February 21, 2023

RE: City of Fort Saskatchewan Indoor Facilities Services Review: Process update memo #1

The City of Fort Saskatchewan provides a diverse portfolio of indoor recreation facilities and amenities to service the needs of its approximately 27,000 residents. The community is growing (12% since 2016), with residents continually expressing their needs for recreation infrastructure to support their appetite for programmed and unstructured recreation.

City operated indoor recreation facilities includes the Dow Centennial Centre, the Jubilee Recreation Centre, the Sportsplex arena, and the Harbour Pool. The City has undertaken several studies that have examined the community's perspective on the future of recreation infrastructure, as well as the potential for expansion at both the Dow Centennial Centre and Harbour Pool. Included in these studies are assessments of the Harbour Pool physical condition.

The Indoor Recreation Infrastructure Service Level Review is comprised of three major reports:

- study of the Harbour Pool;
- a recommended Indoor Recreation Facility Program; and
- a recommendation on the ability of the Harbour Pool and the Dow Centennial Centre to accommodate the Facility Program.

The 2023 Harbour Pool Assessment Report (under separate cover) provides an overview of the current state of the facility. Lead by ACI Architecture and conducted by a multidisciplinary team of engineers and architects, the Report addresses structural, mechanical, electrical, and architectural considerations of the facility and the potential for expansion. The Report also includes an assessment of the aquatics components of the facility interpreted by an aquatics specialist (WTI). This aquatics assessment includes a review of the technical aspects of the natatorium and waterworks and includes some insight on functionality and limitations.

The Assessment Report includes some conclusions related to investment required to sustain the existing Harbour Pool on a like for like (as is) basis. It also provides some insight as to what it would cost to replace the Harbour Pool on a 'like for like' basis. The report speaks to the risks associated with each of these approaches to providing 'like for like' aquatics facilities moving forward. What the report does not do, is provide insight on recommended improvements to the current experiences users get at the pool nor meeting the evolution of aquatics demands in the community. Aquatic demands have seen sizeable shifts since 1982, the date of construction for the Harbour Pool. This information will be brought forward at a later date and will be rationalized through research and community engagement.

The findings of the Assessment Report are summarized as follows:

- The Facility Condition Index, a ratio of the current investment requirements related to the replacement costs, of the Harbour Pool currently is 52%. This suggests that replacement could be contemplated.

- The WTI Aquatics Assessment scores the existing facility at 66.28% which suggests that the facility does require attention related to aquatics specific elements.

- The report looked at three scenarios for providing aquatics services on a 'like for like' basis. **It is important to note that the capital costs included in the following table reflect estimated 2023 construction costs only and do not include design fees, site development and servicing, or demolition of existing buildings (if applicable).**

Scenario	Capital cost estimate	Potential required code authority mandates **if necessary*	Total estimated cost (2023)	Total estimated cost (2023) inc. Risk
1. Reinvesting in the **existing facility** to provide like for like moving forward	$5,276,000	$6,111,400	$11,387,400 (+30% risk/ contingency)	$14,803,620
2. Reinvesting in the **existing facility with** mechanical **enhancements** (efficiency, etc.) to the facility but without increasing service levels (or adding to the functionality or changing the user experience)	$7,726,000	$6,111,400	$13,837,400 (+/-30% risk / contingency)	$19,261,320
3. Investing in a **new facility** to provide like for like with enhancements but no additional functionality	$17,470,350	N/A	$17,470,350 (+/-15% risk / contingency)	$20,090,902

*"risk" indicates the potential fluctuation in construction market condition and with unforeseen construction conditions

Of note is that these scenarios are limited to replacing 'like for like' aquatics services in the City. The City has changed and evolved since the facility was originally built and thus current and expected future aquatics demands needs to be considered in the context of the decision regarding the Harbour Pool's future. These current and future demands will be outlined in the next phase of this planning process and concept plans, capital and operating costs, and community benefits of different future investment scenarios will be provided.

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FEBRUARY 10, 2023

SUBMISSION FOR

Harbour Pool
Facility Analysis Report
Rev. 1

ACI Architecture Inc.

Fort Saskatchewan, Alberta

In Collaboration with

rjc Engineers

ARROW ENGINEERING a division of Englobe

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DEFINITIONS

Below is a list of industry standard definitions that are applied and used throughout this report and for future reference.

Authority of Having Jurisdiction (AHJ)

A body having jurisdiction in certain matters of a public nature; a body having power under a statute to pass regulations to direct, specify, and govern elements or activities of construction projects such as safety, health, or standards of manufacture or installation; a government body responsible for the enforcement of any part of the building code, or the official or agency designated by that body to exercise such function (as per the National Building Code - 2019 Alberta Edition).

Code Compliance Review

A review of a document conducted by staff or designated entity of an Authority Having Jurisdiction (AHJ) to determine whether the context of the document complies with regulations, codes, or other standards administered by the jurisdiction.

Deferred Maintenance

Deferred maintenance is the postponement or delaying of building and equipment maintenance or upgrades during normal operating budget cycle due to lack of funds.

Facility Condition Index

Facility Condition Index is a standard asset management tool which measures the "construction asset's condition at a specific point in time." Facility Condition Index is obtained by aggregating the total cost of any needed or outstanding repairs, renewal or upgrade requirements at a building compared to the current replacement value of the building components. The Facility Condition Index does not include growth or expansion.

- As an example, if the standard cost of a renewal exceeds 50% of the total capital cost of a new facility, then the replacement of the facility should be considered instead of the renewal of the facility. This would take into consideration:
  - Renewal - as opposed to replacements or rehabilitation of the components, equipment, and systems of the current facility
  - Code / Bylaw / Barrier Free Accessibility and Inclusivity upgrades
  - Program Upgrades
  - Risk analysis in terms of capital and schedule (e.g. downtown of a facility if renewal is selected)
  - Interdependencies: Items typically associated with renewal components that are not typically captured (e.g. valve replacement on a mechanical unit upgrade)

Functional Programming

The functional program is a document prepared by the Owner/Architect that describes the facility's space and function requirements. These requirements will establish the criteria for evaluating potential design solutions or other strategic alternatives. This typically consists of a report explaining the guiding principles for future work, defines zones and individual spaces to be developed, the planned operational model, relationship diagrams as necessary to show working and physical relationships, the total gross area and a construction estimate.

Life-Cycle Costing Analysis

The life-cycle costing analysis assists funding decisions by highlighting the total cost of an asset throughout its life expectancy, rather than focusing on initial construction costs only. This tool enhances decision-making and financial planning by helping decision-makers select the most cost-effective infrastructure.

Like to Like

Refers to a replacement of parts or components in which there are no functional or programmatic upgrades or improvements. The components, equipment and systems are replaced with items that are the same or similar in performance.

Manual Test

Testing using hand-held instruments, immediate control system readouts or direct observation to verify performance.

Natatorium

A facility containing an indoor swimming pool.

Preventative Maintenance

Preventative maintenance is maintenance that is regularly and routinely performed on assets to reduce the chances of failure that can be very costly, and to extend their lifespan.

Rehabilitation

Rehabilitation is the action of restoring or replacing parts or components of an infrastructure asset to a former condition or status. Generally, this involves repairing the asset to deliver its original level of service without resorting to significant upgrading or renewal, using available techniques and standards.

Renewal

Renewal is an investment in existing infrastructure to restore it to its former condition and potentially extending its service life. Capital investment in renewal extends the period of service potential but does not change the replacement value, and so does not increase the size of the infrastructure asset portfolio. Renewal includes rehabilitation and replacement.

Replacement

Replacement is the action of replacing an infrastructure asset so as to provide similar, or an agreed alternative, level of service.

Risk Capital

Increase of capital cost to the facility due to unforeseen circumstances.

1 EXECUTIVE SUMMARY

1.1 Introduction

On August 23rd, 2022, ACI Architecture Inc., Water Technology Inc. (WTI), Read Jones Christoffersen Ltd., (RJC), Arrow Engineering, and AECOM conducted a facility walk-through and analysis of the Harbour Pool - a multi-tank aquatics facility, which is open year-round. The building is located at 10001 94 Avenue, in Fort Saskatchewan, Alberta. This walk-through was complemented by several discussions and meetings between the assessment team and City of Fort Saskatchewan administration as well as through review of past assessment and planning initiatives related to the facility dated back as far as 2004.

The facility was constructed in 1982 with additions to the facility completed in 2019. The current occupancy classification of the facility is Assembly Occupancy – Group A, Division 2, up to 3 Storey under the National Building Code – 2019 Alberta Edition. As per existing drawing review the building area is 2,329 m^2 (25,000 ft^2) with the following facility spaces:

- Natatorium (Main Pool, Warm Pool, and Whirl Pool)
- Change Rooms with Washrooms
- Public Washrooms
- Main Entrance Lobby
- Control Office
- Natatorium Viewing Area
- Multipurpose Room
- Three Levels of Mechanical Area

THE PURPOSE OF THE REPORT:

1. Examine the existing infrastructure and provide feedback on its current lifecycle usage and projected costs to replace, renew or rehabilitate components, equipment or systems to a new lifecycle expectancy on a like-for-like costing; not including any functional upgrades to the components, equipment or systems.
2. Review the current facility based on new code constraints including:
   - National Building Code - 2019 Alberta Edition
   - National Energy Code of Canada (NECB) 2017
   - City of Fort Saskatchewan Bylaws
3. Review the current facility for barrier-free and inclusivity constraints.
4. Provide feedback to the City of Fort Saskatchewan based on lessons learned from our current aquatics facilities renewal for the City of Edmonton (Peter Hemingway Leisure Centre and Kinsmen Sports Centre) and other aquatics experiences of the assessment team.
   - Lessons learned based on Authority Having Jurisdiction requirements
   - Alberta Health Services (AHS) requirements.
5. Identify infrastructure options related to the future of the Harbour Pool including costing to renew the facility as is and providing costing and timeline to renew, including schedules to complete.
   - This report will inform planning related to the future provision of aquatics in Fort Saskatchewan.

1.2 Facility Ratings

The assessment conducted by ACI Architecture Inc. references the standards and best practices for facility assessment of the Alberta Recreation & Parks Association (ARPA) including the approach and methodology used and the application of the Facility Condition Index Percentage (FCI %). This assessment is based solely on the examination of the components, equipment, and systems. Refer to Appendix A for the detail.

Based on the benchmark standards and practices, the FCI calculated for Harbour Pool facility is 52%. Based on this score, *best practices* indicates the appropriate course of action is to **renew Harbour Pool Aquatics Facility for a "like to like" replacement and rehabilitation of the components, equipment and systems.**

From an architectural perspective, the condition of Harbour Pool aquatics facility is predominantly in the acceptable range. From the aquatics mechanical and aquatics structure perspective, the facility and equipment condition are in the fair and good range.

However, Harbour Pool facility has equipment, systems and components that are high priority items requiring immediate renewal; this means that they need to be addressed within the next five (5) years. These include:

- **Park paving and maintenance,**
- **Replacing exterior original cladding,**
- **Exterior door/ frame maintenance,**
- **Lobby finishes,**
- **Change rooms (including drainage and tile),**
- **Natatorium (tiles),**
- **Natatorium Storage,**
- **Mechanical rooms,**
- **Basement,**
- **Structural repairs and remediation.**

WTI, the aquatics specialist, utilized an Aggregated Evaluation Scoring System in its assessment of Harbour Pool. This System is used to evaluate aquatics facility conditions relating specifically to pool mechanical and structure from the perspective of experts in pool design, operations and maintenance.

ACI Architecture Inc.	Water Technology Inc.
Facility Condition Index **52**	Aquatics Aggregated Evaluation Scoring System **66.27**

The Total Aggregated Evaluation Score from WTI's assessment of the pool mechanical and structure for Harbour Pool is 66.27% (Refer to Water Technology Inc. Aquatics Evaluation Report in Appendix E). This assessment result renders a similar conclusion to the Facility Condition Index work and confirms that the facility requires investment.

The table on the following pages is a synopsis of the assessment completed by ACI Architecture Inc. as well as the other specialists. The table identifies, for various elements and attributes of Harbour Pool, timing when each requires attention and reinvestment. Three separate time frames are noted including < 5 years, 5-10 years, and more than 10 years. For each attribute, an estimated cost is cited. Please refer to the Appendices for the details.

Please refer to Appendix F Costing and Facility Condition Chart for additional detail.

Facility Condition Index (ACI Architecture Inc.)					
Discipline	**Attribute**	**≤ 5 years**	**5-10 years**	**≥ 10 years**	**Costs +/- $5000**
Architectural	Existing Sidewalk Maintenance			X	$25,000.00
Architectural	Existing Stoop Maintenance & Addition		X		$50,00.00
Architectural	Park Paving and maintenance	X			$750,000.00
Architectural	Roof Drainage Surface Maintenance			X	$25,000.00
Architectural	General Long Term Maintenance		X		$100,000.00
Architectural	Structural Reviews and Repairs (General Construction)			X	$25,000.00
Architectural	Exterior Original Cladding	X			$650,000.00
Architectural	Exterior 2018 Cladding			X	$25,000.00
Architectural	Exterior Window Replacement		X		$125,000.00
Architectural	SBS Roof Replacement		X		$350,000.00
Architectural	Standing Seam Roof Replacement		X		$25,000.00
Architectural	Exterior Door/Frame Maintenance	X			$100,000.00
Architectural	Lobby Finishes	X			$50,000.00
Architectural	Public/ Accessible Washrooms			X	$15,000.00
Architectural	Multipurpose		X		$90,000.00
Architectural	Change Rooms	X			$100,000.00
Architectural	Staff Area		X		$30,000.00
Architectural	Natatorium	X			$500,000.00

Architectural	Natatorium Storage	X			$150,000.00
Architectural	Mechanical Rooms	X			$50,000.00
Architectural	Basement	X			$110,000.00
ARCHITECTURAL					**$3,345,000.00**
Structural	Structural Repairs and Remediation	X			$100,000.00
STRUCTURAL					**$100,000.00**
Mechanical	HVAC Systems - Maintenance and Ductwork			X	$225,000.00
Mechanical	Existing Mech. Units - Heating, Boilers, Pool Air System and Furnaces		X		$750,000.00
Mechanical	Existing Mechanical Piping/Drains		X		$100,000.00
MECHANICAL					**$1,075,000.00**
Electrical	Electrical Panels and Upgrades		X		$300,000.00
Electrical	Wiring and Controls Upgrades		X		$75,000.00
Electrical	General Lighting Replacement (Natatorium and Non-Natatorium)		X		$300,000.00
Electrical	General Maintenance			X	$50,000.00
ELECTRICAL					**$725,000**
COSTING TOTAL (2023$)					**$5,245,000.00**

LESS THAN 5 YEARS (IMMEDIATE)	$1,710,000.00
5 – 10 YEARS	$3,145,000.00
GREATER THAN 10 YEARS	$390,000.00
FOR A TOTAL EXPENDITURE FROM 0 - >10 YEARS OF	$5,245,000.00

1.3 Observations and Considerations

- The Aquatics facility was built in 1982 and is 40 years old. The renovations that were completed in 2019 include the addition of a universal change room and interior renovations to the existing men's and women's change rooms.
- The Natatorium has undergone renovations and alterations over the years. The tile has been maintained and repaired as necessary. Yearly shut downs include tile sounding and visual reviews.
- The facility was designed for wave pools, however, the wave machines were never installed (refer to Appendix A - Architectural Report).
- The exterior cladding was originally a combination "neptune concrete block split face", exposed sandblasted concrete, and standard concrete block. In 2010, the original finishes were covered with metal cladding.
- Due to the age of the facility, and regardless of the regular maintenance the facility received, any alterations or "significant" repairs to the Harbour Pool pose significant risk of capital. The costs of the repairs will continue to increase with the ongoing operations of the entire facility in tangent, will be increased capital investment in meeting modern code requirements.
  - The pool was designed to be a wave pool and has an elevated pool deck. Any expansion or alterations would be costly because of the extensive foundation structure modifications that would be required.
  - Any expansion of the current facility may cause significant envelope connection risk through constructibility issues, material compatibility, movement of the new structure to old structure.
  - The design and construction of new system infrastructure that would be needed with alterations or "significant" repairs presents sizeable challenges including:
    - The systems compatibility with the rest of the building,
    - The controls compatibility with the existing control systems for mechanical and electrical,
    - Risk with existing Hazardous Materials within the facility that would be a concern during demolition and construction.
  - Additional costs for abatement.
  - Additional costs for design and construction.

1.4 Scenarios

Three potential options are presented below. These options assume that the City will continue providing aquatics in Fort Saskatchewan. It is important to note that the capital costs included in the following table reflect estimated 2023 construction costs only and do not include design fees, site development and servicing, or demolition of existing buildings (if applicable). The first scenario is the status quo with the facility, renewal in the existing facility to provide like for like. The second scenario is a renewal with aquatics modifications to improve the pool's current functionality. The third scenario is the replacement of the facility.

OVERVIEW OF SCENARIOS

Scenario	Capital Cost Estimate	Potential Required Code Authority Mandates	Total Estimated Cost (2023)
Scenario 1 - Baseline Renewal *reinvesting in the existing facility to provide like for like moving forward*	**$5,276,000**	**$6,111,400**	*$11,387,400 (+30% risk)* **$14,803,620**
Scenario 2 - Renewal with Aquatics Modification *reinvesting in the existing facility with aquatics mechanical modifications to the facility but without increasing service levels (or adding to the functionality or changing the user experience)*	**$7,726,000**	**$7,090,400**	*$14,816,400 (+30% risk)* **$19,456,320**
Scenario 3 - Replacement of Facility *investing in a new facility to provide like for like, using the same gross floor area, with enhancements but no additional functionality*	**$17,470,350**	**N/A**	*$17,470,350 (+ 15% risk)* **$20,090,902**

1. BASELINE - RENEWAL SCENARIO

Based on the Facility Condition Indexes of both the Aquatics Facility and the Aquatics Mechanical and Structure, it is possible that the renewal of the facility could occur through rehabilitation of components, equipment and systems identified in the assessment analysis attached in Appendix F. This scenario would render a baseline "like for like" facility and user experience. It is important to note that this report does not delve into "user experience" which will be discussed in other parts of the planning process. The cost to this investment as follows:

TABLE A	
FACILITY CONDITION	
LESS THAN 5 YEARS (1-5 YEARS)	$1,710,000
5 – 10 YEARS	$3,145,000
GREATER THAN 10 YEARS	$390,000
FOR A TOTAL EXPENDITURE FROM 0 - >10 YEARS	$5,245,000
AQUATICS SYSTEM	
LESS THAN 5 YEARS (1-5 YEARS)	$31,000
TOTAL FACILITY CONDITION + AQUATICS	**$5,276,000**

These elements may have significant cost impacts which cannot be identified or confirmed at this point. This scenario would not upgrade the following interdependencies and conditions based on best practices and current lessons learned:

- Code Upgrades
- Barrier Free Accessibility and Inclusive Upgrades
- Program Upgrades
- Risk Capital – found conditions, cost escalation, supply chain risk (add $30% risk capital)

Based on current renewals of aquatics and natatorium facilities, it is believed that there are interdependencies that will fall within the process with the Authority Having Jurisdiction (AHJ) – the City of Fort Saskatchewan.

ACI's experience with the City of Edmonton leads us to believe that the AHJ will deem any renewal of the items listed below as a Major Modernization:

- The aquatics facility that requires major tile replacement of the natatorium space and tank basins
- The aquatics mechanical components, equipment, or systems
- Aquatics facility systems such as building envelope, windows, structure

In the event that the AHJ categorizes the renewal of Harbour Pool as "major," they may require the City of Fort Saskatchewan to update all pool operations to meet

- Current City of Fort Saskatchewan Bylaws
- Current National Building Code Alberta Edition 2019 conditions and NECB 2017 Energy Compliance– full upgrades
- Meet the nationally adhered to Barrier Free Accessibility Requirements, and:

TABLE B		
CODE REQUIREMENTS		
Code Upgrades Requirements (examples) • Fire egress and exiting • Roof load structural upgrades • NECB energy upgrades • Occupancy • Fire ratings	**25-40% of construction value** *$5,276,000*	$1,319,000-$2,110,400
Barrier Free Accessibility • Barrier free exit and egress • Inclusive accessibility • Access to aquatics program	**Best practices costs**	$500,000
Total (Code Upgrades @ 40% example + Barrier Free)		**$2,610,400**

The City should understand that in order to complete a renewal as a major modernization, major pool mechanical may need to be upgraded in order to facilitate a code compliant pool operation addressing current AHS qualifications (aquatics mechanical system upgrades to meet new turn over rates, filtration, surge tank resizing, anti entrapment, if not up to date, electrical bonding, and potentially other factors).

TABLE C		
AHS REQUIREMENTS		
Aquatics Mechanical as per AHS code • New filtration • New pump and distribution to meet 8 exchanges per hour • New surge tank for increase water volumes • New perimeter drainage • New pumps and valves • New anti entrapment • New electrical bonding • New basin and deck tiles	**Best practices costs**	**$3,500,000**

TOTAL COSTS – Major Modernization (Table B + C)	**$6,111,400**

It is important to note that the $6.1M cost noted in the above table is an additional cost to the $5.2M renewal costs (Table A). The total potential cost is **$11,387,400**. It is also important to note that a risk capital of 30% ($3,416,220) is to be included due to found conditions, cost escalation and supply chain risk. Therefore, the baseline scenario, with the renewal of components, equipment, and systems like for like, cost is **$14,803,620.**

SCENARIO 1 - SUMMARY			
Scenario	**Capital Cost Estimate** *Table A*	**Potential Required Code Authority Mandates** *Table B+C*	**Total Estimated Cost (2023)**
Scenario 1 - Baseline Renewal *reinvesting in the existing facility to provide like for like moving forward*	**$5,276,000**	**$6,111,400**	*$11,387,400 (+30% risk)* **$14,803,620**

From ACI's experience with the Hemingway Pool Renewal, the City of Edmonton deemed the renewal of the natatorium a Major Modernization. The cost for upgrading a 50m basin to AHS standards was $4.7M. While not the identical situation to Fort Saskatchewan, the critical factor of this experience is that once a project is deemed a "Major Modernization", the improvements needed, and their accompanying cost results in a cost well beyond those identified to directly address the deficiencies. This would be a significant capital risk to the project and will only be known when the AHJ advises as to the extent of the modernization and its interdependent upgrades.

2. RENEWAL WITH AQUATICS MODIFICATIONS SCENARIO

Based on the Facility Condition Indexes of both the Aquatics Facility and the Aquatics Mechanical and Structure, a potential next step is renewal with aquatics modifications to the facility including the rehabilitation of components, equipment and systems identified in the assessment analysis attached in Appendix F. This scenario also includes enhancements to upgrade the aquatics mechanical component of the facility to the modern standards of quality and compliance of the aquatics amenities (refer to Appendix E - Water Technology Inc. Evaluation Report, Section 6.7). No additional programming to facility. The cost to this investment is as follows:

TABLE A	
FACILITY CONDITION	
LESS THAN 5 YEARS (1-5 YEARS)	$1,710,000
5 – 10 YEARS	$3,145,000
GREATER THAN 10 YEARS	$390,000
FOR A TOTAL EXPENDITURE FROM 0 - >10 YEARS	$5,245,000
AQUATICS SYSTEM	
LESS THAN 5 YEARS (1-5 YEARS)	$31,000
TOTAL FACILITY+AQUATICS	**$5,276,000**

Aquatics modifications to the facility – There are potential enhancements provided by WTI recommendations to help improve and modernize the pool amenities (refer to Appendix E. Water Technology Inc. Aquatics Evaluation Report page 49, Section 6.7).

TABLE B	
AQUATICS ENHANCEMENTS	
Aquatics Mechanical Enhancements: • Replace Pool Tile Finish • Construct Perimeter Gutter at Beach Entry • Remove Caissons and Elevated Pool Deck • Install Wave Blowers with Variable Control • Install Regenerative Media Filtration • Install Ultraviolet Supplemental Disinfection	**$ 2,600,000**

Again, this scenario would not upgrade the following interdependencies and conditions based on best practices and current lessons learned:

TABLE C		
CODE REQUIREMENTS		
Code Upgrades (examples) • Fire egress and exiting • Roof load structural upgrades • NECB energy upgrades • Occupancy • Fire ratings	**25-40% of construction value of Table A+B** *$7,726,000*	**$1,931,500-$3,090,400**
Barrier Free Accessibility • Barrier free exit and egress • Inclusive accessibility • Access to aquatics program	**Best practices costs**	**$500,000**
Sub-Total (Code Upgrades @ 40% example + Barrier Free)		**$3,590,400**

TABLE D		
AHS REQUIREMENTS		
Aquatics Mechanical • New filtration • New pump and distribution to meet 8 exchanges per hour • New surge tank for increase water volumes • New perimeter drainage • New pumps and valves • New anti entrapment • New electrical bonding • New basin and deck tiles	**Best practices costs**	**$3,500,000**

TOTAL COSTS – Major Modernization (Table A + B + C + D)	**$14,966,400**

Schedule Risk

- Construction completion 24-28 months
- Loss of operations and revenues for 24-28 months
- There will be downtime to the current Harbour Pool program space, with program stoppage with Scenario 1 and 2.

Based on a renewal with an addition, there is a measure of risk that needs to be identified and carried throughout the project or carried and mitigated based on completion of phases of scope of work. We would recommend the following risks to be carried:

Capital Risk – Found Conditions	**30% of $14,816,400**	**= $4,444,920**
Schedule Risk	**Construction completion 24-28 months**	***Loss of operations and revenues for 24-28 months***

It is important to note that the $7.09M cost noted in previous tables above is an additional cost to the $7.7M renewal with aquatics modification costs presented in the first table in this section. The total potential cost is **$14,966,400**. It is also important to note that a risk capital of 30% ($4,489,920) is to be included due to found conditions, cost escalation and supply chain risk. Therefore, the renewal with aquatics modification scenario, with the renewal of components, equipment, and systems like for like, cost is **$19,456,320.**

SCENARIO 2 - SUMMARY			
Scenario	**Capital Cost Estimate** *Table A + B*	**Potential Required Code Authority Mandates** *Table C + D*	**Total Estimated Cost (2023)**
Scenario 2 - Renewal with Aquatics Modification *reinvesting in the existing facility with aquatics mechanical modifications to the facility but without increasing service levels (or adding to the functionality or changing the user experience)*	**$7,726,000**	**$7,090,400**	*$14,816,400 (+30% risk)* **$19,456,320**

3. REPLACEMENT SCENARIO

Scenarios 1 and 2 provide rehabilitation scenarios with significant risk and operational impacts / shut down. A Replacement Scenario is provided for construction of a new pool, with a like for like user experience, to provide as a comparator for costs, risks and operational impacts of the rehabilitation scenarios.

- The full slate of investments identified would not be required with the design and development of an entirely new facility, however, some may be required depending on how / if the City re-purposes the existing facility should replacement not occur on the existing site.

Program expansion, including a new stand alone leisure tank, and other amenities, could also be included as part of a new aquatics facility and would not be constrained with the realities of the existing facility. The full breadth of what this potential program expansion could include will be identified in subsequent steps in this planning process.

This replacement facility scenario ***would address the following interdependencies and conditions*** based on best practices and current lessons learned:

- Code upgrades
- Barrier Free Accessibility and Inclusive Upgrades
- Program Upgrades
- Risk Capital – based on a replacement would be normalized to a New Build 15% (half of the risk capital to a renewal.

This would be a new free-standing facility or an addition to an existing City of Fort Saskatchewan facility (as an example DOW).

In this scenario, there is a potential for NO DOWNTIME to the current Harbour Pool program space, business as usual with no program stoppage, IF a new site is selected for the replacement facility.

It is expected that the development of a new facility would take at least 24 months of design and construction for a new build.

New Facility			
Existing Area	**2329.38m²**	**Cost $7500/m²**	**$17,470,350.00**
Capital Risk – New Build	**Best practices standard of 15%**		**$2,620,552.50**
Total Cost			**$20,090,902.50**

1.5 Summary

The findings of the Assessment Report are summarized as follows:

1. The Facility Condition Index, a ratio of the current investment requirements related to the replacement costs, of the Harbour Pool currently is 52%. This suggests that replacement could be contemplated.
2. The WTI Aquatics Assessment scores the existing facility at 66.275% which suggests that the facility does require attention related to aquatics specific elements.
3. The report looked at three scenarios for providing aquatics services on a 'like for like' basis. It is important to note that the capital costs included in the following table reflect estimated 2023 construction costs only and do not include design fees, site development and servicing, or demolition of existing buildings (if applicable).

Key considerations in reviewing the three scenarios for further action include:

1. **Schedule –risk to project completion due to potential discovery of unexpected facility conditions.**
2. **Operations – tolerance for operational downtime of the current facility and aquatics program.**
3. **Capital – the current and continued value of deferred maintenance capital risk versus planned investment in new capital.**

In addition to these considerations, the City has changed and evolved since the facility was originally built. Current and expected future aquatics demands needs to be considered in the context of the decision regarding the Harbour Pool's future. These current and future demands will be outlined in the next phase of this planning process and concept plans, capital and operating costs, and community benefits of different future investment scenarios will be provided.

Appendix A

ARCHITECTURAL REPORT

2 APPENDIX A - ARCHITECTURAL REPORT

2.1 Project Methodology

On Tuesday August 23rd, 2022, ACI Architecture Inc. conducted an on-site review of the Harbour Pool facility with the use of photographic and documented observations, and received direct input and considerations from the maintenance and operation personnel with knowledge of alterations done to the facility over the years. It is important to note that the assessment represents a point in time. The term "appears" is used because at the time of the assessment the element "appears" to be achieving a level of functionality. Those elements were not tested under different conditions nor was an invasive inspection done to gain more information (e.g. holes were not drilled).

The following documents were reviewed in reference of this assessment:

> 2014: BR2 Architecture - Harbour Pool Facility Evaluation, Fort Saskatchewan, Alberta
>
> 2017: Maverick Inspection Ltd. - GPR Inspection Report
>
> 2018: RJC - Main Pool, Warm Pool, and Whirl Pool Structural Assessment
>
> 2018: RJC - Main Pool Expansion and Modification Feasibility Study
>
> "Harbour Pool - Life Cycle Spreadsheet fr Jean Dabels, Fleet and Facilities Coordinator CoFS" - Projects completed to facility

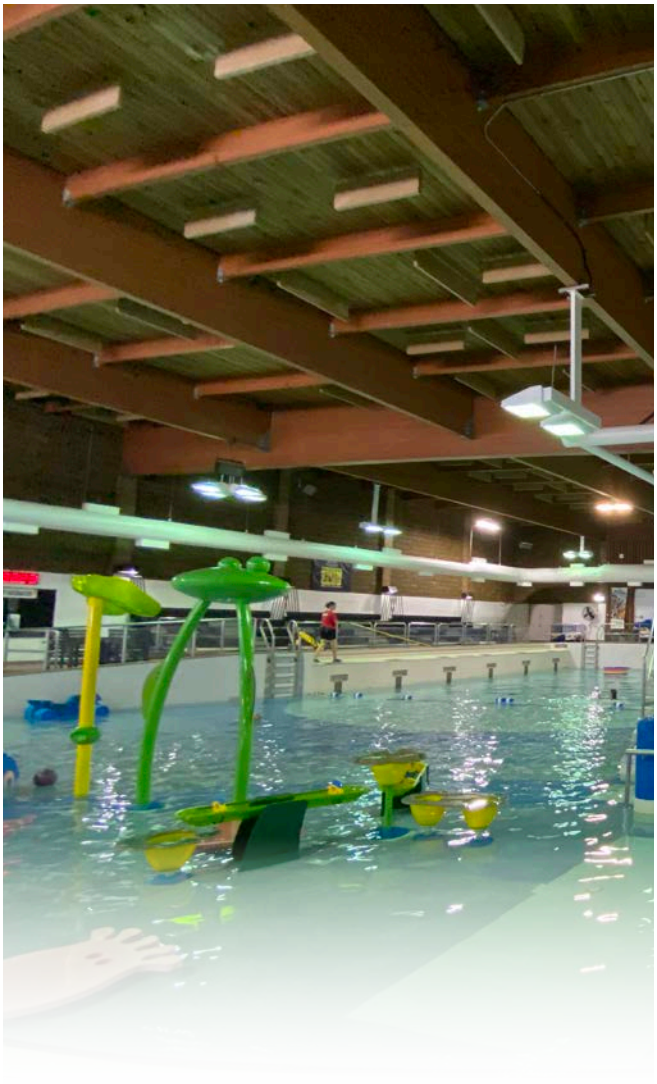
This Facility Analysis is intended to provide and outline immediate and ongoing maintenance needs and costs for the facility, as well as possible longer-term maintenance of the building, or viability of the facility for the future.

In reference to the on-site assessment and the current building code safety requirements, ACI Architecture Inc. recommends the replacement of all building systems with less than 5 year (<5) life expectancy.

During this assessment, reference to the benchmark standards and best practices of the Alberta Recreation & Parks Association (ARPA), the Facility Condition Index Percentage (FCI %), as identified in this report, the cost of a renewal reaching >67% of replacement costs should be considered to be replaced instead of renewed.

Based on the benchmark standards and practice, the FCI calculated for Harbour Pool is 52%, and therefore, we recommend that the renewal work identified in this report be considered for Harbour Pool Aquatics Facility.

LESS THAN 5 YEARS (IMMEDIATE)	**$1,710,000.00**
5 – 10 YEARS	**$3,145,000.00**
GREATER THAN 10 YEARS	**$390,000.00**
FOR A TOTAL EXPENDITURE FROM 0 - >10 YEARS	**$5,245,000.00**



2.2 Existing Facility Analysis

Facility Analysis Report Outline

All of the observations and information identified during the site review of the facility are documented in the Facility Analysis Report. (Refer to Costing Chart in Appendix F.)

The Facility Analysis Report includes architectural building system descriptions, as well as structural, mechanical and electrical systems, observations and/or comments based on discussions with the maintenance and operations personnel. The descriptions identify the condition of each system using a rating from 1 to 6, with respect to the observed condition of the system. The information in the report is the basis for the Executive Summary.

Facility Analysis Report Format

The Facility Analysis Report is a summary, in chart form, that identifies the overall condition of the facility and the interior spaces and the probable cost to maintain and / or upgrade. The chart contains the following reviewing format:

- Facility and/or venue name
- Chart Rating Definitions:
  - **1 - Critical Unsafe;** high risk of injury or critical system failure.
  - **2 - Poor** Does not meet requirements; has significant deficiencies.
  - **3 - Marginal** Meets minimum requirements; has significant deficiencies.
  - **4 - Acceptable** Meets present requirements; has minor deficiencies.
  - **5 - Good** Meets all present requirements: no deficiencies.
  - **6 - Excellent** As new / state-of-the-art; meets present / foreseeable needs.
  - **FI** Requires further investigation.
  - **N/A** Not applicable.
  - **CU** Currently being upgraded.
  - **Life Expectancy**
    - Less than 5 years for replacement (<5)
    - 5 to 10 years for replacement (5-10)
    - Greater than 10 years for replacement (>10)
  - **Priority** High (H), Medium (M), Low (L)
  - **Life / Safety Code Meets Code** (No); Does not meet code or Infringement endangers life (Yes)

Facility Analysis Report Explanation:

1. A system noted as Further Investigation (FI) denotes a system for which information was unavailable, could not be readily determined, and/or could not adequately be reviewed with a visual examination on site.
2. System Priorities have been established as High (H), Medium (M), Low (L).
3. Life / Safety Code Infringement are major infringements to the current National Building Code - 2019 Alberta Edition, which would affect life/safety for users and staff. It is anticipated in existing facilities that some requirements of the current Building Code may not be met. For the purposes of this Study, it is only those infringements which specifically involve fire and/or life/safety and access/egress that are identified.
4. Cost to upgrade identifies costs to each individual system, accurate to approximately $5,000.00 and this level of accuracy is sufficient for this early stage of costing.
5. Structural, Mechanical, Electrical, and Aquatics system conditions and costs have been reviewed and provided by ACI Architecture Inc. on a rudimentary basis and with input and needs/performance assessments from operational staff; they are not a detailed review or an engineering-based assessment of the systems.

2.3 Harbour Pool Analysis

Facility History and General Information:

Habour Pool was constructed in 1982 and renovated in 2019 to include an additional change room. The facility's primary spaces consist of the Natatorium (main pool, warm pool and whirl pool), Change Rooms with Washrooms, Public Washrooms, Main Entrance Lobby, Control Office, Natatorium Viewing Area, Multipurpose Room, and three level mechanical area.

The building would be classified as an Assembly Occupancy - Group A, Division 2, up to 3 storeys under the National Building Code – 2019 Alberta Edition. The existing building is non-sprinklered.

Historically, Harbour Pool was designed as a wave pool, however, the intended design did not proceed. Furthermore, it was later discovered that the wave equipment/technology at the time would have been overpowering for the amount of run-off required. The wave paddles that were originally part of the design were removed in 2002 from the pool basin due to rust. The wave cage remains due to the inlets inside that are piped into the circulation system.

General Site:

> Cost to upgrade (Site): $850,000 (*Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 2.0.)*
>
> *Implementation: 5 - 10 Years / > 10 Years*

The North and East of the site area includes the asphalt surface visitor vehicle parking. Service vehicle access to the building are located on the south west corner, concrete aprons are present at specific door locations. The service vehicle access also contains additional parking.

At the time of the assessment, there appears to be adequate site drainage away from the building. The facility expansion roof discharges at grade on the north and west elevations. The discharge to grade are concrete trenches that direct the water flow away from the facility. The trenches drain directly to the asphalt paved parking lot. A dedicated drain to the stormwater is recommended to avoid water collecting and to add drainage under the concrete sidewalks and underneath the asphalt paving. Water draining onto the asphalt has caused heaving settlement and cracking issues. Exterior grade around the entire perimeter of the facility appears to slope away from the building. The building is situated on site with a north to south slope. Most of the base of the cladding is above grade. Concrete foundation is exposed below the cladding.

Photo 1: Harbour Pool East Facade

Exit man doors in the East elevation are significantly higher than the exterior concrete sidewalk. Stairs and railings have been added to these locations to accommodate access. This access, however, does not meet Barrier-Free requirements. Man doors located along the South facade have no concrete stoop and have a substantially vertical drop from the door sill to the grade. South and West elevations all appear to have concrete stoops at Exits.

General Construction:

> Cost to upgrade (General Construction): $125,000 (*Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 3.0.)*
>
> *Implementation: 5 Years - 10 Years / > 10 Years*

Existing drawings consist of two sets dated 1984 and 2018. The 1984 drawings show the original aquatics facility constructed as a flat roof construction supported on glulam beams connected to concrete columns. These columns are reinforced with masonry infills. The roof is an SBS roofing system. The facility has lower roofs located on the south elevations. These roofs are covered with pre-finished standing seam metal panels with exposed fasteners. In reference of BR2's report from 2014, the roof has been replaced in 1988-1989 and also in 2015-2016.

The 2018 drawings denote the addition of universal change rooms. The addition is constructed as a flat roof supported on open web steel joist (OWSJ) connected to 190mm load bearing concrete block. The block walls are supported on concrete grade beams. The roof is an SBS roofing system.

The original section of the aquatics facility exterior wall construction consists of two major wall assemblies. Assembly one, located mainly within the natatorium, consists of 100mm concrete block facade, 25mm air space, 50mm styrofoam insulation secured to vapour barrier

fastened to 250mm concrete block-wall. Assembly two, consists mainly of second story infill pieces, consists of pre-finished metal cladding complete with building paper fastened to metal studs. Insulation has been integrated within the metal stud cavity space.

In 2010, the entire facade of the facility was refinished including painting. At this time new window and door flashing was installed.

Upon visual inspection, the floor slabs are slab on grade for the majority of the facility and structural concrete slab for the deck slab above the basement.

The concrete apron on the north, east and west side of the facility appear to have positive slope away from the building. No aprons are installed along the south side.

Foundations for the facility are a mixture of foundation walls complete with strip footing and reinforced concrete grade beams on piles.

Planters are located below the windows on the east elevation. They are inspected to be in acceptable condition. The exterior finish is metal cladding which matches the facility's cladding.

Photo 2: Planters

Exterior Building Envelope:

> Cost to upgrade (Building Envelope): $1,275,000 (*Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 4.0.)*
>
> *Implementation: >5 Years / 5 - 10 Years / >10 Years*

WALLS

According to the BR2 report from 2014, the exterior of the facility had exterior renovations to re-clad the building with new stucco and rigid insulation, and another renovation in the 1990s where the exterior was redone to pre-finished metal cladding. Exterior building envelope substrate walls consist of load-bearing block wall. A visual review of the block wall from the interior confirms this to be acceptable condition. The wall has been painted and sealed in certain locations. The connection from the block wall to the concrete columns consist of caulking that should be regularly maintained and replaced.

The 100mm concrete block exterior facade is assumed to be covered by metal cladding.

CLADDING

The existing metal cladding that has been installed over the original block shows significant signs of deterioration. This includes painting delaminating and exposed raw steel. Replacement of cladding around the perimeter of the original portion of the aquatics facility is recommended. *(Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 4.0.)*

Photo 3 & 4: Delaminating Cladding

The visual inspection of cladding located over the 2019 universal change room expansion are in excellent condition.

Photo 5: Universal Change Room Addition

Below grade consist of cast in place concrete walls. These concrete walls show signs of patching along the east face. The walls appear to be in acceptable condition and are maintained regularly.

Photo 5: Exterior Wall + Windows

LOWER ACCENT ROOFS

Located on the south portion of the facility below the natatorium windows is a lower accent roof. This roof is a standing seam assembly combined with slope metal cladding.

The sloped metal standing seam roof is reviewed as in excellent condition.

Photo 6: Standing Seam Roof

The sloped cladding at both sides of the standing seam roof are in poor condition, paint delaminating and exposed raw steel is visible throughout. Recommendation is to replace the cladding with a more suitable material for slopes and water shedding. *(Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 4.0.)*

Photo 7: Sloped Standing Seam Roof

Photo 8: Delaminated Cladding

ROOF

The roof on both the original and addition portions are SBS roofing system. In general, the sloping to drain is in acceptable and good condition, however, there are spots where ponding is occurring. Based on discussion with the maintenance facility, remediations have occurred on the lower roof to install additional drains to alleviate some ponding. The ponding in general is minimal and expected on a facility of this age.

Photo 9-10: Ponding on Roof

The roof consists of a two drainage system. Over the original facility the water is drained through the interior to the storm water system. On the 2019 expansion, the water is drained to grade on the exterior. Remediation work was

completed on the interior of the natatorium to the roof drains due to leaking. Both systems appear to be operating as designed.

Photo 11: Drainage

The roofs are accessed by a ladder located within the second floor mechanical room. The exit from the ladder is equipped with parapet mounted railing.

Photo 12: Exit Ladder

EXTERIOR DOORS

All exterior doors are found to be insulated metal doors in pressed steel frames. The doors appears to have proper seals with minimal openings and light penetration. Some minor damage is noticed on the doors, including dents.

The exterior door located along the south wall second from the west corner is recommended to have sill flashing installed at the concrete top to prevent water penetration into the facility. Currently a threshold is installed below the door, however, the concrete backslopes towards the doors.

Photo 13: Exit Door with significant drop

The two doors located along the south facade are recommended to have concrete pads installed on the exterior. On both doors there is a significant drop from the door sill to the grade.

Photo 14: Exit Door with significant drop

The exterior door located along the original east facade are in acceptable to good condition. Both facades have concrete aprons that abut to the door sills.

The exterior doors located along the addition west facade is visually inspected to be in good condition. However, upon inspection, the sill indicates to have a significant slope transition that is recommended to be altered to allow for ease of exiting.

Photo 15: Exit Door with significant slope transition

The main entrance sliding doors located along the north facade upon visual review are in good condition. The operation of the doors is facilitated through motion sensors and evidently to be fully operational.

Photo 16: Main Entrance

The interiors of some exterior doors indicate signs of corrosion and damage, due to the moisture and water penetration. The exterior door frames are original to the building.

Photo 17: Corrosion on Doors

EXTERIOR WINDOWS

The majority of the windows located within the original natatorium space were replaced in 2010. Upon visual inspection, the windows to be in good condition. The flashing around the perimeter of the windows is in good condition.

Photo 18: Exterior Windows

General Area Interior Spaces and Finishes:

> Cost to upgrade (Interior Finishes): $1,095,000 (*Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 5.0.)*
>
> *Implementation: >5 Years / 5 - 10 Years / >10 Years*

LOBBY AREA

The lobby area consists of the administration desk and viewing areas. The lobby also allows access to the multipurpose room, public washrooms and change rooms.

Upon visual review, the finishes are the original floor tile, wall tile, wood slat wall panels, and slat ceiling. The lobby area demonstrates evidence of renewal. The ceiling and tiles were painted within the last 3 years.

Photo 19: Main Lobby

The administration desk area was renovated to include new flooring and ceiling in 2005, upgraded administration desk millwork in 2020 with glass screening. Upon visual review, the administration is in good condition.

Photo 20: Lobby

The viewing areas were originally directly connected to the natatorium. However, a glass dividing wall that included doors, was installed to separate the two spaces containing different conditions. The separation was to have the air

handling to properly function, as the pool natatorium operates with negative pressure and the administration areas operate with positive pressure. The excessive humidity was also causing damage to office equipment, and sound transmission from pool to administration area was not ideal.

Photo 21: Natatorium Viewing Area

Based on visual inspection of the tile floor where there is a transition from change room to lobby area, evidence shows floating of tiles which is a cause of major concerns. Due to the thickness of the floating areas, there is a ledge created at the entrance that does not allow water to drain. No drains are located within this area which will cause water pooling on the natatorium side and creates a safety concern around slips and falls. Recommendation would be to investigate floating tile and possible drainage solutions. *(Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 5.0.)*

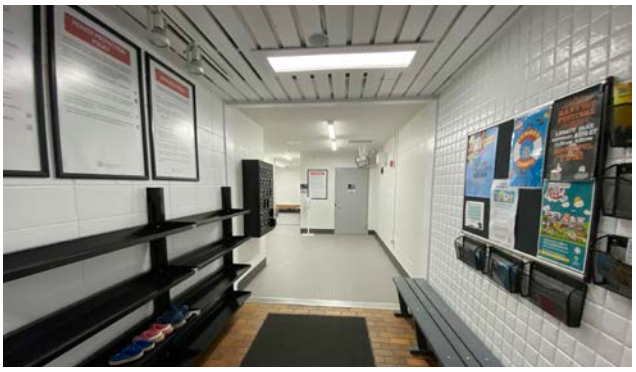


Photo 22: Transition Area

PUBLIC WASHROOMS

The Public Washrooms were recently renovated to include new floor tile, wall tile, millwork vanity, and ceiling. The washroom finishes appear to be in excellent condition. Replacement of caulking along the millwork backsplash, sink perimeter, and toilet base would be recommended.

Photo 23: Public Washrooms

ACCESSIBLE WASHROOMS

The Accessible Washroom was installed as part of the 2019 addition. The room consists of a toilet, barrier free sink, shower, and electronic change table. Review of the accessible washroom is in excellent condition.

Photo 24: Accessible Washrooms

MULTIPURPOSE ROOM

The multipurpose room is visually inspected as good condition. Flooring demonstrates replacement of new tile. Some areas show remediation of tile cracking/damage. Extensive millwork has been added to the room. Millwork is in good condition.

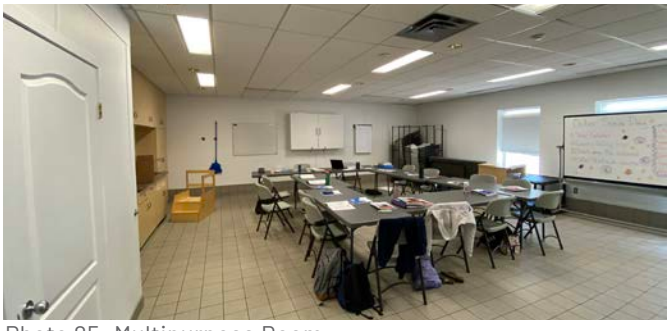


Photo 25: Multipurpose Room

Photo 26: Ceiling in Multipurpose Room

A storage room is located in the multipurpose room and consists of panelized partition wall systems complete with a hollow core wood door. Replacement of the door and wall system to fire rated assembly is strongly recommended for storage rooms. *(Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 5.0.)*

The ceiling tile and grid system were replaced in 2005. However, there are multiple areas of damage to the grid system. It is recommended to be repaired or replaced, refer to photo 26.

Mosaic tile is installed on the interior window sills. The tile is mostly in good condition, however, there is evidence of shifting and misalignment of tile in some areas. These may be due to substrate levelness or water penetration and would require further analysis. Recommendation is to further investigate this area.

Photo 27: Mosaic Tile Misaligned

CHANGE ROOMS

All three change rooms consisting of men's, women's and universal were renovated or constructed in 2019. The finishes upon visual review are in good condition, however, there are concerns with certain items.

The floor drainage upon review do not seal flush to the floor, which is due to the floating floor system, and therefore have exposed cut edges. There are safety concerns around lacerations or trip due to the unevenness and exposed edges. The recommendation is to replace the current drainage to a grate system with proper seal to allow for level transition and no exposed cut edges. *(Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 5.0.)*

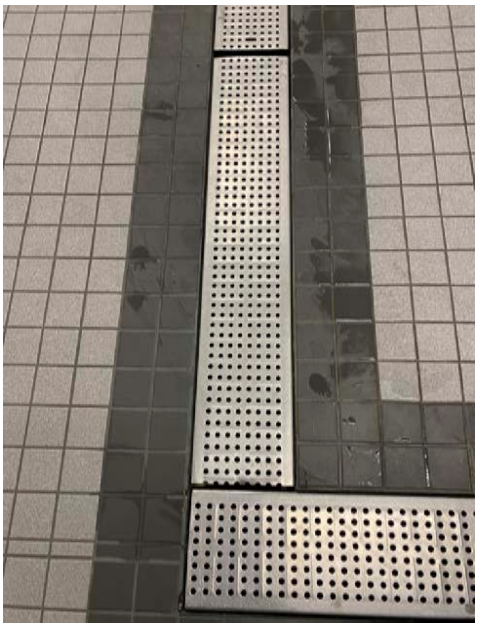


Photo 28-29: Change Room drainage

The tile base around the perimeter of the change rooms differs depending on the room. For the universal change room the tile consists of a cove base, however, in the other two rooms, a separate cover has been added to wall base. This cover shows signs of deterioration and dirt collection. Based on a discussion with the operators, the tiles within the men's and women's change room were floated. This created a problem where cove was noted as not possible. Recommendation to review possible cove options with a tile supplier to eliminate separate cover system.

Photo 30-31: Cove Base in Change Rooms

Due to the floated tile floor, there are major concerns where the men's and women's change room enter the natatorium area. Because of the thickness at the base on floated tile flooring, there is a ledge created at the entrance of the change room that does not allow water to drain. The drains are located within the change rooms. This results in water pooling on the natatorium side and creates a safety concern around slips and falls. Recommendation would be to investigate floating tile and possible drainage solutions.

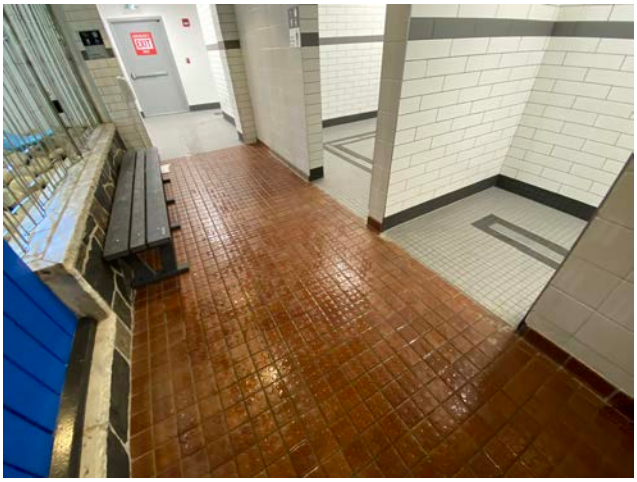


Photo 32-33: Change Area Floor Tiles

STAFF AREA

The Staff Area consists of first aid room, lunch room, staff change room, access corridor to natatorium, and two offices. The lobby allows access to the multipurpose room, public washrooms and change rooms.

Overall the administration area appears to be in overall good condition. The tile floor matches the replaced reception area. The walls and ceiling in the administration are reviewed to be in good condition, minor damage is noticeable.

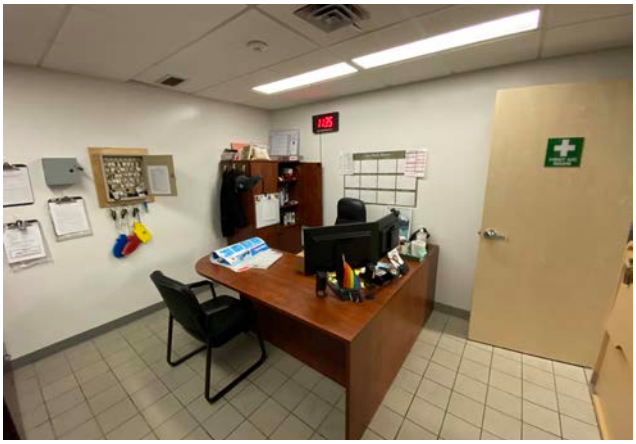


Photo 34: Staff Area Office

Lockers and changing enclosure partitions within the staff change is visually inspected to be in good working condition. One recommendation is to extend the change room partitions to full height walls to allow for more privacy. *(Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 5.0.)*

Photo 35: Staff Locker Area

Millwork within the staff area is inspected to be in good condition. The doors within the Staff Area are also wood and in good condition.

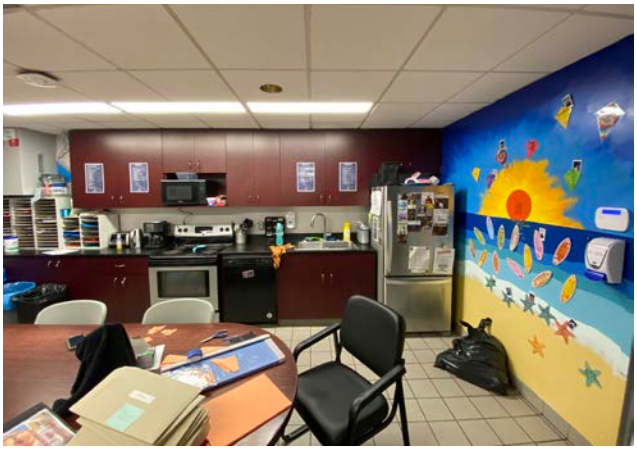


Photo 36: Staff Room

NATATORIUM

The natatorium consists of the main pool, warm pool, whirl pool, and viewing areas. All elements of the Natatorium are considered in good condition. ***Please refer to Appendix E - Water Technology Inc. Aquatics Evaluation report for more in-depth review of the pools, basins and accessories.***

The Natatorium areas contains tiled floor decks, a mixture of wood wall slats, stone veneer walls, concrete block, and exposed wood roof deck with glulam beams. Acoustical baffles have been installed between the glulam beam system.

Photo 37-38: Natatorium Area

The visual inspection indicates tiled floor deck to be in acceptable condition. There are multiple areas that remediation work that had been completed over the years based on drainage and tile failure evidence. The majority of the tiles are in good condition, however minor damage can be visually seen mainly on the base tiles and at grout lines. The recommendation is to repair damaged tiles immediately and within 10 years replacement of entire deck tiles. *(Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 5.0.)*

Photo 39: Damaged Base Tiles

Along the south deck, there is an anomaly within the floor tile between the two existing deck drains. There is visual evidence that the concrete deck has been altered to create a drainage path for the water to access the drains. Concerns over tripping are minor, but the recommendation is to explore alternative options to achieve the deck drainage.

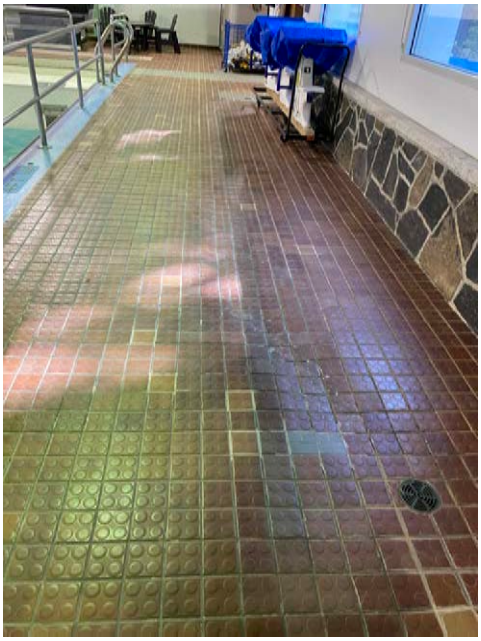


Photo 40: Delaminated Floor

The wood slat walls, stone veneer, and exposed concrete block walls is in excellent condition. As noted previously, there is caulking located between the block walls and concrete columns. The recommendation is to have the caulking be replaced regularly to avoid water penetration. There are areas of water penetration within the wood slats. The recommendation is to investigate occurrence and repair as required.

Photo 41: Stone Veneer

NATATORIUM STORAGE

Natatorium storage is accessed from the east portion of the natatorium. The storage room consists of epoxy coated floor, painted concrete ceiling, and painted concrete block. The room finishes are visually inspected as good condition.

Photo 42: Natatorium Storage

The door access from the natatorium is painted metal door with pressed steel frame. There is significant visual corrosion around the base of the pressed steel frame, which was installed from original construction time period. The recommendation is to repair/replace the damaged frame. The adjacent natatorium base tile requires replacement.

Photo 43: Corrosion on Door Frame

MAIN FLOOR MECHANICAL ROOM

The main floor mechanical room contains the water surge and filtration tanks. ***Please refer to Appendix E - Water Technology Inc. Aquatics Evaluation report for more in-depth review of the pools, basins and accessories.***

The Main Floor Mechanical Room consists of exposed concrete floor complete with a catwalk installation, exposed concrete ceiling, and exposed concrete block. The room finishes are in good condition.

Photo 44: Mechanical Area

POOL STORAGE

Pool Storage is accessed from the Main Floor Mechanical room. The pool storage room consists of epoxy coated concrete floor, painted concrete ceiling, and painted concrete block. The review of the room finishes are in good condition.

This contains the chemical storage room and hosts components of the chemical treatment portion of the operation system. ***Please refer to Appendix E - Water Technology Inc. Aquatics Evaluation report for more in-depth review of the pools, basins and accessories.***

Photo 45: Pool Storage

ELECTRICAL ROOM

The main floor electrical room consists of exposed concrete floor, exposed concrete ceiling, and exposed concrete block. The room finishes are inspected to be in good condition.

SECOND FLOOR MECHANICAL ROOM

The second floor mechanical room consists of the building mechanical units. The room consists of exposed concrete floor, painted gypsum board ceiling, and exposed concrete block. The room finishes are in good condition.

Photo 46: Mechanical Area

The stair access to the second floor mechanical room are steep. Based on the construction year, the stairs are acceptable and considered "grandfathered". However, if major modernization was to occur, the recommendation is to replace the stairs with code conforming rise and run.

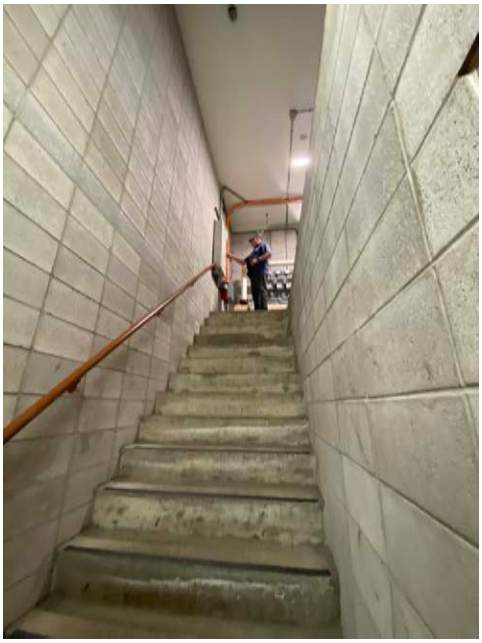


Photo 47: Stairs in Mechanical Area

BASEMENT

The basement contains the water distribution systems, filtration tanks, storage rooms/areas, and laundry. ***Please refer to Appendix E - Water Technology Inc. Aquatics Evaluation report for more in-depth review of the water distribution and holding tanks.***

The basement consists of exposed concrete floor, exposed concrete walls, and exposed concrete ceilings. The room finishes are evaluated as good condition, however, remediation work has been completed for the concrete

cracks, ***refer to structural assessment of this document***.

Photo 48: Basement Area

There are windows with sight lines from the basement directly into the pool basin. There are areas of saturation on the window sills. The recommendation is to replace the windows in conjunction with the pool tile basin replacement. *(Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 5.0.)*

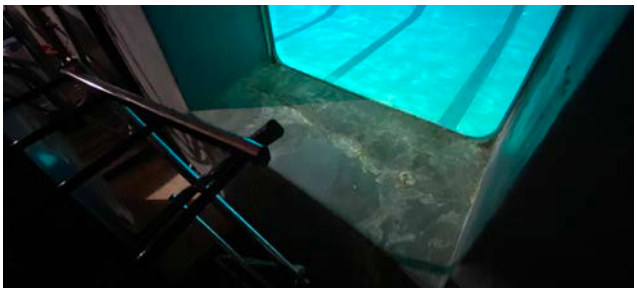


Photo 49: Window Saturation

The stair access to the basement is steep. Based on the construction year the stairs are acceptable and considered "grandfathered". However, if major modernization was to occur the recommendation would be to replace the stairs with code conforming rise and run.

Photo 50: Basement Stairs

The storage and washing area are located directly within the basement. The storage contains cleaning supplies and aquatics accessories. The cleaning supplies are non-flammable. The washing area consist of one washer and one dryer.

Photo 51-53: Basement Storage Room

The storage room is accessed from the basement area. The storage room was meant to be the original wave generator, however, was not installed. ***Please refer to Appendix E - Water Technology Inc. Aquatics Evaluation report for more in-depth review of the wave generation.***

Through inspection, the storage room contains archive administrative files, paint, building supply storage, and miscellaneous storage. The door accessing the storage room is not evidently to be rated. The recommendation is to replace the door with a fire rated assembly. Any penetrations through the storage room walls and floor should be fire caulked and sealed.

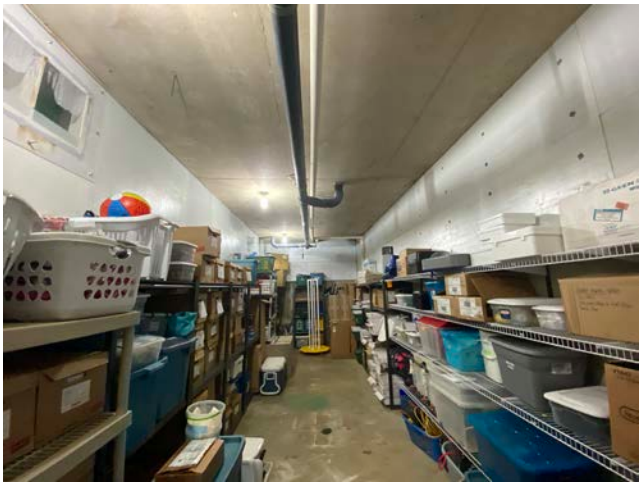


Photo 54: Storage

The walls within the storage room have insulation installed above six feet. This is in reference to the wave generator and exterior walls.

Photo 55: Storage with Bump Outs

Within the storage room there are two bump outs from the concrete floor, where the wave equipment would have been mounted. Above this area show signs of water penetration. Recommendation is to investigate staining and water penetration and remediation.

Photo 56: Water Staining

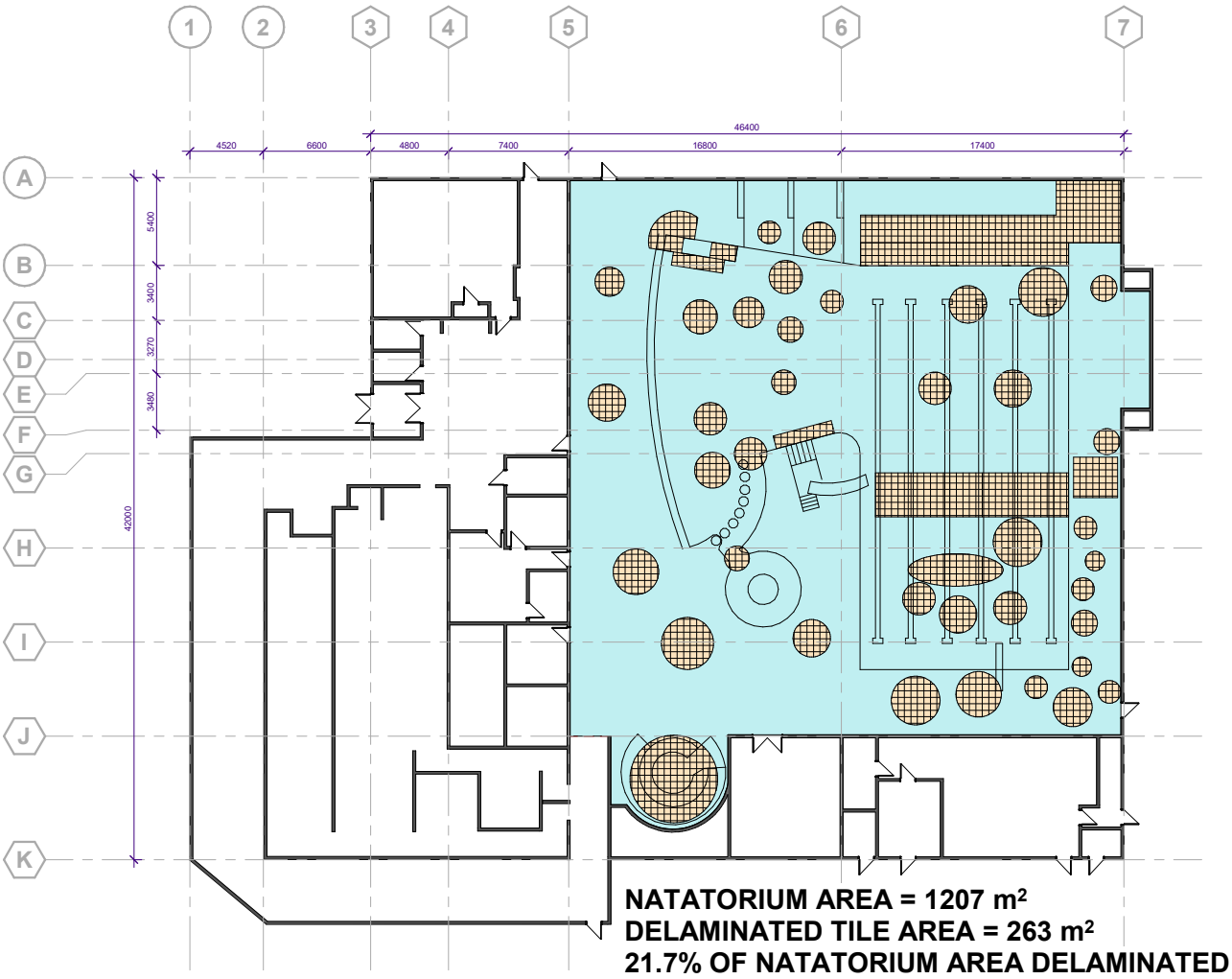
ON-SITE CHAIN DRAG REVIEW

In addition to the visual review of the facility, the top surfaces of the pool and vertical wall surfaces in the aquatics tank were surveyed for areas of unsounding tile using the chain-drag test and hammer sounding test. This test involves the dragging of a heavy chain access the slab surfaces and tapping areas with a hammer. On January 6, 2023, ACI conducted the chain drag walkthrough of the pool area.

The pool area, as seen on the diagram below, is 1207 m2. Upon investigation, approximately 263 m2 of the pool tile is delaminated.

A summary of each area is noted as follows:

- Main Pool: The testing indicates a significant amount of unsound tile on main pool slab surfaces. A total of approximately 100 m2 of unsound tiles were detected on the slab and vertical surfaces.
- Warm Pool: The testing indicates a significant of unsound tile occurred on the warm pool slab surfaces. A total of approximately 23 m2 of unsound tiles were detected on the slab and vertical surfaces.
- Whirl Pool: The testing indicates that a large amount of unsound tile occurred on the whirl pool slab. A total of approximately 62m2 of unsound tiles were detected on the slab and vertical surfaces.
- Pool Deck: The testing on the pool deck indicates a significant amount of unsound tile. A total of approximately 152 m2 of unsound tiles were detected on the slab surfaces.



Appendix B

STRUCTURAL REPORT

3 APPENDIX B - STRUCTURAL REPORT

3.1 General

The purpose of this review is to assess the general condition of the structural systems of the building. The review was limited to visual observations of accessible areas. No testing or dismantling of any finishes or coverings occurred during our review. A design review was beyond the scope of this project and no calculations were performed. Structural drawings were available for review. It is important to note that the assessment represents a point in time. The term "appears" is used because at the time of the assessment the element "appears" to be achieving a level of functionality. Those elements were not tested under different conditions nor was an invasive inspection done to gain more information (e.g. holes were not drilled).

3.2 Structural Description

Harbour Pool is a single storey building with a small basement and a mechanical mezzanine constructed in 1982. An expansion in the northwest corner was completed in 2019. The high roof over the natatorium is constructed of wood decking supported on glulam beams and girders on concrete masonry walls and a concrete column. The low roof over the office and change room spaces consists of steel deck supported on open web steel joists and steel beams on concrete masonry wall and steel columns. The mechanical mezzanine is constructed of a concrete slab and beam system supported on concrete masonry walls.

The pool tanks are constructed of concrete walls and base slab. The main floor is a concrete slab on grade throughout the building, except for over the basement areas where there is a structural concrete slab. The foundations system is constructed of foundation walls and footings according to the available drawings.

3.3 Observations and Recommendations

> Cost to upgrade: $100,000 (*Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 6.0.)*
>
> *Implementation: Less than 5 years*

Based on the visual review of random areas throughout the building, the structure is performing as intended.

The roof structure appears to be in satisfactory condition and performing as intended.

Some minor staining was noted on the wood deck at the roof drains (Photo 1).

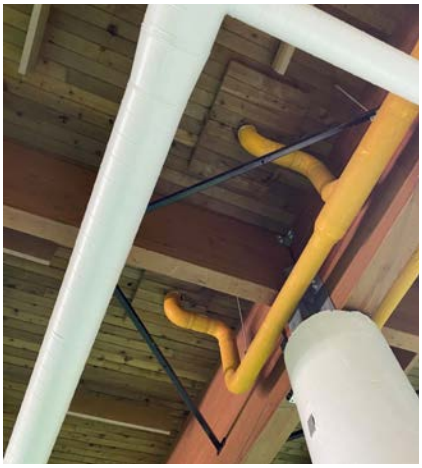


Photo 1: Minor staining on the roof deck at the drains

The mechanical mezzanine floor structure appears to be in satisfactory condition. Some minor cracking was observed

The masonry walls appear to be in satisfactory condition. Some minor cracking was observed.

A joint on the east wall appears to have been caulked (Photo 2). No additional cracking was noted in this area.

Photo 2: Caulked joint on east wall

The slab-on-grade, include in the natatorium, is seen to be in satisfactory condition. No differential settlement or

excessive cracking was observed. No cracks appeared to be transmitted through the floor finishes.

The pool deck structural slab over the basement area is seen to be in satisfactory condition.

Some localized areas have had cracks filled from below with pressure injection crack repair system (Photo 3 and 4)

Photo 3 & 4: Repaired cracks on the underside of the pool deck structural slab

A crack has been repaired in the storage room (Photo 5)

Photo 5: Repaired crack in storage room

The pool basin appears to be in good condition, based on discussions with the pool staff. The tank was filled with water and not directly observable in most locations. The pool staff indicated there did not appear to be any significant cracks transmitted through the tiles.

The pool walls in the basement area appear to be adequate condition. A coating has been applied to the walls and localized cracks have been repaired with pressure injection crack repair systems (Photo 6 and 7)

Photo 6 and 7: Repaired cracks in the pool tank walls

A few cracks were noted in the basement slab-on-grade (Photo 8). There does not appear to be any differential settlement or excessive cracking in the slab.

Photo 8: Cracking in the basement slab-on-grade

The foundation system appears to be performing satisfactorily. The foundations were not directly observed as they are buried below grade, however no significant settlement or differential settlement were observed. No significant cracks was observed in the structure due to settlement.

Appendix C

MECHANICAL REPORT

4 APPENDIX C - MECHANICAL REPORT

4.1 GENERAL

Cost to upgrade: $1,075,000 (*Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 10.0.)*

Implementation: 5 - 10 Years / > 10 Years

Arrow Engineering Inc was invited as part of a larger consultant team to provide a visual inspection and analysis of the Harbour Pool in Ft. Saskatchewan, Alberta. The pool was originally built in approximately 1982 and went through a major mechanical upgrade in 2004. No information or plans of the 2004 mechanical upgrades were provided at the time of the site visit. It is important to note that the assessment represents a point in time. The term "appears" is used because at the time of the assessment the element "appears" to be achieving a level of functionality. Those elements were not tested under different conditions nor was an invasive inspection done to gain more information (e.g. holes were not drilled).

This report describes the current HVAC mechanical systems located in the various spaces in the existing building. This report does not include the pool mechanical systems and another consultant will provide information on that portion of the mechanical systems.

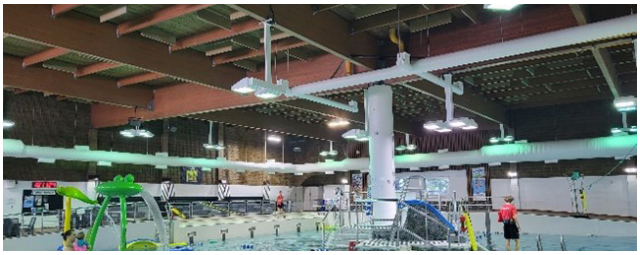
This building evaluation report is specifically related to the mechanical installation and was conducted on August 23, 2022. Existing mechanical documentation was not available for review at the time of inspection and no formal testing of systems or equipment was undertaken as part of the review.

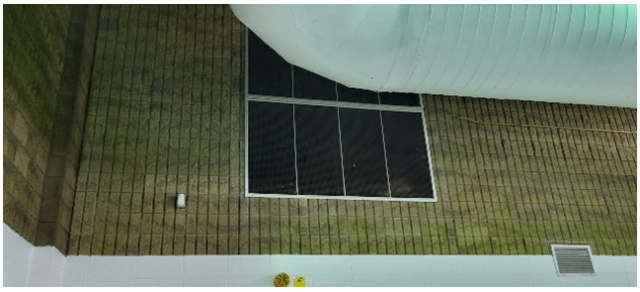
Based on the review of the building, the mechanical systems currently in place have been well maintained and no major concerns were seen in the equipment and operation. A mechanical lifecycle spreadsheet report, provided as part of the review, indicates the maintenance performed and condition of the equipment up to June 2022.

4.2 Heating, Ventilation Air Conditioning (HVAC)

Ventilation

The mechanical heating, ventilation for the pool space is provided by one large air system located in the upper level mechanical room with an exposed duct distribution system around the perimeter of the pool to various diffusers and grilles. A large return air grille on the mechanical room wall draws the air back to the air system.





The existing pool air system was replaced with another air system in 2004 and would appear to be in good operating condition. The air system consists of supply fans, gas fired heat section, filters and appears to be regularly maintained. It would appear that a heat recovery run around glycol loop has been installed to recover the waste heat from the pool exhaust and return the heat back to the outdoor air intake for the pool air system. No plans or details were available at the time of the site visit.

There are three Lennox furnaces installed to provide conditioned air to the lobby, administration offices, and meeting rooms. These furnaces also have DX cooling coils with roof mounted air cooled condensing units to provide air conditioning. The furnaces replaced the original multi-zone air system that was removed in 2004. The furnaces looked to be in very good condition with an expected life cycle of 10 more years maximum. There was one newer Lennox unit heater installed in the mechanical room and is in good operating condition.

The locker rooms are ventilated with an Engineered Air indoor gas fired makeup air unit and connected to the existing distribution ductwork to the change rooms.

In 2019 a Universal Change room was added to the building and this change room is ventilated with an Engineered Air roof mounted makeup air unit. This makeup air unit is interlocked with a new roof mounted exhaust fan.

An existing makeup air unit, located in the upper mechanical room, provides ventilation air to the Men's and Women's Change rooms and is interlocked with an existing with a roof mounted fan which exhausts air from the washrooms to the exterior. No deficiencies were observed or reported.

Pool Equipment Mechanical Room – The room is exhausted to the outdoors with a heat recovery ventilator installed to ventilate the room, no information was provided at the time of the site visit. There is also an electric unit heater that has been installed to provide heat into the room.

The Chlorine room for the pool is exhausted with a separate exhaust fan with an outdoor air intake to makeup the exhaust air. Access to the room was not available during the time of the walk-through.

Heating

There are two pool hot water heating boilers located in the mechanical room. The RBI boilers are in fair operating condition and were part of the major mechanical upgrades done in 2004. The lifecycle spreadsheet indicates that the boilers and related pumps have been regularly serviced to June 2022.

The pool and building heat exchangers appear to be in fair operating condition and have been regularly serviced with minor repairs to the copper piping connecting to the heat exchangers. The insulation on the heat exchangers is not in good condition and should be replaced with new.

4.3 Plumbing

In general, the plumbing fixtures in the building are well maintained with upgrades to the shower trim performed in 2019 when the Universal Change addition was added: The wash basins in the Men's and Women's washrooms were replaced in 2016 are in good condition.

Domestic Water Distribution - Domestic branch piping is copper and original to the building. The piping appears to be in acceptable condition and with no observed deficiencies.

Sanitary Waste - Waste and vent piping was generally concealed. No issues or concerns were reported at the time of the assessment.

Natural gas piping was observed to be in good condition, with no concerns reported.

Rain Water Drainage – Roof drains and related storm drainage piping are in good condition and no issues or concerns were reported at the time of the assessment. Domestic Water Heaters – two natural gas domestic water heaters are installed in the mechanical room for sinks and showers. The domestic water heaters are in good condition with no observed deficiencies.

4.4 Fire Protection

Portable fire extinguishers of various types are located throughout the building in strategic locations. They all appear to be in acceptable condition with recent inspections. There is also a fire water-main piped to fire hose cabinets installed throughout the building.

4.5 Controls

The building has an ESC digital controls system installed and no issues or concerns were reported at the time of the assessment.

Appendix D

ELECTRICAL REPORT

5 APPENDIX D - ELECTRICAL REPORT

> Cost to upgrade: $725,000 (*Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 11.0.)*
> *Implementation: 5 - 10 Years / >10 Years*

It is important to note that the assessment represents a point in time. The term "appears" is used because at the time of the assessment the element "appears" to be achieving a level of functionality. Those elements were not tested under different conditions nor was an invasive inspection done to gain more information (e.g. holes were not drilled).

5.1 General

The 1982 facility consists of three levels. The basement and second floor mechanical room are both service areas that are not accessible to the public. The majority of the secondary distribution panels are original to the building. The electrical installation is well maintained and equipment is well labelled. The building is serviced underground from a pad mount transformer located south and west of the southwest corner of the facility. Communication services are provided to the building via underground service cables.

5.2 Electrical Distribution

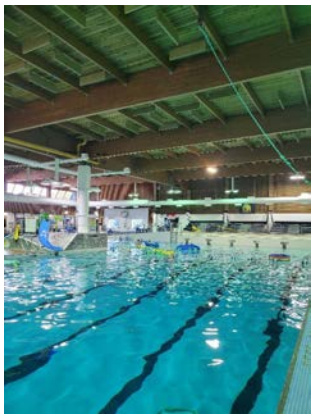
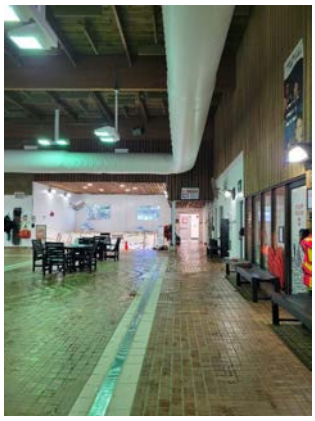
The electrical equipment appears to be a blend of original vintage equipment with some new equipment in the expansion space. Where the equipment is original, life cycle replacements should be considered to prevent equipment failure. The main distribution panel has two sections. The first section has a bus rated at 600A, 347/600V, 3 PH, 4W complete with a 400A main breaker. The second section has an 800A, 347/600V, 3 PH, 4W panel board. The main distribution panel feeds several mechanical units and a 150 kVA 600V//120/208V transformer. The transformer feeds a central distribution panel that sub-feeds multiple sub-panels, MUA-1, EF-1, the men's change room heater and the electric heater in the sauna.

Bonding to all electrical and mechanical was upgraded in 2017 and appears to be in excellent condition.

The mechanical starters are well labelled; however they appear to be original to the building and have reached the end of their expected service life. Life-cycle replacement of the starters should be considered at this time. (*Refer to Costing and Facility Condition Analysis Rating in Appendix F Section 11.0.)*

5.3 Interior Lighting & Controls

The interior lighting is a combination of fluorescent T8 strip lights, vapour tight fluorescent T8 strip lights, recessed fluorescent T8 fixtures, screw bases with cage (most with LED bulbs), pot lights, heat lamp pot lights, metal halide and LED lighting. The lighting in the pool area was redone in 2011 with metal halide fixtures. The remote ballasts for the fixtures are in the upper mechanical room and are hard to access. The lighting levels did not meet ABC 2014, 2014 additional lights were added to bring the light levels up to code. In 2019, a couple of LED fixtures were installed in key areas to test lighting levels and performance and one was added in the middle of the main pool area above the lanes to address lighting levels. LED fixtures were installed in key areas to test lighting levels and performance. Currently, the only LED installed for lighting levels is the fixture in the middle of the Main Pool area above the lanes. When we were on site, several locations on the deck still did not meet the requirements of the National Building Code – 2019 Alberta Edition, which requires 215 lux at both the deck level and on the surface of the water. As the facility was in operation, no levels were checked on the pool surface. It is recommended to address the deficiencies in the lighting level to meet code and provide additional safety for the users of the facility. Consideration should be given to replacing the existing fixtures with LED fixtures which use less energy and generally require less maintenance.

The interior lighting is controlled by local light switches for service rooms and by a lighting control panel behind the lobby desk for the public spaces. The switch in the staff change room has been changed out for an on/off complete with occupancy sensor wall switch. Several of the switches in the lighting control panel have tape labels indicating that they should not be turned on. If the switches are no longer in use, they should be replaced with blanks and abandoned wire should be removed back to source. Consideration should be given to adding vacancy sensors in the service areas. This would revise the lighting control to add automatic off if there is no occupancy for 30 minutes. The lights would still maintain manual on/manual off capability.

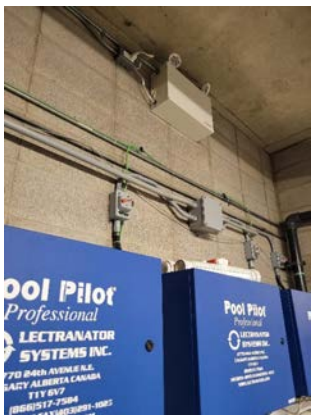

5.4 Exterior Power and Lighting

The exterior lighting operates at 347V. The exterior building mounted lights were replaced with new LED fixtures some time in the last 10 years. There are also two HID flood lights mounted on concrete bases at the northeast corner of the building. Exterior lighting is controlled by a lighting conductor and a hand off auto switch in the main electrical room. In auto, the lights are controlled by photoelectric cells.


The exterior receptacles have been upgraded to have the new in-use style weatherproof covers. Two of the covers were laying on the ground when we were on site. The covers should be re-attached to the junction boxes, and if damaged should be replaced.


5.5 Emergency Lighting and Exit Signs

Emergency lighting is provided by emergency battery packs complete with LED heads and additional remote LED heads were needed. All equipment appears to be in excellent condition. The emergency lighting battery pack in the filter room has a yellow caution LED illuminated and should be investigated and repaired if required.



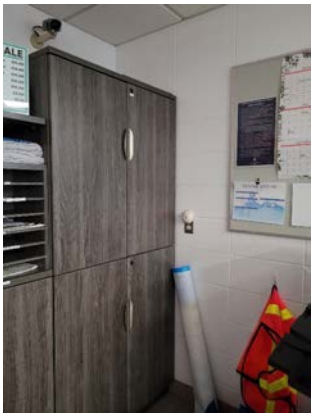
Exit signs are green running man style and appear to be in excellent condition.

5.6 Fire Alarm

The fire alarm system is a Simplex Fire Control 4007 panel located in the main electrical room. There is also a fire alarm dialer located in the main electrical room. The fire alarm annunciator is located in the main vestibule to the building. The system is complete with pull stations, heat detectors, smoke detectors and horn/strobe devices.

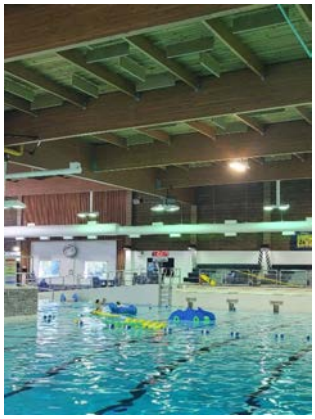
5.7 Security and CCTV

There is a security camera mounted behind the front desk facing out to the public area, as well as two exterior mounted cameras facing the parking lot on the west side of the building.



5.8 Audio System

The Audio system equipment is located behind the main desk in the lobby. The speakers in the pool area are suspended from the ceiling. The equipment appears to be in good condition.



Appendix E

WATER TECHNOLOGY INC.
AQUATICS EVALUATION REPORT

6 APPENDIX E - WATER TECHNOLOGY INC. AQUATICS EVALUATION REPORT

6.1 General Overview

WTI has been commissioned by the City of Fort Saskatchewan to report on the current condition of the existing indoor pool located at 10001 94 Avenue. WTI visited the facility on August 23, 2022, toured the pool and related amenities, and met with staff to discuss operations. The enclosed report documents the observations from the site visit and outlines recommended capital and operational changes. Major components of the aquatic amenities have been given a score based on their observed condition, and these scores are weighted and aggregated to provide a total score. Below is a summary outline of the condition scores, recommendations, and estimated capital costs.

The Total Aggregated Evaluation Score is shown below, and out of a possible high score of 100, is an indication of the condition of the aquatic amenities.

Total Aggregated Evaluation Score: 66.25

The condition of a facility is a major determination of the effort and cost of maintaining the utility and value of the amenities. A deteriorated facility will demand higher annual operating expenses over time as parts break, systems fail, finishes deteriorate, and structures weaken. There are also efficiencies lost when operating aging systems or equipment which are unable to take advantage of current methods and financially sustainable practices. The recommended repairs, replacements and renovations detailed in this report seek to modernize aquatic components and maintain the efficient lifespan of the facility.

The facility is in remarkable condition for its age in comparison to other aquatics facilities in similar age and which typically would score below 50. It is evident staff has maintained important aspects of the pools and continue to take preventative action to preserve the value of the facility. However, it is not to say that there are items that will need to be addressed for optimization. Most items preventing a higher evaluation score are aspects inherent to the original pool design. This report will discuss strategies and options for address and operating with these less-than-optimal aspects.

Below are the recommendations based on the observed condition of the aquatic components. A detailed description for each recommendation is included further in the report. Furthermore, several potential enhancements are discussed for future means of improvement to the existing aquatic amenities.

Recommendations:

- Monitor Cracks in Pool Vessel
- Inspect and Clean Wave Caissons
- Inspect and Repair Rust Spots on Whirlpool Finish
- Modify Diving Stand Railings for Clearance Compliance
- Inspect and Unblock Whirlpool Air Intakes
- Repair Whirlpool Vacuum Gauge
- Clean and Repair Main Pool Hydroxan Fitting
- Replace Corroded Pipe Couplings
- Install Pipe Hanger

Potential Enhancements:

- Replace Pool Tile Finish
- Construct Perimeter Gutter at Beach Entry
- Remove Caissons and Elevated Pool Deck
- Install Wave Blowers with Variable Control
- Install Regenerative Media Filtration

6.2 Introduction

The purpose of this evaluation is to review the present condition of the aquatic amenities and aquatic mechanical systems at the existing Harbour Pool facility. The evaluation consists of visual examination of the pools and associated mechanical equipment. The report outlines the present condition of the systems, equipment, and components and provides recommendations for repairs or replacements. Each recommendation is given an estimated range for the probable cost to construct, install, or perform the renovation or repair. It is important to note that the assessment represents a point in time. The term “appears” is used because at the time of the assessment the element “appears” to be achieving a level of functionality. Those elements were not tested under different conditions nor was an invasive inspection done to gain more information (e.g. holes were not drilled).

The aquatic center is a stand-alone aquatic facility serving the community of Fort Saskatchewan. The facility holds

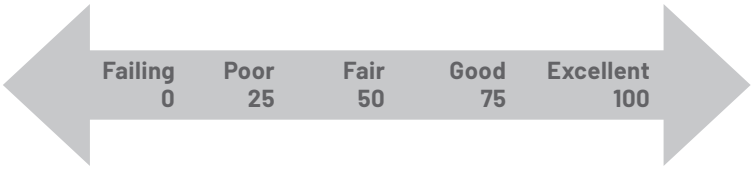
two bodies of water with three separate pool mechanical systems. The main pool is both a lap lane pool and leisure pool with zero depth entry and spray features. The main pool has six 25-metre lap lanes and one springboard diving board. The main pool and warm water pool, while having separate pool mechanical systems, are constructed as a single pool vessel and share a single body of water. These two pool areas are connected with a narrow in-pool walkway allowing users to walk from one area to the other without leaving the water. The main pool and warm water pool are kept at separate water temperatures. To the west of the warm water pool is a whirlpool/spa.

The main pool and whirlpool are constructed with concrete and the interior finish is tiles. The pools are filtered using open tank vacuum DE filtration. The pool is disinfected with a chlorine residual produced by an in-situ salt chlorine generation system. The pH and alkalinity are controlled using injection of Carbon Dioxide and a Sodium Bisulfate slurry. Pool water heating is provided with heat exchangers connected to the building boiler system.

6.3 Methodology

WTI observed the condition of the aquatic elements at the facility. Aquatic elements include pool vessels, water features, pool filtration systems, pool circulation pumps, piping, valves and controls, and water treatment systems. Observations were conducted in a non-destructive manner and did not involve the removal of any structures or disassembly of any equipment.

Major components of the aquatic systems and structures are categorized in the report and scored based on their observed condition. The condition scores are weighted and aggregated to produce an overall evaluation score. Potential scores range from zero to one hundred, representing the condition descriptions below:



Total evaluation scores for the pool and aquatic amenities are compiled and weighted to create a total aggregated evaluation score. The total aggregated evaluation score provides an indication of the overall condition of the aquatic amenities of the facility.

Included in the report are observations and indications of the condition of the accessible means of pool entry and exit. WTI has endeavored to identify problems with the means of access and potential non-compliance with the accessibility standards. Observations and evaluations included in this report do not constitute certification or verification of compliance with barrier free requirements. Accessibility compliance is a legal opinion, and WTI is not able to anticipate or guarantee judicial interpretation with respect to a facility's legal compliance. WTI recommendations are based on a current understanding of the technical requirements of accessibility regulations on aquatic amenities.

Compliance with suction fitting regulations with respect to entrapment has not been verified or investigated as a part of this evaluation and report. Any statements regarding drains, suction fittings, or any other component are preliminary observations only, and further inspection to substantiate compliance is necessary.

The cost amounts associated with the provided recommendations are the opinion of WTI based on a professional understanding of market conditions. Cost amounts have not been trade or contractor verified, and are intended only to provide guidance for a preliminary aquatic budget.

6.4 Evaluation Score

Below are categories of major components of the aquatic amenities. A ranking of the condition of each category is indicated with an associated score. The resulting weighted score, when aggregated, helps to indicate the overall condition and utility of the existing aquatic amenities.

Evaluation Score (WTI)					
Item	Type/Style	Condition Rank	Condition Score	Weight Value	Total Score
Pool Vessel	Steel Reinforced Concrete	Good	75	0.100	7.50
Pool Finish	Ceramic Tile and Grout	Good	75	0.050	3.75
Pool Surface Water Collection	In-Wall Skimmer with Grating	Poor	25	0.100	2.50
Pool Accessibility	Barrier Free Ramp Entry	Good	75	0.050	3.75
Pool Ladders	Recessed Step, Stainless Steel Handrails	Poor	25	0.025	0.63
Underwater Lighting	Recessed In-Wall, Wet Niche	Good	75	0.025	1.88
Main Drains	Anti-Entrapment Covers	Good	75	0.075	5.63
Return Inlets	Floor Inlets	Good	75	0.050	3.75
Piping	PVC	Good	75	0.050	3.75
Filtration	Vacuum DE	Fair	50	0.100	5.00
Circulation Pump	Flooded Suction Centrifugal Impeller	Good	75	0.050	3.75
Circulation Valves	Manual Butterfly	Excellent	100	0.050	5.00
Chemical Control	Automatic Controller	Good	75	0.050	3.75
Chemical Storage and Safety	Storage Room	Excellent	100	0.050	5.00
Primary Disinfection	Salt Chlorine Generation	Good	75	0.050	3.75
Supplemental Disinfection	None	Failing	0	0.50	0.00
Chemical Balance	Carbon Dioxide and Sodium Bisulfate	Excellent	100	0.050	5.00
Pool Water Heating	Heat Exchanger	Good	75	0.025	1.88

Total Pool Score Weight	Evaluation Score
1.00	**66.27**

6.5 Observations

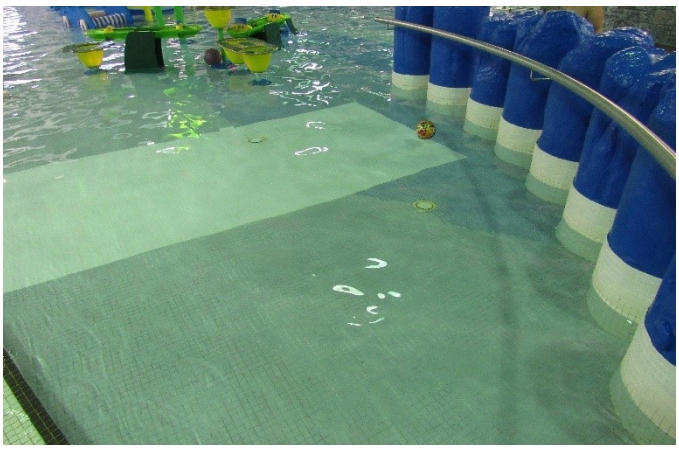
The main pool concrete pool vessel has had some cracking, and potentially leaking. These cracks are visible in the subgrade mechanical and storage spaces partially around the pool vessel. However, it appears all visible cracking has been properly repaired.

The pool was originally constructed with wave caissons and blowers to generate wave actions in the pool. However, staff reports this wave system could not be used without overflowing water beyond the beach entry and flooding the deck. Operation of the wave system was ceased shortly after original construction and has not been used since. Blowers have been removed and the associated openings to the top of the wave caissons has been covered.

Subgrade spaces around the pool vessel have been used as storage to equipment and maintenance supplies. Storage items are well organized and labeled.

The whirlpool has a few limited locations where rust is developing on the pool finish. These type of rust stains, particularly in the joints of two walls or wall and floor, are concerning as they may indicate rusting of the steel reinforcement in the concrete.

The interior of the pools is finished with ceramic tile and grout. The tile is in good condition, and it is evident tile and grout replacements have been made periodically. Pool water chemistry has an enormous impact on cementitious pool finishes such as tile grout. The salt added to the pool water for the salt chlorine generation system increases the corrosive nature of the water making pool finish replacements and repairs more frequent.

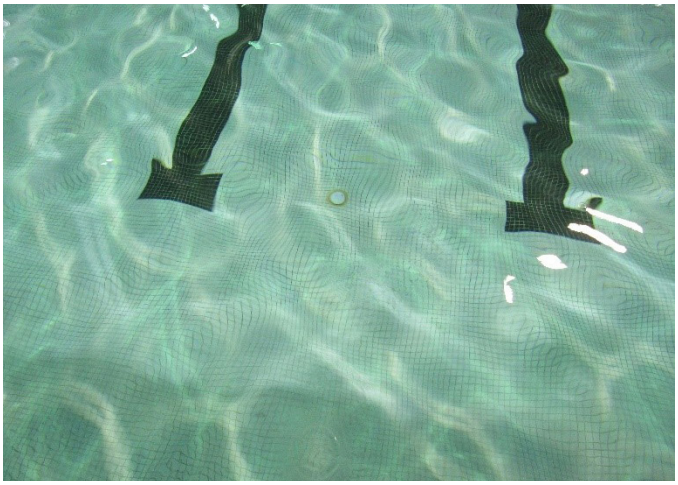


Surface water is collected in the main pool and whirlpool using in-wall skimmers with vertical grating. This method of water collection is inferior to a perimeter gutter with respect to the ability to remove contaminants from the water surface. Furthermore, accessing the skimmers to clean debris or repair damage is inconvenient as there is no top access from the deck.

A gutter is constructed along the edge of the beach style entry of the shallow area of the pool. However, this gutter is not designed for continuous surface water collection, and the pool water, at normal operating levels, does not reach this gutter. The gutter was installed to collect overflow from the operation of the wave generation system (which is no longer in use).

The beach entry area gutter has a single drop out.

The pool water is returned to the pool vessel from the filtration and water treatment system through inlet diffusers in the pool floor. The floor inlets appear to be properly distributed and in good condition with minimal staining.

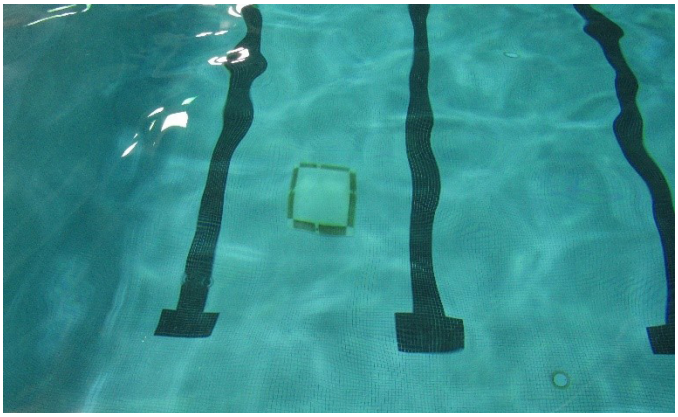


Due to the construction of wave caissons, two sizes of the main pool in the lap lane area are raised high above the water level. This creates an extremely high vertical distance from the pool water level to the pool deck. While pool ladders in this area are code compliant, egress from the pool water in these areas is difficult and dangerous for any user without sufficient physical climbing abilities. Without a functioning wave system, this deck height and difficulty in pool exiting is unnecessary.

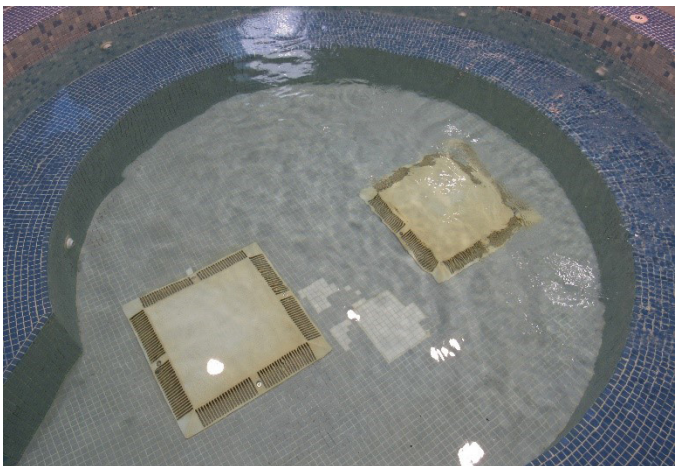
The pool deck is finish in tile with raised circular texture. Coefficient of friction was not tested as a part of this evaluation, however, by subjective feel the surface appears to have sufficient slip resistance.

The deck clearance behind the diving stand, or distance between the wall and diving stand, is insufficient and not code compliant. There needs to be a minimum of 0.9 metres, or about 3 feet, of unobstructed clearance behind the diving stand.

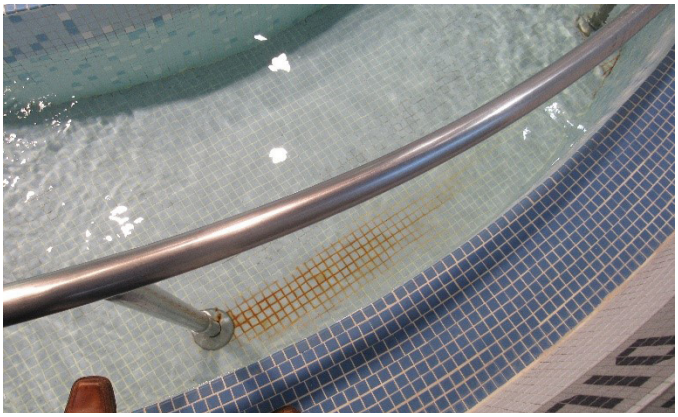
Close inspection of the main drain covers was not possible at the time of the site visit as the pool was filled. However, the covers appear to be 30-inch Aegis covers.



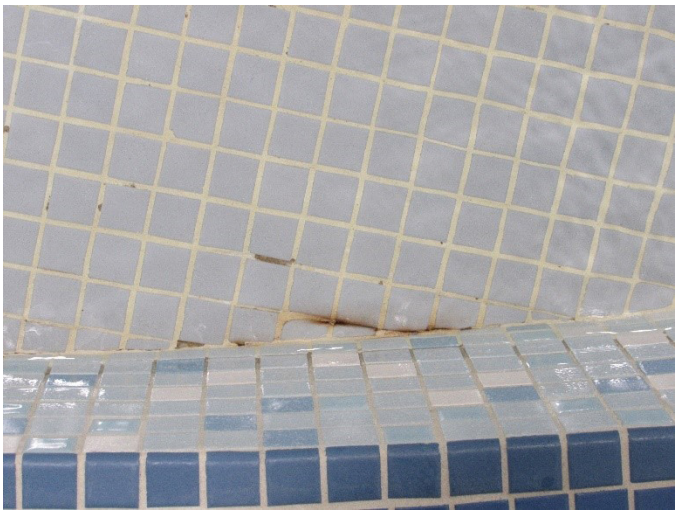
Dual main drains in the whirlpool.



Rust deposits in the whirlpool, appears to be from corrosion of the handrail post and/or anchor.



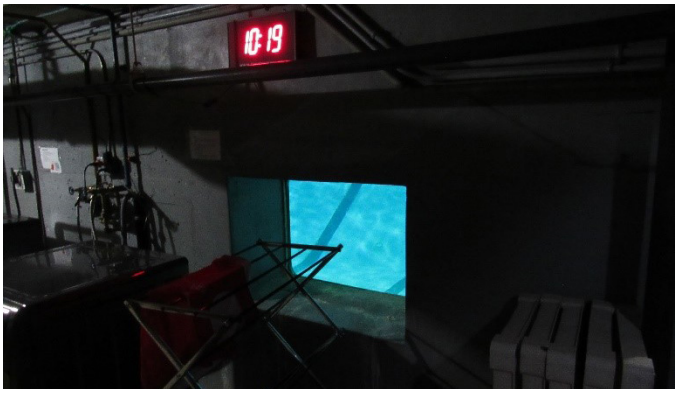
Spot of corrosion in whirlpool. Potentially from a deposit of rust or corrosion of the pool vessel from under grout.



Location of corrosion in whirlpool. Potentially from corrosion from the pool vessel or nearby handrail/anchor.

Some of the air intakes for the whirlpool jets are not pulling in air when jets are in use. This causes the remaining intakes to whistle. Staff has tried to mitigate this whistle with foam at the opening of the intakes. It is assumed the non-functioning intakes have some type of blockage.

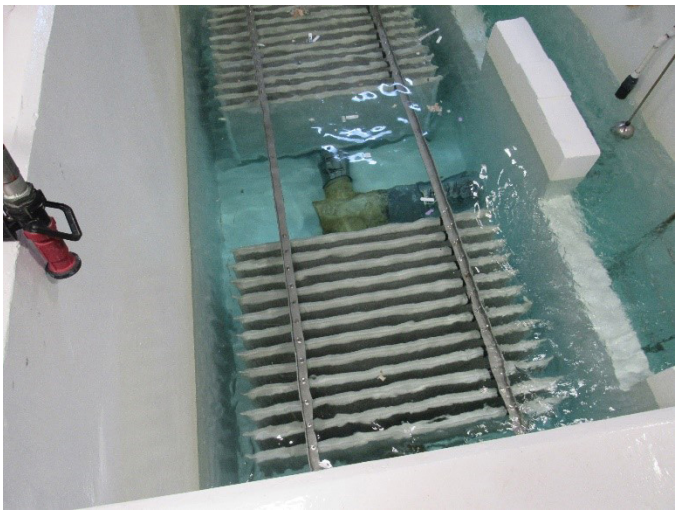
The main pool has two underwater viewing windows. Some efflorescence existing around and in the opening to the window, but both windows appear to be in good condition. The concrete and seals around the windows should be monitored frequently to prevent failure.



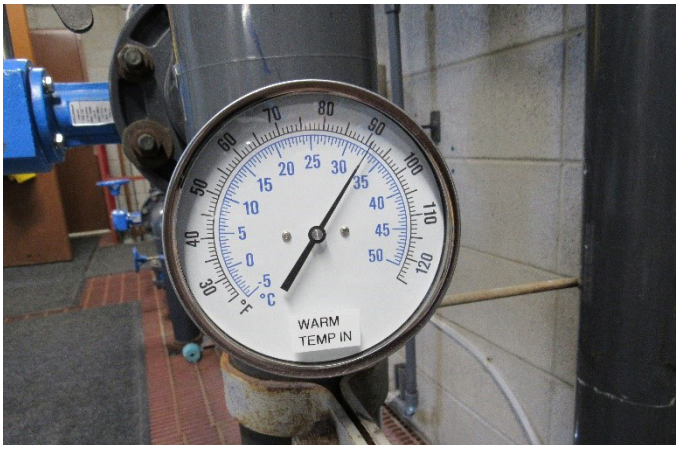
Carbon dioxide pressure storage tanks are located in the formerly chlorine gas storage room, separated from the rest of the mechanical room.

Salt chlorine generation system electrolytic cells are well mounted and easily accessible for replacement.

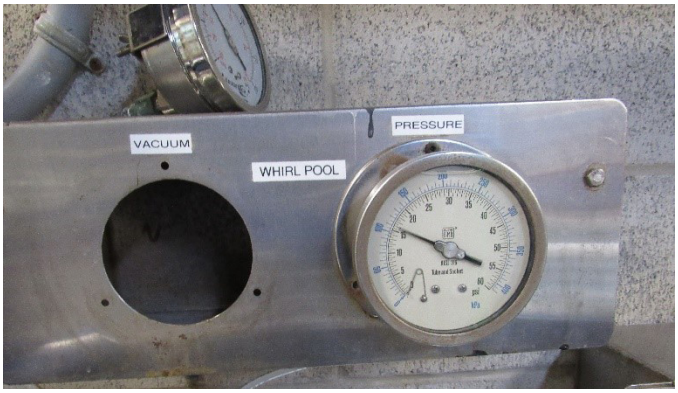
The vacuum DE systems appear to be in good condition. Grids and grid framing have little corrosion and grid cloth is intact and well coated. The tank interior is painted and the paint surface in adhering and has little staining.



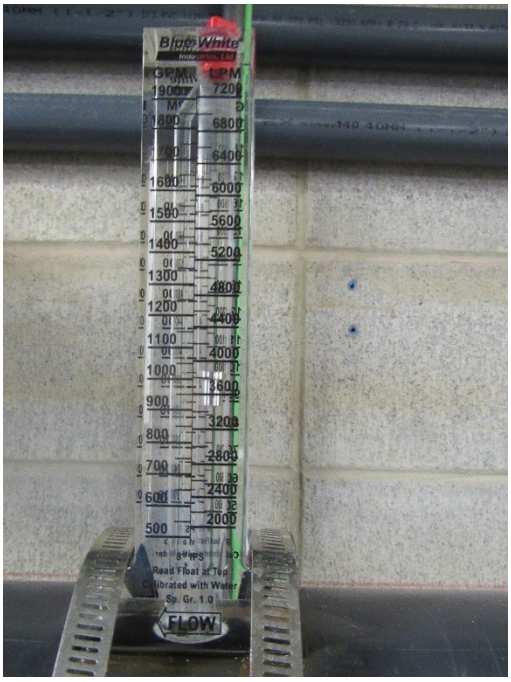
Temperature gauges are functioning and readable.



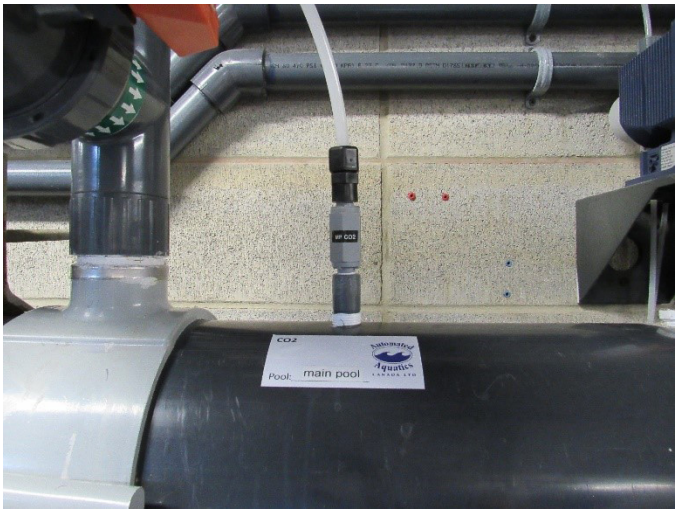
Vacuum gauge for the whirlpool is not installed or functioning. Pressure gauge is installed. Pressure and vacuum gauges for the main pool and warm pool are functioning.



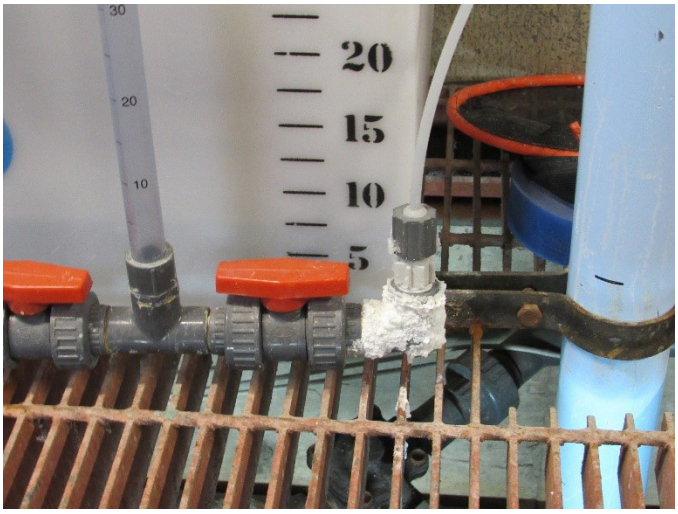
Analog flow meters are functioning and visible.



Chemical injection points for carbon dioxide and sodium bisulfate are clean and functioning.



Mineral buildup on one fitting for the main pool Hydroxan supply. Check for minor leaking.



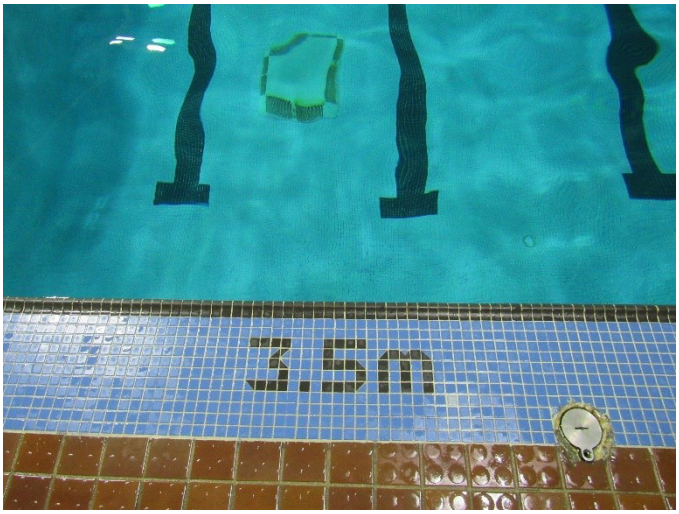
Chemical controllers are functioning and appear accurately calibrated.

Chemical storage room will well organized and labeled. Room contains sodium bisulfate slurry tank, salt, sodium bicarbonate, sodium sulfite, and other pool chemicals in small quantities.

Piping, fittings, and valves of the pool circulation system are in good condition with a few exceptions. There are three couplings on drain lines in the pump pit will significant corrosion. Replacement is necessary.

Pool piping hangers and supports are in good condition with one exception: in the pump pit one horizontal section of pipe is partially supported with rope. Steel hangers should installed to properly support the piping.

Pool depths are properly marked in both metric and imperial.



The colors of the pool floor tile in the shallow area of the pool are several shades of blue. Alberta pool regulations require the pool basin to be white. The pool was originally designed permitted with this color pattern; therefore some level of "grandfathered" status likely exists to allow the tile to remain. However, any future tile repairs or replacements should be completed with white tile only.

6.6 Recommendations

MONITOR CRACKS IN POOL VESSEL

The cracks in the main pool vessel have been repaired with what appears to be an epoxy injection. These repairs seem sufficient and in good condition. However, the pool should be monitored closely for any continued cracking or failure of the existing crack repair. Cracking suggests possible movement or weakening of the pool vessel, and any future failure needs to be addressed quickly to prevent the need for significant renovations. The corrosion of the steel reinforcement within the concrete is a primary concern with any leaching of water into the concrete. This concern is heightened with the salt content of the pool water and its increased corrosion potential.

Probable Cost: $0 – Operational Staff Procedure

Implementation: Less than 5 Years (should be incorporated into annual maintenance procedures)

INSPECT AND CLEAN WAVE CAISSONS

The unused waive caissons should be regularly inspected and cleaned of any debris or biological growth. These unused areas, being difficult to access and without thorough water circulation, are subject to collection of dirt and growth of algae or bacteria. Manually vacuuming and brushing the inside of the caissons will help to keep them clean and improve the overall quality of the pool water.

Probable Cost: $0 – Operational Staff Procedure

Implementation: Less than 5 Years (should be incorporated into annual maintenance procedures)

INSPECT AND REPAIR RUST SPOTS ON WHIRLPOOL FINISH

On the spots in the whirlpool with visible rust the grout and tile should be removed so the vessel concrete can be inspected. The grout and tile can be replaced if it can be confirmed the rust stains are not emanating from the concrete or a concrete joint. If the rust is from the concrete proper crack or joint repair should be performed prior to replacement of the tile and grout.

Probable Cost: $6,000 to $12,000 CAD

Implementation: Less than 5 Years

MODIFY DIVING STAND RAILINGS FOR CLEARANCE COMPLIANCE

The diving stand currently does not meet the Alberta pool regulation standard of a minimum of 900mm of unobstructed deck clearance behind the diving board. This clearance is crucial to provide proper access around the pool, particularly in the case of an emergency. This access is even more significant for the Harbour Pool as access to the opposite side of the pool from the entrance is inconvenient in the other direction around the pool, which involves traveling up ramps and over the top deck above the caissons.

Record drawings of the diving stand indicate the back of the stand to be constructed exactly 900mm from the building wall. Tape measurements at the time of observation confirm the concrete pedestal of the stand is approximately 900mm from the wall, however, the stainless-steel handrails extend beyond the pedestal and obstruct this clearance. A solution is likely possible which involves modification of the handrail location without any other more extensive changes.

Probable Cost: $3,000 to $8,000 CAD

Implementation: Less than 5 Years

INSPECT AND UNBLOCK WHIRLPOOL AIR INTAKES

The functioning air intakes in the whirlpool are "whistling" due to the blockage of other intake connections. Inspecting an unblocking all air lines should help lower the velocity of air through the functioning intakes and stop or elevate the whistling noise.

Probable Cost: $1,000 to $3,000 CAD

Implementation: Less than 5 Years

REPAIR WHIRLPOOL VACUUM GAUGE

The whirlpool non-operating vacuum gauge should be reinstalled and replaced if not operable. Having an accurate reading of the differential between the pressure and suction sides of the circulation system is important for the optimal operation of the filtration system.

Probable Cost: $300 to $600 CAD

Implementation: Less than 5 Years

CLEAN AND REPAIR MAIN POOL HYDROXAN FITTING

Mineral buildup on a fitting on the injection tubing for the Hydroxan solution of the main pool should be cleaned and the fitting inspected for leaking. Mineral buildup on these types of chemical fittings is common, and not a cause for concern unless due to significant leaking, which would typically result in a much great amount of chemical crystallization on the fitting. If leaking is evident, the fitting should be replaced.

Probable Cost: $200 to $400 CAD

Implementation: Less than 5 Years

REPLACE CORRODED PIPE COUPLINGS

Three steel pipe couplings in the pump pit are badly corroded and should be replaced. Corrosion on the piping components increases the risk of component failure and potential flooding of the pump pit. The couplings should be replaced, preferably with PVC fittings.

Probable Cost: $2,000 to $4,000 CAD

Implementation: Less than 5 Years

INSTALL PIPE HANGER

A horizontal section of pool piping is currently supported with a hanging rope from the ceiling. All piping should be properly supported with steel hangers, and the rope support should be replaced. Proper support of piping is important to prevent damage from potential seismic activity, pipe knocks / pressure surges, or facility structural movements.

Probable Cost: $1,500 to $3,000 CAD

Implementation: Less than 5 Years

6.7 Potential Enhancements

The previously discussed recommendations are necessary to maintain the aquatic components of the facility in proper working order. The following Potential Enhancements may be undertaken at the City's discretion to help improve and modernize the pool amenities. These enhancements focus on renovations altering the existing pool to best match modern standards of quality and compliance and be supported by today's advanced mechanical systems. While not necessary for the ongoing operation of the aquatic amenities, they are worthy of consideration, particularly in conjunction with any other significant renovation, alteration, or addition to the facility.

REPLACE POOL TILE FINISH

As discussed in the Observations section, the shallow area of the pool floor tile is colored several shades of blue. Code requires white pool finishes. Any other significant renovation of the pool amenities may require updating the pool finish to comply with this code requirement. Also, repairs to the isolated spots of the pool finish have been made over time, and should complete replacement of the pool tile necessary, the new finish should be completed in white only.

Probable Cost: $400,000 to $600,000 CAD

Implementation: 5 Years to 10 Years

CONSTRUCT PERIMETER GUTTER AT BEACH ENTRY

The existing gutter at the beach entry is non-functioning aside from collection of bather splash-out and is followed by a small ledge requiring a step down into the water. This design arrangement is unnecessary with a non-functioning wave generation system. The beach entry area could be reconstructed with a true, continuously functioning gutter to collect surface water. This would not only eliminate the step, creating a flush zero depth entry, but also create a highly effective surface skimming mechanism along the entire edge of the shallow area; which is the zone with the greatest bather contamination.

Probable Cost: $100,000 to $200,000 CAD

Implementation: 5 Years to 10 Years

REMOVE CAISSONS AND ELEVATED POOL DECK

With the lack of a wave generation system the elevated deck and high vertical wall on two sides of the pool is unnecessary. This raised deck presents a safety hazard and hinders incidence response. While the elevated position

improves lifeguard visibility, it is a significant impediment to many swimmers from exiting the water on those two sides of the pool. Also, it is extremely difficult to remove an injured swimmer to these elevated deck positions, thereby potentially requiring an emergency extraction from the far side of the pool to be brought across the water to the more accessible edge of the pool. Lowering the pool deck would improve safety, as well as greatly increase the utility of the deck area for general use. Greater access to the pool with a water level deck would increase user ability to recreate and relax in these deck areas.

Should a capital investment be allocated toward lowering the elevated deck, it would also be advantageous to consider extending the installation of a deck level gutter discussed previously for the beach entry around the entire perimeter of the pool. A deck level perimeter gutter, in comparison to the existing skimmers, is a much more effective method of removing surface water contamination, and with the lowering of the elevated deck, much of this pool edge would already be in the process of reconstruction.

Probable Cost: $700,000 to $1,100,000 CAD

Implementation: 5 Years to 10 Years

INSTALL WAVE BLOWERS WITH VARIABLE CONTROL

If there is not a desire to install deck level gutters or lower the elevated deck, the City may consider bringing wave creation abilities back into operation. Staff reports the original problem was an inability to contain the waves created by the original wave equipment. This may have been due to overpowered blower systems, an insufficiently designed pool vessel for wave containment, or a combination of both. Today wave blowers can be installed with variable adjustments to precisely control the size and intensity of the wave generated. A new system will very likely not produce the size waves originally intended without the same wave containment issues but will be capable of at least producing small waves for play and amusement.

Probable Cost: $150,000 to $250,000 CAD

Implementation: Less than 5 Years

INSTALL REGENERATIVE MEDIA FILTRATION

The existing vacuum DE filtration system have been excellently maintained by staff over the life of the facility, and the system appears to be maintaining high water quality. However, as a historically traditional filtration method, vacuum DE filters are not the most efficient form of filtration with respect to water consumption. In an effort to lower the water usage of the pools, regenerative media filters may be installed.

In a regenerative media filtration system, pool water passes through a pressure tank with septums coated with perlite to remove particles and contaminates. This perlite coating is a safer substitute for DE and is what the facility is currently using on the grids of the existing vacuum DE filter. Dirt and contaminants get caught in the perlite media, but unlike a traditional vacuum DE filter, the regenerative media filter using a regenerative "bump" cycle. This cycle mechanically separates media that successfully trapped dirt or debris from cleaner media with remaining filtration capacity. This process prolongs the life and filtration ability of the media cycle and greatly reduces the waste of water. The regenerative cycle is fully automated to optimize the filtration performance and is initiated by the operator's command. Prolonging the cycle and filtration ability of the perlite coating saves in media usage and water usage, which thereby further saves in water heating and chemical costs.

Probable Cost: $200,000 to $300,000 CAD

Implementation: 5 Years to 10 Years

INSTALL ULTRAVIOLET SUPPLEMENTAL DISINFECTION

A primary disinfection chemical is necessary to disinfect and oxidize contaminates and maintain a residual throughout all areas of the pool water. However, it is almost impossible for even a strong oxidizer to completely remove all bacteria and pathogens from a busy, crowded pool. Further, chloramines and disinfection byproducts, a result of the oxidation process, are also present in pool water and increase as pool occupancy increases. Supplementary sanitation, a secondary method of disinfecting the pool water beyond maintaining a residual of chlorine in the water, is crucial to mitigating these remaining contaminations. Currently the pool has no method of providing supplementary sanitation. An ultraviolet sanitation system should be installed to provide effective supplementary sanitation. Pool water will pass through a medium pressure ultraviolet light chamber. In this chamber, ultraviolet bulbs will flood the passing pool water with ultraviolet radiation to kill bacteria and breakdown contaminants. Exposure to ultraviolet light inactivates biological contaminants and reduces noxious chloramines, thus providing a means of secondary treatment of pool water.

Probable Cost: $100,000 CAD to $150,000 CAD

Implementation: Less than 5 years

Appendix F

COSTING ESTIMATES

7 APPENDIX F - COSTING ESTIMATES

PROJECT NAME: Harbour Pool

CHART RATING DEFINITIONS:

Existing Facility Analysis

(1) Critical: Unsafe, high risk of injury or critical system failure.
(2) Poor: Does not meet requirements, has significant deficiencies. May have high operating / maintenance costs.
(3) Marginal: Meets minimum requirements, has significant deficiencies. May have above average operating maintenance costs.
(4) Acceptable: Meets present requirements, minor deficiencies. Average operating / maintenance costs.
(5) Good: Meets all present requirements. No deficiencies noted.
(6) Excellent: As new / state-of-the-art, meets present and foreseeable requirements.
(FI) Requires further investigation
(N/A) Not applicable
(CU) Currently being upgraded

Life Expectancy: Less than 5 years for replacement (<5); 5 to 10 years (5-10); greater than 10 years (>10)

Priority: High (H); Medium (M); Low (L)

Future Expansion: Can be expanded (Yes); No capacity for expansion (No)

Life / Safety Code Infringement: Meets code (No); Does not meet code or endangers life (Yes)

Building Planning Strategies

(a) Location Strategy: Is the building located strategically to capture market.
(b) Reinvestment Strategy: Minor upgrades to the building required to maintain facility.
(c) Revitalize Strategy: Renovations and additions that are required to meet current standards for facilities.
(d) Build New Strategy: Due to the current facility conditions, recommendation is to rebuild facility.

BUILDING VENUE: Harbour Pool

ARCHITECTURAL / STRUCTURAL

Component Reference	Rating (1-6)	FI FI	Life Expectancy (<5, 5-10, >10)	Priority (H, M, L)	Life Safety Code Infringe- NO/YES	Cost to Upgrade (+/- $5,000)
1 History						
1.1 No applicable costs or information	N/A	N/A	N/A	N/A	NO	$ -
					SUBTOTAL	**$ -**
2 Site *(page 11-12)*						
2.1 Existing sidewalk maintenance - General Maintenance	5	N/A	>10	L	NO	$ 25,000.00
					SUBTOTAL	**$ 25,000.00**
2.2 Existing stoop maintenance & addition - Maintenance on concrete stoops - Install concrete pads at two doors located at the south façade	2	N/A	5-10	H	NO	$ 50,000.00
					SUBTOTAL	**$ 50,000.00**
2.2 Parking paving and maintenance	4	N/A	5-10	L	NO	$ 750,000.00
					SUBTOTAL	**$ 750,000.00**
2.3 Roof drainage surface maintenance	5	N/A	>10	L	NO	$ 25,000.00
					SUBTOTAL	**$ 25,000.00**
3 General Construction *(page 12-15)*						
3.1 General long term maintenance	3	N/A	5-10	M	NO	$ 100,000.00
					SUBTOTAL	**$ 100,000.00**
3.2 Structural reviews and repairs	3/4	N/A	>10	L	NO	$ 25,000.00
					SUBTOTAL	**$ 25,000.00**

BUILDING VENUE: Harbour Pool

ARCHITECTURAL / STRUCTURAL

Component Reference	Rating (1-6)	FI FI	Life Expectancy (<5, 5-10, >10)	Priority (H, M, L)	Life Safety Code Infringe- NO/YES	Cost to Upgrade (+/- $5,000)
4 Building Envelope *(page 6-9)*						
4.1 Exterior Original Cladding	2	N/A	<5	H	NO	$ 650,000.00
- Replacement of original cladding around perimeter of aquatics facility - Replacement of sloped cladding at standing seem roof location					**SUBTOTAL**	**$ 650,000.00**
4.2 Exterior 2018 Cladding	6	N/A	>10	L	NO	$ 25,000.00
- General maintenance					**SUBTOTAL**	**$ 25,000.00**
4.3 Exterior window replacement	4	FI	5-10	H	NO	$ 125,000.00
					SUBTOTAL	**$ 125,000.00**
4.4 SBS Roof replacement	4	FI	5-10	H	NO	$ 350,000.00
- Remediation of areas where ponding is occurring					**SUBTOTAL**	**$ 350,000.00**
4.5 Standing Seam roof maintenance	4	FI	5-10	H	NO	$ 25,000.00
- General Maintenance					**SUBTOTAL**	**$ 25,000.00**
4.6 Exterior doors/frames maintenance	2	N/A	<5	H	NO	$ 100,000.00
- Install sill flashing at concrete top of south exterior door - Replace sill along east façade due to significant slop transition - Replace doors with damage, dents and corrosion from interior side					**SUBTOTAL**	**$ 100,000.00**
5 General Area Spaces and Interior Finishes *(page 15-23)*						
5.1 Lobby Area Finishes	5	N/A	5-10	H	NO	$ 50,000.00
- Investigate drainage in natatorium and replace areas of floating tile near natatorium viewing area in the lobby					**SUBTOTAL**	**$ 50,000.00**
5.2 Public/Accessible Washrooms	5-6	N/A	>10	L	NO	$ 15,000.00
- Replacement of caulking along millwork backsplash, sink perimeter, and toilet base in Public and Accessible Washrooms					**SUBTOTAL**	**$ 15,000.00**
5.2 Multipurpose	3	N/A	5-10	H	YES	$ 90,000.00
- Replacement of door and wall system to fire rated assembly is strongly recommended for storage room - Further investigation required; shifting and misalignment of tile in certain areas, replacement may be required - Replacement of ceiling, damaged present on substantial area					**SUBTOTAL**	**$ 90,000.00**
5.3 Change Rooms	2	N/A	<5	H	YES	$ 100,000.00
- Replacement of the current drainage to a grate system with proper seal - Review and replacement of floating tile and drainage - Review and replacement of cove base					**SUBTOTAL**	**$ 100,000.00**
5.4 Staff Area	3	N/A	5-10	H	NO	$ 30,000.00
- Replacement of change room partitions to full height					**SUBTOTAL**	**$ 30,000.00**
5.5 Natatorium	3-4	FI	<5	M	NO	$ 500,000.00
- Repair 22% of overall pool tile due to delamination found in change test; replace damaged tiles immediately; 10 year replacement of entire deck tiles						

BUILDING VENUE: Harbour Pool

ARCHITECTURAL / STRUCTURAL

Component Reference	Rating (1-6)	FI FI	Life Expectancy (<5, 5-10, >10)	Priority (H, M, L)	Life Safety Code Infringe- NO/YES	Cost to Upgrade (+/- $5,000)
- Replace caulking between block walls and concrete columns (regular maintenance recommended)						
- Further review and investigation required; deck drainage have delamination and warping; replacement recommended						
					SUBTOTAL	**$ 500,000.00**
5.6 Natatorium Storage	3	FI	<5	H	YES	$ 150,000.00
- Replacement of door frame, hardware due to corrosion						
- Adjacent base tile in area requires replacement					**SUBTOTAL**	**$ 150,000.00**
5.7 Mechanical Rooms	3	FI	5-10	H	NO	$ 50,000.00
- General Maintenance					**SUBTOTAL**	**$ 50,000.00**
5.8 Basement	2	N/A	<5	H	YES	$ 110,000.00
- Replace storage door with fire rated assembly; wall and floor should be fire caulked and sealed						
- Further investigation required where staining and water penetration is seen; remediation required						
- Replacement of windows looking into pool basin area					**SUBTOTAL**	**$ 110,000.00**
					ARCHITECTURAL SUB TOTAL	**$ 3,345,000.00**
6 Specific Non-architectural and operational design issues *(page 24-25)*						
6.1 Structural repairs and remediation	3	FI	<5	L	NO	$ 100,000.00
- General structure maintenance and remediation					**STRUCTURAL SUBTOTAL**	**$ 100,000.00**
10 Mechanical concerns and observations *(page 29-31)*						
10.1 HVAC systems Maintenance and ductwork	4/5	N/A	>10	L	NO	$ 225,000.00
					SUBTOTAL	**$ 225,000.00**
Existing mechanical units - Heating 10.2 Boilers, Pool Air System, Furnaces	3	FI	5-10	M	NO	$ 750,000.00
- Replacement of heat exchangers					**SUBTOTAL**	**$ 750,000.00**
10.3 Existing mechanical piping/drains	3	FI	5-10	M	NO	$ 100,000.00
					SUBTOTAL	**$ 100,000.00**
					MECHANICAL SUB TOTAL	**$ 1,075,000.00**
11 Electrical concerns and observations *(page 23-25)*						
11.1 Electrical panels and upgrades	2-3	N/A	5-10	M	NO	$ 300,000.00
					SUBTOTAL	**$ 300,000.00**
11.2 Wiring and controls upgrades	3	N/A	5-10	M	NO	$ 75,000.00
					SUBTOTAL	**$ 75,000.00**
11.3 General lighting replacement						
- Natatorium Lighting	2	N/A	5-10	H	YES	$ 225,000.00
- Non-natatorium lighting (original)	3	N/A	5-10	M	NO	$ 75,000.00
					SUBTOTAL	**$ 300,000.00**
11.4 General maintenance	4/5	N/A	>10	L	NO	$ 50,000.00
					SUBTOTAL	**$ 50,000.00**
					ELECTRICAL SUB TOTAL	**$ 725,000.00**
					COSTING TOTAL	**$ 5,245,000.00**