

DATE: May 13, 2021

FILE: 8020-02

TO: Chair and Members
Comox Valley Recreation Commission

FROM: Russell Dyson
Chief Administrative Officer

Supported by Russell Dyson
Chief Administrative Officer

R. Dyson

RE: Comox Valley Aquatic Centre Facility Condition Assessment

Purpose

To provide the Comox Valley Recreation Commission (CVRC) with information regarding the 2021 Comox Valley Regional District (CVRD) Aquatic Centre facility condition assessment and to inform next steps to strategically invest in Comox Valley recreation services.

Recommendation from the Chief Administrative Officer:

THAT the May 2021 Comox Valley Regional District Aquatic Centre facility condition assessment report from FaulknerBrowns Architects be received.

Executive Summary

Given the significant infrastructure assets invested by the CVRD to provide recreation service to the region and the need to maximize available funding for maintaining and upgrading these key community facilities, the department has been focusing on enhancing its asset management practices in recent years as a strategic priority. The need for the aquatic centre facility condition assessment was identified in the 2021-2025 financial plan and was recently completed by FaulknerBrowns Architects. It helps form one part of the asset management strategy for recreation consideration.

Highlights include:

- February 2021, the CVRD retained FaulknerBrowns Architects and a team of subconsultant engineers (Consultant Team) to prepare a Facility Condition Assessment (FCA) study of the Comox Valley Regional District Aquatic Centre Pool Facility.
- The aquatic centre has been well maintained since being built in 1999 and ongoing maintenance over its service life.
- Sanitization and filtration upgrades were identified as urgent repairs to the facility to be undertaken in 2021.
- The assessment has identified an estimated \$7.88 million of upgrade and maintenance to complete on the aquatics centre over the next 10 years.
- The commission supported a COVID closure plan, currently underway, that addresses some key upgrades.
- The undertaking of the facility condition assessment of the Comox Valley Aquatic Centre (CVAC) will help staff be strategic around any significant investment to recreational facilities in the future.

Furthermore, the CVRD with the City of Courtenay will begin a review of aquatic services to help understand community needs and want to help shape the future of aquatics. Together with the other recent reports for services the CVRC oversees a strategic funding and implementation plan as part of the CVRD's asset management strategy will be fundamental to sustainable recreation services to the Comox Valley.

Prepared by:

Concurrence:

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Background/Current Situation

The CVRD has invested in significant infrastructure assets in the region to provide recreation services to the region including:

- **CVRD Sports Centre** on Vanier Drive which includes a six-lane pool, sauna, hot tub, wellness centre, two ice arenas, outdoor track and field, and meeting rooms,
- **CVRD Aquatic Centre** on Lerwick Road which includes a wave pool, two indoor waterslides, tot slide, eight lane pool, fitness studio, sauna, steam room, hot tub, meeting room, and swim shop, and
- **CVRD Exhibition Grounds** on Headquarters Road which includes horseback riding, special events, and other seasonal activities.

Asset management planning is becoming a standard best practice for the delivery of sustainable services and an increasingly common requirement for grant funding for local governments. Given the significant aging infrastructure assets invested by the CVRD to provide recreation service and the need to maximize available funding for maintaining and upgrading these key community facilities, the department has been focusing on enhancing its asset management practices in recent years.

At the March 5, 2019 planning session, the Comox Valley Sports Centre Commission (CVSCC) identified asset management – Utilize the Asset Management process to develop the long-term plan for recreation infrastructure and sustainable service delivery that support and enhance the delivery of recreation services to all citizens in the Comox Valley, as one of five strategic priorities for the CVRD recreation department.

In February 2021, the CVRD retained FaulknerBrowns Architects and a team of subconsultant engineers (Consultant Team) to prepare an FCA study of the Comox Valley Regional District Aquatic Centre Pool Facility. Staff have received the draft report as attached Appendix A.

The draft report provides information on the overall condition of the facility and recommendations for repairs within a 10-year capital plan, involving:

- Review of the present condition of the facility;
- Opinion of present overall condition and identification of deficiencies and noncompliance to applicable codes;
- Prioritized list of recommended repairs and remediation to maximize life-cycle use;
- Opinions of probable cost to remedy physical deficiencies and cost benefit analysis of replacement alternatives of major components for major repair or replacement of building components and over an evaluation period of 10 years.

The facility assessment focused on the present state of the facility with particular attention paid to building components that are at or near the end of their expected life or are not able to perform in a manner that meet current building standards or codes.

Structural, Mechanical and Electrical, Building Envelope and Architectural reports are included in Appendix A to this report and provide more specific detail related to those disciplines. Together, these reports have been distilled to a Facility Condition Index (FCI) which provides a snapshot view of the building condition. This quantitative assessment identifies and financially quantifies (in present dollar values) actions to remediate observed code/safety issues, to repair major defects in materials or systems that may significantly affect the value or continued operation of the facility, and to replace systems that have reached, or may reach, their Expected Useful Life (EUL) over a ten (10) year evaluation period.

The building appears to be in good condition and some areas in very good condition and well maintained. The major components of the building generally appear to be aging appropriately with decades remaining if proper care is taken. Maintenance has allowed most components to remain serviceable through their expected life.

FCA Priority/Urgency Ranking

Recommendations for capital repairs and upgrades have been itemized into the following categories in Table 1:

Table 1

Priority Number	Priority Level	Action Required	Description of Priority Level
1	High Urgency	Immediately	Work to be completed immediately, involving code/life safety issues and conditions directly affecting facility's ability to remain operational.
2	Moderate Urgency	< 2 years	Work to be completed within 2 years: Issues that directly impact the operation of the facility, that if not addressed in the near term, may progress to a priority one item
3	Low Urgency	2-5 years	Items that are necessary to the function of the facility, but may not require immediate attention.
4	Long Term Requirements	5-10 years	Items observed which are likely to require attention in the next 5-10 years, or would be considered an enhancement to the facility (function, efficiency, aesthetics).

The assessment has identified an estimated \$7.88 million of upgrade and maintenance to complete on the aquatics centre over the next 10 years. The majority of this work was identified as being urgent with \$3.2 million in the next year, \$3.5 million over the remaining 5 years, and \$1.1 million in years 6-10. The urgent work included the flat and sloped roof at a total of \$1.2 million, as well as significant pool mechanical upgrades. Other core upgrades over the next 5 years included the HVAC/air handler upgrades at \$1.9 million, natatorium (interior ceiling) upgrades at \$800,000, and other envelope and interior upgrades through the 10-year plan.

Finally, there are some items that are not issues that are necessarily required, but can be considered as enhancements for the mechanical operating systems. As noted by FaulknerBrowns, they recommended an energy audit before undertaking any enhancements or major renovations to the facility.

This facility condition assessment serves as a guiding background document for the CVRC, the staff and Board of Directors of the CVRD, providing high level strategic direction, identification of priorities, and tactical recommendations for continued service using the existing infrastructure.

Currently of the \$790,000 allocated to the aquatics centre for 2021 under the COVID closure plan, the planned upgrades to replace the Ryan Road sign, epoxy floor, LED lights, and stereo system are underway. The remaining \$550,000 is planned to be utilized to complete required pool mechanical upgrades including UV and filter upgrades which will eradicate bacteria and viruses and without adding anything corrosive to the water, leaving it cleaner and clearer. Given the busy construction industry and the goal to open up the aquatics centre for fall 2021, work plan items have been identified that are expected to be achievable to ensure the closure time is maximized for required upgrades with available funding.

Policy Analysis

The following COVID-19 response and renewal framework for the CVRD services are supported.

- Maintaining core services at an affordable cost - Careful management of recreation services and assets essential to providing affordable and reliable services to citizens in the CVRD and this FCA helps us plan for the future.
- Adapting to changing community priorities – Assessing recreation services for updates and improvements.

The following Sports Commission Strategic Plan Goals are supported.

- Strategic Goal 1 - Asset Management Outcome - Utilize the Asset Management process to develop the long-term plan for recreation infrastructure and sustainable service delivery.

In the sustainability strategy Objective 5.4.2 states;

- Enhance sports and recreation infrastructure. Public recreation facilities are a cornerstone of a good quality of life in the Comox Valley, especially for families. Because each municipality has a constrained tax base and because all residents use facilities in each community, an overall strategy on how best to continue to enhance the recreational infrastructure of the region is important.

At the CVRD Board meeting on February 25, 2020 the following motions were carried:

THAT an options analysis be completed in 2021 considering the best delivery of aquatic services in the Comox Valley with a focus on the Comox Valley Sports Centre Pool and City of Courtenay's Memorial Outdoor Pool.

AND FURTHER THAT an allowance for professional fees of up to \$100,000 be included in the 2021-2025 financial plan, allocated equally between the Recreation Grant (600) service and the Comox Valley Recreation Complexes (645) service in 2021.

AND FINALLY THAT City of Courtenay and CVRD recreation staff oversee this process in partnership.

Options

This report is for information only.

Financial Factors

In April 2021, the CVRD Board adopted the recreation complex function 645 2021-2025 financial plan which included professional fees of \$50,000 to conduct a CVRD aquatic centre facility condition assessment for year 2021.

The life expectancy of a pool can be anywhere between 30-45 years and will be dependent on a number of things such as how well it has been maintained over time and if an active asset management process is in place. Good staff oversight maintaining the aquatic centre pool through the addition of a strong maintenance program, including safety risk management as part of the management, will help extend the life span of this aging facility. With continued strong maintenance and safety risk management of this pool facility the potential of an additional 20-25 years of life may be possible. The projected 10-year financial impact for the aquatic centre pool is \$7.88 million and for the sports centre pool is \$1.6 million. Recreation facilities total financial impact of \$9.48 million.

However, this study only considers the technical analysis and consultant expertise. To help balance the community needs for what is wanted and what can realistically be afforded and required over the next years to come would require further program and service analysis. This would include a review of where neighbouring communities are heading with their aquatic services/facilities to assist in the decision-making process. Taking a wholesome review of recreation service needs will help with ensuring recreation services can provide a sustainable service that meets the needs of our region.

Careful management of services and assets is essential to providing affordable and reliable services to citizens and businesses in the CVRD.

Legal Factors

There are no legal concerns generated by this report.

Regional Growth Strategy Implications

- i Public health and safety: Support a high quality of life through the protection and enhancement of community health, safety and well-being:
 - Objective 7A-5: Support the promotion of healthy lifestyles and invigorating community spirit through physical activity

Intergovernmental Factors

Participating areas are: Town of Comox, City of Courtenay, Village of Cumberland, and Electoral Area A, Electoral Area B and Electoral Area C.

Interdepartmental Involvement

Although the Recreation Department has taken the lead on this initiative, the Finance Department provides input and will continue to do so as implementation of a life cycle management plan occurs.

Citizen/Public Relations

It is important that the residents in the Comox Valley have access to recreational opportunities that are affordable and in addition promote and maintain a healthy active lifestyle.

Attachments: Appendix A – FaulknerBrowns Architects – CVRD Comox Valley Aquatic Centre Facility Condition Assessment Report



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Prepared for:
 Comox Valley Regional District
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Image 1. Natatorium during Consultant Facility Review March 17, 2021

FAULKNERBROWNS ARCHITECTS

1.0 GENERAL INFORMATION

ACKNOWLEDGMENTS

The consulting team was assisted by the contributions of CVRD staff and others who gave their time, energy, and guidance. Their collaboration was integral to the preparation of this report. Thanks to the following participants and contributors:

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PROJECT INFORMATION

Comox Valley Aquatic Centre Facility Condition Assessment
377 Lerwick Road, Courtenay, BC V9N 9G4
Weather: 8 °C, Mostly Cloudy

Assessment Date: 03/17/2021
Report Date: April 8, 2021 (Draft 1)

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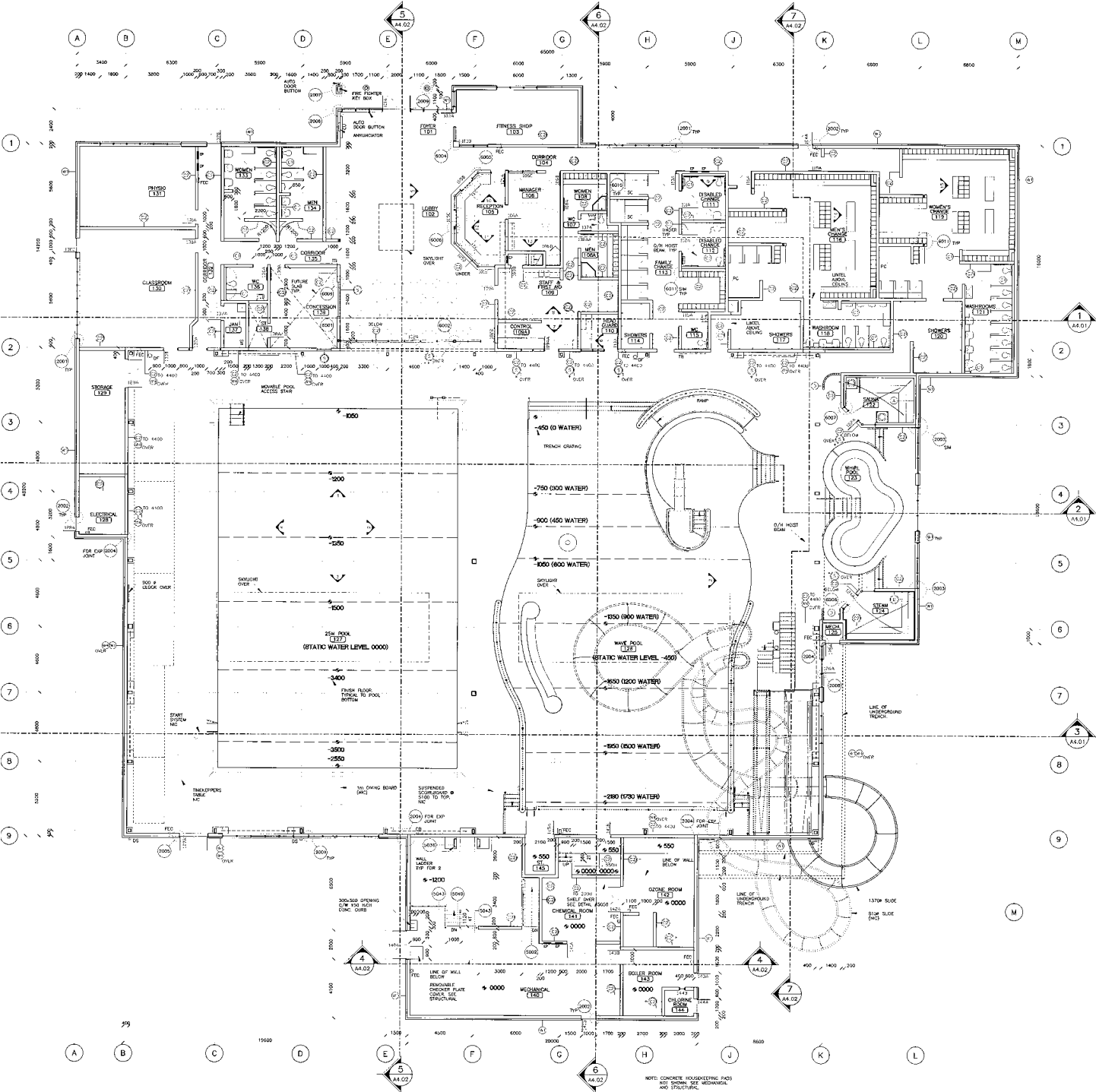


Image 2. Overall Facility Floor Plan - Original Construction Drawings 1998

2.0 EXECUTIVE SUMMARY

2.1 METHODOLOGY

FaulknerBrowns Architects and a team of subconsultant engineers (Consultant Team) was commissioned by the Comox Valley Regional District (CVRD) to prepare a Facility Condition Assessment (FCA) study of the Comox Valley Aquatic Centre Pool Facility located at 377 Lerwick Road in Courtenay, British Columbia (hereinafter also referred to as the "CVAC" or the "Facility").

The purpose of the project is to provide information on the overall condition of the facility and recommendations for repairs within a 10-year capital plan, involving:

- Review the present condition of the facility
- Opinion of present overall condition and identification of deficiencies and non-compliance to applicable codes
- Prioritized list of recommended repairs and remediation to maximize life-cycle use
- Opinions of probable cost to remedy physical deficiencies and cost benefit analysis of replacement alternatives of major components for major repair or replacement of building components and over an evaluation period of 10 years

The scope of work included visual evaluation of components and systems to observe and document existing conditions, review of provided plans and documentation and interviews with CVRD representatives.

2.2 FACILITY CONDITION ASSESSMENT REPORTS

Comprehensive descriptions of existing building systems, assessment findings and corresponding recommendations, complete with operations and maintenance-related deficiencies, are provided in this report under the following reports:

Appendix A: Structural Condition Assessment

Appendix B: Electrical Condition Assessment

Appendix C: Mechanical Condition Assessment

Appendix D: Building Envelope Condition Assessment

Appendix E: Architectural, Interiors and Code Assessment

2.3 RECOMMENDATIONS

It is recommended that appropriate corrective actions be undertaken as per the findings of the study. The repairs and renewals forecasted do not represent a fixed schedule; repairs or renewals may be required sooner or later than anticipated. The opinions of probable cost presented will vary due to changing market conditions. We recommend regular updates to this report as necessary, to reassess the facility conditions and opinions of probable cost. A general summary of recommendations is outlined below:

Structural Systems

- Repair cracks in the pool deck and column/brace bases and renew the pool deck waterproofing.
- Clean corrosion on steel structure in natatorium and repaint.
- Consider seismic upgrading in capital management planning for the facility.
- Replace or reinforce-in-place existing steel support angles for ductwork in the rooftop mechanical room.

2.3 RECOMMENDATIONS CONTINUED

Electrical Systems

- Upgrade all lighting to LED
- Consider adding a photovoltaic system.

Building Envelope

- Replace roof shingle and low-slope 'flat' roof membrane system complete with new insulation, to meet current code requirements. Roof replacement should prioritize the the low-slope roof, due to increased risk of standing water and leaks.
- Replace all roof flashings and gutters and tie-in flashings at skylights, as part of roof membrane replacement work.
- Repair or replace deteriorated wooden roof fascia (at saddle / gutter locations).
- Replace damaged gutters and rain water leaders.
- Repair holes and voids in EIFS wall cladding, and replace all sealant joints on EIFS.

Mechanical and Plumbing Systems

Listed in recommended level of priority:

1. Upgrade Pool Filters (*Refer to Mechanical Condition Assessment - 5. Pool Mechanical Systems for filter options.*)
2. Relocated all Chemical Treatment to the Ozone room to address safety concerns and operational benefits. Optimally, secondary disinfection should be considered to replace the Ozone. (*Refer to Mechanical Condition Assessment - 5. Pool Mechanical Systems for secondary treatment options.*)
3. Replace Air Handling Units (AHU-1/2/3/4). Units are working and well maintained, but as units are past their Estimated Life Span, replacement should be prioritized in 2-3 years.
4. Water feature pumps: check valves are installed to minimize problem of loss of prime (low cost option).

2.4 OPINIONS OF PROBABLE COST

Cost estimates (in 2021 dollars) have been attached to this report under *Appendix F & G*. The costs are provided over an evaluation period of 10 years for physical deficiencies observed during the assessment which are considered beyond normal routine operational maintenance expenditures, and for lifecycle replacement.

The total Opinion of Probable Cost over the evaluation period is **\$7,882,170** (uninflated).

The quantities associated with each item have been estimated during a site assessment and do not represent exact measurements or quantities. At the time of replacement, specific "scope of work" statements and quotations should be determined and the budgetary items revised to reflect actual expenditures. Opinions of probable cost assume that regular annual maintenance and repairs will be performed to all elements at the facility. Not included are items that would be addressed as routine maintenance.

All costs are inclusive of 5% Design contingency and 15% Construction Contingency For all projects, it is recommended that an updated cost estimate be completed prior to work proceeding.

Cost Estimate Threshold

A cost threshold of \$3,000 has generally been used in reporting opinions of probable costs (OPC) associated with the Facility, but some assets important to the use, function and safety of the facility to its users may be included that fall below this defined threshold.

3.0 INTRODUCTION

3.1 SCOPE OF WORK

Facility Condition Assessment

The FCA prepared by the Consultant Team was based on the American Society for Testing and Materials (ASTM) Standard E2018-08, "Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process".

The PCA was prepared in accordance with the scope of services outlined in the CVRD's Request for Quotation, FaulknerBrowns' Proposal dated February 4, 2021 and Project Agreement dated executed by the Client on February 23, 2021.

The major deviations from ASTM Standard E2018-08 for this project were as follows:

- No reviews of municipal / public records for zoning, building, and/or fire & life safety code / regulatory compliance were conducted.
- Investigation of whether or not the Property resides in a flood plain was not performed.
- Verification of number of parking spaces was not conducted
- Verification of gross and net usable areas of the site buildings was not performed.

Compliance with ASTM E2018-08 does not warranty or guarantee code compliance with any governmental entity, trade standard, or the insurance industry. While the report identifies deficiencies and non-compliance to applicable codes, the PCA should not be considered an in-depth code compliance review.

On March 17, 2021, the Consultant Team conducted a visual review of the Property. The majority of the Facility was made available during the time of the site visit. The major components and systems observed include:

- Site improvements
- Building structure
- Building envelope
- Interior elements and finishes
- Aquatic components and associated amenity areas
- Mechanical and electrical systems
- Life safety / fire protection systems

The scope of work performed summarized is as follows:

- Review of existing documentation, made available by the CVRD.
- Conducted a visual walk-through review of the Facility and building systems to assess their general condition.
- Conducted interviews with facility staff and key maintenance personnel.
- Identified and financially quantified (in present dollar values) actions to remediate observed code/safety issues, to repair major defects in materials or systems that may significantly affect the value or continued operation of the facility, and to replace systems that have reached, or may reach, their Expected Useful Life (EUL) over a ten (10) year evaluation period.
- Prepared a report and associated spreadsheet, outlining findings, opinions, and recommendations, complete with photograph documentation of individual components and each identified deficiency and other pertinent information obtained during the assessment.



Image 3. On Site Review March 17, 2021

Methodology

The review of the Facility was based on a non-invasive visual walk-through review of the visible and accessible components and systems. The assessment did not include an intrusive investigation of wall assemblies, ceiling cavities, or any other enclosures/assemblies. The review of mechanical (including pool systems), electrical, and fire & life safety systems included discussions with the CVRD representative. No physical tests were conducted and no samples of building materials were collected to substantiate observations made.

3.2 RELIANCE/LIMITING CONDITIONS

Exclusive Use

This report, including its information and opinions, has been prepared for the exclusive and sole use of the CVRD. This report shall not be relied upon for any purpose other than intended for the Client within the scope of services negotiated between FaulknerBrowns Architecture Inc. (FaulknerBrowns) and the CVRD. Any reliance on this document by any third party is strictly prohibited. FaulknerBrowns shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Distribution

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

Physical Limitations to Scope/ Standard of Care

The assessment outlined in this report generally captured conditions that existed at the time of the site visit. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. No guarantee or warranty, expressed or implied, with respect to the Property, building components, building systems, property systems, or any other physical aspect of the Property is made.

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

3.3 FCA PRIORITY/URGENCY RANKING

Recommendations for capital repairs and upgrades have been itemized into the following categories:

Priority Number	Priority Level	Action Required	Description of Priority Level
1	High Urgency	Immediately	Work to be completed immediately, involving code/life safety issues and conditions directly affecting facility's ability to remain operational.
2	Moderate Urgency	< 2 years	Work to be completed within 2 years: Issues that directly impact the operation of the facility, that if not addressed in the near term, may progress to a priority one item
3	Low Urgency	2-5 years	Items that are necessary to the function of the facility, but may not require immediate attention.
4	Long Term Requirements	5-10 years	Items observed which are likely to require attention in the next 5-10 years, or would be considered an enhancement to the facility (function, efficiency, aesthetics).

APPENDIX A: STRUCTURAL CONDITION ASSESSMENT

Comox Valley Aquatic Centre

Structural Condition Assessment

377 Lerwick Road
Courtenay, BC

May 05, 2021
RJC No. VIC.129291.0001

Prepared for:

Comox Valley Regional District
c/o FaulknerBrowns Architecture Inc.
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1.0 INTRODUCTION

Read Jones Christoffersen Ltd. (RJC) was engaged by FaulknerBrowns Architecture Inc. (the Architect), to perform a structural condition assessment of the Comox Valley Aquatic Centre, located in Courtenay, BC. RJC was part of a multi-disciplinary team and our assessment forms part of an overall condition assessment of the building. We note that RJC also was responsible for building envelope components and has prepared a separate report for these components.

This report is intended to provide the Client with a general description of the systems employed in the building and to comment on their general condition as visually apparent at the time of our inspection. In addition, our review of the property is to be our basis to provide our opinion of the probable cost of the associated remedial work that will be required over the next 10 years.

In general, the scope of work included a walkthrough review of the property, a review of available documents, and the preparation of this report. Only structural components of the base building were included in this assessment. Where the performance of a non-structural component appeared to be affecting the structure (e.g. water ingress, which could cause deterioration of the structure), comments are provided within this report.

2.0 ASSESSMENT

2.1 Documents Reviewed

As part of this assessment, RJC reviewed the following documents:

- Architectural drawings from original construction (29 Sheets) prepared by CJP Architects (Issued for Permit Application and dated "Jul 13, 98").
- Structural drawings from original construction (11 sheets) prepared by Pomeroy Engineering Limited (Issued for Construction and dated "98.10.09").

The structural drawings note that the building was designed to the 1992 BC Building Code, and the following parameters were listed:

- Roof Snow Load: 2.4kPa (plus 0.4kPa rain load and associated snow build-up)
- Design hourly average wind pressure: $q_{30} = 0.58$, $q_{10} = 0.45$ kPa
- Ground floor live load = 4.8kPa
- Mechanical floor live load = 3.6kPa, dead load = 4.0kPa
- Seismic Data:
 - $Z_a = 6$, $Z_v = 6$
 - $F \cdot S = 3$
 - $v = 0.4$
 - $I = 1.0$
 - $R = 2.0$

2.2 Structure Description

The structure is primarily one storey with a rooftop mechanical space. The natatorium consists of cast-in-place concrete pool basins and decks, with a steel superstructure. It is noted that some floor areas are suspended slabs, with tanks below; however, most floor areas are slab on grade construction. The remainder of the structure primarily comprised of load bearing CMU walls supporting a structural steel roof. Foundations appear to be strip and pad footings.

2.3 Site Observations

In general, the building structure appeared to be in good condition and no immediate safety concerns were noted. The following is a summary of our observations. Refer also to Appendix A for photographs and condition-specific commentary.

1. The steel roof of the natatorium is experiencing corrosion that appears to be mild, but extensive.
2. Several instances of cracks in the pool deck were observed. Most had been repaired via routing and caulking.
3. Some areas of the pool deck have had the waterproof coating re-applied recently. However, the majority of the area appears not to have been recoated recently. We estimated that approximately 10% of the floor area of the pool deck has been recoated.

4. A portion of the changeroom floor has been recoated. We estimated that approximately 20% of the area has been recoated.
5. Some instances of cracking and other deterioration were observed at bases of columns and braces in the natatorium. None of the conditions represents an immediate structural concern, but repairs should be performed to mitigate deterioration.
6. The west pool had been drained at the time of our review to allow for close-up visual review. Light cracking of the floor and walls was observed at several locations in the pool. We note that some cracking of pools is inevitable and pools are typically provided with additional reinforcement to limit the extent and size of cracks. The pool basin appears to be performing as intended, as site personnel noted that an unusual amount of water loss is not occurring.
7. The east pool was filled at the time of review and thus our ability to assess the condition was limited. However, the construction and condition appeared to be similar.

2.4 Seismic Considerations

Vancouver Island is a seismically active region, with a significant probability (approximately 20-30% chance) of a damaging earthquake affecting any given region within the next 50 years. The purpose of this section is to provide the client with an awareness of the expected seismic performance of the buildings in question, and also scenarios in which seismic upgrading may be required.

At the time of the buildings' construction, building codes required reasonable consideration of seismic resistance; however, seismic design codes have become much more stringent since this time. As such, the structure will be significantly deficient in terms of seismic resistance by modern standards (currently BC Building Code 2018). Under a significant seismic event, the building will be severely damaged and may require demolition due to either excessive repair costs or safety concerns.

Unless a building undergoes a major renovation or changes of use/occupancy, seismic upgrading of the overall structure is typically not required. The final judgment as to what triggers a seismic upgrade rests with the authority having jurisdiction (the Comox Valley Regional District). However, typical practice in the region is currently to follow the guidance set forth in the building code commentary (Commentary L to the National Building Code of Canada), which defines a "major renovation" as the following:

"A major renovation is an extensive renovation to the architectural, structural, mechanical, and electrical components in a major portion of the building that extends the useful life of the building. The renovation may or may not involve removal of the wall and ceiling finishes in the project area."

To avoid classifying as a major renovation, the occupied area of a building must also not be increased. In the event of a minor renovation, upgrading of "non-structural" seismic hazards (eg. seismic restraint of piping), is required, but the requirement for base building structure is simply to maintain the existing level of structural safety.

Currently, there is no limitation on the time period which must elapse between subsequent “minor renovations.” However, some jurisdictions in seismic zones in the United States are now tracking total construction costs of renovations over a set period (for example 5 years), and requiring upgrades as a result of cumulative renovation costs.

2.5 Recommendations

Our general recommendations for this facility are as noted below. Refer also to Appendix A for recommendations relating to specific observations.

1. Repair cracks in the pool deck and column/brace bases and renew the pool deck waterproofing.
2. Clean corrosion on steel structure in natatorium and repaint. Only limited observations were performed as part of this assessment, but we anticipate that such work will be extensively required. We recommend allowing for a complete restoration of all steel elements in the natatorium. A more detailed assessment (eg. via boom lift) may narrow the required scope.
3. Consider seismic upgrading in capital management planning for the facility. See section 2.4 for detailed discussion. A seismic evaluation would establish the buildings current level of resistance relative to key thresholds and a schematic upgrade design would allow for costing of potential upgrades.
4. Replace or reinforce-in-place existing steel support angles for ductwork in the rooftop mechanical room (See Photo 23 in Appendix A).

3.0 CONCLUSION

3.1 Summary of Assessment

In general, the building structure appears to be in good condition. Some maintenance and repairs of the pool deck and steel elements in the natatorium are recommended (See Section 2.5). Although not a base building structural component, we observed that steel angles supporting ducting within the rooftop mechanical space are severely corroded and should be replaced or reinforced in the near term. Finally, we noted that the building is expected to be seismically deficient by modern seismic standards.

3.2 Limits of Liability

The review of this property was of a visual nature only. No testing or dismantling of any coverings was performed. This inspection was made on a random basis with no attempt to review or inspect every element or portion of the building. The intent of the review was to determine areas of visually obvious deterioration and need for repair and to determine, in a general way, the overall quality and sufficiency of the work but not to ascertain the quality of sufficiency of any particular aspect of the building. No calculations were performed to confirm the adequacy of any of the elements reviewed. Our comments are not a guarantee or warranty of any aspect of the condition of the building, whatsoever.

Drawings made available were used solely for the purpose of obtaining design information on elements hidden from view which the Engineer may require, supplemental to their visual inspection, in order to more fully describe the building but no comments can be made as to the construction of those elements.

Any and all previous opinions expressed by Read Jones Christoffersen Ltd., either verbally or in writing, regarding the condition or cost estimates for repair of the above elements are superseded by this report.

This report has been prepared for the exclusive use of the Architect and the Comox Valley Regional District. The contents of this report may not be quoted in whole or in part or distributed to any person or entity other than by the Client or those parties possessing a reliance letter. Read Jones Christoffersen Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

4.0 CLOSURE

This report has been prepared for FaulknerBrowns Architecture Inc., on behalf of the Comox Valley Regional District.

We trust the information presented in this report satisfies your current requirements. Should you have any questions, comments, or concerns, please do not hesitate to contact the undersigned.

Yours truly,

READ JONES CHRISTOFFERSEN LTD.

Prepared by:

Brandon Paxton, M.A.Sc., P.Eng.
Project Engineer

BP/

Appendix A Photographs




TABLE A1 – GENERAL OBSERVATIONS	
<p>Location: Exterior</p> <p>Observation: Exposed structure at entrance appears to be in good condition. Essentially all other structural components are not visible from the outside, as they are concealed by cladding.</p> <p>Recommendation: No action.</p> <p>Time Frame: N/A</p>	 <p>Photo 1 Exposed structure at entrance</p>
<p>Location: Natatorium</p> <p>Observation: The structure of the natatorium consists of two cast-in-place concrete pools, concrete block walls supporting the adjacent roofs, and a steel structure over the pools.</p> <p>Recommendation: No action.</p> <p>Time Frame: N/A</p>	 <p>Photo 2 General photo of pool area</p>
<p>Location: Natatorium – West Pool</p> <p>Observation: The west pool had been drained to allow for visual review of the basin.</p> <p>Recommendation: No action.</p> <p>Time Frame: N/A</p>	 <p>Photo 3 West pool</p>

TABLE A1 – GENERAL OBSERVATIONS

Location: Natatorium – west side of pool

Observation:
Several cracks were observed around the pool, most of which had been repaired by routing and caulking. Some control joints also appear to have been provided at the time of construction, but proved insufficient to prevent cracking.

Recommendation:
Repair cracks and renew pool deck coating

Time Frame: 1-5 years

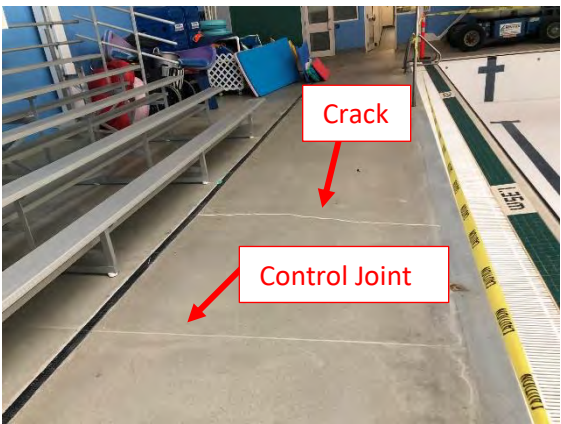


Photo 4 Control joint and crack in pool deck

Location: Natatorium – central pool deck

Observation:
Cracks were observed in various locations around the pool deck. Most of the cracks had been repaired.

Recommendation:
Repair cracks and renew pool deck coating

Time Frame: 1-5 years

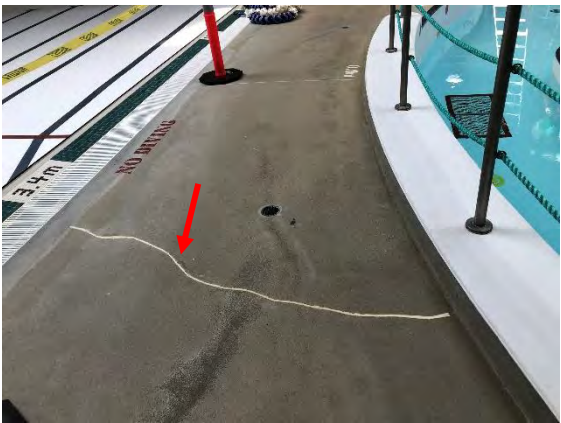


Photo 5 Repaired crack in pool deck

Location: Natatorium – south wall

Observation:
Some locations around the pool deck have had the coating renewed. We estimate that approximately 10% of the area has been renewed.

Recommendation:
Repair cracks and renew pool deck coating

Time Frame: 1-5 years



Photo 6 Area of renewed coating at pool deck

TABLE A1 – GENERAL OBSERVATIONS

Location: Natatorium – north wall

Observation:

A portion of the floor in the changerooms and offices have had the waterproof coating renewed. We estimate that approximately 20% of the changeroom/office area has been renewed.

Recommendation:

Renew pool deck coating

Time Frame: 1-5 years



Photo 7 Joint in coating at changeroom

Location: Natatorium – west pool

Observation:

Fine cracks were observed in several locations within the pool basin. Some cracking of concrete pools is inevitable and pools are provided sufficient reinforcing to control the cracking. The degree of cracking observed appeared normal

Site staff reported that the pool coating was renewed approximately 5 years ago and that they are not observing unusually high water loss.

Recommendation:

No action

Time Frame: N/A

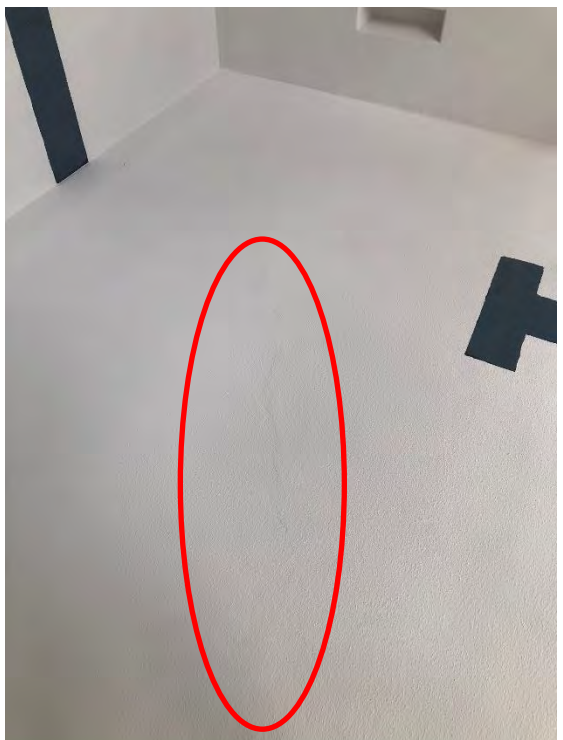


Photo 8 Crack in floor at south end of pool

TABLE A1 – GENERAL OBSERVATIONS

Location: Natatorium – west pool

Observation:
Close up view of crack with ipad for scale.

Recommendation:
No action

Time Frame: N/A



Photo 9 Close-up of crack in Photo 8

Location: Natatorium – west pool

Observation:
Fine cracks were also observed in the walls of the pool at some location.

Recommendation:
No action

Time Frame: N/A



Photo 10 Crack in wall of pool at south end

TABLE A1 – GENERAL OBSERVATIONS

Location: Natatorium – west pool

Observation:
The paint markings in the pool were faded and flaking away in some locations. Site staff noted that this seemed to be caused by the cleaning chemicals.

Recommendation:
Clean and re-apply markings

Time Frame: ongoing, as needed



Photo 11 Flaking paint markings

Location: Natatorium – west pool

Observation:
Staining was observed on the side of a roof truss over the east pool. The staining is likely due to either a roof leak or condensation causing corrosion.

Recommendation:
Investigate and remediate

Time Frame: 1-2 Years



Photo 12 Staining on roof truss

TABLE A1 – GENERAL OBSERVATIONS

Location: Natatorium - roof

Observation:

While on the roof above the natatorium, several of the roof framing members as well as drain lines were observed to be experiencing mild corrosion. The corrosion observed does not represent a structural concern at this time.

Recommendation:

Clean corrosion and re-coat steel elements.

Time Frame: 1-5 years



Photo 13 Roof truss and roof drain lines

Location: Natatorium – east wall

Observation:

Moderate corrosion of structural steel framing at the east wall of the natatorium. The corrosion appeared mild except for the specific location shown in the photo, but not all area were visible.

Recommendation:

Clean corrosion and re-coat steel elements.

Time Frame: 1-2 years



Photo 14 Corrosion at steel bracing

TABLE A1 – GENERAL OBSERVATIONS

Location: Natatorium - roof

Observation:

Mild corrosion of the structural steel roofing framing was observed near the slide tower.

Recommendation:

Clean corrosion and re-coat steel elements.

Time Frame: 1-5 years

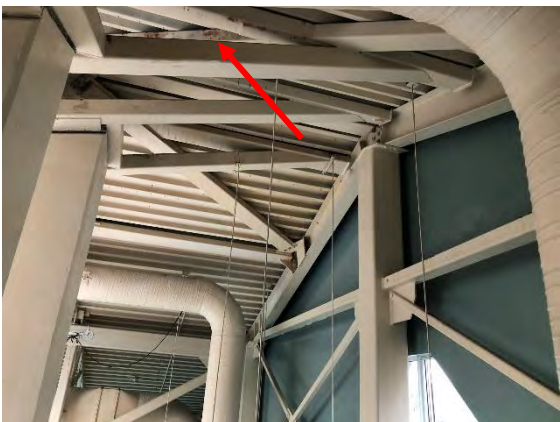


Photo 15 Corrosion on roof framing

Location: Natatorium – slide tower

Observation:

A concrete column of the slide tower exhibiting “delamination” of the concrete (delamination is bursting of the concrete cover due to corrosion of reinforcing steel and associated volumetric expansion). The condition observed is not an immediate safety concern, but should be addressed in the near future.

Recommendation:

Repair and repaint concrete.

Time Frame: 1-2 years



Photo 16 Damage/deterioration of column

TABLE A1 – GENERAL OBSERVATIONS

Location: Natatorium – north wall

Observation:

The floor/wall intersection near the changeroom entrances was observed to be cracked. The cause of cracking is unknown, but it does not appear to be a structural concern at this time.

Recommendation:

Repair crack at time of pool deck renewal

Time Frame: 1-5 years



Photo 17 Crack at base of wall

Location: Natatorium – southwest corner

Observation:

The floor/wall intersection in the southwest corner of the building was observed to be cracked. The cause of cracking is unknown, but it does not appear to be a structural concern at this time. We recommend that the crack be repaired when the pool deck coating is renewed.

Recommendation:

Repair crack at time of pool deck renewal

Time Frame: 1-5 years

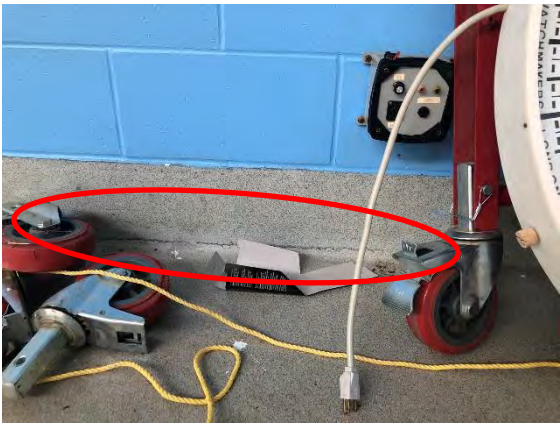


Photo 18 Crack at base of wall

Location: Natatorium – north wall

Observation:
The concrete encasement of a brace was observed to be cracked and the adjacent floor/wall intersection was also observed to be cracked. We note that the concrete encasement is not structural, although it does provide protection to the steel. Neither condition appears to represent a structural concern.

Recommendation:
Repair cracks at time of pool deck renewal

Time Frame: 1-5 years



Photo 19 Cracked concrete at brace

Location: Natatorium – north wall



Observation:
Concrete at the base of a column was observed to be cracked. The crack is not at immediate structural concern, but may be due to corrosion of the steel reinforcement.

Recommendation:
Repair crack at time of pool deck renewal

Time Frame: 1-5 years



Photo 20 Crack at column base

<p>Location: Natatorium – central pool deck</p> <p>Observation: A crack in the coating and rust staining was observed at the base of a steel column. It is possible that the crack was caused by corrosion and expansion of underlying steel structure.</p> <p>Recommendation: Repair crack at time of pool deck renewal</p> <p>Time Frame: 1-5 years</p>	 <p>Photo 21 Crack and staining at column</p>
<p>Location: Natatorium – hot tub</p> <p>Observation: Restoration work appeared to be ongoing in the area. Steel elements were being cleaned of corrosion and repainted.</p> <p>Recommendation: No action</p> <p>Time Frame: N/A</p>	 <p>Photo 22</p>

Location: Upper floor mechanical space

Observation:

Duct support angles were observed to be severely corroded.

Recommendation:

Replace or reinforce-in-place the existing angles.

Time Frame: Immediate



Photo 23 Corroded duct support

APPENDIX B: ELECTRICAL CONDITION ASSESSMENT

Building Condition Assessment Report for

COMOX VALLEY AQUATIC CENTER

Prepared for:

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Peer Review



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1. Introduction

1.1 Overview

- .1 The following report provides a condition assessment of the electrical systems for the Comox Valley Aquatic Center located at 377 Lerwick Road in Courtenay, BC. The intent is to provide an opinion on the general condition of the various components, identify concerns, provide possible energy savings solutions, and evaluate the associated level of maintenance. The report includes a compilation of rehabilitation, replacement, repair, and maintenance projects, which we believe should be undertaken in the next 10 years. Also included are recommendations to reduce operation and maintenance costs and to increase the likelihood that building components attain their expected operational life.
- .2 Recommendations are presented in the following categories:

Category	0	1	2	3	N
Timeframe	< 1 Year	1 to 3 Years	3 to 6 Years	6 to 10 Years	No Specific Timeframe

- .3 AES Engineering conducted the electrical assessment by inspecting the existing electrical equipment, reviewing available record documents and reports, and holding discussions with the building caretakers. AES performed the site review on March 17th, 2021. This included a visual inspection of the building areas and service rooms.
- .4 For further details, refer to:
- Appendix A for photos of the electrical equipment.

1.2 Facility Description

- .1 The building consists of a wave/leisure pool, sauna, whirlpool, steam room, meeting/multipurpose rooms and a fitness/weight room. Construction was completed in 1999.
- .2 The majority of the electrical systems are original to building construction and are in fair condition. The following subsections provide a general overview of the power, lighting, fire alarm, communications, and security systems with some recommendations for potential power consumption cost savings.

2. Power

2.1 Electrical Service and Capacity

- .1 The electrical service to the building is a 1000A, 600V supply from BC Hydro to the main breaker (*Cutler Hammer* make) located in the main electrical room. Beside the main breaker section is the secondary 600V distribution section consisting of 9 breakers in total. Located within the room is a 600, 208/120 transformer which takes the

600V and drops the voltage down to 208/120V then feeds into MDC-2. MDC-2 section consists of 9 breakers in total feeding various items throughout the aquatic center.

- .2 BC Hydro bills (January 2nd 2019 to January 30th 2019) indicate a maximum demand of 256 Kw. BC Hydro has included demand surcharges to the electrical bill on some of the invoices reviewed. **See section 5 for energy conservation solutions. Additionally, refer to the mechanical report for further recommendations for pump and pool systems energy conservation.**

2.2 Normal Power Distribution

- .1 The 600V *secondary* distribution centre supplies the following loads, which are typically located throughout the facility.

- 600A *MCC – 1*
- 400A *MDC-2*
- 400A *MCC-2*
- 50A *20 KVAR Capacitor*
- 30A *15 KVAR Capacitor*
- 100A *Panel MA*
- 30A *Ozone Generator*
- 200A *Spare*

- .2 The 1200A 208Y/120V secondary distribution (MDC-2) centre feeds the following panelboards, which are typically located throughout the facility.

- 15A *Fire Alarm Panel*
- 60A *Panel MM*
- 100A *Panel M*
- 100A *Panel Z*
- 200A *Panel A*
- 200A *Panel B*
- 200A *Panel C*

2.3 Emergency Power Distribution

- .1 The building is not provided with any form of emergency back up generation.

2.4 Condition Assessment

- .1 While there is no definitive expected life of electrical equipment, 30 to 40 years is generally considered a reasonable expectation, with equipment containing moving parts being closer to the 30-year range (e.g. generator), and items with no or infrequently moving parts being towards the 40-year range (e.g. panelboards and transformers). Although an item may still be operational after 30 or 40 years, it is subject to an ever-escalating risk of failure. Beyond this duration, any problems, regardless of reason, attract additional scrutiny due to the requirement to properly maintain equipment as designated by *CSA C22.1-18 (Canadian Electrical Code, Part I)* and *CSA Z463-18 (Maintenance of Electrical Systems)*.
- .2 Most of the electrical equipment is original to building construction in 1998. They appear to be in good working condition. The following items were highlighted during the site visit:
 - The main electrical room has limited space. Possible addition of electrical equipment within the room maybe difficult in the future.
 - Some panel schedules are outdated. A reverification of the panel schedules throughout the building is recommended.
 - Several panel boards had missing identification tags and damaged latching mechanisms.
 - All panels and distribution looked to be in good condition.
 - Digital information meters are not present on any panels or distribution. We would recommend adding Revenue grade meters to monitor and control energy consumption.
 - We would recommend the distribution is scanned using infrared technology to ensure all internal components are in good working order.
 - Have all internal lugs/nuts re-torque within the distribution.

3. Lighting

3.1 Exterior Lighting

- .1 Exterior lighting typically consists of wall mounted downlights and pole top fixtures for the parking areas.
- .2 While some exterior lighting has been upgraded there are still older luminaires installed. It is recommended that during future replacement works, existing non-LED luminaires are replaced with LED to provide increased service life and reduced energy consumption.

3.2 Interior Lighting

- .1 Interior lighting in areas (lobbies, washrooms, staff/office areas, meeting rooms, and service rooms) typically consists of luminaires with various types of CFL, fluorescent, and LED luminaires. However, a large majority of these areas have been upgraded to LED lamps. We would recommend that the facility continue with this and as lamps fail replace them with LED.

- .2 Interior lighting in the pool area looks to be of a high intensity discharge type. We would recommend having these luminaires replaced to LED, to provide increased service life and reduce energy consumption.
- .3 Interior lighting generally appears to be in satisfactory condition. It is recommended that during future replacement works, existing non-LED luminaires are replaced with LED, to provide increased service life and reduced energy consumption.
- .4 It was noted that during the site visit some corridors currently do not have occ/vacancy sensors. We would recommend these be added to control the lighting, dimming it down when no occupancy is detected.

3.3 Pool Lights

- .1 It was noted during the site review that all in pool lighting are no longer function. Pool lights are original to the building and have outlived their typical life expectancy.
- .2 We would recommend all pool lights be replaced with new Led. New lights would provide sufficient illumination at the pool area as per BC Public Health Act Pool Regulation Section 11(2)(a).

3.4 Emergency Lighting and Exit Signage

- .1 Emergency lighting is supplied from DC battery packs with remote heads. Typically, most DC battery packs and heads looked to have been recently updated to LED.
- .2 Exit signages are typically of red "EXIT" type. It is recommended that all red "EXIT" signs to be replaced with green "running man" pictograms during the future replacement works.

3.5 Lighting Control System

- .1 Lighting Control for the facility was by low voltage relays (Douglas make) with relay panels located through out the building, typically located in corridors. Occupancy sensors and low voltage switching is utilized throughout the building for lighting on/off control.

4. Fire alarm, Communications, and Security Systems

4.1 Fire Alarm System

- .1 The fire alarm system is an addressable system (Edwards make) with the fire alarm control panel located in the main electrical room and the annunciator panel in the reception/staff area. A graphic annunciator is located at the buildings main entrance. The fire alarm system is provided with integral batteries.
- .2 Initiating devices typically include heat detectors, manual stations, sprinkler flow switches. Supervisory devices include tamper switches. Annunciating devices include fire alarm bells.

- .3 The fire alarm system looked to be in good working condition. We have no recommendations for the fire alarm system at this time.

4.2 Communications Systems

- .1 The building telco room is in the main electrical room.
- .2 Communications cabling is generally in good condition.
- .3 The building security systems consists of video surveillance systems. Cameras are mounted throughout the facility in common areas.
- .4 The security systems appeared to be in satisfactory condition. Regular modernization is recommended as part of the base-building maintenance to ensure reliability of the security system and satisfy increasing demand for flexibility. Although security systems typically become obsolete after 20 years, facility staff are recommended to consider starting the replacement process when the security equipment reaches an installation period of 15 years.

5. Energy Conservation

5.1 Recommendations

Below is a list of recommendations for energy conservations:

- Replace all lighting in the pool area and other lighting throughout the building with LED type lighting to cut down on maintenance and improve efficiency in turn provide cost savings on energy bills.
- Add digital information metering to both MCC sections. Client installed metering can help track and record current and historical data. Increases can be an indication that equipment needs maintenance or that it is possibly failing.
- Photovoltaic:
There is the option to offset the cost of energy from BC Hydro by implementing a renewable energy system such as solar photovoltaics (PV). A typical solar panel array will generate around 200 watts per square meter depending on the arrangement and orientation of the modules. It can be tied into the energy grid to offset the power demand from BC Hydro as a one-to-one credit for any power generated by the solar panels. The typical payback period for a PV system in BC can range anywhere from 8 to 16 years depending on the power consumption of the user and annual utility rate and cost escalation. Once this payback period is reached, any power generated is money back in the owner's pocket. Over a 25 year period, which is the typical length of a solar panel manufacturer warranty, the return on investment for an entire PV system including inverters, racking, and installation is about 150%-200%, making it a great investment if it fits within the budget.
- Adding occupancy/vacancy sensors to corridor lighting for dimming the lighting when no occupancy is detected.
- Most of the buildings energy conservation will come from modifying the pools mechanical systems. Refer to the mechanical report for possible solutions and recommendations.

6. Summary

- .1 Recommended replacement works listed above are based on a visual review and a more detailed analysis may be required for individual building systems. The extent of the overhaul can be determined by the client. However, it should be noted that the equipment maintenance costs can grow exponentially and surpass system replacement costs prior to the suggested timeline.

7. Conclusions

- .1 The majority of the equipment was installed in 1999 (original to building construction) and are in fair condition.
- .2 Upgrade all lighting to LED.
- .3 Consider adding a PV system to the building.
- .4 The communications, fire alarm, and security systems, are typically in satisfactory condition and can be expected to operate without major issue, given the appropriate maintenance.

Appendix A: Photos

End of Report

Power



Photo 1 – 600V Main Switch/MDC

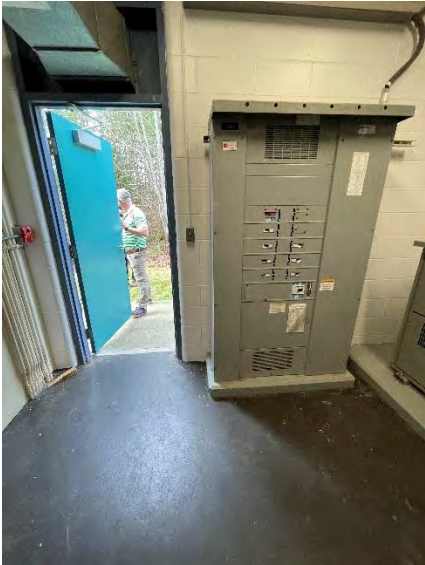


Photo 2 – 120/208V MDC



Photo 3 – 600V – 120/208V Transformer



Photo 4 – BC Hydro Meter

Panelboards



Photo 5 – Typical 120/208V Panelboard



Photo 6 – Typical 208Y/120V Panelboard



Photo 7 – Lighting Control Panel

Exit Signs/Emergency Lighting



Photo 8 – Exit Sign



Photo 9 – Exit Sign



Photo 10 – Emergency Lighting



Photo 11 – Emergency Lighting/Battery Pack

Lighting



Photo 12 – Pool HID Lighting



Photo 13 – Pool HID Lighting

Lighting



Photo 14 – Changing Room Lighting



Photo 15 – Corridor Lighting



Photo 8 – Washroom Occupancy Sensor



Photo 9 – Staff Area

Exterior Lighting



Photo 10 – Exterior Parking Lot lighting



Photo 11 – Building Wall Mounted Lights

Fire Alarm



Photo 24 –Fire Alarm Annunciator



Photo 25 – Fire Alarm Control Panel



Photo 26 – Fire Alarm Manual Station



Photo 27 – Fire Alarm Bell

Fire Alarm



Photo 28 - Fire Alarm Heat Detector



Photo 29 - Fire Alarm Strobe

Communications System



Photo 30 – Main incoming Telus/Shaw Demarcation

APPENDIX C: MECHANICAL CONDITION ASSESSMENT



COMOX VALLEY REGIONAL DISTRICT - COMOX VALLEY AQUATIC CENTRE POOL FACILITY CONDITION ASSESSMENT

Project No.: 341a-003-21
377 Lerwick Road, Courtenay, BC V9N 9G4

Condition Assessment Report- Final
April 22, 2021

PREPARED FOR:

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PROFESSIONAL'S SEAL & SIGNATURE

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This report has been prepared by the AME Consulting Group for the exclusive use of the Comox Valley Regional District (CVRD and the design team. The material in this report reflects the best judgement of the AME Consulting Group with the information made available to them at the time of preparation. Any use a third party may make of this report, or any reliance on or decisions made based upon the report, are the responsibility of such third parties. The AME Consulting Group accepts no responsibility for damages suffered by any third party as a result of decisions made or actions taken based upon this report.

1. EXECUTIVE SUMMARY

AME has been engaged to do a condition assessment of the base mechanical, plumbing and pool systems equipment at the Comox Valley Aquatic Centre (CVAC). This report provides a summary of the mechanical systems, which have been evaluated with respect to their current and past performance. This report is in conjunction with the Equipment Condition Assessment Report that has age and expected lifespan, repair or replace recommendations. Based on the site review and discussions with the staff, AME has the following findings and recommendations.

1. AHU-1/2/3/4, to plan for replacement Equipment is at EOL.
2. Pool Filters: to plan for replacement of all filters as the vessels are at EOL.
3. Ozone: To plan for removal of system, as is at EOL, consider replacing with secondary disinfectant.

It is strongly recommended that an energy audit be performed to confirm which system in each category would be best suited for maximizing GHG reduction, sustainability and return on investment. As we are unclear of what Comox Valley Regional district has for a mandated GHG and energy target we cannot provide detailed recommendations.

The report also has recommendations of non-critical items, these can be reviewed by the Comox Valley Regional District and determined if are within their scope.

2. INTRODUCTION

AME has been engaged to do a condition assessment of the base mechanical, plumbing and pool systems equipment at the Comox Valley Aquatic Centre (CVAC). This report provides a summary of the mechanical systems, which have been evaluated with respect to their current and past performance, as well as equipment age and expected lifespan.

Cameron Baerg visited the site on March 17th, 2021 to perform a site visit. The visit was guided by facility staff Mike Morrissey and accompanied by Doug Giesel. The assessment criteria were based on existing drawings and discussions with facility staff. AME is not responsible for the accuracy of the received documents as they have been provided to be the basis of this report. We welcome discussion on modifications in order to achieve the client's goals.

- .1 Review of the available document provided by the facility management operation. These documents are as follows:
 - .1 Existing building drawings and O & M manual
- .2 Visual inspection remarks collected during the site visit.

The facility was originally constructed in 1999. The facility consists of a main building and pool tank. The main building contains change rooms, reception, classroom, physio and fitness rooms. The south side of the pool tank is the pool mechanical rooms, and there is a penthouse mechanical room above the main building which houses the main air handlers for the facility. The pool operates for year around with shut down period in July-August to perform annual maintenance.

3. APPLICABLE CODES AND STANDARDS

The following codes and standards have been referenced for this report:

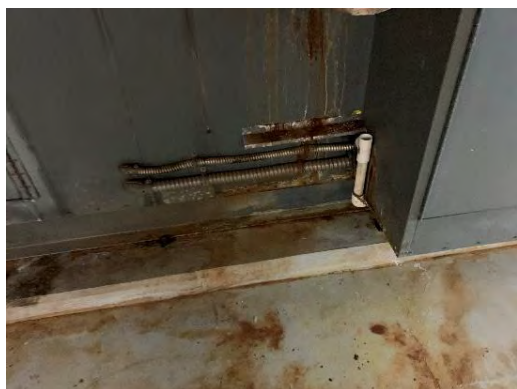
- .1 BC Building Code – Current Version
- .2 ASHRAE 62.1 – Current Version as referenced in the BC Building Code
- .3 ANSI Z358-2014 – Emergency eyewash and shower standards
- .4 BC Reg. 296 - BC Occupational Health and Safety Regulation, sections 6.116 to 6.132 and 6.125 relating to toxic process gases and emergency ventilation.
- .5 BC Health Act
- .6 BC Pool Design Guide, current version

4. HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

4.1 Ventilation Systems

.1 AHU-1 – Main Pool Air handler

Existing unit is gas fired, 80% efficient. The unit is at its EOL, and replacement is recommended, although VFD's have been added to the Supply and Return fan, there are several options for a new unit that would provide energy efficiency and increased performance. Due to the proximity of the mechanical room to the heating plant we would suggest a passive heat recovery approach would have the lowest life cycle cost. Though it may not have the lowest GHG emissions. An Energy audit should be performed to confirm best suited replacement.



AHU-2 – Changerooms/Offices/Weight Room

Existing unit is gas fired, 80% efficient. The unit is at its EOL, and replacement is recommended. There are several options for a new unit that would provide energy efficiency and increased performance. As part of the AHU replacement, a central heating system approach could be considered. An Energy audit should be performed to confirm best suited replacement. As a minimum we recommend passive heat recovery off the changerroom exhausted areas.



.2 AHU-3 – Offices

Existing unit is gas fired, with DX cooling, 83% efficient. The unit is at its EOL, and replacement is recommended. There are several options for a new unit that would provide energy efficiency and increased performance. An Energy audit should be performed to confirm best suited replacement.



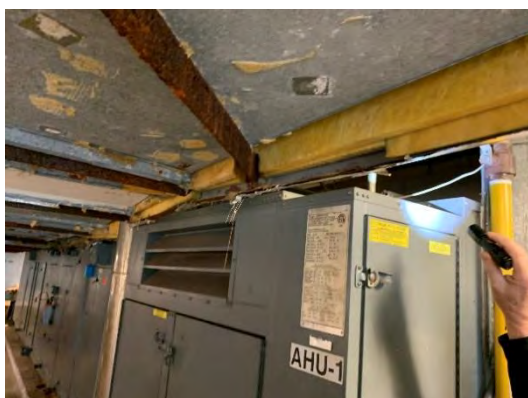
.3 CU-1 – Condenser for AHU-3

Existing outdoor condensing unit on adjacent roof, serving AHU-1. The Unit is at its EOL, and replacement is recommended. There are several options for a new unit that would provide energy efficiency and increased performance. An Energy audit should be performed to confirm best suited replacement.



.4 Duct Distribution:

Existing ductwork in the Penthouse Mechanical room will require to be completely insulated, and sealed. At the time of the site visit, the insulation was removed. This would lead to condensation in during winter when there is cold outside air entering the ductwork. Hangers and supports should be inspected to ensure they are not corroded through. Recommend to insulate to Ashrae standards.



.5 Central Heating Plant:

A Central heating plant was discussed during the site visit. There are several options that could be implemented that have potential for energy efficiency and increased performance. An Energy audit should be performed to confirm best suited design.

Central heating eliminates the pool water from passing through the boilers thus providing a longer life expectancy than a pool heater. Furthermore pool heaters are sized for heat up thus the majority of the time then have spare capacity. When sizing the boilers you can look at peak daily conditions which would be significantly lower than peak totals which is currently in place. This alone will save construction costs and improve efficiency. The design would also have to look @ getting heating water over to the main HVAC room which is across the pool.

.6 Control system (Building Management System):

The existing DDC system is Delta. The system can be reviewed for compatibility with new equipment should a central boiler plant or more automation with a pool system be desired. Further investigation can be reviewed to determine the best suited options.

Natatorium Ductwork:

Ductwork throughout the Natatorium appeared in good condition, and was understood regular cleaning was performed. Recommendation to maintain schedule and perform inspections inside the ductwork to ensure duct is not corroding from inside out.



5. POOL MECHANICAL SYSTEMS

Pool Filters

Existing pool filters are at EOL, replacement recommended. There are a number of new technologies that have become available since the facility was built, that would improve water quality, potentially save water and energy. Some filter options would include Vertical deep bed sand filters, Regenerative Filters, and drum filters, all should be reviewed to determine what is best for the choice for the client needs. In Further discussion with Facility staff, interest was towards Regenerative filters, as these would have the lowest water consumption, as well require less space that traditional sand filters. A pool design matrix can be reviewed to narrow down preferred system, as well energy audit to confirm best suited options.



Filtration pumps:

The main pool has had a VFD added while the Wave Pool & Whirlpool are set speed. The Filter pumps age were determined to be: Main filter pump @ 8yrs, Water pool @ 10yrs, and Hot tub @ 5yrs old. Follow up discussion included that the pumps receive regular maintenance. They are monitored for sequels, squeaks, if accidental breaker trips occur, and/or identified water leak, and investigation is performed, and repair as required. Also noted in discussion, is that more recently if new pump impellers are deemed to be replaced, they have been epoxy coating the pump volutes, and powder coating pump parts to extend their life. Further investigation can be reviewed should addition VFD's to the other filter pumps and water pumps would be warranted, as an energy audit could be performed to confirm best suited options and energy savings.



Water Feature pumps:

The water feature pumps as per above with the filter pumps regular maintenance has been performed, and pump seals, and or bearings are replaced as required, with pump volutes being epoxy coated if deemed necessary to replace. The pumps serving WF-6 & 9, were indicated to have some operation issues losing pump prime during some start stop cycles. One options could include adding a check valve and/or replacing with self priming pumps. VFD's could be an option for pumps requiring adjustable flow, such as the Lazy river should more control be required. The Wave generator currently has it's original motor, but new volute & impeller in 2020. Energy efficient options can be reviewed and consulted with White water. Further investigation should be done, and energy audit performed to confirm best suited options and energy savings.



Wave Generator:



Chemical Injection pumps:

Existing injection pumps are diaphragm type. No issues were identified at time of site visit. Should upgrade of the pool system be considered, and connectivity to the BMS, options could include going to a DDA pump for more accurate injection and controllability. Further review can be performed to determine options for the facility.



Pool Heaters:

The pool heaters were not noted as having any issues. The Main pool heater had the heat exchanger replaced in 2017, the Wave pool was done in 2020, and the Whirlpool heater is from 2019. While no significant issues were identified at the time of the site visit, remaining life expectancy would be approx. 3 years, 5 years and 7 years for the Main, Wave and Whirlpool. You may want to consider implementing a central low temperature plant which would provide pool heat, domestic hot water heat as well as heating for building and ventilation. This eliminates pool water from corroding the heaters and provides better opportunity to increase building efficiency. Further investigation with pool design should be reviewed to confirm preferred system, as well energy audit to confirm best suited options.

Main Pool Heater



Wave Pool Heater

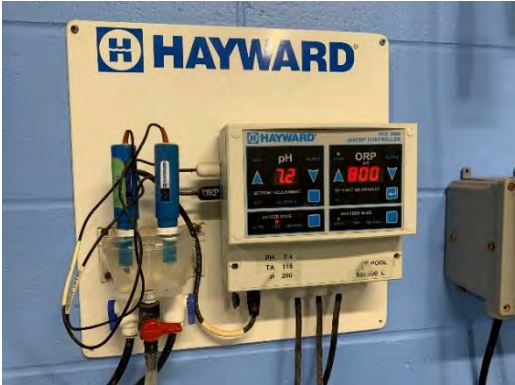


Whirl Pool Heater



Chemical Controllers:

The existing chemical controllers were not known to have any issues, appear to be relatively new. Options could include as part of the pool automation system, with Newer chemical controllers that are available that would be capable of connect ability to a DDC, this would allow for either the building automation to control or at minimum and remote monitoring.



Ozone:

The existing Ozone system is past EOL, and recommendation to remove entirely. Secondary disinfection should be considered to replace the Ozone. There are many options, that can be evaluated. Further investigation with pool design can be reviewed to confirm the preferred system.

UV filters, Wapotec Hydroxan - Hydrosan and clear comfort are all secondary treatment options that should be evaluated as a potential replacement for ozone. The most common in BC is UV.

Contact Tanks

Ozone Generator



Infinity Series Corona Discharge Ozone Generator
System Specifications
CD-150S

Serial Number: 119815001
Date of Manufacture: 11/88
Electrical Requirements: VAC 240
Phase 1
Amps 30.8
Hz 50/60

Generator feed gas: OXYGEN
(contains integral oxygen generator)
Rated ozone production: 150 gr/h
Ozone flow rate: 75 scfh
Concentration: 5-6 % by weight
Cooling: 3.5 GPM (min)

DEL INDUSTRIES
San Luis Obispo, CA • 93401 • Service: 800-876-1335

See Enclosure 2
CAUTION: Read the instruction manual before use.
WARNING: Disconnect the electric power before servicing.
WARNING: NEVER USE FINE-Grain material, liquid granules, and all other materials of
unknown or of the kind in which the product is located. Facilities, etc., and other
conditions are made optimal and have with great intensity in an enclosed with
Hazardous:
CAUTION: Connect only to a circuit protected by a class A ground fault circuit
interrupter.
FOR INDUSTRY USE ONLY.

Ozone Generator



Pool Chemical Tanks:

Chemical tanks at time of site visit had no containment. During site visit it was discussed the process of how chemicals were mixed and transferred. The Bulk feed and Sodium Hypochlorite tanks were located next to the door leading to the pool deck. While the Sodium Hypochlorite tank was recessed in a containment area, the Bulk feed tank was on top the floor. The larger Sodium Hypochlorite tanks located in the upper pool mechanical room had no containment nor were the tanks double wall. Nearest eye wash/drench shower was not measured for distance but does not meet work saft guidelines.

- .1 BC pool design guide requires that chlorine and acid storage rooms must have either dual wall containment tanks or containment curbs capable of accepting 110% of the volume of the chemical contained. Local health authority may require a containment curb regardless, in which case a single wall tank and containment curb is recommended.
- .2 Separation of Chemicals:
It is recommended that chlorine and acid be stored in separate rooms. The reason for this is that if the chemicals are mixed, a potentially fatal gas can be created. Separate rooms mitigate the risk of accidental mixing of the chemicals.
- .3 Ventilation:
 - .1 WorkSafe BC guidelines require that chlorine and acid storage rooms be continuously ventilated with a minimum of 30 air changes per hour.

.2 Eyewash:

- .1 WorkSafe BC guidelines require a drench shower and eyewash station be installed in accordance with CSA Z3581.

Chemical Room



Hydrochloric Acid



Bulkfeed tank w/Agitator & Sodium Hypochlorite

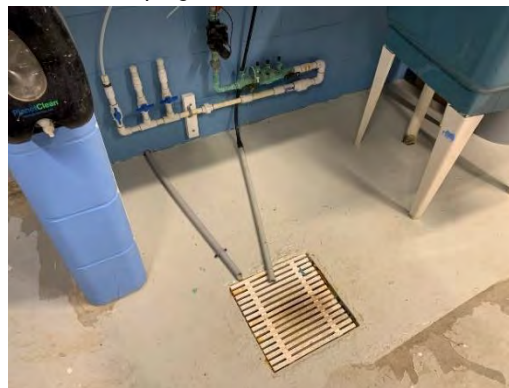


A sump pump was used as a bulk feed pump for the pools (shown in Pic above), this type of pump is not suitable for chemicals, and will corrode quickly. Further review required and discussion with CVAC & staff to determine best suited options, as per worksafe guidelines noted above.

Main Chemical Tanks



Piping from Bulkfeed Tank



Anti-entrapment, Main drain compliance:

The Lap Pool & Wave pool main drain covers were replaced with VGB compliant covers. no further action required.

The Whirlpool was under renovation during site visit. During follow up review, it was identified that two of the three main drains were missing anti-entrapment covers. Recommendation to install two VGB compliant drain covers to meet the pool design guidelines note below.

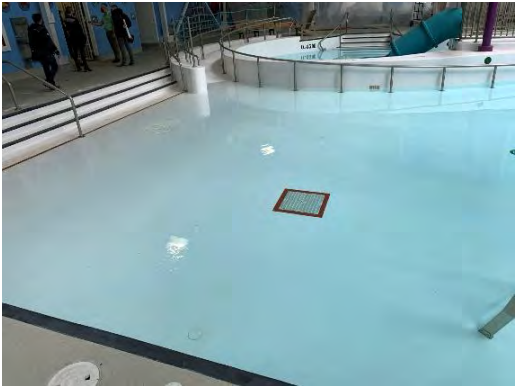
BC Pool Design Guide requires the following:

1. Main drains (suction outlets) with velocity through grate at maximum 1.5 fps (feet per second).
2. Main drains (suction outlets) must be VGB or ANSI 16 compliant. There must be a minimum of 2 drains separated by a minimum of 900mm, or an approved anti suction device installed on the pump to shut the pump off, should there be an entrapment event.
3. Main drain grates must be replaced every 7 years, according to ANSI 16, as the compliance rating is only valid for 7 years after installation.

Lap Pool



Wave Pool



Pool Deck Emergency Stop buttons:

I was observed that the emergency stop buttons were not clearly identified, recommendation would be to provide clear signage.

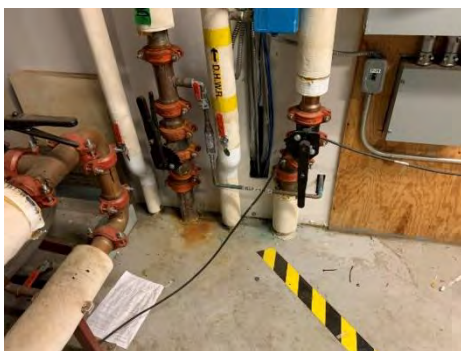


6. PLUMBING SYSTEMS

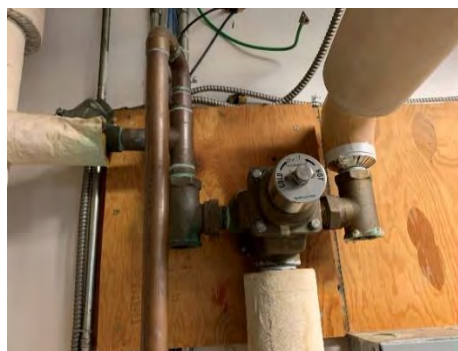
Domestic Pipe Distribution

No issues were identified at the time of the site visit, with regular maintenance recommended, and inspection for water leaks or pipe vibration can be performed. Inspection for loose insulation should be replaced to ensure heat loss is minimized, and water hammer arresters replaced if pipe hammering is overserved.

Domestic water distribution



Hot Water Tempering valve (TMV-1)



Domestic Hot Water Generation:

The domestic hot water storage tanks are near EOL, and replacement should be planned for. Numerous locations of piping were missing insulation, it was not discussed if this was for inspection purposes or was removed for some other reason. The Domestic hot water boiler was replaced in 2016, therefore no action required. However, should a central heating system be considered, the domestic hot water system should be reviewed at the time. There are several options that could be implemented that have potential for energy efficiency and reduce GHG's. An Energy audit should be performed to confirm best suited design. Refer to central heating plant description.

Domestic Hot Water Tanks



Domestic Hot water Boiler



Piping between Domestic Hot Water Tanks, missing insulation



Floor Drains:

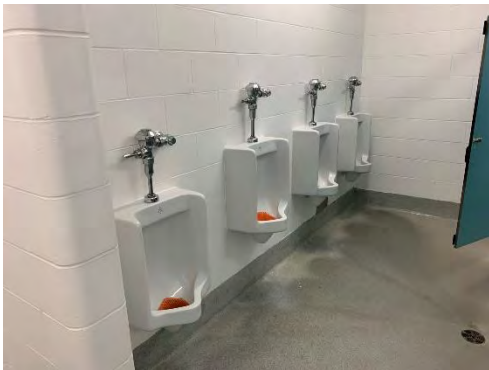
Floor drains appeared in reasonable condition throughout the change rooms, not issued were identified at the time of the site visit. Mechanical room floor drains should be inspected, in particularly in the Pump pit, as the drains were very corroded, and inspection and pipe scope should be performed to ensure no leaks in the piping. The drains should be replace with new corrosion resistant fixtures.



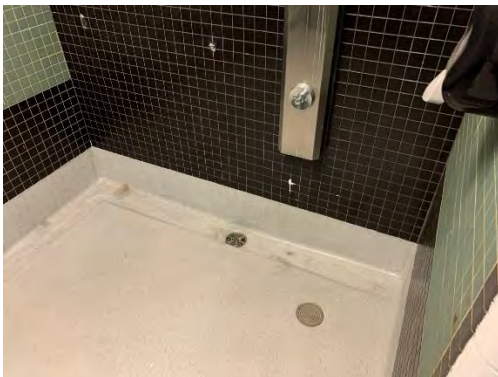
Plumbing fixtures:

No issues were identified at time of site visit, regular maintenance, would require spring return to be inspected as they tend to corrode for push button showers and lavatories. Staff shower should be inspected, and replacement considered for base and enclosure to ensure no leakage. Further review required to identify if other fixtures require replacement or maintenance. Further discussion with facility staff, was indicated that there was no intent to change fixtures. Should this change in the future, consideration could be to limit the amount of contaminants, we would recommend replacement using Hands free technology. This could be by solar rechargeable batteries or hard wired.

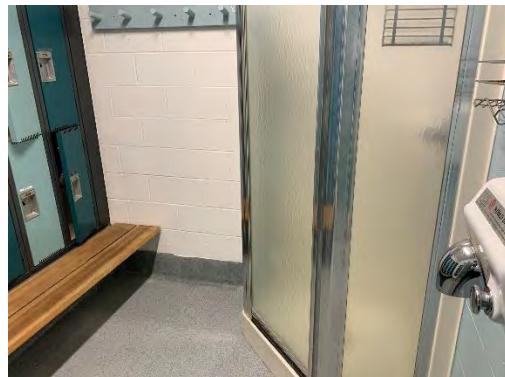
Mens Change room



Womens Change room



Staff change room shower

**END OF REPORT**

**APPENDIX D:
BUILDING ENVELOPE CONDITION
ASSESSMENT**



Comox Valley Aquatic Centre

Building Enclosure Assessment

377 Lerwick Road
Courtney, BC

May 04, 2021
RJC No. VIC.129291.0002

Prepared for:

Comox Valley Regional District
c/o FaulknerBrowns Architecture Inc.
1055 West Georgia Street, Suite 2174
Vancouver, BC V6E 3P3

Prepared by:

Read Jones Christoffersen Ltd.
645 Tyee Road, Suite 220
Victoria, BC V9A 6X5



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1.0 INTRODUCTION

Read Jones Christoffersen Ltd. (RJC) was engaged by FaulknerBrowns Architecture Inc. (the Architect), to perform a Building Envelope Assessment of the Comox Valley Aquatic Centre, located in Courtenay, BC.

This report is intended to provide the Comox Valley Regional District (CVRD) with a general description of the systems employed in the building, and to comment on their general condition as visually apparent at the time of our site review.

RJC was part of a multi-disciplinary team and our assessment forms part of an overall condition assessment of the building. We note that RJC also was also responsible for structural components and has prepared a separate report for these components.

2.0 ASSESSMENT

In general, the scope of work included a visual walkthrough of the property and a review of available documents. The building systems examined were:

- Exterior Walls Assemblies
- Window and Door Assemblies
- Roof Assemblies

2.1 Documents Reviewed

As part of this review, we were provided with the following documents for review:

- .1 Architectural drawings (29 sheets) prepared by CJP Architects marked issued for "Permit Application" and dated July 13, 1998
- .2 Structural drawings from original construction (11 sheets) prepared by Pomeroy Engineering Limited marked "Issued for Construction" and dated "98.10.09"
- .3 Issued for Construction Specifications (reviewed physically on site).

2.2 Building Enclosure Components

The building is a one-storey structure, constructed from conventional cast-in-place concrete walls and footings, and load bearing CMU walls. A roof level mechanical room is also present, which is generally constructed out of steel framing and steel studs.

All exterior walls of the building are clad in an Exterior Insulated Finish System (EIFS), incorporating four inches of expanded rigid insulation. The Air, Moisture and Vapour barrier is applied directly onto the CMU, concrete or exterior gypsum wall sheathing. At steel stud locations, the stud cavities are empty (un-insulated).



The roof structure is a steel framed system, and includes a flat roof assembly and a sloped roof assembly over the natatorium. Roofing material is a combination of asphalt shingles and torch-on modified bitumen sheet membrane. Insulation for both roof systems is provided above a metal deck, with air and vapour barrier applied over a layer of exterior rated sheathing. The sloped roof system incorporates a Z-Girt and cross strapping system to facilitate venting.

The windows are double glazed, thermally broken aluminum framed systems (Kawneer Isoport 516), with operable awning style vents (Kawneer 526 Vent insert) located at offices or multi purpose spaces. A thermally improved curtain wall system is present at the main entry lobby, with double pane IGUs.

Doors are aluminum framed, thermally broken systems, located at the main entrance of the building, and at the natatorium. Steel framed / metal doors assemblies are present at the mechanical roof top level as well as at the mechanical room located at the ground floor on the south side.

Skylight assemblies are present at the natatorium, with these assemblies also incorporating thermally improved aluminum framing with double pane safety glass units.

Foundation waterproofing was largely concealed at the time of review but the drawings note an application of a damproofing membrane system.

2.3 Site Observations

In general, the building envelope systems appear to be consistent with project documents reviewed. The following provides our observations of the various enclosure assemblies reviewed on site:

(Refer to Photos in Appendix A)

.1 Wall Assemblies

In general, the conditions of the cladding systems appear in generally good condition commensurate with its age. Minor instances of deficiencies were noted as follows:

- .1 Some areas of the EIFS had voids or holes from exterior damage. These were isolated instances and it was noted that the maintenance staff typically repairs such instances when discovered.
- .2 Some efflorescence on the EIFS soffits were observed, particularly where they transition with the roof gutters.
- .3 At sloped roof transitions, the EIFS is vulnerable to water ingress as the saddle detail requires coating and/or improved detailing.
- .4 Sealants around the EIFS joints, around widow-to-wall transitions, around vents, and at penetrations are showing signs of ageing. At one location, a hole through the EIFS is left unsealed.
- .5 Wall coating appear to be faded in areas of high exposure.



.2 Window, Door and Skylight Assemblies

- .1 Window and door IGUs appear to be in good condition with no signs of fogging. However, glazing wet seals have migrated and are aged.
- .2 Some window frames appear to have signs of condensation on their frames, but there are not signs of moisture related deterioration.
- .3 The aluminum and glass double door located at the south west corner of the natatorium appears to have some damaged to the door leaf, with gusset plates installed over the door frame butt joints to keep the frame intact.
- .4 The steel double door at the ground floor mechanical room, south elevation, has significant corrosion on the door leaf and the door frame. The push door hardware appears to be worn, as well as the weather seals for all doors within this space.
- .5 Skylight IGUs appear to be in good condition with no fogging or condensation observed within the IGUs.
- .6 Skylight perimeter sealants are ageing and requires replacement. Flashings are showing signs of wear and requires re-finishing or the coating, or replacement.

.3 Roof Assemblies

The roof assemblies are showing signs of significant wear and tear and have approached the end of their useful life. Deficiencies observed are as follows:

- .1 The torch applied membrane has areas of 'alligatoring', blistering, seam separation and loss of protective granules indicating the membrane has aged.
- .2 The sloped shingles have significant granular loss and several locations have the fibreglass core exposed
- .3 Shingles are brittle at various locations
- .4 Both low slope and sloped roof assemblies have areas of debris and moss growth which affect the overall performance of the membrane
- .5 Drainage appears to be impeded by debris build-up around the gutters and drains. At the south elevation, the gutter requires repair as it is detaching from the roof due to weight of moss and debris build-up within the gutter.
- .6 Some down pipes are damaged, or elbow joints disconnected / broken.
- .7 On leak was reported at the slope roof location (north east side of the natatorium).
- .8 Wood fascia boards have moisture related deterioration at the roof saddle transitions.



3.0 RECOMMENDATIONS

RJC has identified the following recommendations for consideration:

.1 Wall Assemblies

- .1 Repair cracks and minor damage at racks/damage at EIFS walls, and clean efflorescence staining at soffits.
- .2 Re-apply EIFS acrylic finish coating (all locations) to extend life of EIFS system, maintain waterproofing & shedding performance and address aesthetics (fading or finishes).
- .3 Repair sloped roof to wall transition and saddles to mitigate risk of water ingress at these locations.
- .4 Replace exterior sealants at EIFS joints, around window and door perimeters, around wall vents and penetrations, and around roof tie-in flashings.

.2 Window, Door and Skylight Assemblies

- .1 Repair or replace corroded steel door frame, door and hardware (including push bar and closer) in pool mechanical room, and install new weather seals.
- .2 Replace damaged door leaf at the south west corner of the natatorium, and replace push bar hardware, and weather seals.
- .3 Replace IGUs at skylights, curtain walls and glazed doors as required to maintain functional performance of the glazing assemblies.
- .4 Replace seals and sealants at the skylights to maintain functional performance of the system.

.3 Roof Assemblies

- .1 Replace roof shingle and flat roof membrane system complete with new insulation. Insulation to be upgraded to meet current code requirements
- .2 Replace all roof flashings and gutters and tie-in flashings at skylights. Work to be completed as part of the roof membrane replacement.
- .3 Repair or replace deteriorated wooden roof fascia (at saddle / gutter locations). Opportunity to replace with cementitious trim boards for added durability.
- .4 Replace damaged gutters and rain water leaders. Work is recommend to be completed as part of roof replacement project.



4.0 LIMITS OF LIABILITY

The review of this property was of a visual nature only. No testing or dismantling of any coverings was performed. This assessment was made on a random basis with no attempt to review or inspect every element or portion of the building. The intent of the review was to determine areas of visually obvious deterioration and need for repair and to determine, in a general way, the overall quality and sufficiency of the work but not to ascertain the quality of sufficiency of any particular aspect of the building. No calculations were performed to confirm the adequacy of any of the elements reviewed. Our comments are not a guarantee or warranty of any aspect of the condition of the building, whatsoever.

Drawings made available were used solely for the purpose of obtaining design information on elements hidden from view which the Engineer may require, supplemental to their visual inspection, in order to more fully describe the building but no comments can be made as to the construction of those elements.

Any and all previous opinions expressed by Read Jones Christoffersen Ltd., either verbally or in writing, regarding the condition or cost estimates for repair of the above elements are superseded by this report.

This report has been prepared for the exclusive use of the Architect and the Comox Valley Regional District. The contents of this report may not be quoted in whole or in part or distributed to any person or entity other than by the Client or those parties possessing a reliance letter. Read Jones Christoffersen Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report

5.0 CLOSURE

Thank you for selecting Read Jones Christoffersen Ltd. for this project. We trust the information presented in this report satisfies your current requirements.

Should you have any questions, comments, or concerns, please do not hesitate to contact the undersigned.

Yours truly,

READ JONES CHRISTOFFERSEN LTD.

Sameer Hasham, B.A.Sc., P.Eng., CPHD
Project Engineer

SH/rt

Appendix A Photographs


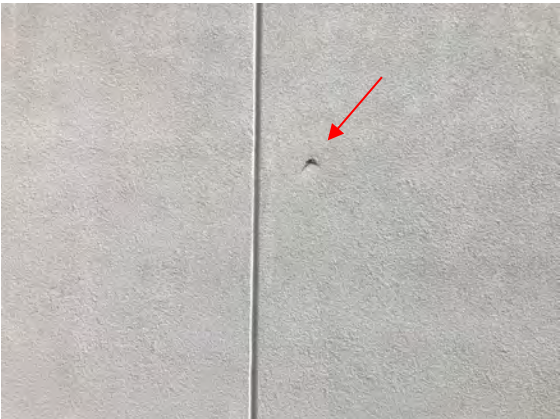

TABLE A1 – GENERAL OBSERVATIONS	
<p>Location: Exterior</p> <p>Observation: Exterior Insulated Finish System (EIFS) appears to be in generally good condition throughout the building. The EIFS finish coating is fading around the building.</p> <p>Recommendation: Re-coat the exterior finish with new tinted acrylic finish coating.</p> <p>Time Frame: 10 years</p>	 <p>Photo 1 EIFS Cladding at east elevation</p>
<p>Location: Exterior</p> <p>Observation: Minor instances of damage at the EIFS cladding are present. Holes as shown in the photo are a risk for water ingress and should be patched. All EIFS panel joints where sealant is provided are also vulnerable to water ingress. Sealant joints should be replaced on a regular maintenance cycle.</p> <p>Recommendation: Repair holes and voids in EIFS wall cladding, and replace all sealant joints on EIFS.</p> <p>Time Frame: 0-2 years</p>	 <p>Photo 2 West elevation (next to transformer)</p>
<p>Location: Exterior</p> <p>Observation: Window sill joint separating. This appears to be an isolated condition with low risk. However, it is recommended that similar joints be reviewed and repaired.</p> <p>Recommendation: Repair joints and seal with appropriate exterior sealant</p> <p>Time Frame: 0-2 years</p>	 <p>Photo 3 West elevation (classroom 130)</p>

TABLE A1 – GENERAL OBSERVATIONS

Location: Exterior

Observation:

Penetrations through EIFS cladding observed at a few locations, with either missing sealant or aged sealant. At one location (electrical room), a new drain through the wall has been installed with no sealant.

Recommendation:

Apply and/or replace sealant at pipe penetrations throughout the building.

Time Frame: 0-2 years



Photo 4 New pipe penetration at electrical room, west elevation

Location: Exterior – south elevation

Observation:

Aluminum frame door appears to have separating joints and repaired with gusset plates.

Recommendation:

Replace aluminum door leaf with new door, complete with new hardware and weather seals.

Time Frame: 2-5 years



Photo 5 South elevation natatorium exit door

Location: Mechanical room – South elevation

Observation:

Mechanical room double door is corroded at the bottom, including the door frame and door leaf. Hardware appears to be stiff and not functioning very effectively.

Recommendation:

Repair or replace corroded door and door frame, with new hardware and weather seals.

Time Frame: 2-5 years



Photo 6 Mechanical room, south elevation




TABLE A1 – GENERAL OBSERVATIONS	
<p>Location: Exterior</p> <p>Observation: Door and window perimeter sealants are showing signs of ageing and cracking.</p> <p>Recommendation: Replace all perimeter sealant around the doors and windows.</p> <p>Time Frame: 2-5 years</p>	 <p>Photo 7 South elevation natatorium exit doors</p>
<p>Location: Exterior – South elevation</p> <p>Observation: Base of wall at the south elevation, along the hardscape, is in close proximity to the concrete slab. Minor instances of wall damage is present.</p> <p>Recommendation: Repair instances of damage, and ensure debris along the wall is cleared to facilitate drainage away from the walls.</p> <p>Time Frame: 0-2 years</p>	 <p>Photo 8 South elevation</p>
<p>Location: Interior – windows general locations</p> <p>Observation: Window seals and gaskets are showing signs of ageing at several locations. Gaps in the dry seals are present, while wet seals are migrating. IGUs appear to be in good condition with no signs of fogging or condensation.</p> <p>Recommendation: Replace glazing seals and gaskets as required to facilitate continued performance.</p> <p>Time Frame: 5-10 years</p>	 <p>Photo 9 Close-up of crack in Photo 8</p>

TABLE A1 – GENERAL OBSERVATIONS

Location: Skylight

Observation:

Skylights IGUs appear to be in good condition with no signs of fogging or failure. Sealants around the pressure plates and flashings have aged and are beginning to wear.

Recommendation:

Replace glazing seals and gaskets to facilitate continued performance.

Time Frame: 5-10 years



Photo 10 Skylight

Location: Skylight

Observation:

Skylight flashings are worn with their finishes faded and the sealant joints aged and/or debonded. Fasteners attaching the flashings in place appear to be corroding.

Recommendation:

Replace flashings around skylights as part of the roof project. For added thermal performance, insulation around the skylights can be increased.

Time Frame: 2-5 years



Photo 11 Skylight flashings

Location: Roof Shingles

Observation:

Organic growth at roof to wall transition observed, and shingles are installed tight at the wall up-turn. This is impeding water flow, and allowing build-up of debris.

Recommendation:

Provide a 2" gap between the wall and shingles for water to shed along the flashing (per RCABC best practice). Complete as part of roof replacement.

Time Frame: 0-2 Years



Photo 12 Staining on roof truss

TABLE A1 – GENERAL OBSERVATIONS

Location: Roof Shingles

Observation:
Significant moss growth observed at the sloped roof section. Moss and organic growth affects the longevity of the shingles.

Recommendation:
Keep roof assembly clean on a regular basis.

Time Frame: Routine maintenance



Photo 13 Organic growth at section of roof

Location: Roof shingles

Observation:
Roof shingles are worn in many locations, with aggregate no longer present, and fiberglass core exposed. The shingles are brittle and have surpassed the end of their service life.

Recommendation:
Replace all roof shingles and increase roof insulation as required to meet minimum code requirements.

Time Frame: 0-2 years



Photo 14 Exposed fiberglass core on shingles

Location: Slope roof

Observation:
The gutter on the south elevation of the sloped roof is damaged and filled with debris.

Recommendation:
Replace gutters and down pipes, and ensure regular cleaning is completed to maintain controlled drainage of roof system. Gutters can be replaced as part of the roof replacement.

Time Frame: 0-2 years



Photo 15 Damaged gutter on south elevation

TABLE A1 – GENERAL OBSERVATIONS

Location: low sloped roof

Observation:

The torch applied membrane on low sloped roof sections is worn and showing signs of ageing and distress. Seams are separating and areas of blisters observed. The roof membrane has surpassed its intended service life.

Recommendation:

Replace roof membrane, and increase roof insulation to meet minimum code requirements.

Time Frame: 0-2 years



Photo 16 Ageing roof membrane at flat roof

Location: Sloped roof gutter to wall transition

Observation:

Sections of the sloped roof transition with the EIFS wall assembly are vulnerable to water ingress. Wood fascia boards are deteriorating at some locations.

Recommendation:

Complete waterproofing of these transition details, and replace deteriorated wood fascia boards. Consider cementitious fascia boards for added durability.

Time Frame: 0-2 years



Photo 17 Gap in EIFS membrane at fascia detail

Location: Soffit at roof eaves

Observation:

Some soffit location as roof eaves appear to have moisture staining, likely due to failure of gutters. These areas are susceptible to water damage if not managed Adequately.

Recommendation:

Repair gutters and clean EIFS. Monitor these areas to ensure no risk of water ingress is occurring at roof eaves and soffits.

Time Frame: 0-2 years



Photo 18 Efflorescence at roof eave (at gutter locations)

TABLE A1 – GENERAL OBSERVATIONS

Location: Roof saddles

Observation:

Sealants at roof saddles are ageing and debonding. These areas are critical to ensure water run-off from the roof system is diverted away from the EIFS assembly.

Recommendation:

Re-seal all roof saddles and ensure flashings are functional. Complete work as part of roof replacement.

Time Frame: 0-2 years



Photo 19 Typical roof saddle detail

Location: Roof mechanical vent

Observation:

The mechanical vent at the roof levels appears to be in good condition. However, sealants around the vents require upkeep on a regular basis to ensure the EIFS is protected from water ingress.

Recommendation:

Apply sealant around the mechanical vent. Complete as part of overall sealant replacement work.

Time Frame: 0-2 years



Photo 20 Vent at roof mechanical wall

**APPENDIX E:
ARCHITECTURAL, INTERIORS AND CODE
ASSESSMENT**

ARCHITECTURAL, INTERIORS AND CODE FACILITY ASSESSMENT



On site review March 17, 2021

1.0 FACILITY DESCRIPTION

The Comox Valley Aquatic Centre is located on 377 Lerwick Road, Courtenay BC. The building consists of a 1-storey steel structure building with concrete foundation. The exterior of the building is clad with face sealed EIFS system. The windows are thermally broken aluminum-frame units. The roof area is a mix of pitched shingle roofs and low-pitch 'flat' 2-ply membrane roof, over metal deck. The main entrance features a mass timber (glulam) pitched entry canopy.

The 43,378 ft² community facility serves the wider Courtenay/Comox/Cumberland region as a recreation centre for aquatic and wellness activities. The centre contains a leisure pool with large two waterslides, an 8-lane, 25-metre pool, sauna, whirlpool, steam room, fitness studio, classrooms, pro shop and accessibility features – beach-entry access into the leisure wave pool, poolside lifts, universal change rooms and poolside chair lift.

Constructed in 1999, the facility is well maintained and cared for, allowing it to remain more functional than most buildings of its age. The building is largely provided with systems and components originating from the initial building construction.

2.0 GENERAL OBSERVATIONS

The building appears to be in very good condition and well maintained. Maintenance has allowed most components to remain serviceable through their expected life.

Overall, the building envelope components appear to be in good condition. No significant deficiencies were observed to suggest differential settlement of the building foundations or movement of the building structure.

At the time of this assessment, the facility was closed due to COVID-19. Since the closure period beginning March 2020, the facility has undergone minor capital improvements, including repainting throughout the facility and maintenance-related repairs at the changeroom and pool areas and lighting improvements.

3.0 SITE SUMMARY

Concrete sidewalks, curbs and asphalt paving are provided at the perimeter of the building. The bituminous parking area (with painted lines) and paths reviewed were generally in very good condition with minor cracks and heaving. While immediate action is does not appear required, we recommend cracks and uneven surfaces that do present that do present due to exterior weather conditions, settlement, and uplift be repaired as to ensure accessibility and prevent tripping hazard.

Component	Description	Comment/Assessment
G2020 Parking Lots/G2030 Pedestrian Paving	Concrete sidewalks, curbs and asphalt paving (Photo A1)	Good condition. No action required. Maintenance/repairs as cracks/deterioration of conditions present.
G2050 Landscaping	Landscaping - Precast Concrete Picnic Table (Photo A2)	Deficiencies observed: bench cracked, presenting safety risk. Recommended removal (and replacement as required).

4.0 BUILDING CODE REVIEW

At the time of construction, the building was designed in conformance with the British Columbia Building Code (BCBC 1992) Assembly Building, Division 3, one-storey, with a total code building area of 3,086m². It is constructed of a mix of combustible/non-combustible construction, facing 3 streets, and is not sprinklered. It is assumed all buildings were constructed in conformance with the Building Code at the time of construction.

The Consultant team was not made aware of any outstanding work orders, building code violations, building code infractions, building ordinances and municipal health and fire safety by-laws violations.

A visual review was completed to assess for safety-related code issues and Interiors code-related deficiency items, including accessibility issues listed below:

Component	Description	Comment/Assessment
C1030 Reception Counter (Photo A3)	Service Counter non-compliant to current BCBC Section 3.8 (Accessibility)	BCBC requires at least one section of service counter not more than 865 mm above the floor. Recommended renovation to achieve recommended 760mm compliant counter.
D2010 Plumbing Fixtures - DF-1 (Photo A14)	Drinking Fountain at Public Corridor non-compliant to current BCBC Section 3.8 (Accessibility).	Model does not allow for requisite clearance under fountain. Replace drinking fountain with compliant model.



Photo A1 Paving and curbing in good condition.



Photo A2 Damaged site furniture



Photo A3 Reception millwork

5.0 POOL REVIEW

The Facility was designed in conformance with the Swimming Pool Health Act (1994). The pool is in generally in good condition and well maintained. CVRD Staff noted the following recent improvements:

- Most of pool area walls and structural members have recently received paint coatings, including rust converter where applicable.
- Decorative rope rail replaced

During visual review of the natatorium, the Consultant Team noted the following pool related life safety deficiencies:

Component	Description/Comment	Recommendation
C3020 Floor Finishes (Photo A4)	Epoxy Flooring System at Pool Deck and Change Rooms is degraded. Non-compliant to latest BC Health Act nonslip/slip-resistant texture (DCOF/SCOF minimums).	Resurface seamless epoxy aggregate flooring approx. 8" cove base and associated fittings (protective edgings, reducer strips, expansion joints) compatible with existing 'Stonhard' system.
C3030 Ceiling Finishes (Photo A5)	Suspended Lightweight Acoustic Ceiling Panels (Pool Area) buckling or have fallen out, presenting a safety risk and affecting noise control in natatorium.	Full replacement of Acoustic Ceiling Panels and Suspension System.
D2092 Pool Equipment	Pool Main Drain Anti-entrapment cover required at two (2) of 3 whirlpool main drains.	Install VGBPSSA-compliant drain cover, to ANSI/APSP-16-2011, with flat or low-profile design for pool areas less than 1.5 m (5 ft) in depth, to minimize tripping hazards, per latest BC Health Act Guidelines for Pool Design. Owner to confirm compliance for remainder of main drains (at lap pool and wave pool), which are noted to have domed covers.

Reference: BC Public Health Act Pool Regulation (2016); BC Ministry of Health, Health Protection Branch 'BC Guidelines for Pool Design Version 2 June 2014.

Additional items observed that do not appear to be affecting performance but are likely to require future attention, or would be considered an enhancement to the facility (function, efficiency, aesthetics):

- Minor rusting at stainless steel guard rails, fittings and escutcheon plates, including waterslide stair railings (Photo A6)
- Minor rusting at interior doors at natatorium (Photo A7)
- Rusting at staff room lockers
- Deterioration at 25m pool grates (Photo A13)
- Fading/deterioration of fiberglass water slide flume and exit section

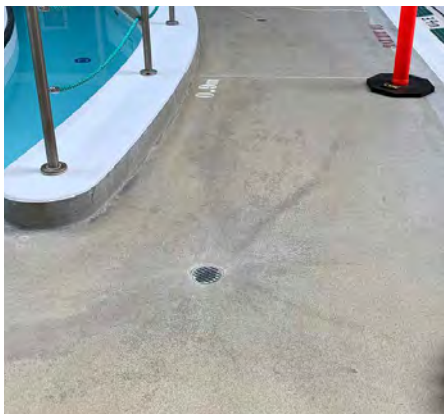


Photo A4 Deterioration at pool deck epoxy flooring



Photo A5 Suspended Acoustic Panels at Natatorium



Photo A6 Stainless steel guards at pool

6.0 INTERIORS REVIEW

Component	Description/Comment	Recommendation
C1020 Interior Doors (Photo A7)	Interior Painted Metal Swing Doors and Glazed Storefront Doors. Minor rusting observed at high humidity areas.	Replace doors and as required to maintain functional performance. Assume 10% for budgetary needs.
C1030 Fittings (Photo A8)	Washroom Partitions - Painted Metal and Plastic/ Phenolic. Deterioration observed.	Replace as required. Full replacement at Men's & Women's Washrooms. At Changerooms, assume 20% for budgetary needs.
C1030 Fittings (Photo A9)	Wood cabinetry, laminate counters and desk at Staff Room and Head Guard Room in poor condition due to high humidity and general use.	Replace millwork counters and cabinets (AWMAC Quality).
C3020 Floor Finishes (Photo A10)	Sports Flooring at Fitness Centre deteriorated at select locations	Replace resilient athletic flooring.
C3030 Acoustic Ceiling Tile (Photo A13)	Lay-in Acoustic Ceiling Tile. Observed staining, damage in various locations.	Replace lay-in exposed grid tiles and investigate leaks. Assume 10% replacement.



Photo A7 Interior doors at natatorium



Photo A8 Washroom partitions at Changerooms

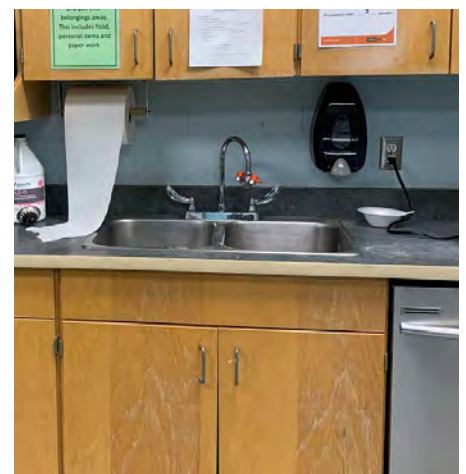


Photo A9 Staff Room millwork



Photo A10 Resilient Sports Flooring at Fitness Centre



Photo A11 Staining at acoustic ceiling tile at Rm. 138 (Concession).

7.0 CLOSURE

This facility condition assessment report and its recommendations are accurate within the limitations inherent in the foregoing. Should any clarification be required regarding the content or conclusions of this report, please contact the undersigned at the contact information provided below.

FaulknerBrowns Architects
Kate Busby
Architect AIBC, AAA, Partner
Email: k.busby@faulknerbrowns.com



Photo A12 Drinking Fountain at Corridor 135

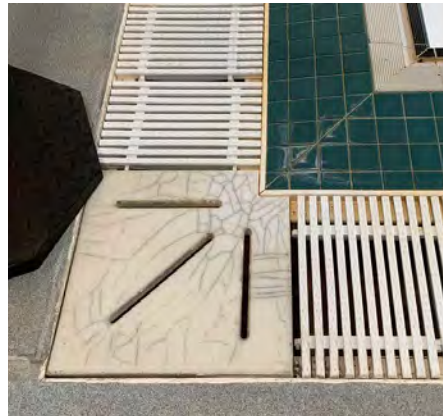


Photo A13 Swimming Pool Grate at 25m pool.

**APPENDIX F:
COST MANAGEMENT REPORT -
CLASS D ESTIMATE**



COST MANAGEMENT REPORT

*Comox Valley Aquatic Centre
Class D Estimate*

REPORT NUMBER 1.2

MAY 10, 2021

PREPARED FOR:

FaulknerBrowns Architects

2288 Manitoba St., Vancouver, BC, V5Y 4B5
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BTY.COM

*People to count on.
Knowledge to build with.*



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APPENDICES:

APPENDIX I	Cost Plan	14 pages
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Prepared By	Reviewed By	Date
Joseph Chan	Eldon Lau	5/10/2021



1.0 Introduction

1.1 Instructions Received

This report has been prepared by BTY Group (“BTY”) at the request of FaulknerBrowns Architects (the “Client”).

FaulknerBrowns Architects has appointed BTY to provide a Class D estimate developed for the condition assessment of Comox Valley Aquatic Centre at 377 Lerwick Road, Courtenay, B.C. (the “Project”). The Project delivery model is yet to be determined, therefore, BTY strongly recommends that estimates are prepared at each of the key design milestones.

Information related to the Project for the purposes of this report was received by BTY on April 14, 2021. Please refer to Section 12.0 for a list of information received in producing this report.

1.2 Report Reliance

This report has been prepared in accordance with the scope of our Fee Proposal, dated February 1, 2021 and is subject to the terms of that appointment. This report is for the sole and confidential use and reliance of the Client. BTY Group, Directors, staff or agents do not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the Client or other third-party consultants or agents. BTY Group will not be liable for the result of any information not received which, if produced, could have materially changed the opinions or conclusions stated in this report. This report shall not be reproduced or distributed to any party without the express permission of BTY Group.

Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the report as a whole. The contents do not provide legal, insurance or tax advice or opinion. Opinions in this report do not advocate for any party and if called upon to give oral or written testimony it will be given on the same assumption.

1.3 Contacts

Should you have any queries regarding the content of this report, please do not hesitate to contact either of the following:

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2.0 *Executive Summary*

2.1 **Report Purpose**

The purpose of this report is to provide a realistic estimate of the Project cost based on the information available at the time of writing.

The opinion expressed in this report has been prepared based on the items description and photos included in the Facility Condition Assessment Report and should, therefore, be considered a Class D estimate. Based on the documents reviewed, our estimate should be correct within a range of approximately +/- 25%.

In order to provide an accurate cost estimate for the Project, BTY Group strongly recommends that a professional Quantity Surveying organization, such as BTY Group, be retained to provide a detailed analysis of any design information produced on behalf of the Client during the remaining stages of design.

2.2 **Project Background and Description**

This cost estimate provides an Order of Magnitude costing to the scope of work items within a 10-year capital plan recommended by the Architect and the Consultant Team based on their assessment on the overall condition of the aquatic centre facility.

The report covered the following major categories:

- Building Envelope
- Architectural /Interiors
- Structural
- Mechanical
- Electrical
- Site Improvements



3.0 Development Cost Summary

The current estimated cost of the project may be summarized as follows:

	Item	Estimated Costs (\$)
A	Land Cost (Excluded)	0
B	Construction (excluding optional items)	7,882,170
C	Contingencies	included
D	Professional Fees	0
E	Municipal & Connection Fees	0
F	Management & Overhead	0
G	Project Contingency	0
H	Furnishing, Fittings & Equipment	0
I	Financing Costs	0
J	Goods & Services Tax	0
	Sub-Total Project Cost	\$7,882,170
K	Escalation (Excluded)	0
	Total Project Cost (April 2021 Dollars)	\$7,882,170

Please note that, where zero dollar values are stated, BTY has excluded these costs and the values should be carried in a separate budget (if applicable).

4.0 Basis & Assumptions

The construction estimate is based on the following list of assumptions:

1. All works will be carried out during normal working hours. The aquatic building will be closed during major renovations;
2. No allowance for hazmat abatement works;
3. The owner will provide temporary utilities for the contractor;
4. All costs are current prices (April 2021 Dollars). No allowance for future cost escalation is included for the 10-year capital plan.
5. Re-coating of the slab of grade is excluded in items 1 and 2 in Appendix 1 – Cost Summary
6. Central mechanical plant of the pools is not considered in the costing. No allowance associated to running piping from the Pool boiler room across the Natatorium to the Penthouse mechanical room is included in the costing
7. All costs are inclusive of demolition /removal, contractor's overheads and profit. Design and construction contingencies have been included as noted in Section 11 of this report
8. Other assumptions as noted in the in Appendix I - Cost Summary

Please note that BTY is not qualified to act as design consultant. The assumptions in our estimate should be reviewed and corrected by the design team.



5.0 Exclusions

The construction estimate includes all direct and indirect construction costs derived from the drawings and other information provided by the Consultants, with the exception of the following:

1. Professional fees and disbursements;
2. Planning, administrative and financing costs;
3. Legal fees and agreement costs / conditions;
4. Building permits;
5. Temporary facilities for user groups during construction;
6. Removal of hazardous materials from existing building;
7. Loose furnishings and equipment;
8. Unforeseen ground conditions and associated extras;
9. General contractor bonding;
10. Phasing of the works and accelerated schedule;
11. Decanting & moving;
12. Project commissioning to be carried out by an independent consultant;
13. Erratic market conditions, such as lack of bidders, proprietary specifications;
14. Unforeseen existing building conditions;
15. Cost escalation.

6.0 Construction Cost Summary

The estimated construction cost of the project, including the optional items, has been summarized in Appendix I at the end of this report.

7.0 Taxes

The estimate includes the Provincial Sales Tax (P.S.T.) where applicable.

The estimate excludes the Goods & Services Tax (G.S.T.).

8.0 Project Schedule & Escalation

No cost escalation allowance has been included in this estimate.



9.0 Pricing

This estimate has been priced at second quarter 2021 rates assuming a normal market. The unit rates utilized are considered appropriate for a project of this type, bid under a Design-Bid-Build model in an open market, with a minimum of five (5) bids, supported by a sufficient number of sub-contractors to ensure competitiveness.

The estimate does not take into account the extraordinary market conditions currently being experienced as a result of COVID-19 nor its potential impact on construction costs in the form of site closures, social distancing requirements, shortages of materials nor other issues that may be affecting productivity and capacity.

The estimate allows for labour, material, equipment and other input costs at current rates and levels of productivity. It does not take into account extraordinary market conditions, where bidders may be few and may include in their tenders disproportionate contingencies and profit margins.

10.0 Risk Mitigation

BTY Group recommends that the Owner, Project Manager and Design Team carefully review this document, including exclusions, inclusions and assumptions, contingencies, escalation and mark-ups. If the project is over budget, or if there are unresolved budgeting issues, alternative systems/schemes should be evaluated before proceeding into the next design phase.

Requests for modifications of any apparent errors or omissions to this document must be made to BTY Group within ten (10) days of receipt of this estimate. Otherwise, it will be understood that the contents have been concurred with and accepted.

It is recommended that BTY Group design and propose a cost management framework for implementation. This framework would require that a series of further estimates be undertaken at key design stage milestones and a final update estimate be produced which is representative of the completed tender documents, project delivery model and schedule. The final updated estimate will address changes and additions to the documents, as well as addenda issued during the bidding process. BTY Group is unable to reconcile bid results to any estimate not produced from bid documents including all addenda.

11.0 Contingencies

11.1 Design Contingency

A design contingency of Five Percent (5%) has been included in the estimate to cover modifications to the program, drawings and specifications during the design stage.

11.2 Construction Contingency

An allowance of Fifteen Percent (15%) has been included in the estimate for changes occurring during the construction period of the project. This amount may be expended due to site conditions or if there are modifications to the drawings and specifications.



12.0 Documents Reviewed

The list below confirms the information that we have reviewed in order to prepare our opinion contained within this report:

	Description	Revised Date
Existing Facility Drawings		
	Architectual - 1998-A1.01- A7.61	July 13, 1998
	Structural - 1998- S.01- S.11 (10 PGS)	October 9, 1998
	Mechanical - 1998- M-1.1 - M-6.1 (12 Pgs)	July 3, 1998
	Electrical - 1998- E1.01-E5.03 (7 PGS)	July 13, 1998
Report		
	CVAC Facility Condition Assessment Report_ISSUE FOR COSTING 210414	April 8, 2012



COST MANAGEMENT REPORT

Comox Valley Aquatic Centre, BC

APPENDICES

APPENDIX I Cost Summary

8 pages

COMOX VALLEY REGIONAL DISTRICT

Comox Valley Aquatic Centre Pool Facility Physical Condition Assessment

Component Opinions of Probable Cost - 10 Year Table

											Opinion of Probable Cost (2021 DOLLARS)						Asset Retirement Obligation (PS3280)								
											SHORT TERM (2021 - 2025)				LONG TERM										
											FCA Priority	1	2	3	4										
											Total Project Cost (Renewal/ Repair within 10 Years)	Immediate 2021	Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025		Years 6-10 2026 - 2031							
Building Information		Assessment						Total Event Costs					\$7,882,170.00	\$3,196,620.00	\$77,220.00	\$2,819,710.00	\$253,550.00	\$475,500.00	\$1,059,570.00						
Item no.	Uniformat Code	Building Component	Component Location	Year of Install	Estimated Service Life (Years)	Remaining Service Life (Years)	Recommended Action Summary Description (Renewal/Repair)	Priority Ranking/ Urgency	Operator/ Energy Savings	Quantity	Unit	Unit Cost (\$)	Net Cost (\$)	Total other Fees (\$) (Design, Contingency)											
A10 FOUNDATION														SUBTOTAL					\$ 127,930.00						
1	A1030	Slab on Grade - Pool Deck & Changeroom	Pool Deck & Changeroom	1999	50		Repair cracks in pool deck and recoat per C3020			1200	m2	\$40	\$48,000	\$ 16,800.00	\$ 64,800.00					\$ 64,800.00	No				
2	A1030	Slab on Grade - Pool Basin	Natorium	1999	50		Repair cracks and recoat per C3020			1169	m2	\$40	\$46,760	\$ 16,370.00	\$ 63,130.00					\$ 63,130.00	No				
3	A1030	Slab on Grade - General	Remainder of Building	1999	50		No required action								n/a						No				
B10 SUPERSTRUCTURE														SUBTOTAL					\$ 774,770.00						
4	B1010	Suspended Floor Construction	Entire Building	1999	50		No action required								n/a						No				
5	B1020	Roof Construction - Natatorium	Natorium	1999	50		Clean corrosion and repaint structural steel of natatorium			1636.66	m2	\$356	\$582,650	\$ 160,230.00	\$ 742,880.00		\$ 742,880.00				No				
6	B1020	Roof Construction - Remainder of Building		1999	50		No action required								n/a						No				
7	B2010	Steel Columns - Natatorium		1999	50		Clean corrosion and repaint structural steel of natatorium			32	no	\$738	\$23,620	\$ 8,270.00	\$ 31,890.00		\$ 31,890.00				No				
8	B2010	Structural Walls - Entire Building		1999	50		No action required								n/a						No				
B20 EXTERIOR ENCLOSURE														SUBTOTAL					\$ 186,940.00						
9	B2030	Exterior Doors - Steel Framed Doors (Double Door 140A)	Pool Mechanical Room	1999	30	5	Repair or replace corroded steel door frame, door and hardware (including push bar and closer) in pool mechanical room, and install new weather seals. Note: Fire Exit, to maintain the security of the building.	2		1	pr	\$5,500	\$5,500	\$ 1,930.00	\$ 7,430.00		\$ 7,430.00				Yes				
10	B2030	Exterior Doors - Storefront Doors (Double Door 127A)	Pool Hall - 25m Pool Area	1999	30	5	Replace damaged door leaf and push bar hardware, and install new weather seals	2		1	pr	\$4,000	\$4,000	\$ 1,400.00	\$ 5,400.00		\$ 5,400.00				Yes				
11	B2030	Exterior Doors - Glazed Entrance Doors	Main Entry	1999	35	10	Replace door IGUs and seals / gaskets as required to maintain functional performance of the system. As needed, assume 10% for budgetary needs.	4		1	pr	\$3,000	\$3,000	\$ 1,050.00	\$ 4,050.00				\$ 4,050.00	Yes					
12	B2030	Exterior Windows - Storefront Windows	General locations (classroom, Physio room, etc.)	1999	35	10	Replace window IGUs and windows seals at storefront windows as required to maintain functional performance of the system. As needed, assume 10% for budgetary needs	4		9	m2	\$730	\$6,570	\$ 2,300.00	\$ 8,870.00				\$ 8,870.00	Yes					
13	B2030	Exterior Windows - Curtain Wall	Main Entry	1999	35	10	Replace window IGUs and windows seals at Curtain Wall windows as required to maintain functional performance of the system. As needed, assume 10% for budgetary needs	4		4.3	m2	\$730	\$3,140	\$ 1,100.00	\$ 4,240.00				\$ 4,240.00	Yes					
14	B2010	Exterior Walls - EIFS Cladding	General Exterior	1999	50	2	Repair minor cracks/damage at EIFS walls, and clean efflorescence staining at soffits. Assumed 20sf of repair area, and cleaning of EIFS soffit below existing gutters on roof eaves.	2		112	m2	\$50	\$5,580	\$ 1,950.00	\$ 7,530.00		\$ 7,530.00				No				
15	B2010	Exterior Walls - EIFS Cladding	General Exterior	1999	50	10	Re-apply EIFS acrylic finish coating (all locations) to extend life of EIFS system, maintain waterproofing / shedding performance and address aesthetics / fading. Full extent of EIFS cladding.			1561	m2	\$45	\$70,480	\$ 24,670.00	\$ 95,150.00				\$ 95,150.00	No					
16	B2010	Exterior Walls - EIFS Cladding	Sloped Roof Transition	1999	50	0	Repair sloped roof to wall transition / saddles to mitigate risk of water ingress at these locations. Full extent of saddle conditions at roof tie-ins, completed with roof replacement work.	1		1	sum	\$5,200	\$5,200	\$ 1,820.00	\$ 7,020.00	\$ 7,020.00					Yes				
17	B2010	Exterior Walls - Sealant Replacement	General Exterior	1999	10	0	Replace exterior sealants at EIFS joints, around window and door perimeters, around wall vents and penetrations, and around roof tie-in flashings. Full extent of EIFS cladding.	1		1	sum	\$35,000	\$35,000	\$ 12,250.00	\$ 47,250.00	\$ 47,250.00					Yes				

COMOX VALLEY REGIONAL DISTRICT

Comox Valley Aquatic Centre Pool Facility Physical Condition Assessment

Component Opinions of Probable Cost - 10 Year Table

										Opinion of Probable Cost (2021 DOLLARS)												
										SHORT TERM (2021 - 2025)				LONG TERM								
Building Information		Assessment					Total Event Costs					\$7,882,170.00	\$3,196,620.00	\$77,220.00	\$2,819,710.00	\$253,550.00	\$475,500.00	\$1,059,570.00				
Item no.	Uniformat Code	Building Component	Component Location	Year of Install	Estimated Service Life (Years)	Remaining Service Life (Years)	Recommended Action Summary Description (Renewal/Repair)	Priority Ranking/Urgency	Operation/ Energy Savings	Quantity	Unit	Unit Cost (\$)	Net Cost (\$)	Total other Fees (\$) (Design, Contingency)	FCA Priority	1	2	3	4	Asset Retirement Obligation (PS3280)		
														Total Project Cost (Renewal/ Repair within 10 Years)	Immediate 2021	Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025	Years 6-10 2026 - 2031		
B30 ROOFING										SUBTOTAL					\$ 1,363,330.00							
18	B3010	Roof Coverings - SBS Membrane Roofing 2-ply SBS roof membrane at low-sloped roofs.	Flat Roof	1999	25	0	Deficiencies observed: blistering, alligatoring cracks, loss of granules, moss growth, and collection of debris. No reported active leak. Replace membrane. Upgrade insulation value to improve energy performance (and to meet current code requirements)	1	Yes	1442	m2	\$319	\$460,000	\$ 161,000.00	\$ 621,000.00	\$ 621,000.00					Yes	
19	B3010	Roof Coverings - Asphalt Shingle Roofing.	Sloped roof	1999	35	0	Deficiencies observed: Brittleness of shingles, loss of granules and moss growth at several areas of the roof. Recommended: Replace shingle system. Upgrade insulation value to improve energy performance (and to meet current code requirements).	1	Yes	1885	m2	\$198	\$373,180	\$ 130,610.00	\$ 503,790.00	\$ 503,790.00					Yes	
20	B3010	Roof Coverings - Roof Flashings	Flat and Sloped Roof	1999	25	0	Replace all roof flashings, gutters including tie-in flashings at skylights. Work to be completed as part of the roof membrane replacement.	1		457	m	\$89	\$40,680	\$ 14,240.00	\$ 54,920.00	\$ 54,920.00					Yes	
21	B3010	Roof Covering	Sloped roof	1999	25	0	Repair or replace deteriorated wooden roof fascia (Saddle locations/gutters). Opportunity to replace with cementitious trim boards for added durability.	1		79	m	\$76	\$6,000	\$ 2,100.00	\$ 8,100.00	\$ 8,100.00					Yes	
22	B3010	Roof Fall Protection System	Sloped roof	n/a			Recommended: Fall protection system at sloped roof areas as part of upgrade.	1		1	sum	\$35,000	\$35,000	\$ 12,250.00	\$ 47,250.00					\$ 47,250.00	No	
23	B3020	Roof Openings - Skylights	Sloped roof	1999	35	5	Replace sealants around skylight framing			91	m	\$52	\$4,730	\$ 1,660.00	\$ 6,390.00					\$ 6,390.00	Yes	
24	B3020	Roof Openings - Skylights	Sloped roof	1999	35	10	Replace skylight seals & gaskets to maintain functional performance of the system. Replace IGU's with higher performing Low E coated systems (Recommendation for higher performance)		Yes	157	m2	\$575	\$90,280	\$ 31,600.00	\$ 121,880.00					\$ 121,880.00	Yes	
C10 INTERIOR CONSTRUCTION										SUBTOTAL					\$ 252,280.00							
25	C1020	Interior Painted Metal Swing Doors		1999	30	5	Minor rusting observed at high humidity areas. Replace doors as required to maintain functional performance. Assume 10% for budgetary needs.			4	lvs	\$2,500	\$10,000	\$ 3,500.00	\$ 13,500.00					\$ 13,500.00	Yes	
26	C1020	Interior Glazed Storefront Doors	Natorium	1999	30	5	Rusting observed at high humidity areas. Replace doors and as required to maintain functional performance. Assume 10% for budgetary needs.			1	sum	\$44,000	\$44,000	\$ 15,400.00	\$ 59,400.00					\$ 59,400.00	Yes	
27	C1030	Washroom Partitions - Painted Metal Privacy panels, hardware fittings	Men's and Women's Washrooms	1999	30	5	Rusting observed. Replace painted metal floor mounted floor mounted braced metal washroom partitions and associated hardware. Full replacement recommended.			18	no	\$1,500	\$27,000	\$ 9,450.00	\$ 36,450.00					\$ 36,450.00	Yes	
28	C1030	Washroom Partitions - Plastic Privacy panels and hardware fittings	Change Rooms Staff Room,	1999	30	5	Deterioration observed Replace laminate-clad/phenolic overhead braced washroom partitions and associated hardware. Assume 20% Replacement.			3	no	\$2,000	\$6,000	\$ 2,100.00	\$ 8,100.00					\$ 8,100.00	Yes	
29	C1030	Stained wood cabinetry and laminate counters and desk	Head Guard Room	1999	25	3	Deficiencies observed: cabinets are in poor condition. Replace millwork counters and cabinets (AWMAC Quality).	4		2	no	\$8,200	\$16,400	\$ 5,740.00	\$ 22,140.00					\$ 22,140.00	Yes	
30	C1030	Reception Counter		1999			Deficiencies observed: Reception Counter non-compliant to current BCBC Section 3.8 requiring at least one section of service counter not more than 865 mm above the floor, Recommended renovation to create recommended 760mm compliant counter.			1	sum	\$47,300	\$47,300	\$ 16,560.00	\$ 63,860.00					\$ 63,860.00	Yes	
31	C1030	Swimming Pool Grate		1999			Deficiencies observed: Swimming pool grate bars and corner profiles deteriorating. Recommend replacement at 25m pool.	4		87	m	\$416	\$36,170	\$ 12,660.00	\$ 48,830.00					\$ 48,830.00	Yes	
C30 INTERIOR FINISHES										SUBTOTAL					\$ 326,740.00							
32	C3020	Floor Finishes - Epoxy Flooring System	Pool Deck	1999			Resurface seamless epoxy aggregate flooring approx. 8" cove base and associated fittings (protective edgings, reducer strips, expansion joints) compatible with existing 'Stonhard' system to meet BC Health Act slip resistance.	1		808	m2	\$145	\$116,770	\$ 40,870.00	\$ 157,640.00	\$ 157,640.00					Yes	
33	C3020	Floor Finishes - Epoxy Flooring System	Change Rooms	1999			Resurface seamless epoxy aggregate flooring approx. 8" cove base and associated fittings (protective edgings, reducer strips, expansion joints) compatible with existing 'Stonhard' system to meet BC Health Act slip resistance. (Note: Staff Room already completed 2019. Family Change Room completed 2019.)	1		245	m2	\$167	\$40,800	\$ 14,280.00	\$ 55,080.00	\$ 55,080.00					Yes	
34	C3020	Floor Finishes - Sports Flooring at Fitness Centre	Fitness Centre (Rm 131)	1999			Replace resilient sports flooring at areas of deterioration. (Total area 46m2/Affected area approx. 12m2)	2		12	m2	\$368	\$4,410	\$ 1,540.00	\$ 5,950.00	\$ 5,950.00					Yes	
35	C3020	Floor Finishes - Sports Flooring at Swim Shop	Swim Shop	1999			No action required.							n/a								

Comox Valley Aquatic Centre Pool Facility Physical Condition Assessment

Component Opinions of Probable Cost - 10 Year Table

										Opinion of Probable Cost (2021 DOLLARS)											
										SHORT TERM (2021 - 2025)				LONG TERM							
Building Information		Assessment					Total Event Costs					\$7,882,170.00	\$3,196,620.00	\$77,220.00	\$2,819,710.00	\$253,550.00	\$475,500.00	\$1,059,570.00			
Item no.	Uniformat Code	Building Component	Component Location	Year of Install	Estimated Service Life (Years)	Remaining Service Life (Years)	Recommended Action Summary Description (Renewal/Repair)	Priority Ranking/Urgency	Operation/ Energy Savings	Quantity	Unit	Unit Cost (\$)	Net Cost (\$)	Total other Fees (\$) (Design, Contingency)	FCA Priority	1	2	3	4	Asset Retirement Obligation (PS3280)	
														Total Project Cost (Renewal/ Repair within 10 Years)	Immediate 2021	Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025	Years 6-10 2026 - 2031	
36	C3020	Floor Finishes - Carpet	Manager Room	2019	12		No action required.							n/a							
37	C3030	Ceiling Finishes - Acoustic Ceiling Tile	Various Locations	1999			Observed staining, damage. Replace lay-in exposed grid tiles and investigate leaks. Assume 10% replacement.	1		28	m2	\$40	\$1,120	\$ 390.00	\$ 1,510.00	\$ 1,510.00					Yes
38	C3030	Ceiling Finishes - Suspended Lightweight Acoustic Ceiling Panels (Pool Area). Existing acoustic baffle system: 50m with rigid fibreglass insulation PVC frame, nylon sail cloth covering.	Natorium	1999			Deficiencies Observed: Approximately 24 panels are buckling or have fallen out, presenting a safety risk. Full replacement of Acoustic Ceiling Panels and Suspension System (252 panels). Recommended seismic suspension system and support rods, clips painted. Design and install to ASTM E580 and CVRD seismic zone, BCBC requirements	1		252	no	\$313	\$78,930	\$ 27,630.00	\$ 106,560.00	\$ 106,560.00					Yes
D20 PLUMBING										SUBTOTAL					\$ 2,668,210.00						
D2010 Plumbing Fixtures																					
39	WC-1	Changerooms and WC	Changerooms and WC	1999			No issued identified at time of site visit.	4		23	no	\$1,320	\$30,360	\$ 10,630.00	\$ 40,990.00					\$ 40,990.00	Yes
40	UR-1	Changerooms and WC	Changerooms and WC	1999			No issued identified at time of site visit	4		5	no	\$1,430	\$7,150	\$ 2,500.00	\$ 9,650.00					\$ 9,650.00	Yes
41	SH-1	Changerooms	Changerooms	1999	7-10	0-5	Staff Changerooms: Replace showers and fixtures at Men's and Women's Changerooms, with new base and enclosure sealed watertight. Public Changerooms: No issued identified at time of site visit, regular maintenance, spring return tend to corrode, and require replacement.	2		23	no	\$825	\$18,980	\$ 6,640.00	\$ 25,620.00		\$ 25,620.00				Yes
42	LAV-1	Changerooms and WC	Changerooms and WC	1999/2021	7-10	0-5	No issued identified at time of site visit, regular maintenance, spring return tend to corrode, and require replacement.	4		23	no	\$1,155	\$26,570	\$ 9,300.00	\$ 35,870.00					\$ 35,870.00	Yes
43	DF-1	Corridor 135	Corridor 135				Drinking Fountain at Public Corridor non-compliant to current BCBC Section 3.8 (Model type does not allow for requisite clearance under fountain). Recommend replace drinking fountain with compliant model. Other drinking fountains/fill stations appear compliant.	4		1	no	\$3,740	\$3,740	\$ 1,310.00	\$ 5,050.00					\$ 5,050.00	Yes
44	Water Hammer arrestors			1999			Regular maintenance should be performed to ensure arrestors are working properly	4		1	no	\$8,250	\$8,250	\$ 2,890.00	\$ 11,140.00					\$ 11,140.00	Yes
D2020 Domestic Water Distribution																					
45	DWTK-1/DWTK-2/DWTK-3			1999	25	3	Replacement within 5 years, recommendation to fully insulate piping as section were missing on joints and fittings. Estimated cost \$75,000 - \$100,000	3		3	no	\$29,889	\$89,670	\$ 31,380.00	\$ 121,050.00			\$ 121,050.00			Yes
46	DHWB-1 - Domestic hot water boiler			2016	20	15	No action required							n/a							Yes
47	TMV-1			2019	25	23	No action required							n/a							Yes
48	P-25 - Domestic Water return pump			2016	10-15	10+	No action required			1	no	\$3,850	\$3,850	\$ 1,350.00	\$ 5,200.00		\$ 5,200.00				Yes
D2090 Other Plumbing Systems																					
49	Floor drains	Changerooms	Changerooms	1999			Change room drains appeared in reasonable conditions, well maintained.							n/a							Yes
50	Floor drains	Pump Room	Pump Room	1999			Floor drains and below floor piping will require to be scoped and confirmed if leaking, as corrosion was extensive in pump pit area. New drains will be required with possible new piping below floor.	1		1	no	\$67,298	\$67,300	\$ 23,560.00	\$ 90,860.00	\$ 90,860.00					Yes
51	Floor drains	Upper Pool Mechanical room	Upper Pool Mechanical room	1999			Floor drains in the Chemical room require new grates, and flush piping from the acid transfer pump should be re-routed as currently exposed pipe is running to the floor drain and is exposed to possible damage.	1		1	no	\$7,700	\$7,700	\$ 2,700.00	\$ 10,400.00	\$ 10,400.00					Yes
D2092 Pool Mechanical Equipment																					
52	P-1 - Main Pool filter pump	Lower Pool Mechanical room	Lower Pool Mechanical room	2013	10-15	7	No significant issues were identified at time of site visit Pump currently has VFD added. Cost estimate \$10-15k.	4		1	no	\$26,276	\$26,280	\$ 9,200.00	\$ 35,480.00					\$ 35,480.00	Yes
53	P-2 - Wave Pool Filter pump	Lower Pool Mechanical room	Lower Pool Mechanical room	2011	10-15	5	No significant issues were identified at time of site visit. VFD Recommended. Cost estimate \$10-15k.	4		1	no	\$26,276	\$26,280	\$ 9,200.00	\$ 35,480.00					\$ 35,480.00	Yes
54	P-3 - Whirl Pool Filter pump	Lower Pool Mechanical room	Lower Pool Mechanical room	2016	10-15	10	No significant issues were identified at time of site visit. VFD Recommended. Cost estimate \$10-15k.	4		1	no	\$17,850	\$17,850	\$ 6,250.00	\$ 24,100.00					\$ 24,100.00	Yes

Comox Valley Aquatic Centre Pool Facility Physical Condition Assessment

Component Opinions of Probable Cost - 10 Year Table

										Opinion of Probable Cost (2021 DOLLARS)																	
										SHORT TERM (2021 - 2025)				LONG TERM													
Building Information			Assessment					Total Event Costs					\$7,882,170.00	\$3,196,620.00	\$77,220.00	\$2,819,710.00	\$253,550.00	\$475,500.00	\$1,059,570.00								
Item no.	Uniformat Code	Building Component	Component Location	Year of Install	Estimated Service Life (Years)	Remaining Service Life (Years)	Recommended Action Summary Description (Renewal/Repair)	Priority Ranking/ Urgency	Operation/ Energy Savings	Quantity	Unit	Unit Cost (\$)	Net Cost (\$)	Total other Fees (\$) (Design, Contingency)	FCA Priority				Total Project Cost (Renewal/ Repair within 10 Years)	Immediate 2021	Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025	Years 6-10 2026 - 2031	Asset Retirement Obligation (PS3280)	
															1	2	3	4									
55		P-4 - Whirl Pool Water feature pump	Lower Pool Mechanical room	2016	10-15	10	No significant issues were identified at time of site visit. Cost estimate \$10-15k.	4		1	no	\$16,275	\$16,280	\$ 5,700.00	\$ 21,980.00											\$ 21,980.00	Yes
56		P-5 - Skimmer suction pump	Lower Pool Mechanical room	2017	10-15	10	No significant issues were identified at time of site visit. Pump currently has VFD added. Cost estimate \$3.5-5k	4		1	no	\$5,204	\$5,200	\$ 1,820.00	\$ 7,020.00											\$ 7,020.00	Yes
57		P-6 - Main Pool Chlorine Gas	Upper Pool Mechanical room	1999	10-15	EOL	Gas Chlorine System has been out of service and replaced with Sodium Hypochlorite, at time of site visit, it was not confirmed if all existing Gas Chlorine equipment was removed or just disconnected. Chlorine tanks are located in the Mechanical room with no containment. Recommendation to relocate Chlorine tanks to separate room and provide containment, and transfer system	1		1	no	\$20,475	\$20,480	\$ 7,170.00	\$ 27,650.00	\$ 27,650.00											Yes
58		P-7 - Main Pool chem injection	Upper Pool Mechanical room	1999	7-10	EOL	Disinfection was Sodium Hypochlorite, at time of site visit. No existing Gas Chlorine equipment. Chlorine tanks are located in the Mechanical room with no containment. Recommendation to relocate Chlorine tanks to separate room and provide containment, and transfer system	1		1	no	\$12,915	\$12,920	\$ 4,520.00	\$ 17,440.00	\$ 17,440.00											Yes
59		P-8 - Wave Pool Chlorine Gas	Upper Pool Mechanical room	1999	10-15	EOL	Gas Chlorine System has been out of service and replaced with Sodium Hypochlorite, at time of site visit, it was not confirmed if all existing Gas Chlorine equipment was removed or just disconnected. Chlorine tanks are located in the Mechanical room with no containment. Recommendation to relocate Chlorine tanks to separate room and provide containment, and transfer system	1		1	no	\$20,475	\$20,480	\$ 7,170.00	\$ 27,650.00	\$ 27,650.00											Yes
60		P-9 - Wave Pool chem injection	Upper Pool Mechanical room	1999	7-10	EOL	Disinfection was Sodium Hypochlorite, at time of site visit, it was not confirmed if all existing Gas Chlorine equipment was removed or just disconnected. Chlorine tanks are located in the Mechanical room with no containment. Recommendation to relocate Chlorine tanks to separate room and provide containment, and transfer system	1		1	no	\$12,915	\$12,920	\$ 4,520.00	\$ 17,440.00	\$ 17,440.00											Yes
61		P-10 - Whirl Pool Chlorine Gas	Upper Pool Mechanical room	1999	10-15	EOL	Gas Chlorine System has been out of service and replaced with Sodium Hypochlorite, at time of site visit, it was not confirmed if all existing Gas Chlorine equipment was removed or just disconnected. Chlorine tanks are located in the Mechanical room with no containment. Recommendation to relocate Chlorine tanks to separate room and provide containment, and transfer system	1		1	no	\$20,475	\$20,480	\$ 7,170.00	\$ 27,650.00	\$ 27,650.00											Yes
62		P-11 - Whirl Pool chem injection		1999	7-10	EOL	Disinfection was Sodium Hypochlorite, at time of site visit, it was not confirmed if all existing Gas Chlorine equipment was removed or just disconnected. Chlorine tanks are located in the Mechanical room with no containment. Recommend: relocate Chlorine tanks to separate room and provide containment, and transfer system	2		1	no	\$12,915	\$12,920	\$ 4,520.00	\$ 17,440.00				\$ 17,440.00								Yes
63		P-12 - Bulk Feed & agitator		1999	7-10	EOL	No issues at time of site visit were identified, but existing system has changed from original design, with a sump pump injecting into the pool supply. Recommendation to replace existing sump pump with pump more suitable for chemicals. Agitator could be replaced at same time. Cost estimate \$4 - 6K	1		1	no	\$2,730	\$2,730	\$ 960.00	\$ 3,690.00	\$ 3,690.00											Yes
64		P-13 - Main Pool Ozone		1999	10-15	EOL	Ozone not currently operational for the main pool. Ozone system not supported and should be removed and replaced with a secondary disinfection. Cost estimate \$ 60-80k for secondary replacement.	1		1	no	\$60,900	\$60,900	\$ 21,320.00	\$ 82,220.00	\$ 82,220.00											Yes
65		P-14 - Wave Pool Ozone		1999	10-15	EOL	Ozone currently operational for the wave pool only. Stan noted the system was very tempermental, and difficult to maintain & know how much ozone is in pool. Ozone system is not supported and should be removed and replaced with a secondary disinfection. Cost estimate \$ 60-80k for secondary replacement.	1		1	no	\$60,900	\$60,900	\$ 21,320.00	\$ 82,220.00	\$ 82,220.00											Yes
66		P-15 - Whirl Pool Ozone		2017	10-15	10	No significant issues were identified at time of site visit.	1		1	no	\$60,638	\$60,640	\$ 21,220.00	\$ 81,860.00	\$ 81,860.00											Yes
67		P-16 - Lazy River Bubbles (WF-7), Ring Compressor		1999	10-15	EOL	No significant issues were identified at time of site visit.	4		1	no	\$24,200	\$24,200	\$ 8,470.00	\$ 32,670.00										\$ 32,670.00	Yes	
68		P-17 - Tot's Pool Floor Bubbles (WF-3) Ring compressor, original. Overhauled in 2020.		1999/2020	10-15	10	No significant issues were identified at time of site visit.	4		1	no	\$16,500	\$16,500	\$ 5,780.00	\$ 22,280.00										\$ 22,280.00	Yes	
69		P-18 - Lazy River (WF-7)		1999	10-15	EOL	No significant issues were identified at time of site visit.	4		1	no	\$13,200	\$13,200	\$ 4,620.00	\$ 17,820.00										\$ 17,820.00	Yes	

COMOX VALLEY REGIONAL DISTRICT

Comox Valley Aquatic Centre Pool Facility Physical Condition Assessment

Component Opinions of Probable Cost - 10 Year Table

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Building Information				Assessment				Total Event Costs					\$7,882,170.00	\$3,196,620.00	\$77,220.00	\$2,819,710.00	\$253,550.00	\$475,500.00	\$1,059,570.00				
Item no.	Uniformat Code	Building Component	Component Location	Year of Install	Estimated Service Life (Years)	Remaining Service Life (Years)	Recommended Action Summary Description (Renewal/Repair)	Priority Ranking/ Urgency	Operation/ Energy Savings	Quantity	Unit	Unit Cost (\$)	Net Cost (\$)	Total other Fees (\$) (Design, Contingency)	FCA Priority				Total Project Cost (Renewal/ Repair within 10 Years)	Asset Retirement Obligation (PS3280)			
															1	2	3	4					
															Immediate 2021	Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025	Years 6-10 2026 - 2031			
70		P-19 - Splashing Tree Frogs (WF-6), Overhauled/coated in 2021.		2021	10-15	10	Pump is past life expectancy, and was non operational at time of site visit, staff informed issue of pump loosing prime, during start and stop cycles, recommend to replace pump with self priming.	4		1	no	\$20,213	\$20,210	\$ 7,070.00	\$ 27,280.00							\$ 27,280.00	Yes
71		P-20 - Water Curtain (WF-5)		2018	10-15	12	No significant issues were identified at time of site visit.	4		1	no	\$13,200	\$13,200	\$ 4,620.00	\$ 17,820.00							\$ 17,820.00	Yes
72		P-21 - Tot's Spray (WF-4)		1999	10-15	EOL	WF has been removed from service.			1	no				n/a								No
73		P-22 - Deck Spray Bar (WF-9). Overhauled/new motor/coated 2021.		2021	10-15	12	Pump is past life expectancy, and was non operational at time of site visit, staff informed issue of pump loosing prime, during start and stop cycles, recommend to replace pump with self priming	4		1	no	\$9,240	\$9,240	\$ 3,230.00	\$ 12,470.00							\$ 12,470.00	Yes
74		P-23 - Waterslide (Green), P-27 - Waterslide (Blue)		1999	10-15		No significant issues were identified at time of site visit	4		1	no				n/a								No
75		PF-1 - Main Pool Filter		1999	15-20	EOL	Original sand, should be replaced every 5yrs, and can become breeding ground for biofilm if left beyond 10yrs. Laterals should be replaced at the same time, as they start failing if left too long. Fiberglass has been know to start to delaminate over time. Recommend replace complete filter	1		1	no	\$60,500	\$60,500	\$ 21,180.00	\$ 81,680.00	\$ 81,680.00							Yes
76		PF-2 - Main Pool Filter		1999	15-20	EOL	Original sand, should be replaced every 5yrs, and can become breeding ground for biofilm if left beyond 10yrs. Laterals should be replaced at the same time, as they start failing if left too long. Fiberglass has been know to start to delaminate over time. Recommend replace complete filter	1		1	no	\$60,500	\$60,500	\$ 21,180.00	\$ 81,680.00	\$ 81,680.00							Yes
77		PF-3 - Main Pool Filter		1999	15-20	EOL	Original sand, should be replaced every 5yrs, and can become breeding ground for biofilm if left beyond 10yrs. Laterals should be replaced at the same time, as they start failing if left too long. Fiberglass has been know to start to delaminate over time. Recommend replace complete filter	1		1	no	\$60,500	\$60,500	\$ 21,180.00	\$ 81,680.00	\$ 81,680.00							Yes
78		PF-4 - Wave Pool Filter		1999	15-20	EOL	Sand was replaced a few years ago (year to be confirmed), Recommend complete filter replacement	1		1	no	\$49,500	\$49,500	\$ 17,330.00	\$ 66,830.00	\$ 66,830.00							Yes
79		PF-5 - Wave Pool Filter		1999	15-20	EOL	Sand was replaced a few years ago (year to be confirmed), Recommend complete filter replacement	1		1	no	\$49,500	\$49,500	\$ 17,330.00	\$ 66,830.00	\$ 66,830.00							Yes
80		PF-6 - Wave Pool Filter		1999	15-20	EOL	Sand was replaced a few years ago (year to be confirmed), Recommend complete filter replacement	1		1	no	\$54,450	\$54,450	\$ 19,060.00	\$ 73,510.00	\$ 73,510.00							Yes
81		PF-7 - Wave Pool Filter		1999	15-20	EOL	Sand was replaced a few years ago (year to be confirmed), Recommend complete filter replacement	1		1	no	\$54,450	\$54,450	\$ 19,060.00	\$ 73,510.00	\$ 73,510.00							Yes
82		PF-8 - Whirl Pool Filter		1999	15-20	EOL	Sand was replaced a few years ago (year to be confirmed), Recommend complete filter replacement	1		1	no	\$38,500	\$38,500	\$ 13,480.00	\$ 51,980.00	\$ 51,980.00							Yes
83		PF-9 - Whirl Pool Filter		1999	15-20	EOL	Sand was replaced a few years ago (year to be confirmed), Recommend complete filter replacement	1		1	no	\$38,500	\$38,500	\$ 13,480.00	\$ 51,980.00	\$ 51,980.00							Yes
84		OZ-1 - Ozone generator	Upper Pool Mechanical room	1999		EOL	Remove entire system - Currently only running the Wave Pool, system is temperamental, and requires lots of monitoring. Recommend changing to UV	1		1	no	\$60,060	\$60,060	\$ 21,020.00	\$ 81,080.00	\$ 81,080.00							Yes
85		TK-1 - Main Pool Ozone contact Tank	Upper Pool Mechanical room	1999		EOL	Remove entire system - Currently only running the Wave Pool, system is temperamental, and requires lots of monitoring. Recommend changing to UV	1		1	no	\$60,060	\$60,060	\$ 21,020.00	\$ 81,080.00	\$ 81,080.00							Yes
86		TK-2 - Main Pool Ozone contact Tank	Upper Pool Mechanical room	1999		EOL	Remove entire system - Currently only running the Wave Pool, system is temperamental, and requires lots of monitoring. Recommend changing to UV	1		1	no	\$60,060	\$60,060	\$ 21,020.00	\$ 81,080.00	\$ 81,080.00							Yes
87		TK-3 - Wave Pool Ozone contact tank	Upper Pool Mechanical room	1999		EOL	Remove entire system - Currently only running the Wave Pool, system is temperamental, and requires lots of monitoring. Recommend changing to UV	1		1	no	\$60,060	\$60,060	\$ 21,020.00	\$ 81,080.00	\$ 81,080.00							Yes
88		TK-4 - Wave Pool Ozone contact tank	Upper Pool Mechanical room	1999		EOL	Remove entire system - Currently only running the Wave Pool, system is temperamental, and requires lots of monitoring. Recommend changing to UV	1		1	no	\$60,060	\$60,060	\$ 21,020.00	\$ 81,080.00	\$ 81,080.00							Yes
89		TK-5 - Whirl Pool Ozone contact tank	Upper Pool Mechanical room	1999		EOL	Remove entire system - Currently only running the Wave Pool, system is temperamental, and requires lots of monitoring. Recommend changing to UV	1		1	no	\$41,407	\$41,410	\$ 14,490.00	\$ 55,900.00	\$ 55,900.00							Yes
90		PH-1 - Main Pool heater	Upper Pool Mechanical room	1999/2017		3	No significant issues were identified at time of site visit. Boilers have past there life expectancy, and should be replace with higher efficiency condensing boilers	2		1	no	\$50,490	\$50,490	\$ 17,670.00	\$ 68,160.00							\$ 68,160.00	Yes
91		PH-2 - Wave Pool Heater	Upper Pool Mechanical room	1999/2020		5	No significant issues were identified at time of site visit. Boilers have past there life expectancy, and should be replace with higher efficiency condensing boilers	3		1	no	\$50,490	\$50,490	\$ 17,670.00	\$ 68,160.00							\$ 68,160.00	Yes

COMOX VALLEY REGIONAL DISTRICT

Comox Valley Aquatic Centre Pool Facility Physical Condition Assessment

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										SHORT TERM (2021 - 2025)				LONG TERM								
Building Information				Assessment				Total Event Costs					\$7,882,170.00	\$3,196,620.00	\$77,220.00	\$2,819,710.00	\$253,550.00	\$475,500.00	\$1,059,570.00			
Item no.	Uniformat Code	Building Component	Component Location	Year of Install	Estimated Service Life (Years)	Remaining Service Life (Years)	Recommended Action Summary Description (Renewal/Repair)	Priority Ranking/ Urgency	Operation/ Energy Savings	Quantity	Unit	Unit Cost (\$)	Net Cost (\$)	Total other Fees (\$) (Design, Contingency)	FCA Priority	1	2	3	4	Asset Retirement Obligation (PS3280)		
															Total Project Cost (Renewal/ Repair within 10 Years)	Immediate 2021	Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025	Years 6-10 2026 - 2031	
92	PH-3	Whirl Pool Heater	Upper Pool Mechanical room	2019	10-15	7	No significant issues were identified at time of site visit.	4		1	no	\$10,395	\$10,400	\$ 3,640.00	\$ 14,040.00					\$ 14,040.00	Yes	
93	MD-1	Lap Pool Main drain	Main Pool	2017			Main drain cover VGB Compliance confirmed.								n/a						No	
94	MD-2	Wave Pool main drains	Wave Pool	2017			Main drain cover VGB Compliance confirmed.	1							n/a						No	
95	MD-3	Whirl pool Main drains	Whirl Pool	1999		EOL	Pool was under renovation during site visit and limited inspection was performed. Two of three main drains missing antientrapment cover. Install two VGBPSSA-compliant drain cover, to ANSI/APSP-16-2011, A flat or low-profile design for pool areas less than 1.5 m (5 ft) in depth.	1		2	no	\$1,100	\$2,200	\$ 770.00	\$ 2,970.00	\$ 2,970.00						Yes
96	WI-1	Lap Pool inlets	Main Pool	1999	25-30	2-5	Inlets appeared to be in reasonable condition, recommend to perform a dye test to ensure even distribution, and circulation of pool water, and perform diffuser adjustment as required. And perform regular maintenance	4		1	no	\$7,838	\$7,840	\$ 2,740.00	\$ 10,580.00					\$ 10,580.00	Yes	
97	WI-1	Wave Pool Inlets	Wave Pool	1999	25-30	2-5	Inlets appeared to be in reasonable condition, recommend to perform a dye test to ensure even distribution, and circulation of pool water, and perform diffuser adjustment as required. And perform regular maintenance	4		1	no	\$7,425	\$7,430	\$ 2,600.00	\$ 10,030.00					\$ 10,030.00	Yes	
98	WI-1	Whirl Pool inlets	Whirl Pool	1999	25-30	2-5	Pool was under renovation during site visit and no inspection was performed. Recommend to perform a dye test to ensure even distribution, and circulation of pool water, and perform diffuser adjustment as required, and perform regular maintenance.	4		1	no	\$4,574	\$4,570	\$ 1,600.00	\$ 6,170.00					\$ 6,170.00	Yes	
99		Wave Generator	Lower Pool Mechanical room	2014/2020	10-15	2-5	Wave generator in working condition. Replacement to include compressor. Recommend VFD.	4		1	no	\$297,000	\$297,000	\$ 103,950.00	\$ 400,950.00				\$ 400,950.00		Yes	
100		Pool Emergency stop Buttons	Natorium	1999	n/a		Sinage was missing for Pool Emergency stop buttons. Recommendation to add and make easier to located on pool deck	1		1	no	\$500	\$500	\$ 180.00	\$ 680.00	\$ 680.00					Yes	
D2092 Pool Piping																						
101		Lap Pool Piping	Pool mechanical room	1999	50		Piping withing the mechanical room appeared in good condition, no leaks were noticed or noted by staff.								n/a						No	
102		Wave Pool piping	Pool mechanical room	1999	50		Piping withing the mechanical room appeared in good condition, no leaks were noticed or noted by staff.								n/a						No	
103		Whirl Pool Piping	Pool mechanical room	1999	50		Piping withing the mechanical room appeared in good condition, no leaks were noticed or noted by staff.								n/a						No	
D2030 Sanitary Waste																						
104		Sanitary Waste	Changerooms	1999			Change room drains appear in reasonable conditions	4							n/a						-	
D2040 Rain Water Drainage																						
105		Rain Water Drainage	Exterior	1999	30	10	Replace damaged gutters and rain water leaders, included as part of roof replacement project.								n/a						Yes	
D30 HVAC															SUBTOTAL					\$ 1,970,880.00		
D3020 Heat Generating Systems																						
106	AHU-1	Main pool Air Handler	Penthouse mechanical room	1999	15-20	EOL	Replace unit and ductwork (& insulation). Extensive work will be required to remove and install new unit, and may require to cut larger opening in the roof (42,380cfm). Although the system is still working Staff noted it has become harder to maintain an even RH level and temperature via DDC.	2	Yes	1	no	\$1,149,572	\$1,149,570	\$ 402,350.00	\$ 1,551,920.00			\$ 1,551,920.00			Yes	
107	AHU-2	Change rooms, Offices, Weight room	Penthouse mechanical room	1999	15-20	EOL	Unit showing signs of age, replace (4100cfm)	2	Yes	1	no	\$95,940	\$95,940	\$ 33,580.00	\$ 129,520.00			\$ 129,520.00			Yes	
108	AHU-3	Office Cooling	Penthouse mechanical room	1999	15-20	EOL	Unit is condensing and flue is leaking moisture (4100cfm), unit is past life expentancy, and recommend replacement	2	Yes	1	no	\$95,940	\$95,940	\$ 33,580.00	\$ 129,520.00			\$ 129,520.00			Yes	
109	CU-001, AHU-3	Condenser for	Roof	1999	12-15	EOL	Renewal, unit is showing signs of wear and past life expectancy	2	Yes	1	no	\$37,583	\$37,580	\$ 13,150.00	\$ 50,730.00			\$ 50,730.00			Yes	
110		Pool Ductwork	Natorium	1999			Ductwork appears in good condition overall, perform regular cleaning and inspection.								n/a						No	

Comox Valley Aquatic Centre Pool Facility Physical Condition Assessment

Component Opinions of Probable Cost - 10 Year Table

										Opinion of Probable Cost (2021 DOLLARS)										
										SHORT TERM (2021 - 2025)			LONG TERM							
Building Information		Assessment					Total Event Costs					\$7,882,170.00	\$3,196,620.00	\$77,220.00	\$2,819,710.00	\$253,550.00	\$475,500.00	\$1,059,570.00		
Item no.	Uniformat Code	Building Component	Component Location	Year of Install	Estimated Service Life (Years)	Remaining Service Life (Years)	Recommended Action Summary Description (Renewal/Repair)	Priority Ranking/ Urgency	Operation/ Energy Savings	Quantity	Unit	Unit Cost (\$)	Net Cost (\$)	Total other Fees (\$) (Design, Contingency)	FCA Priority	1	2	3	4	Asset Retirement Obligation (PS3280)
OPTIONAL ITEMS (ALTERNATES)																				
O1	B3010	Roof Covering (Alternate for Item 19 - Sloped Roof)	Sloped roof - Standing seam metal	1999	50	50	Replace shingle roof with new standing seam metal roof system, with metal snow guards and upgraded gutter system.	Yes		1885	m2	\$324	\$610,440	\$ 213,650.00	\$ 824,090.00					Yes
O2	B3020	Roof Openings - Skylights (Alternate for Item 24 - Roof Openings - Skylights)	Sloped roof	1999	35	10	Replace skylight system with higher performance system. Recommendation for higher performance system to include thermally broken skylight frame with triple pane glazing	Yes		157	m2	\$1,755	\$275,540	\$ 96,440.00	\$ 371,980.00					Yes

- Notes:
1. All costs are current prices (April 2021 Dollars). No allowance for future cost escalation is included
 2. 'Total other fee' column includes contractor's profit and overheads, 5% Design contingency and 15% Construction Contingency
 3. Cost of removal /disposal in connection with the work items is included (indicated by a 'Yes' in the Asset Retirement Obligations column)



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