas of the east side of the slab are also 0.5 cm higher.
- Weeping tile and French drain sump pump were not operating and the manhole was found to be full of water (see photo 5).
- From discussion with staff it is our understanding that the man door on the northwest corner of the building could not be opened during the winter as it was pinched shut by the foundation grade beam. Additionally, the siding along the west grade beam has been kinked likely due to frost movement of the grade beam.

Discussion

The Joe Phillips slab has visible cracking throughout the slab and from discussion from staff it was reported that movement of the slab is not isolated to a specific area. From the slab surveys conducted, the rink slab's elevation is higher by between 0.5 cm and 1.0 cm throughout the west end of the rink. The east end of the rink only had a couple of isolated spots that were measured 0.5 cm higher from the initial survey. This upward movement of the slab after the ice was removed supports the conclusion from the 2014 MPE report, suggesting the slab movement was primarily due to expansive soils and not frost heave as it would be expected the slab to lower as the ground thaws. From March to June the groundwater level steadily increased below the Joe Philips slab to a maximum height of 0.64 m below the slab. This increase in groundwater level is likely a result of the sump pump not operating in the manhole that collects the flow from the exterior weeping tile and French drain system. As the overland flow filled the French drain and was not pumped away it could then saturate the ground and increase the groundwater level. Once the pump was repaired and operational again the measured groundwater lever started to drop and in July was measured at 0.85 m. Frost heave is not believed to be a significant contributor to the slab movement as the Joe Phillips Arena does have an operational sub-slab heating system and this should prevent the ground from freezing below the rink. Scoping of the weeping tile system in the winter after ice has been in place for an extended period of time to see if the standing water is frozen would determine if the sub-slab heating system is effective in preventing the ground from freezing.

Scoping of the sub-slab weeping tile found that there were sections that were crushed, sections that had sags and sections of the laterals that run the length of the rink that are back graded. All of these issues combined, prevent the weeping tile from effectively draining the water from under the Joe Phillips slab and reducing the groundwater elevation. The high groundwater level around the Joe Phillips Arena is likely the cause of the stuck door on the west side where frost heave lifts the grade beam causing the door to be pinched. A piezometer installed on the north west side of the building would allow for the monitoring of the ground water in the area to assess the effectiveness of the french drain and sub-slab weeping tile in lowering the ground water.

Photo 4. Overview of Joe Phillips Slab

Photo 5. Water level in French drain collector sump manhole with failed pump

Photo 6. Water seeping into header trench from under Joe Phillips slab through piping holes

Photo 7. French drain collector sump with pump operational

RECOMMENDATIONS

- Plan to replace the Red Dutton Arena slab and header trench, including the installation of a new gravel base, sub-slab weeping tile system and sub-slab heating system as soon as fiscally possible.
- Keep all pumps (sump, French drain, trench, etc.) operational at all times and have them controlled by float switches. Float switches should include additional contactors or relays so the pump activity can be monitored via computer.
- The French drain collector sump manhole should include a high water level alarm.
- Record water elevations at piezometer locations, sumps and other pump locations weekly.
- Install operational thermistor to monitor sub-slab temperatures and record daily values.
- Install three (3) additional piezometers to monitor ground water levels around the site.

CAPITAL AND PLANNING COSTS (REFRIGERATED SLABS)

For the Red Dutton Arena, a construction cost allowance of $950,000 is anticipated to replace the slab (including refrigeration piping, insulation, sub-slab heating piping, gravel base and weeping tile), with an allowance of $60,000 for related design costs.

The anticipated service life of Joe Phillips slabs is 10 to 15 years with an operational and monitored site drainage system, this assumes that the refrigeration piping, weeping tile systems and sub-slab heating or circulation systems remain operational. Should any of these systems fail and not be readily repairable, the affected slab would likely need to be replaced sooner. The construction cost allowance and related design cost allowance for the Red Dutton Arena slab are also applicable to these slabs.

It is anticipated that the service life of the Curling Rink slab will be 15 to 20 years with an operational and monitored site drainage system, this assumes that the refrigeration piping and circulation system remains operational. Should this system fail and not be readily repairable, the slab would likely need to be replaced sooner. The construction cost allowance and related design cost allowance for the Red Dutton Arena slab is also applicable to the Curling Rink slab.

To assess the condition of refrigeration piping and sub-slab heating systems, an allowance of $2,500 per slab is recommended.

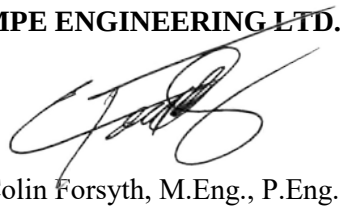
At existing sumps, for the installation of required pumps, float switches, related controls and signal wiring, MPE recommends a Capital Allowance of $4,000 per location. A basic PLC with data logging capability would be required to monitor pump activity, with a Capital Cost Allowance of $7,000. A design allowance of $5,000 is recommended.

For the installation of the additional piezometer MPE recommends a Capital Allowance of $3,000. This assumes 6m deep bore holes with 50mm slotted PVC pipes that are sand packed and bentonite sealed, and includes steel casing protectors. These bore holes will have not have borehole logs, lab testing or an engineering report.

Thank you for the opportunity to provide this report, and we look forward to your comments. Please contact me at 403-219-6463 or cforsyth@mpe.ca if you have any questions or require further information.

Yours truly,

MPE ENGINEERING LTD.



Colin Forsyth, M.Eng., P.Eng.
Structural Engineer
CF/cf

SPRINGBANK PARK FOR ALL SEASONS
Agricultural Society

32224A Springbank Road, Calgary, Alberta T3Z 2L9 • Tel: (403) 242-2223 Fax: (403) 242-3202

Summary of Submissions of Springbank Park For All Seasons
Recreation Governance Board - December 1, 2020

Appearing for SPFAS: Lisa Skelton, SPFAS President; John Rop, SPFAS GM

Relevant Background:

- In 2019, RVC applied for $1.069M in Municipal Sustainability Initiative (MSI) funding on behalf of SPFAS. This $1.069M was initially allocated to fund a wide array of SPFAS capital life cycle replacement projects included in the Stantec Report, over the next 3 years.

- The $1.069M amount was drawn against a total amount of MSI funds of approximately $2.2M, set aside by RVC several years prior, intended to be used for the community of Springbank.

- In compiling its report in 2019, Stantec conducted high-level summary assessments of the conditions of each of the SPFAS' ice arenas. The concrete slab for one of the arenas (the Red Dutton Arena) was listed on the Component Listing and Repair/Replacement Appendix included in the Stantec Report as being scheduled for replacement in 12 years, at a cost of $1.4 million. The Report includes the following finding, at page 2 of the Appendix: *Except the cracked slab section near the north-east corner and the spalling header trench walls, no major deficiencies were observed or reported."* However, it should be noted that the Plan also stated the following on page A.17: *The interior and outdoor ice rinks were operable at the time of assessment, and therefore the floor slabs were mostly covered with ice. Therefore, the condition of the floor slabs could not be entirely determined. However, major slab cracking was observed in the north-east corner of the Red Dutton Arena. […] Additional damages were also observed in the Red Dutton Arena's header trenches with concrete flaking off its wall and rebar exposed.*

- In the summer of 2020, SPFAS and RVC jointly retained MPE Engineering Ltd. ("MPE") to conduct a detailed assessment of the condition of the concrete slabs of all three SPFAS indoor rink facilities. At the time of that assessment, the ice in the Red Dutton had been removed for the summer season. In September of 2020, MPE issued its SPFAS Arena Slabs Review Report, which included a recommendation, on page 3 of its "Site Conditions" summary, that the Red Dutton header trench and ice slab be replaced "as soon as fiscally possible".

- On October 8, 2020, SPFAS representatives met with RVC administrative personnel to advise the County of the development regarding the Red Dutton Arena as well as to review the prospect of directing MSI funds currently unspent ($968K) toward the Red Dutton Arena Project. Based on the receipt of the MPE Report, this project is now the "top priority" for SPFAS.

- On October 19, 2020, the SPFAS Operations and Capital Enhancement Committee received preliminary information that the estimated cost of the Red Dutton Arena Project would likely be in the range of approximately $1M – $1.6M, depending on the scope of the project.

- Based on the expert opinion of MPE, at its October 26, 2020 meeting, the SPFAS Board of Directors approved a motion to replace the Red Dutton Arena's concrete slab and complete other related life

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cycle replacement work. This work will begin on April 1, 2021, unless a failure of the slab occurs before then (in which case the ice will have to be removed prematurely.)

- On November 4, 2020, SPFAS met with Gibbs Gage Architects to begin planning for the Red Dutton Arena Project. Gibbs Gage has since been retained by SPFAS and will be providing SPFAS with a more detailed preliminary cost estimate in advance of the December 1st RGC meeting.

Requests and Submissions

1. SPFAS Request #1 – Redirect Currently Unspent MSI Funds: Based on the foregoing, SPFAS' first request is that RVC make application to the Province to have the unspent MSI funds (approximately $968K of the original $1.069M) re-directed to the Red Dutton Arena Project. An application of this sort is contemplated by Section 8.2 of the MSI Capital Program Guidelines which allow for an amendment to a previously accepted project where there has been "a change in scope, costs, and/or funding sources." To be clear, this will not be an application for further MSI funding but rather to re-direct previously granted MSI funding.

2. SPFAS Request #2 – SPFAS and RVC Work Together to Fully Fund the Entire Project: If the application to re-direct the remaining MSI funds is approved by the Province, there will remain a significant shortfall in the funding required to complete the Red Dutton Arena Project. Preliminary information indicates that that shortfall will be in the range of $300K-$700K (to be determined once the final scope of the Project is confirmed, a Request for Proposals is issued, and contractors are confirmed.)

Therefore, SPFAS's second request is that RVC and SPFAS work together to identify a mechanism to fund that shortfall. This request involves considering 3 sources of possible funding to close the funding gap, specifically, MSI funds, RVC funds and SPFAS funds.

One possible method of funding the shortfall would involve the following two elements:

(a) Further application to the Province to secure MSI funding to pay for the components of the Red Dutton Arena Project shortfall which are referred to in the Stantec Report; in combination with

(b) an application under RVC Policy C-317 for capital funding to cover 50% of the cost of the components of the Project shortfall not referred to in the Stantec Report, with SPFAS funding the other 50%.

An alternative method of funding, necessary in the event that an additional MSI grant is not available, would involve SPFAS making application for a second capital funding grant under Policy C-317, based on the entire amount of the shortfall, on a 50/50 cost sharing basis, or alternatively, under the emergency application provisions of that same policy, again, on a 50/50 cost sharing basis. While SPFAS recognizes that Policy C-317 permits one application for capital funding per year, SPFAS would submit that Council has the discretion to override that Policy and specifically allow for a second application by SPFAS, on the basis that this need for extra capital funding is due in large part to the significant capital life cycle replacement funding deficit that has accumulated over the past 9 years of static funding from RVC.