CITY OF SHORELINE
REQUEST FOR QUALIFICATIONS AND PROPOSALS

RFP 9773
AQUATICS MANAGEMENT SERVICES

Submit no later than October 23, 2020, 5:00 p.m. Exactly Pacific Local Time

The City of Shoreline, Washington is considering qualifications and proposals from qualified private or public entities to provide industry standards pool management, operations, staffing, and programming services for the Shoreline Pool, located at 19030 1st Ave NE, Shoreline, WA. The qualifying firm will provide aquatic services to the public and operate the facility as provided for in this Request for Proposals (RFP).

Services shall include all aspects of pool and program operations including staffing, preventative and routine maintenance, general cleaning of pool and facility, compliance with public health standards, marketing, and funding.

1. TIMELINE, TERM, AND RESOURCE DOCUMENTS

A. Preliminary Timeline for RFP

Request for Qualifications and Proposals issued	August 27, 2020
Mandatory site visit	September 11, 2020
Written questions due to City	September 16, 2020
City's response to written questions	September 23, 2020
Qualifications/Proposals due	October 23, 2020
RFP Finalists notified	October 30, 2020
Interviews of Finalist	November 6, 2020
Apparent successful operator selected	November 13, 2020
Contract negotiations	December 6, 2020
Contract execution (anticipated date)	January 6, 2021

Note: The above dates are approximate, not binding, and subject to change.

B. Term

The proposed term of agreement is for a minimum of one year. The City shall have the option of renewing the agreement, subject to approval of funding and review of the services provided by the selected operator, in one (1) year increments.

The City however, reserves the right to terminate the agreement at any time if major maintenance or repairs are required to keep the Shoreline Pool operational and that performing such major maintenance or repairs is not fiscally prudent or in the best interests of the citizens of Shoreline.

C. Resource Documents

The following documents are attached to this RFP to provide background material on the Shoreline Pool:

- 2014 Pool Assessment
- 2015 Pool Assessment Addendum

2. BACKGROUND

A. Shoreline Pool History

The Shoreline Pool was constructed by King County in 1971 and has provided important aquatic and recreational opportunities for many in the community, including seniors, youth, local swim teams, and families for almost 50 years.

Historically, the Shoreline Pool has been operated year-round, seven days a week. Weekdays the Shoreline Pool opens at 5:30 a.m. and closes at 8:45 p.m. with weekends having limited hours to allow for rental opportunities. Aquatic programs include swim lessons, water aerobics, lap swim and swim team.

The entire facility is approximately 15,000 square feet and includes a 215,280 gallon swimming pool, decking, locker rooms with showers, viewing area, lobby, staff offices, mechanical room, and storage spaces. The pool is a 25 yard/meter indoor pool with shallow and deep ends, a bulkhead and a diving board. There is a parking lot immediately adjacent to the building. The Shoreline Pool is located next to Shoreline Park, which includes a public restroom and two athletic fields.

In 1999, the City of Shoreline developed a master plan for the Shoreline Pool. The master plan sought to extend the life of the pool by 20 years and necessary improvements were completed in 2001 which included pool and building mechanical, electrical, and plumbing system improvements. In 2014, a Pool Assessment was completed which identified several significant health and safety upgrades along with other major maintenance necessary to keep the Shoreline Pool operational. Based on this Pool Assessment, the City invested $750,000 in short-term repairs intended to extend the life of the Shoreline Pool for another five to seven years. In 2019, the City spent over $100,000 on maintenance and emergency repairs in order to keep the pool operational.

In response to the COVID-19 public health emergency, the Shoreline Pool was closed on March 6, 2020. Given the restrictions of Washington State's Safe Start Plan, Staff analyzed the operating costs and revenue generation and determined that re-opening the Shoreline Pool was not fiscally prudent. Subsequently, the decision was made that if the Shoreline Pool were to reopen, that management and operations would be with an outside vendor and not the City of Shoreline.

B. Shoreline School District Joint Use

The Shoreline Pool building is owned by the City of Shoreline. However, the land on which the building is located is owned by the Shoreline School District. Pursuant to a Joint Use Agreement, the School District is entitled to certain benefits such as three hours of pool use time between the hours of pool opening and 6:00 p.m. for swim team practices during the high school swim season at no cost to the School District.

Because of a Joint Use Agreement, the City offered the opportunity for management and operation of the Shoreline Pool to the Shoreline School District; that offer was declined.

C. Pre-Opening Required Maintenance

Prior to re-opening the Shoreline Pool to the public, the drain cover must be replaced. A plan for resolving this maintenance must be addressed in the proposal.

3. SCOPE OF WORK

The Scope of Work is expected to include, but not be limited to, the following tasks:

A. Personnel and Staffing, including lifeguard services

i. The Operator shall be responsible for all duties associated with staffing the Shoreline Pool including all advertising, recruiting, interviewing, pre-screening, hiring, firing, training, scheduling, providing uniforms and supervising all personnel.

ii. Operator personnel must include, at a minimum, a Certified Pool Operator or Aquatic Facility Operator properly trained in water chemistry and mechanical components to effectively maintain pool, per public health requirements.

iii. The Operator shall be responsible for all duties associated with contracting and supervising all instructors for programs if not employees of the Operator including all advertising, recruiting, interviewing, and pre-screening.

iv. The Operator shall provide sufficient and appropriate staffing levels at all times during pool operation.

v. Operator's staff shall provide all customer services necessary to operate the Shoreline Pool, including cashier services and scheduling.

vi. Operator's staff shall perform normal lifeguarding duties, such as monitoring patrons and responding to first aid situations and enforcing pool rules; and maintain appropriate and safe ratios for lifeguards to pool users.

vii. The Operator must ensure that all lifeguards and swimming instructors are American Red Cross certified (or equivalent) in lifeguarding or swimming instruction, as well as in first aid and adult, child, infant CPR as required and, that such certifications are maintained.

B. Pool Preventative and Routine Maintenance and Repair Services

i. The Operator shall provide all labor, supervision, chemicals, supplies and/or materials necessary to performance maintenance which is necessary for the safe operation of the Shoreline Pool.

ii. The Operator shall maintain the Shoreline Pool in compliance with the following health and safety standards:

King County Board of Health, Title 14

Revised Code of Washington (RCW) Chapter 70.90

Washington Administrative Code (WAC) 246-260, (WAC) 246-262

The Virginia Graeme Baker Pool and Spa Safety Act

iii. The Operator shall maintain cleanliness, water clarity and quality, and chemical balance of the Shoreline Pool and perform all pool cleaning and associated tasks.

iv. The Operator shall furnish water testing and monitoring of chemicals to maintain chemical balance to achieve proper water quality and maintain proper water levels consistent with public/community pool standards.

v. The Operator shall provide scheduled maintenance for the HVAC system. For a schedule of HVAC maintenance, see Appendix 1.
vi. Custodial services shall include general cleaning, disinfecting, and trash removal (inside and outside of facility). For a schedule for custodial services, see Appendix 2.

C. Aquatic Programming and Administration

i. The Operator shall establish hours of operation for the Shoreline Pool consistent with or broader than the historic days and hours of operations based on community demand.
ii. The Operator shall be responsible for all duties associated with day-to-day programming of the Shoreline Pool, including all program and event promotion and marketing, budgeting, registration, and fee establishment and collection.
iii. The Operator should provide, at the minimum, the following programs:
    - Recreational/Open swimming
    - Swim Lessons
    - Lap Swimming
    - Water Fitness
    - High School Swim Team
    - Community/Private Swim Team
    - Private Rentals (e.g. birthdays, summer/day camp)

    For current program offerings, see the City's current Recreation Guide.
iv. The Operator shall establish reasonable rules for patron conduct when utilizing the Shoreline Pool.

D. Health and Safety

i. In addition to maintaining the Shoreline Pool consistent with state and local laws and regulations, the Operator shall provide for the safety of patrons consistent with best industry practices and the Washington State Dept. of Health's rules and guidelines.
ii. The Operator shall be responsible for reporting any serious injuries or illness as required by state and local laws.

4. SUBMITTAL REQUIREMENTS

A. Mandatory Pre-Proposal Briefing Session and Site Visit

A mandatory pre-proposal briefing session and site visit of the Shoreline Pool is scheduled for **Friday, September 11, 2020 at 3:00 p.m**. ***Pre-registration is required.***

To register for the Pre-Proposal Briefing and Site Visit:
Contact: Susana Villamarin, Project Manager
Email: svillamarin@shorelinewa.gov
Date and Time: Friday, September 11, 2020 at 3:00 p.m.
Location: Shoreline Pool
Address: 19030 1st Avenue NE, Shoreline, WA

All attendees will be required to wear masks, complete a health questionnaire, and observe social distancing protocols. Vendors must provide their own transportation.

City staff will make a presentation describing objectives, anticipated roles and responsibilities, operations, schedule, and expected outcomes. A question and answer session will follow the presentation.

All substantive questions and answers resulting from this pre-submittal briefing and site visit will be formalized and issued as an addendum to this RFP. Only written addenda should be utilized by Vendors when preparing a response to this RFP.

B. Proposal Submittals

The deadline for proposals by interested parties is **October 23, 2020 by 5:00 p.m.** exactly Pacific Local Time.

Due to the current COVID-19 restrictions imposed by Washington State and Seattle/King County Public Health, Shoreline City Hall is currently closed to the Public. Therefore, proposals shall be submitted in PDF format to purchasing@shorelinewa.gov by the submittal deadline. Submittals shall list RFP 9773 in the subject line of the email.

The RFP is deemed submitted as evidenced by the receipt date and time shown in the source code of the e-mail received by the City's computer system. All respondents will receive an email confirmation that their submittal has been successfully received.

Questions related to this solicitation must be submitted no later than 5:00 p.m. Pacific Local Time on September 16, 2020 to be considered. Question should be directed to Susana Villamarin, Project Manager, svillamarin@shorelinewa.gov. Questions via phone will not be accepted.

The proposals will be the basis from which interested individuals or firms will be selected for interviews. Following the City staff evaluation of the proposals received, selected individuals or firms may be invited to make oral presentations before the City's Evaluation Panel. The City's Project Manager will provide additional details outlining the preferred content of the presentation to each firm or team of firms that are invited to participate. Upon completion of the evaluations, the City's Evaluation Panel will determine the most qualified individual or firm based on all materials and information presented. The City will then begin the negotiations for an agreement with the selected individual or firm.

Any individual or firm failing to submit information in accordance with the procedures set forth in the RFP may be subject to disqualification. The City reserves the right to change the solicitation schedule, issue amendments to the solicitation, or cancel the solicitation at any time prior to the submittal deadline. The City reserves the right, at its sole discretion, to waive immaterial irregularities contained in the solicitation. The City reserves the right to reject any and all proposals at any time, without penalty. The City reserves the right to refrain from contracting with any respondent. Individuals or firms eliminated from further consideration will be notified by mail by the City as soon as practical.

Proposals remain confidential until closing deadline after which proposals are considered a public record subject to public disclosure under RCW 42.56, the Public Records Act. Proposers shall mark as "proprietary" any information that the Proposer believes meets the exemption under RCW 42.56.270(1). This designation will be considered by the City in response to public records requests.

Any Proposal may be withdrawn, either personally or by written request, at any time prior to the time set for the Proposal submittal deadline.

C. RFP Evaluation Components/Criteria

Qualifications and Proposals described below should not exceed a total of twenty (20) pages. Supplemental materials may be provided however, these materials may not be included in the evaluation process. Blank, separator pages will not be included in the maximum page count.

Submittals should include only the information requested to ensure orderly, comprehensive, and fair evaluation. Qualifications shall be organized in the following order with tab pages clearly identifying each section:

i. **Letter of Introduction**

ii. **Operators Organizational Qualifications**
Provide an organizational chart for the operator team. Clearly indicate names of individuals who will perform each task. Show each individual position and the reporting arrangement between individuals. Operator will be required to provide evidence of a Washington State Business license.

iii. **Background and Qualifications of the Team**
Organization Legal Name – The name of the organization or organizations, if a joint venture. Indicate the address of the organization, or lead organization, if a joint venture.

General Background and Experience – Summary of the background and experience of the operator in operating a pool or similar facility and running aquatics and/or recreation programs.

Unique Experience – Description of any operational endeavors, awards or opportunities which make the operator especially experienced for this project.

Responsibility and Ongoing Projects – Ability to accept responsibility for operating a pool facility in view of the organization's current and projected work load and a list of current ongoing activities and responsibilities, identifying the involvement of the primary staff manager and other key staff to be assigned to operating and maintaining the Shoreline Pool.

Disclose any items that reflect on the operator's management history and experience including personnel actions, negative financial audit findings, etc.

iv. **Qualifications of Lead Personnel**
Qualifications of Pool Manager – Identification of the pool manager who will have overall responsibility for the operations and maintenance of the pool. Include professional biographical data or a resume outlining specific experience this individual has that is pertinent to developing aquatics programming, managing staff, managing community relations, ensuring the safe and healthy operation of a public pool (including description of roles and responsibilities).

Qualifications of Personnel – Identify the lead personnel and include a description of activities they will be working on and professional biographical data or a resume outlining their expertise and professional experiences with fulfilling their assigned functions.

v. **Operations Plan Proposal**

Operating Hours – Identify the hours when the pool is expected to be open to the public for general use and when it will be reserved for private use.

Program Plan – Provide a description of the programs planned for the Shoreline Pool. Include a general description of anticipated programs, demographic of expected participants, range of fees. Describe public programs as well as anticipated private programs.

Marketing/Communications and Community Outreach – Describe how the operator plans to communicate with the public, neighbors, and participants.

Financial Plan – Prepare a five-year financial plan that reflects the programs and staffing expectations. The financial plan should include all sources of revenue and all sources expenses. Financial reserves for maintenance issues should be included in the financial plan. Operator will be required to provide one (1) current credit or bank references for the organization regarding the organization's financial ability prior to an interview. The financial plan should include the expense of drain cover replacement prior to re-opening the pool.

Maintenance Plan – Prepare a maintenance plan that includes ongoing custodial services and routine maintenance. The maintenance plan should address how non-routine maintenance issues will be identified and resolved.

Safety Plan – Provide a plan to ensure the safety of patrons utilizing the Shoreline Pool.

Expectations for City Involvement – Prepare an operations plan that highlights any items where City involvement is expected including financial or maintenance support.

Insurance – Demonstrate that the operator has or will be able to secure and maintain liability insurance.

vi. **References**

Name three (3) references the City may contact to verify qualifications, including telephone numbers. References will not be scored but will be used to verify the accuracy of information provided by the respondents and may lead to adjustment of the initial scoring of respondents. The City reserves the right to contact references other than those provided by the operator.

D. Rating Criteria and Review Process for Proposals.
The rating criteria for the written materials are as follows:

i. **Organizational Capability (20%)**
The over-all organizational structure proposed for the operation the pool. History of, and expertise in, operating and maintaining a pool or other recreation facility. Financial stability and management of the organization.

ii. **Personnel Expertise (25%)**
Identification and qualifications of key personnel--staff(s), individual(s), team(s) or firm(s); education and general management, marketing and recreation experience, including experience operating pool or recreation facilities and programs; strength to respond and communicate effectively with City staff, the public, community groups, City policy makers, development and nonprofit professionals.

iii. **Public Program Opportunities (20%)**
Demonstrated ability to respond to the demands of the public for a variety of aquatics opportunities; quality of community-related programming and education proposed for youth and others to enjoy fitness activities; appropriate amount of public programming and access to the pool.

iv. **Financial Plan (30%)**
Feasibility of a financial plan for this facility; experience managing the financial operations of a recreation facility. Minimal expectations of financial involvement by the City. Realistic understanding of the financial aspects of operating a pool including anticipating costs of maintenance. One (1) current credit or bank references for the organization regarding the organization's financial capability. This must not be a revenue-sharing plan.

v. **Communications (5%)**
Demonstration of willingness to collaborate with various members of the public and neighboring community; marketing, media and public relations experience in communicating with the public.

5. LEGAL AND INSURANCE COMPLIANCE

The Operator shall provide aquatic management services consistent with all applicable federal, state, and local laws and regulations.

The Operator shall be solely responsible for securing all licenses, permits and other authorization necessary for managing and operating the Shoreline Pool.

The Operator shall be required to secure and maintain comprehensive liability, personal injury and property damage insurance. The Operator shall maintain workers compensation and unemployment insurance on all its employees. The amounts of insurance shall be negotiated but shall be not less than $1,000,000 per occurrence.

The City shall maintain property insurance on the building itself.

Title VI Compliance
The City of Shoreline, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation, issued pursuant to such Act, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises as defined at 49 CFR Part 26 will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, or sex in consideration for an award.

6. ATTACHMENTS

- **A.** 2014 Pool Assessment
- **B.** 2015 Pool Assessment Addendum
- **C.** Appendix 1 - HVAC Services
- **D.** Appendix 2 - Custodial Services

ATTACHMENT 1
RFP 9773

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SHORELINE POOL ASSESSMENT

BUILDING MAINTENANCE AND IMPROVEMENT RECOMMENDATIONS

City of Shoreline, Washington

MAY 2014

COMMUNITY INSPIRED ARCHITECTURE

contents

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A. EXECUTIVE SUMMARY

SHORELINE POOL ASSESSMENT PROCESS

BACKGROUND

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RECOMMENDATIONS

COST SUMMARY

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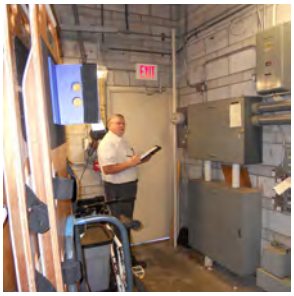
executive summary



DESCRIPTION OF PROCESS

In September of 2013 the City of Shoreline retained ORB Architects, Inc., an architectural firm specializing in the design and evaluation of aquatic facilities, to perform a Swimming Pool Repair/ Replacement Needs Analysis of the existing Shoreline Swimming Pool. Also included on the evaluation team are BCRA for the Building Science Assessment, PCS Structural Solutions, Enginuity Systems for the plumbing and mechanical (including the pool mechanical systems), and Cross Engineers for the electrical evaluation.

The purpose of the Needs Analysis is to understand the complete picture of the buildings physical and operational condition. In addition, the ORB project team was asked to provide recommendations on what we considered to be short-term and long-term needs for the pool facility. See the Recommendations section of this Executive Summary for further information related to the short-term and long-term needs.

Our team first visited the site on September 19th, 2013 to perform our initial visual assessment of the facility. This included completing a checklist of all building, accessibility, and Washington Administrative Code requirements as well as noting the visible condition of building and/or equipment. The structural engineer completed a Structural Evaluation for Existing Buildings, while the mechanical and electrical engineers carried out their own checklists. Our team also reviewed all available information pertaining to the building construction and operations as provided by the City of Shoreline. This included Record Drawings of past construction and renovations, as well as operating costs.

The Initial Assessment Report was provided to the City of Shoreline on October 15th, 2013 and presented at the October 24th Parks Board Meeting. Based on the initial findings, additional investigation items were requested as a matter of providing complete data for the final report. These additional investigation items included performing some destructive investigations to see the condition of the internal natatorium ceilings, as well as additional thermography and air leakage testing in order to better understand how some of the recommended building improvements relate to better energy efficiency for the facility. The additional investigation was performed on Sunday, January 12th, 2014.

This is the Final Facility Condition Assessment Report which represents a complete picture of the existing conditions at the Shoreline Swimming Pool. It also outlines our recommendations for repair and maintenance needs. It is our understanding that this report will be part of the public record used to plan for the facilities future, which could include anything from extensive maintenance, to a replacement. This report outlines the existing conditions, recommended repairs, and related costs.

SHORELINE POOL BACKGROUND

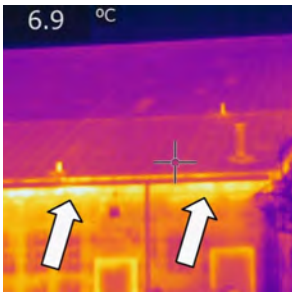
The Shoreline Swimming Pool was built in 1971 as part of the Forward Thrust Initiative that included dozens of other pool facilities throughout King County. In 2002 the city completed an addition to the lobby area that included a new reception area, a second floor meeting room, and the expansion of the women's changing room.

The City of Shoreline owns and maintains the facility. The local Shoreline High School is a major user of the pool facility, which supports its competitive swimming and diving teams. The facility also supports other swimming groups and runs a full schedule of programs to meet the needs of the community.

The pool is a positive feature within in the community that serves many people. Therefore the City of Shoreline is pro-actively looking forward and planning for how they will be able to preserve, and possibly improve this community asset.

As noted above, the Shoreline Pool is one of 22 Forward Thrust indoor swimming pools. Of those 22 pools, only 3 have been closed down. Of those 3, 2 have essentially been replaced by new pools, and one is being considered for renovation under private ownership. Between 2002 and 2008, King County turned over the ownership and operations of all the Forward Thrust pools to the local jurisdiction where that pool resided. In nearly every case, the new owner is a city, municipal park district, or a school. Most are operated directly by the owner jurisdiction. However, several are operated by non-profit companies under contract with the jurisdiction. When the pools were turned over, the majority of them also underwent some level of renovation improvement to extend the useful life of the facility. A full list and summary of the Forward Thrust Pools is included in the Appendix for comparison.

assessment



ASSESSMENT

Based on the initial investigations, the ORB project team could tell that the Shoreline Pool has been well cared for. In fact, the ORB project team observed that as compared to other Forward Thrust Pools our team has evaluated, the Shoreline Pool is in better condition than most. That being said, there are some items that are at, or near the end of, their useful life. This report identifies certain repair and maintenance needs that, if completed, could improve the current maintenance issues and potentially reduce other growing operational costs.

The pool facility is approximately 15,000SF with a 215,820 gallon swimming pool. All “square box” lap pools operate at a loss and require some form of a subsidy in order to operate. As pools age, the cost to operate, and hence that subsidy, is bound to increase as more and more maintenance is required and systems become less efficient. If maintenance items are deferred, that cost will accumulate, and become more of a burden on the community.

Following our initial site observations, the ORB project team felt that it was prudent to perform some additional investigation to address specific concerns that there may be some rot in the ceiling and at the clerestories from past or present water intrusion. The additional investigation found no significant internal rot. Additionally the air leakage testing found that the Shoreline Pool building is actually performing slightly above average for air leakage. These results are as good as, if not better than anticipated.

While the building is minimally insulated, which inevitably translates to energy loss and the costs associated with that, it also means that the building structure has been able to "breath" resulting in little, if any ceiling rot over time. It would require a significant overhaul of the building envelope, (roofs and walls) to properly seal the building and insulate to current code levels. Performing significant of a renovation would be unlikely to have a good return on the investment and the current building is serving its purpose well.

To meet some of the operational cost savings potential, ORB has recommended some specific repairs, including replacing the clerestory windows and walls where there is clear damage and the windows are at the end of their useful life, having shown signs of leaking. We've also recommended maintenance and commissioning of the mechanical HVAC system. Operational cost saving opportunities can also come from such installing a pool cover, which would reduce heat loss and evaporation when not open.

This energy saving "low-hanging fruit" could add up to an annual operational cost savings of around $8,000. See the Mechanical Engineering Assessment from Enginuity Systems for more details.

RECOMMENDATIONS

A breakdown of all the recommended needs that have been identified by our team are listed on pages A|9 and A|10. The recommendations are categorized as either a short-term need or a long-term need, and include the Area of Magnitude costs. The summary of totals is included at the bottom of this page as well.

In addition, as part of our assessment, and for use in the City of Shorelines future planning and decision making process, the ORB project team has highlighted certain recommendations that related to Health, Safety and Welfare (HSW) as well as those that might offer Operational Cost Savings. Health, Safety and Welfare items may offer a reason to assign a higher priority for completing these recommendations. Likewise, completing those recommendations which may result in cutting operational costs could add life to the facility by allowing it to be more viable to operate.

SHORT-TERM NEEDS

The short-term needs include those that are likely to be necessary within the next 6-8 years.

In particular, short-term needs encompass those items that are categorized as being HSW related, which include requirements necessary to comply with the Americans with Disabilities Act (ADA). Additionally, the ORB project team has identified some energy saving "low-hanging fruit" that could help the facility save on operational costs.

ORB estimates that completing the short-term needs of the facility would allow it to continue to operate for an additional 5 to 10 years, or at least until the City of Shoreline has an opportunity to renew a bond to fund further improvements.

LONG-TERM NEEDS

In order to extend the life of the facility for the long-term there are some recommended additional scope items that would need to be performed. This includes more significant items at the facility that may not have favorable economic pay-back, but rather offer a community benefit that is less tangible.

These long-term measures would renew the life of the pool for another generation of users by adding an estimated 20 to 25 years of operations to the existing facility.

AREA OF MAGNITUDE CONSTRUCTION COST ESTIMATE SUMMARY

Total - Short-Term Needs	$857,800
Total - Long-Term Needs	$1,473,200
GRAND TOTAL	**$2,331,000**

recommendations

During the process of working with the City of Shoreline on this Assessment Report, the ORB team was asked to help further prioritize some of the recommendations being made to identify those that could be accomplish during the annual major maintenance shutdown.

Furthermore, our team was asked to help outline additional prioritization for potential future planning. At this time there is no know budget for future work, so the recommendations are based purely on our teams perceived need and value to the facility.

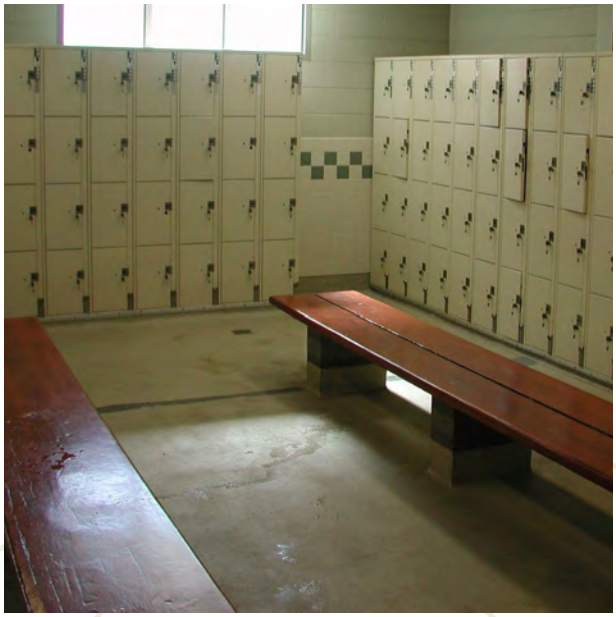
FEBRUARY 2014 MAJOR MAINTENANCE SHUTDOWN

Starting the week of February 24th 2014, the City of Shoreline shut down the pool for three weeks in order to perform their scheduled annual major maintenance work. In addition to several of the standard maintenance tasks such as cleaning vents/grills and fixing leaking faucets, much of the work performed was based on a subset of the initial assessment recommendations that our team provided on October 31, 2013, which the ORB team believed could be self-performed within the stated budget.

Those items which are highlighted in green in the Cost Summary on pages A|9 and A|10 indicate those which were completed by the City of Shoreline during this Major Maintenance Shutdown. The total cost to the City was about $25,000.

FUTURE PLANNING

Due to budgeting, it's understood that the implementation of the short-term needs for the Shoreline Pool will likely be implemented in phases over the next several years. As stated, the short-term needs are those believed to be required in the next 6-8 years. The following pages list those items which the ORB project team recommends prioritizing within the next 3 years.



ADA: Complete all remaining recommendations (except the elevator):

Completing the remaining ADA recommendations would include building a third wall to create compliant shower stalls, adding ADA lockers, and installing ADA benches with backrests in the locker rooms.

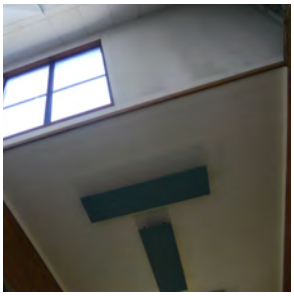
- Important tasks for code compliance
- Satisfy the need to serve all the clients in the Shoreline Community
- Design and Specification services are highly recommended
- Estimated Construction Cost $17,000

Mechanical Pool, Item #4: Install a new Digital Flow Meter to meet code requirements:

Installing a Digital Flow Meter is a relatively easy, and non-disruptive task to complete. It was one of the ORB team's recommendation for the February shutdown that was not completed at that time.

- A working Flow Meter is a Health Department requirement
- This does not need to be combined with any other plumbing related task at this time
- The Digital Flow Meter shall be capable of working with a VFD pump and controller in order to be compatible with the potential for future upgrades
- To add the digital flow meter does not require any engineering
- Estimated Construction Cost $6,000

recommendations



Building Enclosure, Item #2: Replace Metal Siding and Repair/Insulate Clerestory Walls, and

Building Enclosure, Item #5: Replace Clerestory Windows, Paint Trim & Beam Below

Due to the fact that these two items are related physically, it only makes sense to perform these tasks at the same time. The damage to the siding and history of leaking at the clerestory windows will only get progressively worse and cost more money without being repaired.

- Top priority investments for preserving the condition of the building before it gets worse
- This task will require Architectural and Engineering design
- Estimated Construction Cost $84,000

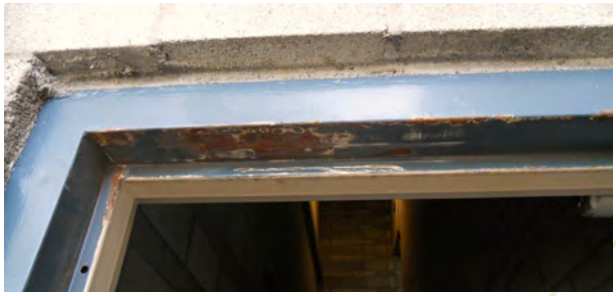
Mechanical HVAC /Plumbing, Item #1: Clean and balance the HVAC system, and

Mechanical HVAC /Plumbing, Item #2: Retro-Commissioning HVAC System with Controls

While not directly critical to the structure of the building, maintaining the HVAC system is important to the air quality of the natatorium, and if not maintained properly could eventually have an affect on the structure. The ORB project team recommends that the following two tasks be completed at the same time in order to maximize the benefit of each.

- Cleaning and balancing the HVAC
- Retro-Commissioning of the mechanical system with controls
- Cleaning the HVAC system will keep it running efficiently. It can be completed by a service company without any design or engineering. It is our understanding that the City of Shoreline is currently soliciting estimates for that task.
- Retro-Commissioning includes balancing and testing for which a Mechanical Engineer should provide specifications.
- Estimated Construction Cost $69,000

ORB suggests that, if these and/or other energy saving scopes of work are considered, the City of Shoreline explore provisions of RCW 39.35, for Energy Conservation in Design of Public Facilities. This would allow you to partner directly with an Energy Service Company (ESCO) who are great at helping clients identify grants, rebates and other funding sources. A recent example is the Tukwila Pool, in which ORB and Enginuity Systems teamed with McKinstry to provide a wide range of building improvements including mechanical systems, pool system, pool finishes, and even locker room upgrades.



Building Enclosure, Item #6: Replace Damaged Exterior Metal Doors, and

Building Interiors, Item #4: Replace Rusted Door Frames and Hinges

One of the most obvious signs of the age and deterioration at the Shoreline Pool is the condition of the doors. The frames, doors and some of the hardware are all significantly deteriorated.

- Doors, such as the exterior one to the chlorine room are very near the end of their useful life
- Some of the interior doors, such as those at the changing rooms have been repaired to preserve their integrity, but will soon need to be replaced as well
- Since the doors would be replaced in-kind, no design work would be required, however we recommend that an Architect be consulted to provide the proper specifications in order to assure that you install doors appropriate for the conditions and any bids for the doors you receive is fair
- Estimated Construction Cost $26,000

You may notice that the ORB project team has not placed any of the roofing upgrades with insulation and electrical short-term recommendations in the list above. While or original assumptions assumed that there would be significant energy and therefore operational cost savings with some of those items, our investigation revealed that the electrical upgrades would result in minimal savings and that the roof was in good condition, partially due to the fact that it is minimally insulated. This is not to say those recommendations would not be good things to do eventually, but they do not seem to have a good cost to benefit ratio that would deem them to be an immediate need in the next 3 years.

cost summary

Shoreline Pool Assessment Recommendations

5/6/2014
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Building Maintenance and Improvements

	Recommended Task	Short-Term Need	Long-Term Need	HSW Related	Operational Cost Savings	Cost Totals
Pool Tanks & Decks (P)						
1	Chemical Grout Cracks at Bottom of Pool	3-5 years				$3,000
2	Re-Plaster Pool	3-5 years				$130,000
3	Repair Pool and Deck Tile	X				$63,000
4	Add Depth Markings and No Diving Symbol Tiles	X		X		Feb 2014
5	Reconfigure Diving Well Bottom Profile *		X	X		$13,000
6	Replace Movable Bulkhead * (only if not repaired)		X			$130,000
6a	Repair Movable Bulkhead * *(cost from Nelson Trucking/Licoln Aquatics)*	X				$69,000
7	Provide a Screened Cage at Gutter Outlet Pipe	X				$600
8	Improve Drainage at Pool Deck (address ponding areas)	X				$700
9a	Option A - Repair Pool Deck at North Deck Cracked Areas Note: This option would repair and coat the area	X				$20,000
9b	Option B - Replace Pool Deck at North Deck Cracked Areas Note: This option would remove & replace slabs to match		X			$37,000
10	Repair Lineal Diffuser Concrete Curbs	X				$26,000
	SUBTOTAL	$312,300	$180,000			$492,300
Building Enclosure /Structure (B)						
1	Re-seal masonry (water repellent), Patch Cracks and Voids	X			X	$23,000
2	Replace Metal Siding and Repair/Insulate Clerestory Walls	X			X	$44,000
3	Roof Structure/Ceiling Repairs, Add Insulation & Acoustic Panels, Paint Trim & Beams (includes remove & re-hang ceiling light fixtures and ceiling supported pipes & ducts)		X		X	$270,000
4	Roof Repairs & Cleaning, Gutter & Downspout Repairs, Trim Overhanging Trees	X				Feb 2014
4a	Replace Roofing		10 years			$115,000
5	Replace Clerestory Windows, Paint Trim & Beam Below	X			X	$40,000
6	Replace Damaged Exterior Metal Doors	X			X	$8,000
6a	Replace Balance of Exterior Metal Doors		X			$8,000
7	Add an Entry Vestibule		X		X	$43,000
8	Seismic - Roof Diaphragm and Ties to CMU Walls *Note: This work also requires Items 3 and 5 above to be done at same time for a complete system assembly*	not req'd	X	X		$200,000
9	Seismic - Bracing Pipes/Furnishings	Not Required	X	X		$18,000
10	Dry Rot Repair - Wood Roof & Wall Construction	None Identified in Investigations				$0
	SUBTOTAL	$115,000	$654,000			$769,000
Building Interiors (I)						
1	Repair Damaged Tile at Base of Walls	X				Feb 2014
2	Remove Access Panel in Upper Level Men's Room		X			$500
3	Replace Lobby & Dressing Room Floor Finishes, Replace Slabs at Dressing Rooms and Add Floor Drains, Provide Ground Water Control with VR & CWB Below Dressing Room	X		X		$146,000
4	Replace Rusted Interior Metal Door Frames and Hinges; reuse balance of hardware	X				$18,000
	SUBTOTAL	$164,000	$500			$164,500
Building Site / Civil						
1	Maintenance - clean storm drains and downspouts	owner - service				Feb 2014
Miscellaneous (M)						
1	Front Desk Upgrades, Remove Projections & Add Coiling Door		X			$10,000
2	Replace Damaged Dressing Room Sink/Counter Supports	X		X		Feb 2014
3	Replace Mounting Feet at Filter Tank	X				$2,500
	SUBTOTAL	$2,500	$10,000			$12,500

* = Related to Shoreline School District Competitive Swimming and Diving Programs
Note: Where and option a. or b. are listed above, only one cost shall apply to the eventual total Construction Cost to the project.

Shoreline Pool Assessment Recommendations

5/6/2014
Page 2 of 2

Building Maintenance and Improvements

	Recommended Task	Short-Term Need	Long-Term Need	HSW Related	Operational Cost Savings	Cost Totals
Building Accessibility ADA (A)						
1	Add Access to Upper Floor (Elevator) and Reconfigure Restrooms for Accessibility	Cost Prohibitive		X		
2	Add Vertical Grab Bars to ADA Toilet Stalls	X		X		Feb 2014
3	Provide 3rd Wall with Grab Bar at ADA Showers	X		X		$4,000
4	Install Insulated Cover at Waste Pipes and Traps	X		X		Feb 2014
5	Provide ADA Lockers in Dressing Rooms	X		X		$10,000
6	Provide ADA Bench in Dressing Rooms	X		X		$3,000
	SUBTOTAL	$17,000	$0			$17,000
Mechanical - HVAC / Plumbing (MH)						
1	Clean and balance HVAC systems	X			X	$24,000
2	Retro-commissioning system w/controls	X			X	$45,000
3	Replace Lineal Diffusers at Pool Deck (partially done Feb 2014)	X			X	$16,000
4	Repair AC in meeting room	X				$1,000
5	Replace upper level restroom fixtures		X		Min. - water usage	$4,000
6	Add VFD to exhaust fans	X				$5,000
	SUBTOTAL	$91,000	$4,000			$95,000
Mechanical - Pool (MP)						
1	Replace DE filters with Pressure DE system (includes platform over existing tank and electrical service)		X			$165,000
2	Replace Chemistry Controller	X		X		Feb 2014
3	ADD UV System (includes electrical services)		X	X		$62,000
4	New Digital Flow Meter	X		X		$6,000
5	Make-up Water Monitoring System	X		X		$3,000
6	Provide Pool Cover and Wall Mounted Storage Reels (includes electrical service for motor operators)	X			X	$147,000
7	Provide Solid Cover at Filter Tank for Vapor Control		X			$16,000
8	Permanent Plug Pool Drain Valves in Sump Pit		X			$700
9	Replace Pool Tank Piping Below Pool Bottom	Further Investigation is Required				
10	Replace Pool inlet Covers (at time of new piping)		X			
11	Replace Pool Water Piping (in mech room)		X			$50,000
12	Replace Pool Pump with VFD Pump (remove Griswold valve)		X		X	$12,000
13	Replace Pool Water Heat Exchanger (new in '01)		X			$10,000
14	Add High Efficiency Boiler for Pool Water (location?)		X		X	$30,000
15	Reduce Pool Water Temperature	Operational Decision			X	$0
16	Add Solar Hot Water	Further Investigation is Required			X	$0
	SUBTOTAL	$156,000	$345,700			$501,700
Electrical (E)						
1	Provide New Lighting at Natatorium w/ Controls		X		X	$96,000
2	Provide New Lighting at Meeting Room w/ Controls (includes ceiling and hvac grille work)		X		X	$20,000
3	Provide New Lighting at Exterior of Building w/ Controls		X		X	$33,000
4	Provide New Lighting at All Other Areas w/ Controls		X		X	$70,000
5	New sound system (includes lifeguard chair com system)		X			$60,000
	SUBTOTAL	$0	$279,000			$279,000
	Total All Scope Items	$857,800	$1,473,200			$2,331,000
	Estimated Replacement Cost for "like" building					*$4,500,000*

* = Related to Shoreline School District Competitive Swimming and Diving Programs
Note: Where and option a. or b. are listed above, only one cost shall apply to the eventual total Construction Cost to the project.

B. ARCHITECTURAL ASSESSMENT

POOL TANKS & DECKS

BUILDING ENCLOSURE / STRUCTURE

BUILDING INTERIORS

BUILDING SITE / CIVIL

MISCELLANEOUS

BUILDING ACCESSIBILITY (ADA)

o·r·b architects

POOL TANKS & DECKS

1. Bottom Slab General Condition: The bottom slab was noted to have a crack in the north/south direction just east of the break point to deep water. This crack was first noticed by staff after the 2001 Nisqually earthquake. It doesn't appear to be full width of the pool; it starts at north and south walls continuing toward the center of the pool to about fifteen feet at each side. These cracks don't appear to be large enough to be leaking as staff has not noticed any excessive water loss. A rust stain was visible on the plaster at one location indicating pool water contact with the reinforcing.

   Recommended Action: At time of re-plaster, chemical grout the crack to prevent corrosive pool water from contacting the slab reinforcing bars. Expose areas with rust staining to clean and treat the rusting reinforcing.

2. Plaster Finish: The plaster was replaced in 1999. Patching "squares" are evident scattered throughout from subsequent spot repairs performed 3 times since the re-plaster, as well as at the area cut out in 2010 at the main drains in order to comply with the Virginia Graham Baker Act, (VGBA).

   Recommended Action: A complete re-plaster should be anticipated within the next 3 to 5 years.

3. Tile Finish: The tile finishes at the deck around the pool and along the water level are ongoing maintenance issues. Many tiles were noted to be cracked, missing or have been temporarily patched to ease sharp corners. Tile markings at the pool bottom and end walls appear in better condition with only a few tiles noted to be missing. The warning tile marking at pool bottom break point to deep water does not extend up the side walls as required by WAC 246-260.

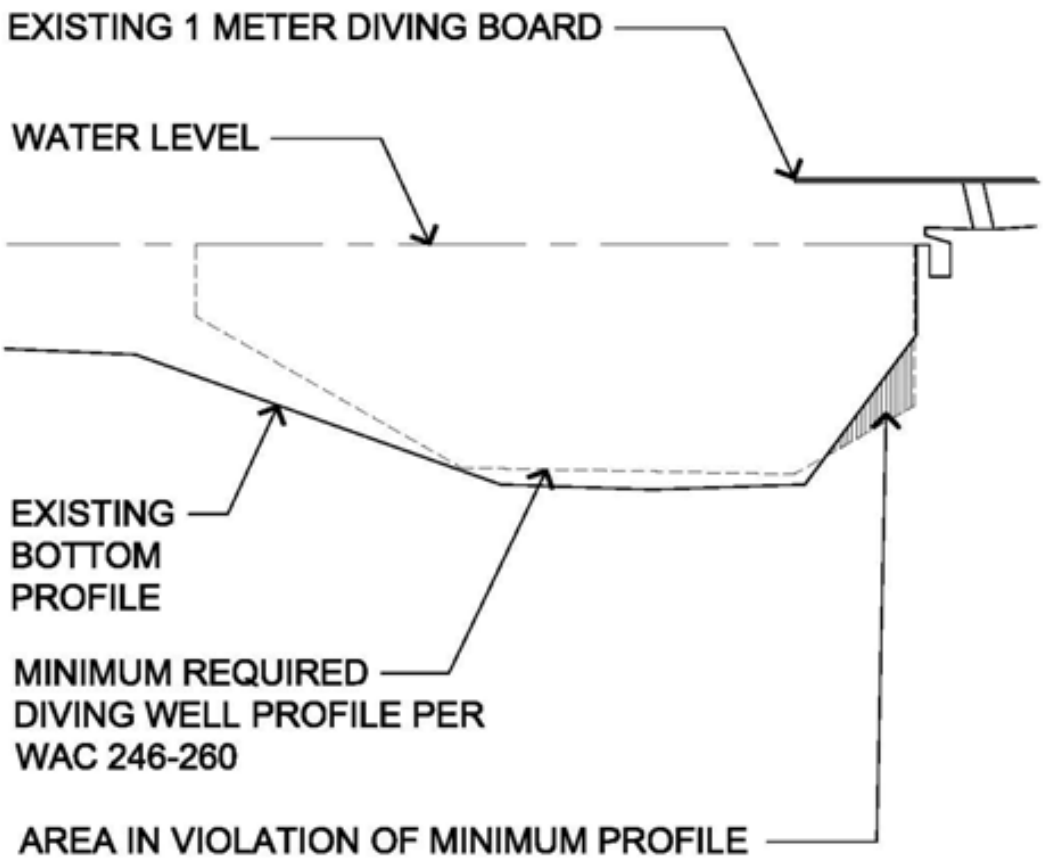
   Recommended Action: At time of re-plaster, add warning marking at side walls, replace all damaged tiles and all tiles at susceptible locations such as deck edges and water level line. The balance of tile should be cleaned and re-grouted at that time.

4. Depth Markings: The depth markings are ceramic mosaic tile located on the deck and vertically on the edge of the deck above pool walls. The size and spacing meet requirements of WAC 246-260 with exception to marking the depths at 2 foot increments between the 5'-6" marker and the 12'-0" marker at both sides of the pool. In addition to depth markings, "no diving" text is also provided in the deck tile markings at depths of approx 7'-0" or less. The no diving markings should be placed on the deck to water depths of 8½ feet to comply with WAC 246-260 minimum water depth for diving from the deck level.

   Recommended Action: Add depth markings between the existing 5'-6" and 12'-0" markings and install additional no diving graphic symbol tiles at depths of 8½ feet or less.

5. Bottom Slab Profile: See sketch below, the bottom slab profile at rear wall of the diving envelope is in violation of WAC 246-260 minimum clearances for 1-meter diving.

   Recommended Action: Reconfigure the slab profile to minimum clearance requirements as shown on the sketch below. The minimum width of reconfiguration is 5 feet each side of the diving board centerline with a gradual taper back into the existing profile.



SHORELINE INDOOR POOL
DIVING WELL SECTION PROFILE

6. Movable Bulkhead: The movable bulkhead is a “floating fiberglass” type with roller wheels each end bearing on top of the gutter walls. The finish is re-painted each time the pool is drained. Staff notes that when the bulkhead is moved, (which occurs daily during the high school swim season) a black algae or other growth comes out of the assembly. This is presumed to be growing between the inner face of the fiberglass and the foam used for flotation. The geared wheel roller assemblies do not function properly and locking pins that anchor the bulkhead to the side walls do not function properly, the pins do not stay locked in place, leaving the bulkhead movable. Each time the bulkhead is moved in its current condition, it continues to degrade and there is more potential for damage to the pool tiles at the edge of pool.

   Recommended Action: With the numerous issues noted, a complete rebuild or replacement of the bulkhead is recommended.

7. Overflow Gutter: The overflow gutter is cast-in-place concrete below the cantilevered deck slab. Bottom slope does not meet the minimum 1’/100’ but the design can be justified as meeting the intent of WAC 246-260. The gutter outlet pipe originally had a screened cage over the pipe opening to prevent large objects from getting into the piping system. Staff now have a removable “drain cover” screen wedged into the gutter each side of the pipe.

   Recommended Action: Provide a removable screened cage similar to the original design.

8. Pool Deck Finishes & Slopes: The deck slabs are exposed aggregate concrete with exception of the 18” wide tile finished band around the pool edge (see tile notes above). Drainage is collected by a continuous slot drain and appears adequate, with exception of two areas where staff noted slight ponding after hosing down the decks. These areas are near the deep end guard chair and at the base of the diving tower where the strip drain does not continue through due to the tower pier.

   Recommended Action: Sawcut drain slots into the slab surface to direct water to the strip drains.

9. Pool Deck Structure: The concrete deck slabs are typically slab-on-grade construction except where they are cantilevered over a cast-in-place concrete under slab air duct at north, east and west decks. The slabs are generally in good condition with exception of the north deck where a continuous crack is present showing up at about mid-span of the cantilevered slab.

   Recommended Action: Repair or reconstruct this cracked north area of the deck.

10. Curb for Air Diffuser Grilles at Pool Decks: The north, east, west and partial south decks have a raised concrete curb along the exterior walls which sets the lineal air diffuser grilles above the deck level to keep water out of the under slab duct. The exposed faces of these curbs are showing signs of lineal cracking and areas were observed where the cracks have spalled concrete, exposing the reinforcing bars. It is presumed the cracking is from the lineal reinforcing bars being set too close to the exposed curb face during original construction. Once cracked, the chlorine rich air works into the crack and corrodes the reinforcing, causing it to swell and spall the concrete.

    Recommended Action: Repair the curbs where cracked.

11. ADA Access to Pool: The facility is in compliance with two different pool lifts and a portable stair currently set for access into the south east corner of the shallow end.

    No Action Required

BUILDING ENCLOSURE / STRUCTURE

1. Exterior Walls - CMU: The majority of exterior walls are 8" concrete masonry units (CMU) with a few 12" CMU walls. The interior face is typically unfinished in the natatorium at heights above 8 feet and unfinished at utility spaces. Exterior face is presumed to have been treated with a clear penetrating sealer when constructed. This type of sealer would typically have a useful life expectancy of 5 to 10 years. Water intrusion and/or condensation stains were noted on high areas of walls at southwest corner of natatorium and in the adjacent electrical room. Exterior CMU walls are filled with poured insulation in the cells which are not structurally grouted.

   This low level of insulation in the wall assembly does not meet current energy code. Trying to improve the energy efficiency of these walls by adding insulation and vapor retarders to the inside wall surface is not cost feasible or practical considering loss of interior space due to the additional wall thickness that would be required. Adding insulation and vapor retarders to the exterior face would also not be cost feasible as compared to energy use pay back. *ROM for EFIS: 9,800sf x $20.00 x 1.445 markup = $283,220; this cost does not include re-working roof edges, opening flashings etc., as would be required to do this system properly to account for the added wall thickness.*

   Recommended Action: Repair cracks and holes and re-seal all exterior masonry surfaces.

2. Exterior Walls – Metal Panel: The upper portion of walls around the clerestory windows, east gable end wall and lower overhang above windows at the north pool deck are faced with a standing seam metal panel system. These panels appear to have been re-painted at some point; the "non-factory" finish is noted to be peeling near the clerestory area. A couple of panel seams adjacent to the clerestory above the diving area were noted to be separated. BCRA opened up these seams and found the seaming method to be just a friction fit and the weather barrier behind not properly shingled over the base flashing. Siding fasteners were noted to be severely rusted. Interior wall finish around

the clerestories is gypsum wallboard. Evidence of air movement at the clerestories thru the walls at joints to the beam below and staining from condensation was noticeable on the face of the gypsum wallboard. These walls are framed with 2x8 and have minimal batt insulation, assumed to be R-11 from the diagrammatic representation as shown on the original detailing. This low level of insulation does not meet current code. The walls do not appear to have a vapor retarder. Without the original specification for the insulation, it is difficult to tell if a vapor retarder was originally specified.

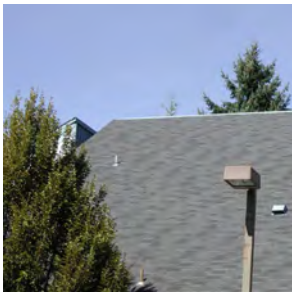
Recommended Action: Replace metal siding and flashings, replace weather barrier. Remove and replace gypsum wallboard and insulation at interior side of walls. Provide insulation and create an air barrier and vapor retarder using spray foam in the stud cavities providing an R-value of approximately R- 43.

3. Roof Structure/Ceiling: The roof structure/ceiling assembly is typically a pre-manufactured wood panel system consisting of a ½" plywood exterior facing with 2x framing members 16" on center spanning between glue laminated beams.

   The panels vary in thickness from 2x4 framing to 2x10 framing depending on location. The 2x10 members were provided with a 2x4 top and bottom flange to create an I-Beam configuration, the other members had only a 2x4 or 2x6 bottom flange using the plywood as a top flange. Framing over the natatorium and most of the bathhouse area are the 2x4 panels with a 2x4 bottom web for a total depth of 5" available for insulation. The original drawings show batt insulation diagrammatically drawn at about 3 ½" thickness or an assumed R-11. This low level of insulation does not meet current energy code. The panels were indicated on the drawings to have a 4-mil visqueen vapor retarder. Venting of the roof assembly (a continuous air movement path located above the insulation) is not shown on the original detailing. The design at the natatorium with the panel span having framing members spanning perpendicular to the roof slope would cut off the air flow path (low to high).

   The glue laminated beams show signs of water staining from past events, possibly as far back as when exposed during construction. No reports of water leaks or condensation on the glue laminated beams since James worked at the pool (1997).

   Recommended Action: Remove interior ceiling finish of all areas and fill cavities with a closed-cell spray foam insulation. This system when used in the available void space will provide an R-Value of approximately R-30 at the 2x4 framed areas and it will act as both a vapor retarder and air barrier. This will also resolve the issue of non-vented cavities as the fully foamed voids do not need to be ventilated.



3a. Ceiling Finishes: The bottom surface of the roof panel construction is typically the ceiling line. It is gypsum wallboard that at a minimum is fire taped where not exposed to public view and smooth finished and painted where exposed to view. The finish in the natatorium is noted to have areas of cracking and peeling tape joints. It has never been repaired or replaced.

Hanging from the ceiling over the pool is an array of blue fabric acoustic panels. They offer some benefit to the noisy echo effect, however it still seemed to echo in the natatorium

An acoustic tile ceiling with 2'x 4' tiles is present at the ceiling over the diving area. Several acoustic tiles are broken, and/or sagging. This acoustic tile does not appear to be the original "concealed spline" system as originally detailed throughout the natatorium and bleacher area. The presence of gypsum wallboard behind these tiles for fire proofing should be confirmed.

Recommended Action: The recommended action as noted above for insulating the roof assembly would result in a complete replacement of the gypsum wallboard finishes. The acoustic tile ceiling would also be replaced to gain access to the ceiling cavities above. Additional acoustic panels should be installed as well.

4. Roofing: The existing roofing is a 3-tab composition shingle. The shingles look to be the same throughout. The 2002 remodel called for a new roof, (However, it's unclear that the whole roof was redone at that time, since there is also account of re-roofing in 2006). There was mention that this is thought to be a third layer of roofing installed over two previous layers (2006?).

Some broken tabs were noted at the roof edge just north of the diving area clerestory windows where a tree fell on the roof. Other areas at the north side where in the shade are showing signs of moss growth in the joints. The east side has moss growth and debris from overhanging trees. The roofing does not properly lap into the north side gutter; it is rolled down behind the gutter

Gutters are metal and appear to be in good condition, they need to be cleaned out. Downspouts at north, east & west sides are in poor condition and leaking.

Entry canopy has a low slope standing seam metal panel roofing with integral gutter that is concealed behind the masonry arc. This entry canopy addition was part of the 2002 remodel.

Recommended Action: Repair tree damaged shingles. Repair drip edge at north side to drain into gutter. Remove moss at north roof. Trim back trees and remove moss and tree debris at east roof. Clean out gutters throughout, replace downspouts. The roofing should have 10 or more years life remaining but at time of re-roof a complete tear off of all previous layers will be required.

5. Windows: The clerestory windows above the spectator seating and above the diving area are an aluminum framed, single glazed system. These windows are reported by staff to sweat and drip under certain exterior environmental conditions. This is evident by water staining on the construction below these windows. Some of the windows also have impact damage, (from being shot at with a BB gun). On the exterior frames of the clerestory windows is a wire mesh mounted in a wood frame attached directly to the aluminum frame, presumably placed there to protect the glass. This screen frame is blocking the drainage off the aluminum sill.

   The pool level windows along the north side of the natatorium are an aluminum framed, dual glazed system. The double entry door at the pool south deck is also a dual glazed aluminum storefront system.

   Windows and storefront doors at the main entry and windows at women's dressing were added during the 2002 remodel, they are also an aluminum framed, dual glazed system.

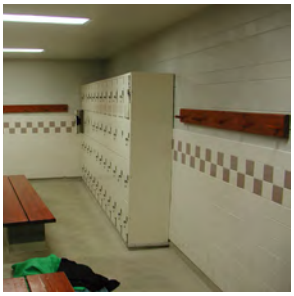
   Recommended Action: Replace clerestory windows with a dual glazed (laminated safety glass) and thermally broken aluminum framed system to reduce sweating. Reconstruct screens to allow proper drainage of the exterior sills.

6. Exterior Doors: The balance of exterior doors that are not mentioned above as storefront type are original construction hollow metal type in hollow metal frames. All of these doors are showing their age with an example being the spectator seating emergency exit door; it is binding in the frame at both the head and jamb. Staff notes that this door sometimes gives a feeling of being latched/locked when it is actually unlocked and can be opened from the exterior if pulled on hard enough. Other examples are the door to the chlorine room, it is extremely rusted thru from the corrosive nature of the chemicals being stored. The double door to mechanical room is rusted at the head from water intrusion presumed to be thru a failed sealant joint.

   Recommended Action: Replace these three doors immediately. Replace balance of the doors on an as needed basis.

7. Building Entry: There is no vestibule/air-lock at the building entry. During cold days, there can be a rush of cool air from the building entry, thru the staff area and into the natatorium.

   Recommended Action: Consider the cost and potential energy savings of adding an entry vestibule.



BUILDING INTERIORS

1. Interior Walls – Main Floor: The interior walls at the main floor level are primarily CMU with a painted finish in most locations. The one location with wood framed / gypsum wallboard finish is the current chlorine room which looks like an addition placed in the corner of the original storage/ electrical room at some time after the original construction.

   Walls in the dressing rooms are finished with a 50" high ceramic tile wainscot (full height in the family changing room) and painted above. The ceramic tile at these walls is held up approx 4" off the floor for an integral coved flooring base to extend up the wall. Numerous locations at the men's dressing area were noted to have the bottom edge of the wall tile broken off due to the wall surface where the tile is adhered projecting approx ¼" away from the wall surface with the coved flooring. This misalignment has left a void behind the bottom edge of the tile leaving that "hanging" edge susceptible to impact damage.

   Shower walls are ceramic tile with a coved tile base transition to the floor tile.

   Recommended Action: Replace the damaged tiles at the base of the walls tiles grout solid the void behind all areas.

2. Interior Walls – Upper Level: All of the original construction upper level walls are wood framed, the 2002 remodel walls are metal stud framed, both with a painted gypsum wallboard finish in locations visible to the public and fire taped only where not visible.

   The upper level toilet room walls are finished with an approximate 42" high ceramic tile wainscot with a coved tile base that transitions into a ceramic tile floor.

   The south wall at the upper level men's toilet room has an access panel from original construction used to enter the attic space. This panel is damaged (bent outward creating a catch hazard) and is no longer needed since the 2002 remodel added a door to access the attic off of the spectator balcony.

   Recommended Action: Remove access panel and patch wall to match adjacent.

3. Floors – Main Floor: Refer to the Pool Tank & Deck comments above for pool deck comments.

   Floors throughout main floor area are slab on grade concrete. The lobby and dressing area floors (including the Family Changing Room) are finished with an epoxy type trowel-on coating with an integral coved base extending approx 4" up the walls. This flooring system has been problematic from

the initial installation in 2002. Numerous locations in both dressing areas are noted where the flooring has been patched/replaced due to water issues below the slab. The original construction drawings do not call for a capillary water barrier. These floors also show signs of cracking that are telegraphing through the coating.

Floor drainage in the dressing areas does not meet the requirements of WAC 246-260 for a minimum ¼" per foot slope; drains are spaced far apart and the floor slopes are not adequate to promote positive drainage.

Shower room floors are ceramic tile with an integral coved tile base transition to the tile walls. Drainage in the shower rooms appears to flow without standing water but looks to be slightly less than ¼" per foot slope.

The staff / administration room is a sheet rubber type floor with a vinyl wall base installed during the 2002 remodel.

The staff changing rooms are exposed aggregate finish at the dressing area and are ceramic tile finished at the toilet/shower area. The women's staff changing area does not have a floor drain; the men's side does have one. This "missing" floor drain at the women's staff changing area is a constant source of ponding water.

Mechanical room spaces are natural concrete floors with adequate drainage.

Recommended Action: Remove and replace dressing area floor slabs. Provide a capillary water barrier layer of gravel and vapor retarder under the slab. Install additional floor drains and replace flooring with ceramic tile or a system similar to the existing epoxy coating.

3a. Floors – Upper Level: Upper level floors are cast in place concrete at the stair landing/passage area, meeting room, restrooms and bleacher area. Stairs to the main level are cast in place concrete. The attic above men's dressing and fan room above women's dressing are wood framed.

Upper Level Restroom floors are finished in ceramic tile with an integral coved tile base transition to the tile walls. Stair landing/passage and meeting room floors are finished with sheet vinyl and rubber base. Bleacher walkway is natural concrete, the bleachers are wood framed with a painted finish. Attic and fan room floors are exposed plywood.

Recommended Action: Routine maintenance.

4. Doors – Main Floor: Interior doors throughout the main floor are primarily hollow metal in hollow metal frames. Most doors are rusting from the floor line up. This is typical for bathhouse construction given the wet chlorine rich environment. Doors in the lobby and staff / administration rooms are solid core wood flush panel type in hollow metal frames, they are not deteriorated like the others as this space does not get regularly hosed down. The door hinges at hollow metal doors are also rusting, balance of hardware is in fair condition. Dressing rooms have electric door operators due to ADA maneuvering space limitations. Staff dressing rooms have pushbutton combination locks.

Recommended Action: Replace rusted doors, frames and hinges. Re-use balance of hardware.

4a. Doors – Upper Level: Doors at the upper level are solid core wood flush panel type in wood frames where original and in hollow metal frames where added during the 2002 remodel. The meeting room door frame is aluminum with a side relite. The door wall-stop at the men's room doesn't align properly with the door handle.

Recommended Action: Replace the one door stop and continue routine maintenance.

BUILDING SITE / CIVIL

1. In 2000, site drainage improvements were made on the north side of the building. Some of the backfill along the north edge of the building, within the fenced enclosure, has settled to the bottom of the "concrete landscape platform" (mow strip) which is not structural.

   There are three storm drains inlets with infiltration piping running east-west along the north side of the building. The eastern drain is covered in several inches of debris.

   Recommended Action: Clean debris from on top of storm drains, and check for debris to be cleaned within as part of routine maintenance.

1a. Several of the downspouts were observed not properly connected to the storm drain. It is suspected in at least on location that debris in the line caused pressure that eventually build up enough to "pop" the connection apart.

   Recommended Action: Clean debris and check connections as part of routine maintenance.

MISCELLANEOUS

1. Reception Desk: The reception desk has projecting "fins" at the customer side. The fins pose a risk of injury hazard. There is no security gate/door at the reception desk as originally intended. A gate would allow the staff to lock up the area for security purposes

   Recommended Action: Remove fins, re-face front of desk and add a security gate.

2. Dressing Room Sink Supports: The dressing room sink supports are plastic laminate faced wood. One support at both men's & women's are damaged.

   Recommended Action: Repair damaged supports.

3. Pool Filter Tank: The tank itself is in good shape, having been provided a fiberglass liner in 2001. However, the feet connecting the tank to the floor are rusted, and in some cases clear to the bolts.

   Recommended Action: Replace the feet and secure to floor

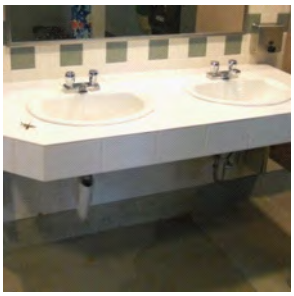
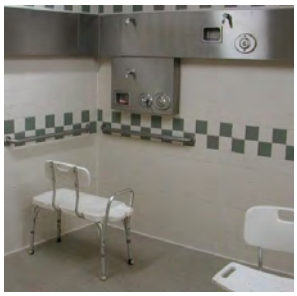
4. Lifeguard Chairs: James noted that the communications at the lifeguard chairs are not adequate, and was related to some safety concerns. Namely they use a wireless doorbell system to communicate with the staff room, which would be used to call for assistance. The batteries don't last and this is a risk. There is also no public address system at the Guard chairs

   Recommended Action: Explore permanent communications systems for the guard chairs. Remove the disabled horns around the pool, and consider a public address system that would work from the lifeguard chairs. (See Electrical - Sound System)

5. Upper level Meeting Room: This room is used for lifeguard training, and other meetings. It's the only space with an A/C that occasionally does not work. The light level is lower than desired. It consists of some wall sconces and cable track with mini-halogen fixtures.

   Recommended Action: Repair or replace the A/C unit (See Mechanical)

   Recommended Action: Provide new lighting with dimming capabilities for the training classroom spaces (See Electrical)

BUILDING ACCESSIBILITY (ADA)

1. ADA Access to Second Floor: The second floor is not ADA accessible.

   Recommended Action: Leave as-is, accessibility work would include adding an elevator and reconfiguring the restrooms which would be cost prohibitive.

2. ADA Toilets: The ADA toilet stalls are missing a vertical grab bar at the side wall.

   Recommended Action: Add vertical grab bars.

3. ADA Showers: The ADA showers are similar to a roll-in type as described by ANSI A117.1. except they are missing a 3rd wall with grab bar to create a 36”x 60” “U” shaped enclosure. The 3rd wall with grab bar is required when there is not a permanent seat.

   Recommended Action: Add a low wall with grab bar to create the “U” shape or add a low wall and fixed seat per the “alternate” ANSI A117.1 configuration. The exact configuration would need to be looked at in more detail to work with the existing ADA shower head and grab bar locations.

4. ADA Sinks: The dressing room sinks are missing insulated covers at the waste pipe & trap. This is typical except for one sink at women’s dressing that is covered.

   Recommended Action: Install insulated covers at waste pipes & traps.

5. ADA Lockers: The dressing room lockers do not have any ADA accessible units.

   Recommended Action: Provide ADA lockers at both men’s & women’s dressing rooms. Quantity of lockers could be determined by the city based on historical number of disabled swimmers. The lockers would most likely be a two tier style with the bottom locker being the ADA unit.

6. ADA Dressing Benches: The dressing rooms do not provide benches with back support properly laid out for access from one end.

   Recommended Action: provide an ADA dressing bench with the required backrest at both men’s and women’s dressing rooms.

7. Staff Dressing: The staff dressing rooms are not ADA accessible but could be justified to remain as-is by the requirement for staff that will be using the space (lifeguards) to be able bodied personnel.

   Recommended Action: Leave as-is.

C. BUILDING SCIENCE ASSESSMENT

GENERAL

CONSTRUCTION

FINDINGS

PHASE 2 FURTHER INVESTIGATION

SUMMARY OF BUILDING SCIENCE FINDINGS AND RECOMMENDATIONS

BCRA

o·r·b architects

Shoreline Pool – Phase I Physical Inventory/Survey
Phase 2 Further Investigation

Building Science Findings & Analysis January 27, 2014

1. GENERAL

1.1. ORB Architects, along with Enginuity Engineers, Cross Engineers and BCRA Building Envelope Group, conducted the Phase I Physical Inventory/Survey of the Shoreline Pool building on August 19, 2013, which included discussion with the key operations and maintenance personnel for the Shoreline Pool.

1.1.1. BCRA returned to the Pool on January 12, 2014 to conduct the Phase 2 Further Investigation involving an air leakage test of the building envelope and a review of openings made by City of Shoreline in the Natatorium roof and wall. Temperature, relative humidity and pressure readings when BCRA arrived at the Pool were as follows:

Exterior Temperature.....41° F
Exterior Relative Humidity 90%
Interior Temperature.....80° F
Interior Relative Humidity.....86%
Interior Pressure.....+4 Pascal (HVAC system on)

2. CONSTRUCTION

2.1. The Shoreline Pool building was a King County Forward Thrust project constructed in 1970-71 to house an indoor swimming pool along with associated shower rooms, office area, viewing area and mechanical/storage spaces. A renovation project in 2002 provided additions to the Women's Locker Room and main entrance Lobby, and added the Meeting/Work Room on the Upper Floor along with replacement of the finishes in the Locker Rooms and main entrance Lobby.

2.1.1. **1970 Original Building Construction** – The original pool building has an area of 13,539 square feet on two floors and is constructed with concrete spread footings, reinforced concrete masonry unit exterior walls and wood framed roof structure.

2.1.2. **2002 Addition Construction** – The addition to the Women's Locker Room, main entrance Lobby and Meeting/Work Room added 814 square feet to the original building and is constructed with concrete spread footings, reinforced concrete masonry unit exterior walls and wood framed roof structure.

3. FINDINGS

3.1. Foundation – The concrete foundations appear to be in good condition, no indications of settlement or distress were observed. The following deficiencies were observed:

- The existing drawings do not show any perimeter foundation insulation on the 1970 original building. No evidence of moisture damage to finishes at the building perimeter was observed.

3.2. Floor Slab On Grade

3.2.1. 1970 Building – The Structural Drawings indicate a 5" thick reinforced concrete slab on grade for the Main Floor areas except for a 4" thick concrete slab on grade for the office area (Rooms 106 and 107). The following deficiencies were observed:

- No capillary break or vapor barrier under the concrete floor slab is shown on the Drawings. Core drilling the floor to confirm this condition was beyond the scope of this investigation.
- Cracking has occurred in the structural concrete slab over the sub-floor concrete duct on the north side of the Natatorium (refer to Photo 1 below). No rust or exposed reinforcing steel was visible, but the location of these cracks allows pool water splashed onto the pool deck to come into direct contact with the reinforcing steel in the slab which creates an ongoing corrosion problem. The cracks have been filled by the City. The location of the cracks is presumed to be located over the inside wall of the sub-floor concrete duct, although the cause of the cracking is not readily apparent. This is a reinforced cantilevered slab with only foot traffic loading; settlement of the pool or foundation should not cause cracking at this location. Further investigation is recommended to determine if there is any corrosion damage to the slab reinforcing steel.
- Cracks are visible in the face of concrete curb for the diffuser grilles in the top of the sub-floor concrete duct at both the north and east sides of the Natatorium (refer to Photo 2 below). These cracks appear to be caused by expansive rust on the reinforcing steel in these curbs which is resulting from pool water splashed onto the pool deck and curb.

3.2.2. 2002 Addition - The Structural Drawings indicate a 4" thick reinforced concrete slab on grade for the addition area. The following deficiencies were observed:

- Cold joints and/or control joints in the concrete floor slab have telegraphed through the finish flooring in the Women's Locker Room addition (refer to Photos 3 and 4 below).

Photo 1 – Cracked floor slab on north side of Natatorium

Photo 2 – Cracked curb at east side of Natatorium

Photo 3 – Cracked flooring in Women's Locker Room addition

Photo 4 – Cracked flooring in Women's Locker Room addition

3.3. Natatorium Sub-Floor Concrete Duct – The sub-floor duct is constructed of cast-in-place concrete starting at the Mechanical Room on the west side of the Natatorium and running along the west, north and east exterior walls and the west end of the south exterior wall of the Natatorium. Inspection of the interior of this sub-floor duct was not possible; one grille was removed along the north wall but visibility into the duct was limited by opposed blade volume damper. Some minor rusting was observed on the steel sleeve for the continuous floor grille. The interior of the sub-floor concrete duct appeared dry.

3.4. Exterior Walls

3.4.1. Exterior walls extending from the Main Floor level up to the roof consist of 8" and 12" reinforced single wythe concrete masonry units (CMU). Single wythe CMU walls deliver only marginal (and many times substandard) weather barrier performance in our climatic conditions, depending on their weather exposure and the quality of construction, which can result in water intrusion to the interior through the relatively porous CMU itself as well as through small cracks that form at poorly bonded mortar joints.

3.4.2. The Drawings indicated that the cells on the CMU walls of the 1970 original building are to be filled with insulation (type of insulation is not indicated, loose perlite insulation is assumed), which yields an R-value of around R-4.4 for 8 inch CMU. The Drawings for the 2002 addition required the CMU cells to be solid grouted which yields an R-value of around R-1.6 for 8 inch CMU. The very low insulation value of the CMU exterior walls contributes significantly to the energy inefficiency of this building.

3.4.3. The exterior walls are bare, unpainted CMU on the exterior side; the interior side is painted in the Natatorium and Locker Rooms; the walls in the Mechanical Rooms and Stairway from the Upper Level are unpainted. Single wythe unpainted exterior CMU walls in the Puget Sound marine climate are generally subject to some level of sweating on the interior side during cold weather due to their poor insulation value and will leak water when subjected to wind driven rain. The sub-floor supply air distribution system in the Natatorium appears to have kept this sweating to a minimum due to the constant movement of warm air across the surface; we did not notice any efflorescence or water staining of the lower painted interior walls of the Natatorium, whereas some minor water staining and efflorescence was observed on the upper unpainted south wall (refer to Photo 5 below). The interior side of the west wall of the Natatorium has been painted full height, (perhaps because of water staining?). The exterior CMU walls in the Mechanical Room and Storage Room on the west end of the building have significant water staining and efflorescence on the interior side (refer to Photo 6 below).

3.4.4. The CMU walls appear in remarkably good condition for their age and exposure to weather. Cracks in the CMU exterior walls were observed in a few locations, mostly occurring at mortar joints and considered to be the result of normal expansion and contraction movement of the CMU due to thermal and moisture level fluctuations (refer to Photo 7 below). Several random small holes and similar minor damage was noted around the exterior, all of which can be easily repaired.

3.4.5. The 1970 Drawings show a through-wall flashing detail at the bottom of the CMU exterior walls with weep holes to the exterior at 4 feet on center. This through-wall flashing and the weep holes are visible on the building, although most of the weep holes have been filled with sealant (refer to Photo 8 below). No evidence of any moisture weeping from these weep holes was observed anywhere around the building and they apparently were not necessary for these walls, although their inclusion in the original design would be considered best practice.

3.4.6. Infrared thermography of the CMU walls shows a normal pattern of solid grouted cells indicating the location of reinforcement (refer to Photos 9 and 10 below). No water intrusion issues in the CMU walls were observed as the weather at the time of this assessment was dry and warm.

3.4.6.1. Phase 2 Further Investigation Findings: No bulk water leakage through the CMU walls was observed during our investigation on January 12, 2014, which followed several days of wind and rain. The efflorescence (white powder) that is forming on the interior side of exterior CMU walls in the storage and mechanical rooms is evidence of moisture moving through the CMU, from the exterior to interior side, and also of water vapor condensing on the cooler CMU wall surfaces during cold weather. There is less efflorescence on the CMU walls in the Natatorium most likely due to better air flow from the HVAC system which warms and dries the surface of the CMU better than the Storage and Mechanical rooms that have little or no forced air ventilation. A considerable amount of condensation collected on the interior side of the CMU exterior walls very quickly when the HVAC system was shut down to run the air leakage test.

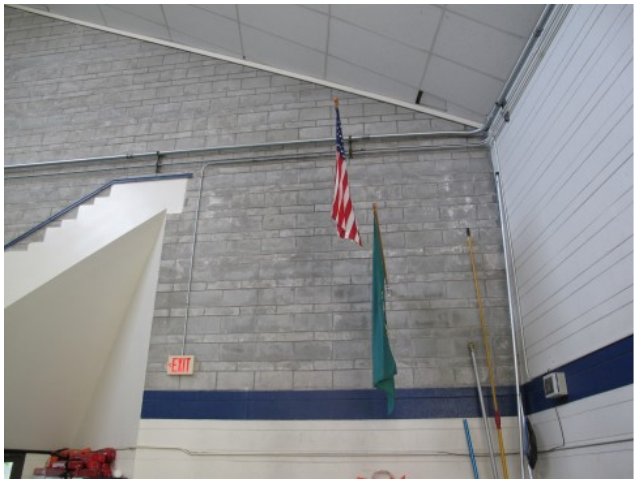


Photo 5 – Water staining and efflorescence on south wall of Natatorium, west end

Photo 6 – Water staining and efflorescence on CMU wall in west Storage Room

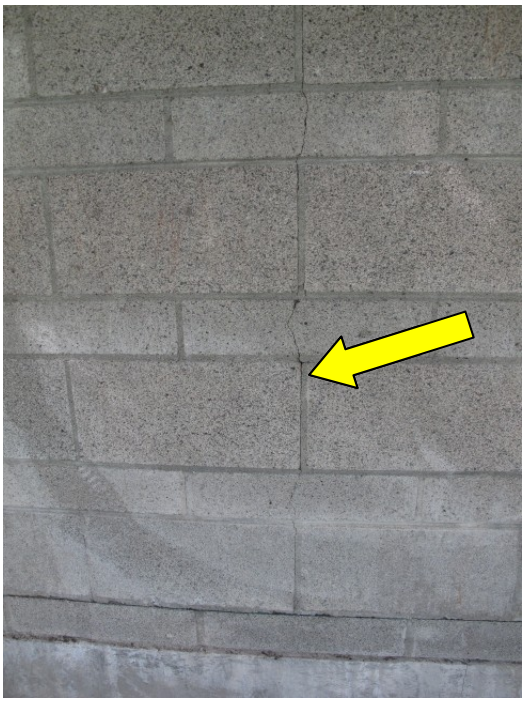


Photo 7 – Crack in east CMU wall

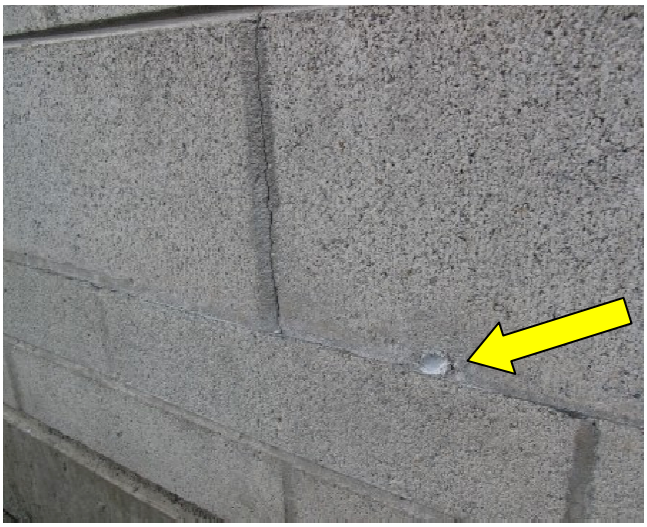


Photo 8 – Typical weep hole in CMU wall filled with sealant

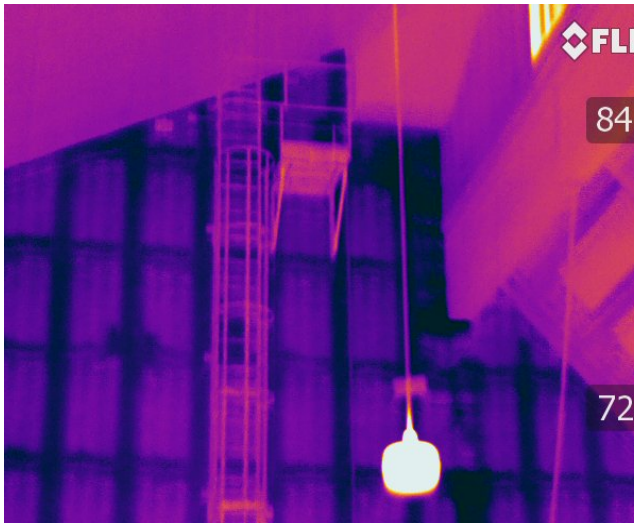


Photo 9 – Infrared image of north wall of Natatorium showing grouted cells in CMU wall (dark blue)

Photo 10 – North wall of Natatorium

3.5. Roof Clerestory Walls – The clerestory walls above the roof level are wood framed and sheathed with plywood, asphalt saturated building paper and standing seam metal siding. The following deficiencies were observed:

- The metal siding standing seams are only held together by friction and can be quite easily pulled loose; several panels were found with seams that had worked open by themselves (refer to Photos 11 and 12 below).
- There is evidence of possible air leakage at the bottom of the clerestory walls; the bottom flashing and fasteners are badly corroded (refer to Photos 13 and 14 below).
- The asphalt saturated building paper does not shingle lap over the top of the flashing at the bottom of the metal siding; any condensation or water leakage behind the metal panels will run behind the bottom flashing and possibly into the building interior (refer to Photos 13 and 14 below).

3.5.1. Phase 2 Further Investigation Findings: Evidence of air leakage was observed at the clerestory metal siding which confirms the cause of the corrosion and condensation we observed at the bottom of the clerestory siding in our Phase I assessment (refer to Photos 13 and 14).

Photo 11 - Open metal panel seams at west clerestory wall

Photo 12 - Open metal panel seams at west clerestory wall

Photo 13 – Corrosion on base flashing for metal siding at clerestory wall possibly from air leakage

Photo 14 – Corroded fasteners & missing building paper at base flashing on clerestory wall

3.6. Roof

3.6.1. 1970 Building – The roof structure consists of glue-laminated beams supporting pre-fabricated roof panels constructed from built-up wood joists spaced at 16 inches on center and fabricated using a 2x web member with a 2x top and bottom flange nailed onto the web member to form a small truss, with plywood sheathing. The roofing is asphalt shingles; we noted there are two layers of shingle roofing. Infrared thermography of the roof did not reveal any issues in the roof, it was not the right time of year to find water intrusion issues, which are best found after several weeks of wet weather and cooler temperatures (refer to Photos 17 and 18 below). The following deficiencies were observed:

- The large glue-laminated beams in the Natatorium are water stained; the pool staff advised that these water stains have always been on these beams (refer to Photo 19 below). The water staining is most severe on the beams under the clerestory windows where most likely the single pane windows act as a large condensing plate in cold weather and drip water onto the beams below (refer to Photo 20 below). The cause of the water staining on the other beams in the Natatorium is not as obvious and could be the result of air transported moisture condensing in the roof structure or bulk water intrusion at some time in the building's life.
- The Drawings graphically show batt insulation in the pre-fabricated roof panels but do not indicate a thickness or specific type of insulation.
- The Drawings do not show any ventilation above the insulation; they show a 4 mil polyethylene sheet vapor barrier on the underside of the pre-

fabricated roof panels with fully taped seams and sealed at fasteners. No means of venting the roof system was observed on the building.

- The shingles at the roof eave run behind the back of the gutter, instead of into the gutter (refer to Photo 21 below). .
- The downspouts on the 1970 original building are in poor and failing condition; they are leaking onto the CMU wall at the north side of the building (refer to Photos 23 and 24 below).
- The roof has problems with moss due to the close proximity of trees (refer to Photo 22 below).

3.6.1.1. Phase 2 Further Investigation Findings: No evidence of trapped water or wet insulation was observed in the roof during the infrared survey of the building exterior and interior (refer to Photos 37 through 50 below). Air leakage at the roof to wall juncture and at roof beams was observed during the infrared survey (refer to Photos 37 through 50 below). Two openings were cut in the gypsum board ceiling of the Natatorium to confirm conditions; the ceiling assembly consists of 5/8" GWB and 6 mil polyethylene sheet vapor barrier installed over 2x4 furring with the cavity filled with 3-1/2" thick expanded polystyrene foam insulation adhered with asphalt to plywood on underside of roof structure. Some minor water staining was observed but materials were found to be dry and in good condition; water staining is thought to have most likely occurred during construction or from roof leaks that occurred prior to roof replacement (refer to Photos 25 and 26 below). The City will repair the openings; the vapor barrier and foam insulation require careful resealing to avoid air and vapor leaks.

3.6.2. 2002 Addition – The 2002 addition only added a small area of new roof at the southwest corner of the building for the addition on the Women's Locker Room and main entry Lobby. Roof structure is wood framed, similar to the original 1970 building roof. The Drawings require the installation of new asphalt shingle roofing over the entire new and existing roof. The Drawings show a ventilation space above the R-21 batt insulation; ventilation holes were observed at the eave.

3.6.2.1. Phase 2 Further Investigation Options: The ridge of the south roof has a sheet metal cap but does not appear to have any ridge vent (refer to Photos 15 and 16 below).

Photo 15 – Infrared image of South elevation

Photo 16 – South elevation

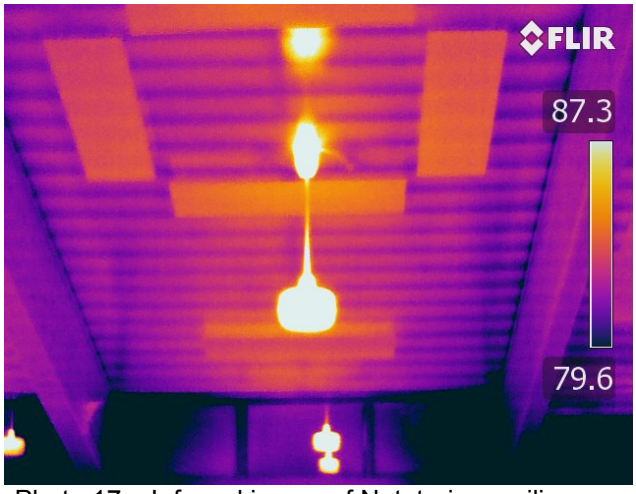


Photo 17 – Infrared image of Natatorium ceiling

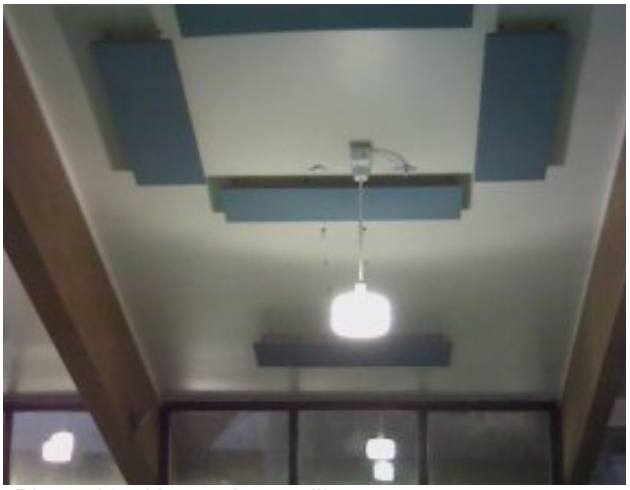


Photo 18 - Natatorium ceiling

Photo 19 – Water stained beam in Natatorium

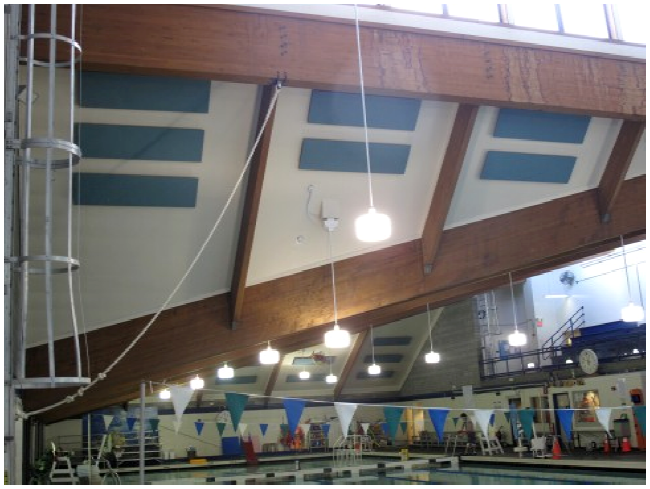


Photo 20 – Water stained beam under west clerestory windows in Natatorium

Photo 21 – Roofing shingles behind the gutter at north side

Photo 22 – Moss on north and east sides of roof

Photo 23 – Leaking downspout at north side of building

Photo 24 – Leaking downspout at north side of building

Photo 25 – Opening cut in ceiling at south Natatorium

Photo 26 – EPS foam insulation cut from ceiling

3.7. Windows

3.7.1. Main Floor Level Windows – Windows on the Main Floor level are double-glazed aluminum framed commercial windows in fair condition.

3.7.2. Clerestory Windows - The clerestory windows above the roof level are single-glazed aluminum framed windows. The clerestory windows have a wire mesh screen in a 2x wood frame installed on the exterior side. The following deficiencies were observed:

- The clerestory single pane windows appear to act as a large condensation plate which possibly results in water dripping off onto the structure below and leaving water staining on the glue-laminated beam (refer to Photo 27 below).
- The glass panes in the clerestory windows have numerous tiny holes, of the type made by a BB gun that leaves a small cone-shaped conchoidal fracture pattern in the glass.
- The wood frame on the wire mesh screens installed on the exterior side of the clerestory windows interferes with proper sill drainage (refer to Photo 28 below).
- The sill detail for the clerestory windows shown on the Drawings does not indicate any end dams on the aluminum sill and shows sill fastener penetrations, both of which can result in a sill that leaks water.

3.7.2.1. Phase 2 Further Investigation Options: An opening was made under the east end of the south clerestory window to confirm possible water damage. The GWB was removed to expose plywood

sheathing; some minor water staining was observed on the back of the GWB but materials were dry and free of deterioration. Probing with a knife did not reveal any soft areas in framing behind the plywood sheathing. The aluminum windows have a large aluminum gutter sill extrusion on the interior side with large weep holes to exterior, presumably to catch condensation off the glass. Ends of this gutter are sealed but lack any positive end dams to prevent water from running out the ends (refer to Photos 29 and 30 below).

Photo 27 – Water stained glue-laminated beam below west clerestory windows in Natatorium

Photo 28 – Wood framed wire mesh screen at clerestory window

Photo 29 – Sill gutter at clerestory windows with weep hole

Photo 30 – Sealant end on sill gutter at clerestory windows

3.8. Exterior Doors/Frames – The exterior doors at the main entry and west exit from the Natatorium are glazed aluminum entrance doors in fair condition. The other exterior doors are hollow metal construction in generally poor to failing condition. The following deficiencies were observed:

- The exit door at the bottom of the Upper Level exit stair at the west side of the building does not fit properly and is binding on the frame making it hard to open/close (refer to Photos 31 and 32 below).
- The door frame at the northwest corner of the Mechanical Room is rusted badly; water penetrating the CMU wall has corroded the head of the frame clear through (refer to Photos 33 and 34 below).
- The door and frame into the Chlorine Storage Room at west side of the building is completely rusted out and barely operable (refer to Photo 35 below).
- Sealant between door frames and adjacent CMU wall is deteriorated or missing altogether (refer to Photo 36 below).

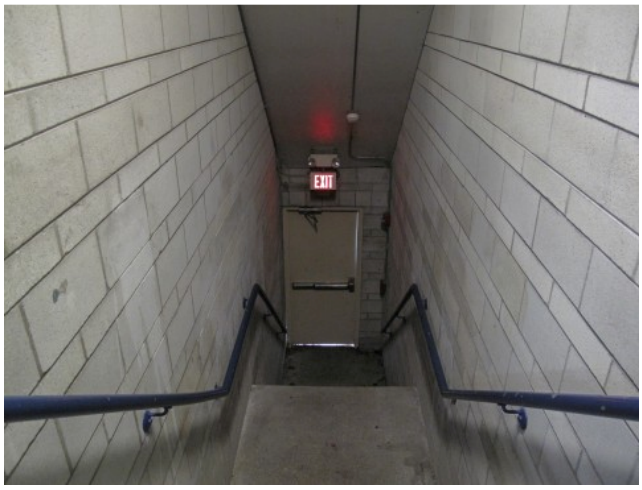


Photo 31 – Exterior door at bottom of Upper Level exit stair

Photo 32 – Binding head on exterior door at bottom of Upper Level exit stair

Photo 33 – Rusted head on Mechanical Room door frame

Photo 34 – Rusted head on Mechanical Room door frame

Photo 35 – Rusted door/frame on Chlorine Room

Photo 36 – Missing sealant at head of door

4. PHASE 2 FURTHER INVESTIGATION – BUILDING AIR LEAKAGE TESTING

4.1. Building Air Leakage Testing - A whole building air leakage test was conducted to determine the air leakage rate of the building envelope and to identify areas of air leakage. The test involved temporarily shutting down the HVAC system and sealing off the exterior openings for outside air intakes, exhaust air outlets, gas appliance combustion air and exhaust vents, closing exterior doors and windows, opening interior doors and then depressurizing the building interior using high capacity blower door fans installed at the main entry doors. The building was depressurized in incremental steps up to a negative 50 pascals and the air leakage rate of the building envelope calculated at 0.229 cubic feet per minute of exterior envelope surface area. An air leakage rate of 0.4 cfm/sf is considered to be slightly below average and is also the air leakage rate required for new buildings by the Washington State Energy Code, so the Pool building

is actually performing slightly above average for air leakage. During the air leakage testing, the interior of the building was surveyed using an infrared camera to locate cold spots and patterns caused by cold exterior air being drawn into the building under negative pressure (refer to Photos 37 through 50 below). These cold air leaks appear as the wispy-edged dark blue areas in the infrared images below. The roof to wall connection around the building appears to be the major location for air leakage; some minor air leakage was also noted around the clearstory windows and all of the exterior doors have leaking weather seals. Due to the cold damp weather on the day of the testing only negative air testing was possible due to poor adhesion of the tape seals on the temporary closures installed over the exterior openings which were not capable of holding against positive pressure. Evidence of air leakage was observed at the clerestory metal siding which confirms the cause of the corrosion and condensation we observed at the bottom of the clerestory siding in our Phase I assessment (Photo 45).

Photo 37 – Infrared image of air leakage at south clerestory window heads

Photo 38 – South clerestory window head

Photo 39 – Infrared image of air leakage at roof beam in Upper Level East Storage Area

Photo 40 – Upper Level East Storage Area

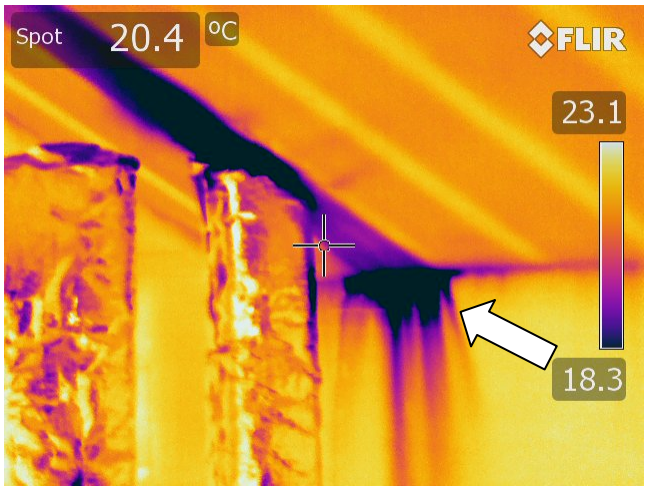


Photo 41 – Infrared image of air leakage at ceiling of Upper Level South Storage Area

Photo 42 –Ceiling of Upper Level South Storage Area

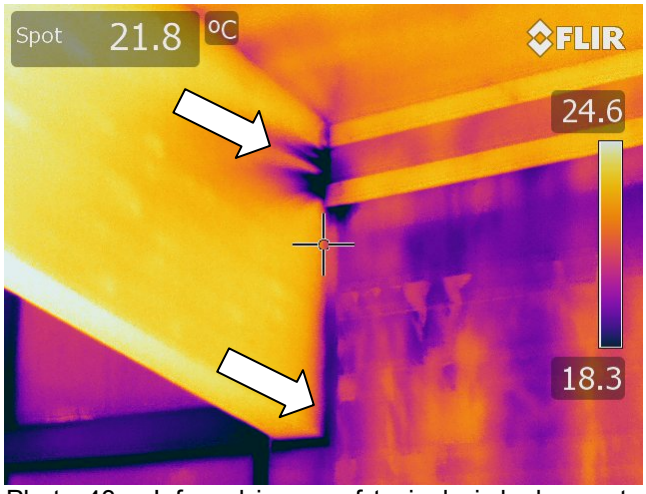


Photo 43 – Infrared image of typical air leakage at roof beams in Natatorium, North side

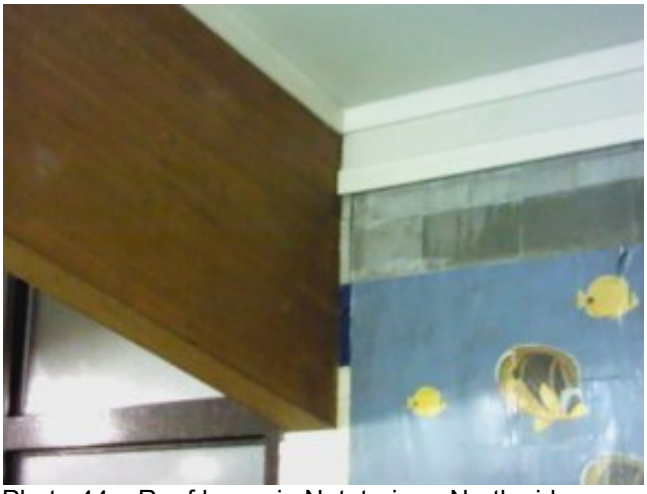


Photo 44 – Roof beam in Natatorium, North side

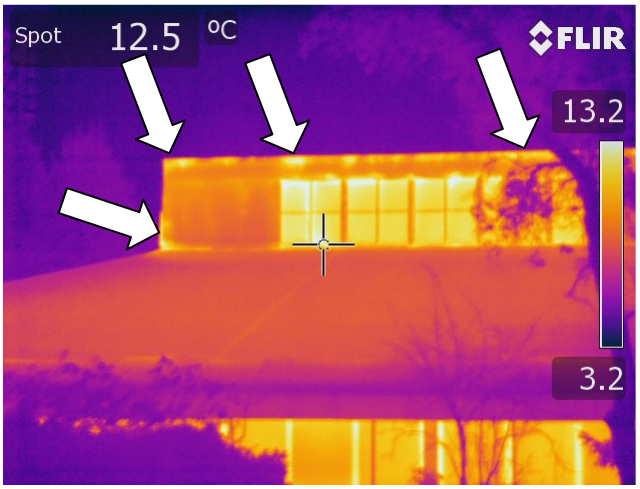


Photo 45 – Infrared image of North elevation
Note warm air leakage at roof/wall & left side

Photo 46 - North elevation

Photo 47 – Infrared image of West elevation
Note warm air leakage at roof to wall juncture

Photo 48 – West elevation

Photo 49 – Infrared image of South elevation

Photo 50 – South elevation

5. SUMMARY OF BUILDING SCIENCE FINDINGS AND RECOMMENDATIONS

5.1. General: Overall, the building appears to have been designed and constructed to perform at an acceptable level given the difficulties common to buildings housing a pool; we did not find evidence of any serious water management issues or deterioration in the envelope during our Phase 1 and 2 investigations. However, the reality is that the building is showing its age and some envelope elements that have been exposed to the weather for the last 40 years are in need of reworking or replacement due to their age and use. From a building science point of view, the building envelope is capable of continuing to provide the current level of weather protection service as long as normal maintenance and repairs are provided. However, there are energy related and water management improvements that could be made to the building that would increase its efficiency and prevent moisture issues in the

envelope from causing deterioration which are outlined in the following recommendations:

5.2. Foundation – Install perimeter foundation insulation as part of an exterior insulation and cladding project. Installing foundation insulation will reduce heat loss through the floor slab and foundation wall perimeter and reduce potential for condensation on the interior perimeter surfaces.

5.3. Floor Slab-On-Grade

- The concrete slab on grade floors in the locker room addition appear to be having some moisture related issues as well as some thermal movement at cold joints between the 1970 original and 2004 addition floor slabs that have resulted in some localized debonding and cracks in the seamless floor covering. If there is no underslab vapor barrier, replacement of the slab along with installation of the proper vapor barrier is recommended to permanently resolve the problem.
- There was no visible corrosion of reinforcement at the cracks in the cantilevered concrete floor slab over the sub-floor concrete supply air duct at the north side of the Natatorium, but this condition is problematic relative to the close proximity to the pool. Pool water that enters these cracks will rapidly corrode the reinforcing steel and result in a structural deficiency and possible safety issue if it is not noticed or concealed from view on underside of slab. Permanent watertight repair of these cracks with epoxy injection or routing and sealing is recommended.
- Expansive rust cracking in the concrete curb for the diffuser grilles in the top of the sub-floor concrete duct at both the north and east sides of the Natatorium requires removal and replacement of the concrete curbs.

5.4. Natatorium Sub-Floor Concrete Duct – We did not observe any moisture or deterioration issues inside this duct at the location where one of the diffuser grills was removed. We recommend the entire length of this duct be inspected as part of any building renovation or HVAC upgrade work that is performed to confirm there is no water intrusion or corrosion of reinforcing steel in this subgrade concrete duct.

5.5. Exterior Walls

- CMU Walls - The single wythe CMU exterior walls do not provide adequate thermal insulation for the building and act as a large condensation plane for the humid interior pool air. These walls are completely reliant on the operation of the HVAC system to continually keep them washed with warm air and to remove condensation. When the HVAC system is shut down for even a short period of time, (as we observed during the Phase 2 air leakage testing), condensation forms on these walls immediately and the water runs down the interior wall face and onto the floor. Installing continuous rigid insulation on the exterior side of the CMU along with a new wall cladding system is recommended to improve the thermal performance of the wall. This recommendation is consistent with the new

2012 Washington State Energy Code requirements for continuous insulation outboard of the wall structure. The design and selection of the air, water and vapor barrier system(s) in an insulation and wall cladding upgrade are critical to assuring long term moisture and energy performance. Installation of a liquid-applied air/water/vapor barrier system onto the exterior side of the CMU wall is recommended, with careful attention paid to sealing this barrier system at the juncture to the roof and to any penetrations or openings. Proper connection of the wall air barrier to a roof air barrier will eliminate the air leakage we observed at the roof to wall connection during the air leakage testing.

- Wood Framed Clerestory Walls – In our opinion, the existing standing seam metal siding has a poorly designed standing seam connection which results in seam separation issues, as evidenced by the open seams we observed on the west clerestory during our site investigation. In addition, the building paper weather resistive barrier behind the metal siding was not shingle lapped properly over the base flashing which allows some water intrusion. Installation of an air/water/vapor barrier system with continuous rigid insulation on the exterior side of these walls along with a new wall cladding system is recommended to improve both the thermal performance of the wall as well as address the air leakage that was observed at the top and corners of these walls and around the windows during the Phase 2 air leakage testing.

5.6. Roof - The shingle roofing was installed within the last 8 years; no evidence of roof leaks or moisture problems were observed during our investigation, although some water staining was observed which we believe is most likely due to previous water leaks or exposure to weather during construction. When the shingle roofing is replaced, removal of both layers of shingles to expose the plywood sheathing is recommended along with careful inspection of the sheathing for any evidence of moisture problems or deterioration. Cutting openings into the roof cavity at reroofing would be advisable to allow the condition of the framing and batt insulation to be observed. The following roof related items need to be addressed immediately to avoid possible deterioration:

- Rework the north gutter and shingle interface so that shingles do not terminate behind the gutter; this could be accomplished by inserting a sheet metal eave flashing under the shingles so that water runoff drain into the gutter and not behind it.
- Replace the original 1970 building downspouts to prevent leaking onto CMU wall and glue-laminated beam ends.
- Remove the moss from the shingles and apply moss treatment. Moss that is allowed to grow lifts the edges of the shingles and will allow water to wick under the shingles leading to eventual roof leaks and sheathing damage.

5.7. Windows – Replacement of the original 1970 natatorium and clerestory windows with thermally broken frames and insulated glass units is recommended. This will improve energy efficiency as well as reduce the current condensation issues for all but the coldest days. The 2004 addition windows provide an acceptable level of performance although replacement should be considered if a complete renovation of the building is planned. The clerestory windows have a sill gutter extrusion that collects the condensation and weeps it to the exterior. This is a necessary feature for windows in this location in a natatorium and any replacement window should have a similar sill gutter and weep system to manage condensation that occurs during the coldest weather or when the HVAC system is shut down for maintenance or repair. The lack of positive end dams on the existing clerestory window sill gutters is a concern, although there did not appear to be any water overflow of the slightly raised sealant joint installed at each end of the gutter.

- Clerestory Windows - If the clerestory windows are not replaced in the near future, installing aluminum angle end dams in silicone sealant is recommended. In addition, the sill gutter and weep holes should be inspected and cleaned at least once yearly to avoid possible plugging of weep holes with debris and water overflowing the gutter onto the wood framing. We noted numerous tiny holes and cone-shaped fractures in the glass, presumably from pellet or BB guns, which would require selection of an impact resistant ballistic glazing for the replacement windows. This might also allow removal of the wire mesh screen on the exterior side of these windows.

5.8. Exterior Doors/Frames - Replacement of the original 1970 hollow metal doors, frames and hardware is recommended; none of these doors seal to the frame properly and they all have functional issues due to age and corrosion. Using fiberglass replacement doors and frames with integral fiberglass weather stripping will prevent corrosion issues and provide better thermal isolation and insulation than either hollow metal or aluminum.

END OF BUILDING SCIENCE FINDINGS & ANALYSIS

Dave Seifert
BCRA Building Envelope Group

Peer Reviewed By:

Todd Wolf, Director
BCRA Building Envelope Group

Appendix A – Air Leakage Test Report

APPENDIX A
BUILDING AIR LEAKAGE TEST RESULTS

BCRA

BUILDING SCIENCE

Air Leakage Test Results

In Compliance with ASTM E-779-10

Shoreline Pool

19030 1st Ave North East

Seattle, WA 98155-2148

Test file name: **ASTM 2014-01-12 1716**
Test technician: **Michael Nelson**
Test company: **BCRA Building Science**

Building address: **19030 1st Ave North East**
Seattle, WA 98155-2148

Building description: **Public pool**

Fan Model: **Retrotec 3000SR**	Fan SN: **502270**	Gauge Model: **DM32**	Gauge SN: **400026**
Fan Model: **Retrotec 3000SR**	Fan SN: **095772**	Gauge Model: **DM32**	Gauge SN: **400270**
Fan Model:	Fan SN:	Gauge Model:	Gauge SN:

Leakage rate

The measured air flow at a test pressure of **50 Pa** was **8280 CFM** with equates to an equivalent leakage area of **804.5 square inches** which also equates to a one inch gap **67.0 feet** long. This building has a leakage rate that would be equivalent to a hole of this size if all the holes and cracks in the exterior were added together.

Depressurize Set

Test Date and Time:	**2014-01-12-17:52**
Height x Temperature difference:	**1014 ft F°**
Air leakage coefficient, C_p:	**555.0 CFM/Pa^n**
	+/- 16.6%
Exponent, n_p:	**0.6880**
	+/- 6.7%
Correlation coefficient, r^2 :	**0.9988**
Air flow at STP:	**8280 CFM at 50 Pa**
	+/-4.5%
Air change rate:	**air changes / hour at 50 Pa**
Flow per unit floor area:	**0.652 CFM per square foot**
	+/-4.5%
Flow per unit envelope area:	**0.229 CFM per square foot**
	+/-4.5%

Test Data

Induced pressure (Pa)	**-9.3**	**-19.6**	**-29.3**	**-39.1**	**-49.5**	**-58.4**						
Fan Pressure (Pa) Range: **A**	**46.8**	**167.3**	**292.2**	**462.1**	**214.5**	**274.2**						
Flow (CFM)	**2099**	**3907**	**5139**	**6430**	**8044**	**9025**						
Error (%)	**1.6%**	**0.0%**	**-3.6%**	**-2.6%**	**2.6%**	**2.2%**						

Induced pressures taken for **10** seconds.
Baseline pressures taken for **30** seconds.

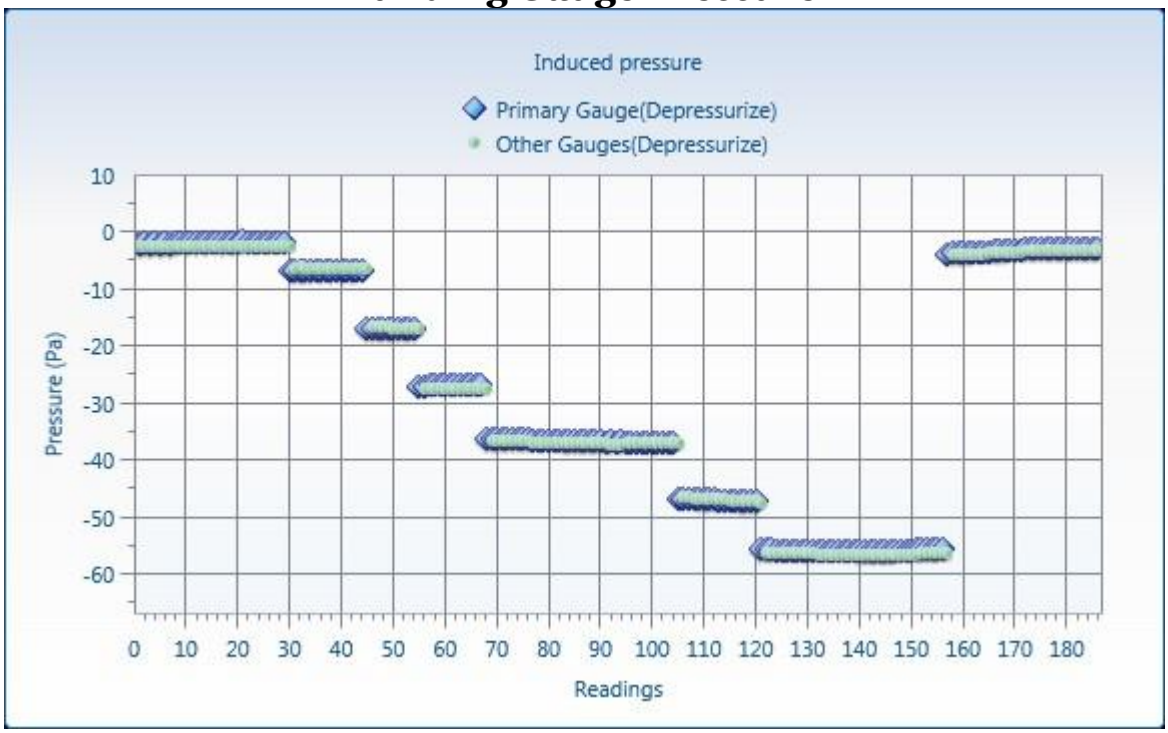
Environmental Conditions

Operator Location: **Inside** the building

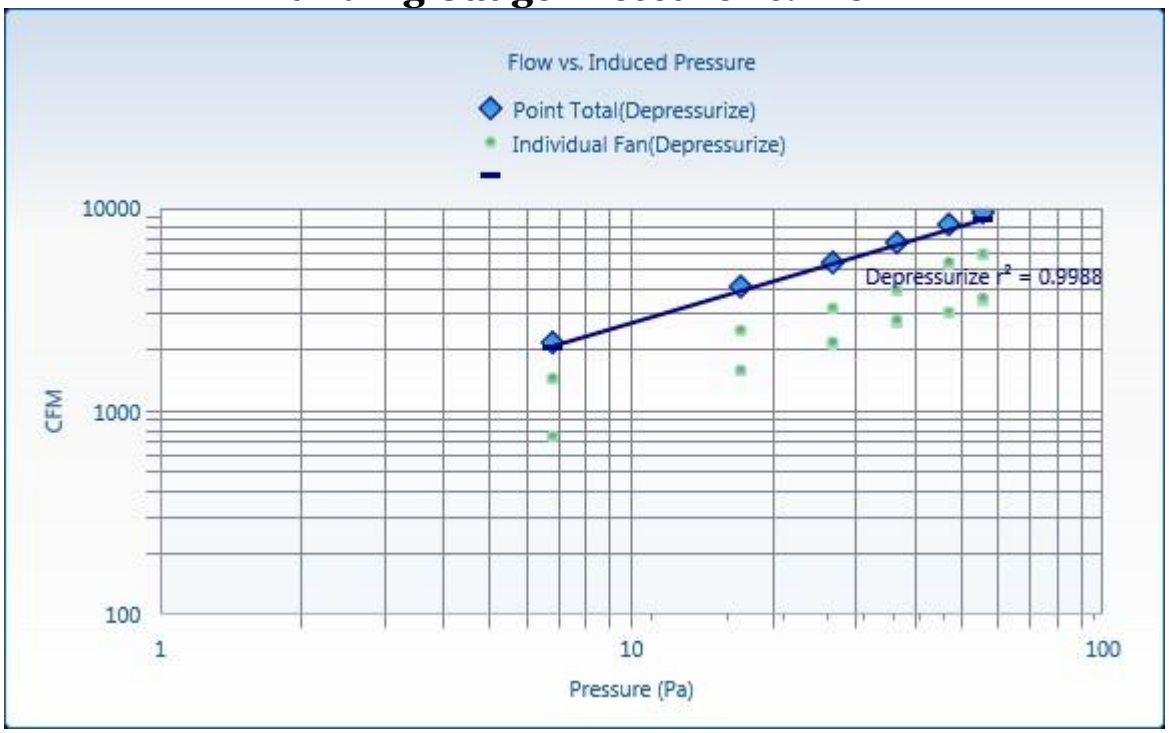
Initial Conditions:
Baseline: **-1.91 Pa**,
Temperature: indoors: **68 °F**, outdoors: **42 °F.**

Final Conditions:
Baseline: **-3.18 Pa**,
Temperature: indoors: **68 °F**, outdoors: **42 °F.**

Building Gauge Pressure



Building Gauge Pressure vs. Flow



Combined Test Data

	Results	Uncertainty
Air flow at STP, CFM at 50	**8280**	**+/-4.5%**
Air change rate at 50 Pa [/h]		
Flow per unit floor area at 50 [CFM/ft²]	**0.652**	**+/-4.0%**
Flow per unit envelope area at 50 [CFM/ft²]	**0.229**	**+/-4.0%**
Equivalent leakage area at 10 Pa [in²]	**804.5**	**+/-5.5%**
LBL Effective leakage area at 4 Pa [in²]	**413.0**	**+/-9.2%**
LEED Permeability at 4 Pa [in² / 100 ft²]	**1.141**	**+/-9.2%**

Calibration Certificate

Retrotec 3000SR 502270.						
Range	N	K	K1	K2	K3	K4
Open(22)	**0.5214**	**519.618**	**-0.07**	**0.8**	**-0.115**	**1**
A	**0.503**	**264.996**	**-0.075**	**1**	**0**	**1**
B	**0.5**	**174.8824**	**0**	**0.3**	**0**	**1**
C8	**0.5**	**78.5**	**-0.02**	**0.5**	**0.016**	**1**
C6	**0.505**	**61.3**	**0.054**	**0.5**	**0.004**	**1**
C4	**0.5077**	**42**	**0.009**	**0.5**	**0.0009**	**1**
C2	**0.52**	**22**	**0.11**	**0.5**	**-0.001**	**1**
C1	**0.541**	**11.9239**	**0.13**	**0.4**	**-0.0014**	**1**
L4	**0.48**	**4.0995**	**0.003**	**1**	**0.0004**	**1**
L2	**0.502**	**2.0678**	**0**	**0.5**	**0.0001**	**1**
L1	**0.4925**	**1.1614**	**0.1**	**0.5**	**0.0001**	**1**

D. STRUCTURAL ASSESSMENT

TYPE OF CONSTRUCTION

GENERAL OBSERVATIONS

ASCE 31-03 CHECKLIST CONCERNS

STRUCTURAL RECOMMENDATIONS

PCS Structural Solutions

o·r·b architects

PCS Structural Solutions

Seattle 811 First Avenue, Suite 620 • Seattle, WA 98104 • tel: 206.292.5076
Tacoma 1250 Pacific Avenue, Suite 701 • Tacoma, WA 98402 • tel: 253.383.2797

www.pcs-structural.com

May 05, 2014

STRUCTURAL EVALUATION FOR
SHORELINE INDOOR SWIMMING POOL FACILITY
SHORELINE, WASHINGTON

A. INTRODUCTION/SCOPE OF SERVICES

The Shoreline Indoor Swimming Pool Facility is primarily a single story structure with a partial second floor. The building is primarily constructed of reinforced CMU walls and wood frame roof structure, a concrete second floor, and concrete slab on grade first floor. The foundations are conventional concrete spread footings.

Our Scope of Services for the evaluation of the structure included a walk through analysis to identify signs of structural distress or deterioration, foundation settlement and overall structural integrity. Our observations were limited to those items visible to the naked eye, and were limited to structural components and seismic bracing of various non-structural items. The scope of services also included the completion of an abbreviated ASCE 31 evaluation; completing both basic and supplemental structural checklists along with non-structural and geotechnical hazard checklists. Complete calculations were not completed as part of the ASCE 31 evaluation. Lastly, our scope included preparation of this report, summarizing our findings.

B. DATES OF CONSTRUCTION

1970 – Original Construction
2001 – Main Entrance Renovation and Addition

C. TYPE OF CONSTRUCTION

1970 – Original Construction

Vertical Load Resisting System: The vertical load resisting system consists of plywood sheathing spanning between built-up wood joists, forming a stress skin panel system. The panels span between glulam beams and exterior reinforced CMU bearing walls. The beams are supported by either steel columns or the CMU walls. The second floor is comprised of a structural concrete slab system, spanning between CMU walls and steel columns. Support for the walls and columns is provided by conventional continuous and spread concrete foundations and the ground floor is conventional concrete slab on grade.

Lateral Load Resisting System: Lateral wind and seismic forces are resisted by plywood roof and concrete floor diaphragms, which span between reinforced CMU shear walls. The lateral forces are transferred from the walls to the surrounding ground surface by conventional concrete stem walls and strip footings.

STRUCTURAL EVALUATION FOR
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SHORELINE, WASHINGTON

2001 – Main Entrance Renovation and Addition
Vertical Load Resisting System: The vertical load resisting system consists of plywood sheathing spanning between solid sawn wood joists. The joists span between glulam beams and exterior reinforced CMU bearing walls. Beams are supported by either steel columns or the CMU walls. The second floor is comprised of a structural concrete slab system, spanning between CMU walls and steel columns. Support for the walls and columns is provided by conventional continuous and spread concrete foundations and the ground floor is conventional concrete slab on grade.

Lateral Load Resisting System: Lateral wind and seismic forces are resisted by plywood roof and concrete floor diaphragms, which span between reinforced CMU shear walls. The lateral forces are transferred from the walls to the surrounding ground surface by conventional concrete stem walls and strip footings.

D. GENERAL OBSERVATIONS

In general, the building is in a good state of structural repair. There were no significant signs of structural distress or deterioration and there were no signs of differential settlement in the building. There were some minor concerns related to the condition of various structural elements. These are as follows.

- There are a few locations throughout the building where there are small cracks in the CMU bearing walls. These are predominantly vertical in nature, and are likely the result of normally expected expansion and contraction due to variations in temperature and moisture.
- There are a few locations over the pool where the glulam beams are stained from water on the sides. It appears that this is limited to cosmetic damage, and no rot was observed.
- There are some areas over the pool area where the gypsum wall board sheathing on the ceilings is stained and sagging from the wood framing members. While this is an indication of water intrusion and possible dry rot conditions, further investigations were performed by the Building Envelope Consultant, and no dry rot was found to exist in the framing in these areas.
- At the concrete curbs around the north and east sides of the pool deck there is some cracking and some minor spalling of concrete. This appears to be the result of moisture intrusion and deterioration of the steel reinforcing in the curbs. This condition has minimal structural implication and is more predominantly a cosmetic issue. Repairs are warranted, however, to prevent continuation of the damage.

STRUCTURAL EVALUATION FOR
SHORELINE INDOOR SWIMMING POOL FACILITY
SHORELINE, WASHINGTON

E. ASCE 31-03 CHECKLIST CONCERNS

Shoreline Indoor Swimming Pool was evaluated as a Reinforced Masonry Bearing Wall Building with a Flexible Diaphragm (Checklist RM1), and as a Masonry Bearing Wall Building with a Stiff Diaphragm (Checklist RM2). Additionally, the Basic Non-Structural Components Checklist and Geologic Site Hazards and Foundations Checklist were completed. The ASCE checklists help to identify building details that have historically resulted in damage or collapse of structures under seismic loading. The checklists identify each item as being "compliant", having adequate strength or detailing characteristics, or as being "non-compliant". The non-compliant statements may then be further analyzed to determine any necessary course of action for the mitigation of the noted concern. The completed ASCE 31 Checklists are located at the end of this report. The following are the non-compliant ASCE 31 Checklist statements for the Shoreline Indoor Swimming Pool building.

Reinforced Masonry Bearing Wall Building with a Flexible Diaphragm (Checklist RM1)

- The checklist requires that the masonry bearing/shear walls be anchored properly against out of plane seismic forces. The original construction lacks adequate connections between the diaphragms and walls to meet this requirement, leaving the walls susceptible to heavy damage and possible partial collapse under moderate to heavy seismic loading conditions.
- There are a small number of locations where wood ledgers are subject to cross grain bending. This is noted as a non-compliant condition by the checklist due to the very limited capacity of wood members to resist bending across the length of the natural grain.
- The checklist requires adequate connection between the plywood roof sheathing and the CMU shear walls to resist in plane seismic forces. While it is assumed that there is a nominal connection in place, there is not sufficient information in the existing drawings to confirm the connection. As such, based upon experience with similar age structures of similar building type, it is assumed that these connections are not adequate to resist loads consistent with current code prescribed force levels, and is noted as non-compliant.
- There is a requirement for continuous cross ties in the diaphragms to help distribute out of plane seismic forces into the diaphragms. At the locations where framing is parallel to the CMU shear walls, such elements do not exist; making this a non-compliant statement in the checklist.
- There is a checklist requirement that unblocked wood diaphragms have spans of 40 feet and have span to depth ratios of less than 4:1. The conditions over the pool area violate this condition, and with the relatively small thickness in the plywood sheathing (1/2"), it is anticipated that the roof diaphragm will have inadequate capacity to resist code level seismic forces.

Reinforced Masonry Bearing Wall Building with a Stiff Diaphragm (Checklist RM2)

- No "non-complaint statements noted.

Geologic Site Hazards and Foundations Checklist

- No "non-complaint statements noted.

STRUCTURAL EVALUATION FOR
SHORELINE INDOOR SWIMMING POOL FACILITY
SHORELINE, WASHINGTON

Basic Non-Structural Components Checklist

- Tall narrow shelving and cabinet units are required to be anchored to the building structures to avoid tipping during a seismic event. While not able to verify all conditions, it is anticipated that there are some items that are not compliant with this checklist item, leaving these items susceptible to damage under seismic loading conditions.
- The checklist requires that the fire sprinkler piping be braced per NFPA-13 document (1996 version). Based upon the age of the systems, it is assumed that the bracing does not meet these requirements, and are subject to damage under moderate to heavy seismic damage.

F. STRUCTURAL RECOMMENDATIONS

The structural concerns and recommendations noted below outline the structural work anticipated to upgrade the existing structure to similar performance to new construction. These relate primarily to the anticipated seismic performance of the building, but also address the physical condition of the structural systems. Concerns are generally listed in order of those deemed most crucial to the protection of the life/safety of building occupants to those considered less so.

Reference	Structural Concern	Recommendation
Building Enclosure/ Structure #8	There are several structural concerns noted related to the capacity of the plywood roof diaphragm and its connections to the CMU bearing/shear walls to resist seismic loading conditions. Left unattended, there is the possibility of significant damage to the walls and diaphragm under moderate to heavy seismic loading conditions.	The plywood diaphragm should be provided with more positive connections to the CMU walls to resist both in plane and out of plane forces. This is likely to involve the addition of epoxy grouted anchors and steel clips and strapping at the interfaces between the wood framing members and the CMU walls. Additionally, it is anticipated that the diaphragm will need to be strengthened in select areas to increase capacities to meet current code level forces. The additions of cross tie elements (wood blocking and steel strapping) is anticipated to be part of this work as well where framing is parallel to the CMU walls.

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F. STRUCTURAL RECOMMENDATIONS (cont'd)

Item	Structural Concern	Recommendation
Building Enclosure/ Structure #9	There are some concerns noted regarding the seismic bracing/anchorage of non-structural piping and furnishing items. Left unbraced, there will likely be damage to the systems and possibly to surrounding areas in the event of a moderate to heavy seismic event.	Provide bracing for piping and tall narrow contents. This may be done with small pipe or unistrut braces at the sprinkler piping and through small metal clips attaching furniture items to adjacent walls.
Building Enclosure/ Structure #10	There are a few areas noted with concerns related to moisture intrusion in the roof framing over the pool area. Further investigations have revealed no dry rot damage, but continued exposure may result in the deterioration of the wood framing members.	Repair the roofing and exterior water proofing assemblies. These repairs are beyond our scope of practice, and specific detail information should be provided by others.
Pool Tank & Deck #9, #10	There are some areas of damage noted to the concrete around the pool deck areas. This appears to be the result of moisture intrusion and deterioration of the steel reinforcing. Currently, this appears to be limited to non-structural portions of the deck, however, should the deterioration be permitted to advance, structural members are likely to be affected.	These areas should be repaired and resealed to avoid further damage.
Building Enclosure/ Structure #1	There is some minor cracking noted in the CMU walls. These leave the building susceptible to water intrusion and freeze thaw damage.	Cracks in exterior walls should be cleaned and sealed. With the minor nature of these cracks, it is likely that new paint or other sealant will address the majority of the locations, but some area may need to be repaired with mortar or epoxy grout products.

STRUCTURAL EVALUATION FOR
SHORELINE INDOOR SWIMMING POOL FACILITY
SHORELINE, WASHINGTON

G. CONCLUSION

The Shoreline Pool building is currently in a good state of structural repair with only minor areas of deterioration noted. There are some structural concerns noted with the anchorage of the CMU walls to the plywood roof diaphragm and concerns related to the overall capacity of the diaphragm to resist seismic load, but these are common for buildings of similar age and type of construction in the Puget Sound region. Mitigation of these concerns will increase the overall life/safety performance of the structure to be more consistent with buildings constructed under current Building Codes.

Additionally, there are some relatively minor concerns noted with non-structural components lacking bracing to resist seismic loads. These items should be addressed to enhance the seismic performance of the building; understanding that the vast majority of damage and loss in moderate sized earthquakes is related to non-structural damage and the related business disruption.

H. APPENDIX - ASCE 31-03 Checklists

See Attached

Prepared by:

Bret Maddox, S.E.
Associate Principal
PCS STRUCTURAL SOLUTIONS

13-500

SHORELINE POOL.

3.7.13 Basic Structural Checklist for Building Type RM1: Reinforced Masonry Bearing Walls with Flexible Diaphragms

This Basic Structural Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

C3.7.13 Basic Structural Checklist for Building Type RM1

These buildings have bearing walls that consist of reinforced brick or concrete block masonry. Wood floor and roof framing consists of wood joists, glulam beams, and wood posts or small steel columns. Steel floor and roof framing consists of steel beams or open web joists, steel girders, and steel columns. Lateral forces are resisted by the reinforced brick or concrete block masonry shear walls. Diaphragms consist of straight or diagonal wood sheathing, plywood, or untopped metal deck, and are flexible relative to the walls. Foundations consist of brick or concrete spread footings or deep foundations.

Building System

C	NC	N/A	LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)
C	NC	N/A	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building shall be greater than 4 percent of the height of the shorter building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.1.2)
C	NC	N/A	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)
C	NC	N/A	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)
C	NC	N/A	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)
C	NC	N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)
C	NC	N/A	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)
C	NC	N/A	MASS: There shall be no change in effective mass more than 50 percent from one story to the next for

Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)

C NC N/A DETERIORATION OF WOOD: There shall be no signs of decay, shrinkage, splitting, fire damage, or sagging in any of the wood members, and none of the metal connection hardware shall be deteriorated, broken, or loose. (Tier 2: Sec. 4.3.3.1) SOME STAINING ON BEAMS, DOES NOT APPEAR TO HAVE RESULTED IN ROT.

C NC N/A MASONRY UNITS: There shall be no visible deterioration of masonry units. (Tier 2: Sec. 4.3.3.7) ONLY MINOR SHRINKAGE CRACKING NOTED.

C NC N/A MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar. (Tier 2: Sec. 4.3.3.8)

C NC N/A REINFORCED MASONRY WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.10)

Lateral-Force-Resisting System

C NC N/A REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)

C NC N/A SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 70 psi for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.4.1)

C NC N/A REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls shall be greater than 0.002 for Life Safety and Immediate Occupancy of the wall with the minimum of 0.0007 for Life Safety and Immediate Occupancy in either of the two directions; the spacing of reinforcing steel shall be less than 48 inches for Life Safety and Immediate Occupancy; and all vertical bars shall extend to the top of the walls. (Tier 2: Sec. 4.4.2.4.2)

Connections

C NC N/A WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support shall be anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections shall have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 3.5.3.7. (Tier 2: Sec. 4.6.1.1)

C NC N/A WOOD LEDGERS: The connection between the wall panels and the diaphragm shall not induce cross-grain bending or tension in the wood ledgers. (Tier 2: Sec. 4.6.1.2)

C NC N/A TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2: Sec. 4.6.2.1) ASSUMED. NOT CLEAR IN DRAWINGS.

C NC N/A FOUNDATION DOWELS: Wall reinforcement shall be doweled into the foundation for Life Safety, and the dowels shall be able to develop the lesser of the strength of the walls or the uplift capacity of the foundation for Immediate Occupancy. (Tier 2: Sec. 4.6.3.5)

C NC N/A GIRDER/COLUMN CONNECTION: There shall be a positive connection utilizing plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 4.6.4.1)

3.7.13S Supplemental Structural Checklist for Building Type RM1: Reinforced Masonry Bearing Walls with Flexible Diaphragms

This Supplemental Structural Checklist shall be completed where required by Table 3-2. The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist.

Lateral-Force-Resisting System

C NC (N/A) REINFORCING AT OPENINGS: All wall openings that interrupt rebar shall have trim reinforcing on all sides. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.4.3) LIFE/SAFETY PERFORMANCE OBJECTIVE

C NC (N/A) PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than 30. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.4.4) LIFE/SAFETY P.O.

Diaphragms

C (NC) N/A CROSS TIES: There shall be continuous cross ties between diaphragm chords. (Tier 2: Sec. 4.5.1.2)

C NC (N/A) OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25 percent of the wall length for Life Safety and 15 percent of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4)

C NC (N/A) OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls shall not be greater than 8 feet long for Life Safety and 4 feet long for Immediate Occupancy. (Tier 2: Sec. 4.5.1.6)

C NC (N/A) PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7) LIFE/SAFETY P.O.

C NC (N/A) DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8) LIFE/SAFETY P.O.

C NC (N/A) STRAIGHT SHEATHING: All straight sheathed diaphragms shall have aspect ratios less than 2-to-1 for Life Safety and 1-to-1 for Immediate Occupancy in the direction being considered. (Tier 2: Sec. 4.5.2.1) PW SHEATHING.

(C) NC N/A SPANS: All wood diaphragms with spans greater than 24 feet for Life Safety and 12 feet for Immediate Occupancy shall consist of wood structural panels or diagonal sheathing. (Tier 2: Sec. 4.5.2.2)

C (NC) N/A UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms shall have horizontal spans less than 40 feet for Life Safety and 30 feet for Immediate Occupancy and shall have aspect ratios less than or equal to 4-to-1 for Life Safety and 3-to-1 for Immediate Occupancy. (Tier 2: Sec. 4.5.2.3) DEFICIENCIES IN CAPACITY ANTICIPATED.

C NC (N/A) NON-CONCRETE FILLED DIAPHRAGMS: Untopped metal deck diaphragms or metal deck diaphragms with fill other than concrete shall consist of horizontal spans of less than 40 feet and shall have span/depth ratios less than 4-to-1. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.3.1)

(C) NC N/A OTHER DIAPHRAGMS: The diaphragm shall not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Tier 2: Sec. 4.5.7.1)

Connections

C NC N/A STIFFNESS OF WALL ANCHORS: Anchors of concrete or masonry walls to wood structural elements shall be installed taut and shall be stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 inch prior to engagement of the anchors. (Tier 2: Sec. 4.6.1.4) ASSUMED BASED ON GENERAL FIELD OBSERVATIONS.

SHORELINE POOL

3.7.14 Basic Structural Checklist for Building Type RM2: Reinforced Masonry Bearing Walls with Stiff Diaphragms

This Basic Structural Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

C3.7.14 Basic Structural Checklist for Building Type RM2

These buildings have bearing walls that consist of reinforced brick or concrete block masonry. Diaphragms consist of metal deck with concrete fill, precast concrete planks, tees, or double-tees, with or without a cast-in-place concrete topping slab, and are stiff relative to the walls. The floor and roof framing is supported on interior steel or concrete frames or interior reinforced masonry walls.

Building System

C	NC	N/A	LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)
C	NC	N/A	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)
C	NC	N/A	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)
C	NC	N/A	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)
C	NC	N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)
C	NC	N/A	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)
C	NC	N/A	MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)
C	NC	N/A	TORSION: The estimated distance between the story center of mass and the story center of rigidity shall be less than 20 percent of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6)

C NC N/A DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements. (Tier 2: Sec. 4.3.3.4)

C NC N/A MASONRY UNITS: There shall be no visible deterioration of masonry units. (Tier 2: Sec. 4.3.3.7)

C NC N/A MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar. (Tier 2: Sec. 4.3.3.8)

C NC N/A REINFORCED MASONRY WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.10)

Lateral-Force-Resisting System

C NC N/A REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)

C NC N/A SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 70 psi for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.4.1)

C NC N/A REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls shall be greater than 0.002 for Life Safety and Immediate Occupancy of the wall with the minimum of 0.0007 for Life Safety and Immediate Occupancy in either of the two directions; the spacing of reinforcing steel shall be less than 48 inches for Life Safety and Immediate Occupancy; and all vertical bars shall extend to the top of the walls. (Tier 2: Sec. 4.4.2.4.2)

Diaphragms

C NC N/A TOPPING SLAB: Precast concrete diaphragm elements shall be interconnected by a continuous reinforced concrete topping slab. (Tier 2: Sec. 4.5.5.1)

Connections

C NC N/A WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support shall be anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections shall have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 3.5.3.7. (Tier 2: Sec. 4.6.1.1)

C NC N/A TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2: Sec. 4.6.2.1)

C NC N/A TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements shall be doweled for transfer of forces into the shear wall or frame elements for Life Safety, and the dowels shall be able to develop the lesser of the shear strength of the walls, frames, or slabs for Immediate Occupancy. (Tier 2: Sec. 4.6.2.3)

C NC N/A FOUNDATION DOWELS: Wall reinforcement shall be doweled into the foundation for Life Safety, and the dowels shall be able to develop the lesser of the strength of the walls or the uplift capacity of the foundation for Immediate Occupancy. (Tier 2: Sec. 4.6.3.5)

C NC N/A GIRDER/COLUMN CONNECTION: There shall be a positive connection utilizing plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 4.6.4.1)

3.7.14S Supplemental Structural Checklist for Building Type RM2: Reinforced Masonry Bearing Walls with Stiff Diaphragms

This Supplemental Structural Checklist shall be completed where required by Table 3-2. The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist.

Lateral-Force-Resisting System

(C) NC N/A REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings with a dimension greater than three times the thickness of the wall. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.6)

C NC (N/A) PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than 30. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.4.4) LIFE/SAFETY P.O.

Diaphragms

(C) NC N/A OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25 percent of the wall length for Life Safety and 15 percent of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4)

(C) NC N/A OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls shall not be greater than 8 feet long for Life Safety and 4 feet long for Immediate Occupancy. (Tier 2: Sec. 4.5.1.6)

(C) NC N/A PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7) AT RIGID DIAPHRAGM AREAS.

C NC (N/A) DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)
NO SIGNIFICANT OPENINGS IN RIGID DIAPHRAGM.

SHORELINE POOL

3.9.1 Basic Nonstructural Component Checklist

This Basic Nonstructural Component Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

Partitions

C NC N/A UNREINFORCED MASONRY: Unreinforced masonry or hollow clay tile partitions shall be braced at a spacing equal to or less than 10 feet in levels of low or moderate seismicity and 6 feet in levels of high seismicity. (Tier 2: Sec. 4.8.1.1)

Ceiling Systems

C NC N/A SUPPORT: The integrated suspended ceiling system shall not be used to laterally support the tops of gypsum board, masonry, or hollow clay tile partitions. Gypsum board partitions need not be evaluated where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.2.1)

Light Fixtures

C NC N/A EMERGENCY LIGHTING: Emergency lighting shall be anchored or braced to prevent falling during an earthquake. (Tier 2: Sec. 4.8.3.1)

Cladding and Glazing

C NC N/A CLADDING ANCHORS: Cladding components weighing more than 10 psf shall be mechanically anchored to the exterior wall framing at a spacing equal to or less than 4 feet. A spacing of up to 6 feet is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.4.1)

C NC N/A DETERIORATION: There shall be no evidence of deterioration, damage, or corrosion in any of the connection elements. (Tier 2: Sec. 4.8.4.2)

C NC N/A CLADDING ISOLATION: For moment frame buildings of steel or concrete, panel connections shall be detailed to accommodate a story drift ratio of 0.02. Panel connection detailing for a story drift ratio of 0.01 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.4.3)

C NC N/A MULTI-STORY PANELS: For multi-story panels attached at each floor level, panels connections shall be detailed to accommodate a story drift ratio of 0.02. Panel connection detailing for a story drift ratio of 0.01 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.4.4)

C NC N/A BEARING CONNECTIONS: Where bearing connections are required, there shall be a minimum of two bearing connections for each wall panel. (Tier 2: Sec. 4.8.4.5)

C NC N/A INSERTS: Where inserts are used in concrete connections, the inserts shall be anchored to reinforcing steel or other positive anchorage. (Tier 2: Sec. 4.8.4.6)

C NC (N/A) PANEL CONNECTIONS: Exterior cladding panels shall be anchored out-of-plane with a minimum of 4 connections for each wall panel. Two connections per wall panel are permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.4.7)

Masonry Veneer

C NC (N/A) SHELF ANGLES: Masonry veneer shall be supported by shelf angles or other elements at each floor 30 feet or more above ground for Life Safety and at each floor above the first floor for Immediate Occupancy. (Tier 2: Sec. 4.8.5.1)

C NC (N/A) TIES: Masonry veneer shall be connected to the back-up with corrosion-resistant ties. The ties shall have a spacing equal to or less than 24 inches with a minimum of one tie for every 2-2/3 square feet. A spacing of up to 36 inches is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.5.2)

C NC (N/A) WEAKENED PLANES: Masonry veneer shall be anchored to the back-up adjacent to weakened planes, such as at the locations of flashing. (Tier 2: Sec. 4.8.5.3)

C NC (N/A) DETERIORATION: There shall be no evidence of deterioration, damage, or corrosion in any of the connection elements. (Tier 2: Sec. 4.8.5.4)

Parapets, Cornices, Ornamentation, and Appendages

C NC (N/A) URM PARAPETS: There shall be no laterally unsupported unreinforced masonry parapets or cornices with height-to-thickness ratios greater than 1.5. A height-to-thickness ratio of up to 2.5 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.8.1)

(C) NC N/A CANOPIES: Canopies located at building exits shall be anchored to the structural framing at a spacing of 6 feet or less. An anchorage spacing of up to 10 feet is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.8.2)

Masonry Chimneys

C NC (N/A) URM CHIMNEYS: No unreinforced masonry chimney shall extend above the roof surface more than twice the least dimension of the chimney. A height above the roof surface of up to three times the least dimension of the chimney is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.9.1)

Stairs

C NC (N/A) URM WALLS: Walls around stair enclosures shall not consist of unbraced hollow clay tile or unreinforced masonry with a height-to-thickness ratio greater than 12-to-1. A height-to-thickness ratio of up to 15-to-1 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.10.1)

C NC (N/A) STAIR DETAILS: In moment frame structures, the connection between the stairs and the structure shall not rely on shallow anchors in concrete. Alternatively, the stair details shall be capable of accommodating the drift calculated using the Quick Check procedure of Section 3.5.3.1 without inducing tension in the anchors. (Tier 2: Sec. 4.8.10.2)

Building Contents and Furnishing

C (NC) N/A TALL NARROW CONTENTS: Contents over 4 feet in height with a height-to-depth or height-to-width ratio greater than 3-to-1 shall be anchored to the floor slab or adjacent structural walls. A height-to-depth or height-to-width ratio of up to 4-to-1 is permitted where only the Basic Nonstructural

Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.11.1)

Mechanical and Electrical Equipment

C NC (N/A) EMERGENCY POWER: Equipment used as part of an emergency power system shall be mounted to maintain continued operation after an earthquake. (Tier 2: Sec. 4.8.12.1)

(C) NC N/A HAZARDOUS MATERIAL EQUIPMENT: HVAC or other equipment containing hazardous material shall not have damaged supply lines or unbraced isolation supports. (Tier 2: Sec. 4.8.12.2) NONE OBSERVED

(C) NC N/A DETERIORATION: There shall be no evidence of deterioration, damage, or corrosion in any of the anchorage or supports of mechanical or electrical equipment. (Tier 2: Sec. 4.8.12.3)

(C) NC N/A ATTACHED EQUIPMENT: Equipment weighing over 20 lb that is attached to ceilings, walls, or other supports 4 feet above the floor level shall be braced. (Tier 2: Sec. 4.8.12.4) EQUIPMENT IS FLOOR/ WALL MOUNT TYPICALLY.

Piping

C (NC) N/A FIRE SUPPRESSION PIPING: Fire suppression piping shall be anchored and braced in accordance with NFPA-13 (NFPA, 1996). (Tier 2: Sec. 4.8.13.1) ASSUMED

C NC (N/A) FLEXIBLE COUPLINGS: Fluid, gas, and fire suppression piping shall have flexible couplings. (Tier 2: Sec. 4.8.13.2) NO SEISMIC BLDG JOINTS.

Hazardous Materials Storage and Distribution

C NC (N/A) TOXIC SUBSTANCES: Toxic and hazardous substances stored in breakable containers shall be restrained from falling by latched doors, shelf lips, wires, or other methods. (Tier 2: Sec. 4.8.15.1)
NO SUBSTANCES NOTED AS BEING IN BREAKABLE CONTAINERS

SHORELINE POOL

3.8 Geologic Site Hazards and Foundations Checklist

This Geologic Site Hazards and Foundations Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

Geologic Site Hazards

The following statements shall be completed for buildings in levels of high or moderate seismicity.

C NC N/A LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.1.1)

C NC N/A SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure. (Tier 2: Sec. 4.7.1.2)

C NC N/A SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated. (Tier 2: Sec. 4.7.1.3)

Condition of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

C NC N/A FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.1)

The following statement shall be completed for buildings in levels of high or moderate seismicity being evaluated to the Immediate Occupancy Performance Level.

C NC N/A DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.2)

Capacity of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

C NC N/A POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 feet for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.3.1)

The following statement shall be completed for buildings in levels of moderate seismicity being evaluated to the Immediate Occupancy Performance Level and for buildings in levels of high seismicity.

C NC N/A OVERTURNING: The ratio of the horizontal dimension of the lateral-force-resisting system at the foundation level to the building height (base/height) shall be greater than $0.6S_a$. (Tier 2: Sec. 4.7.3.2)

SHORELINE POOL

C NC N/A TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C. (Section 3.5.2.3.1, Tier 2: Sec. 4.7.3.3)

C NC N/A DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.4)

C NC N/A SLOPING SITES: The difference in foundation embedment depth from one side of the building to another shall not exceed one story in height. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.6.5.2)

E. MECHANICAL ASSESSMENT

EXISTING SYSTEM DESCRIPTIONS

DISCUSSION / RECOMMENDATIONS

ENERGY AUDIT

enginuity systems LLC

o·r·b architects

May 6, 2014

Mr. Geoff Anderson
ORB Architects
350 South 38th Court, Suite 210
Renton, WA 98055

Subject: Shoreline Pool Mechanical Assessment

Dear Mr. Anderson:

As a member of your team, Enginuity Systems was tasked to provide a mechanical analysis of Shoreline Pool with the goal of recommending improvements that would extend the facility life another twenty years. Additionally, it was requested that we consider the findings of the energy audit dated April 15, 2013. Our scope of services consists of the following specific items:

- Repair/replacement needs analysis

  A. A site evaluation or survey of the following systems:
     - Natatorium HVAC.
     - Lockers/Lobby/Support facilities HVAC.
     - Hydronic Heating.
     - Pool water circulation system.
     - Plumbing fixture replacements.
     - Plumbing piping.
     - Plumbing equipment.

  B. A review of record drawings.
  C. Preparation of a draft findings report.
  D. A meeting with Parks personnel to present the draft report findings.

- Further investigation (no scope here).

- Report Writing

  A. Narrative of deficiencies and corrective measures.
  B. Cost estimating for corrective measures.
  C. Refined narrative and cost estimates.

This report presents the findings of this investigation.

GENERAL

General: Our review of the existing systems fell into three categories: HVAC, plumbing and pool water systems. We also reviewed the energy audit that was conducted on the facility by Cascadia USGBC.

The original building was constructed in 1971, with upgrades in 2001. The 2001 upgrade was a general retrofit that included the addition of air conditioning to the meeting room, replacement of the domestic water tank, replacement of the control system,

732 Broadway
Suite 102
Tacoma, WA 98402-3702

p. 253.292.0357
f. 253.292.0358
www.enginuitysys.com

replacement of plumbing fixtures and domestic water piping, replacement of the pool water heat, and other miscellaneous items.

HVAC – EXISTING SYSTEMS & DISCUSSION

The HVAC system is in reasonable condition considering the age of the facility. The air handling equipment is generally 40 years old, with controls components retrofit in 2001. The boiler has been recently replaced.

Natatorium

The natatorium HVAC system brings in outside air mixes it with return air, heats it, and distributes it to the spaces. A heating water (hydronic) coil provides air heating. The air is then exhausted by three fans. Two are above the West end of the natatorium, and one is over the spectator area. Outside air is designed to modulate to control humidity to setpoint, with exhaust fans staging to control natatorium pressure to negative setpoint. The supply air is delivered underfloor around the natatorium exterior walls. The air supply is through a concrete duct. This duct appears to be in good condition, but may contain some wood blocking that might obstruct airflow. Additionally, it was reported that the air supply at the end of the duct run is lower than at a location closer to the air handling unit. The natatorium outside air damper is reported as fixed at 70% outside air. It is reported as not being able to modulate to 100% open.

Natatorium Air Handling System Performance

Overall design airflow: 29,000 CFM supply, 29,000 CFM exhaust.
Natatorium/spectator volume: 192,000 Cubic Feet
Design air changes per hour: 9.06
Pool/deck floor area: 8,672 Square Feet
Minimum code natatorium ventilation: 4,336 CFM.
Minimum code spectator area ventilation: 1,050 CFM
Total ventilation from natatorium AHU: 5,386 CFM

There are four basic goals that are accomplished with the natatorium HVAC system:

1. Heating: Pool air temperature should be maintained at or above pool water temperature in order to reduce pool water evaporation.

2. Dehumidification: The relative humidity should be maintained below 60%. We advocate coming close to the higher end for two reasons. It takes less energy to do so, and the occupant comfort is greater. When swimmers get out of the water, the moisture on the skin evaporates. This causes a body to cool. Lower humidity levels accelerate that cooling. For a facility with the elderly, this is a significant concern.

3. Pressurization: Design guides explain that if negative air pressure is maintained in the natatorium, it will prevent odors and moisture from spreading to other parts of the facility. In our experience, humidity cannot be controlled unless negative pressure is maintained. This gives pressurization an added importance.

4. Air distribution: Air distribution is important for two reasons. Humidity and temperature cannot be controlled adequately if proper air distribution is not

present. Without good air mixing, "short-cycling" can occur that reduces the effectiveness of the air distribution system. Air distribution is also important for condensation control. Air streams directed over exterior exposures (walls and ceilings) increase the component surface temperature. This has the effect of reducing the likelihood of condensation on that component.

In general, the natatorium HVAC system at Shoreline accomplishes all of these functions. The main drawback is the energy cost. The most failure-prone items were replaced in 2001.

Lockers, Staff Rooms and Common Spaces

A two-deck multizone system serves the front area of the building. This is a 2-deck system, outside air mixes with warm air from the hot deck to control room temperature to setpoint. The multizone controls are reported as "all one zone". If the temperature setpoint for one zone is adjusted, all zones control to the new setpoint. Other than that, no problems were noted and the physical condition appeared to be good. The original locker room system was designed for 3,900 CFM with four zones. These zones serve the Women's locker room, the Men's locker room, the lobby and the administrative (office) spaces.

Building Controls

The building control system was installed in 2001, and is a Honeywell direct digital control (DDC) system.

Hydronic heating System

Heat is delivered to the building through a hydronic piping system. This was originally designed at a relatively high temperature. There was a specific engineering reason for that approach. The heating water was delivered to the human comfort devices first (space heating, domestic water heating). Any leftover heat was employed to heat the pool water. Pool water heating for normal operations takes about 250,000 to 400,000 British Thermal Units (BTUs) per hour. However, when the pool is emptied for maintenance, it takes about 1,200,000 BTUs per hour for several days to bring it back up to operating temperature. Since the public is not in the facility during maintenance operations, the human comfort requirements are less and heat is available for pool water heating. The boiler was not over-sized for the sum of all heating devices, but was sized for the actual heat required. In our opinion, this was good engineering for the time. The heating water system was not reported as having any significant problems. All of the circulating pumps were reported as having been replaced. Control valves were replaced in 2001.

Currently, the system works well. Interior conditions are comfortable, and negative pressure in the natatorium is maintained. One contributor is the large amount of outside air supplied to the natatorium and the restoration of function undertaken as a result of the 2001 remodel.

Meeting Room

The meeting room was retrofit with a split system heat pump in 2001. The owner has indicated that at times the unit has operational issues, including times when the unit is not operational at all.

HVAC – RECOMMENDATIONS

General

A general recommendation for all HVAC systems is that they be both cleaned and balanced. This will improve system performance and remove a place for bacteria to grow.

From a short-term operational standpoint, we recommend retro-commissioning the system. Retro-commissioning is the process of testing the system to insure that it meets the engineer's design intent, and fixing the items found to be out of specification. The original design intent was full modulation of the outside and return air dampers. While this system is probably serviceable, it should be expected that some retrofit actions will be required in order to restore full function.

Aside from getting the system back to full operation as was intended in 2001, it appears that there are no really good energy conservation retrofits which can be systematically applied. Refer to the energy audit commentary below. Most measures recommended in the audit are not practical, would have the opposite result, or would provide minimal benefit. This is mainly due to the configuration of the system and the engineering particulars of how natatoriums function. The largest energy target would be heat reclaim from the natatorium, and this would require a separate air handling unit.

Natatorium HVAC

The supply grilles and balancing dampers in the natatorium should be replaced. The balancing dampers are mostly corroded in place, and incapable of adjustment. This prevents the system balance to be adjusted for uniform airflow, and the reported low airflow at the end of the system can't be corrected.

If possible, it would be beneficial to remove all of the wood blocking in the underground concrete duct system serving the natatorium in order to provide less pressure drop on the air system.

We also advocate applying variable frequency drives (VFDs) on the remaining two exhaust fans for improved pressurization control.

It is also recommended that the natatorium unit outside air dampers be repaired or replaced to allow modulation up to 100% open.

Meeting Room

We recommend that the owner contact a service company to come in and repair the split system heat pump unit, to restore it to a reliable operating condition.

Locker Rooms, Staff Spaces and Other Common Spaces

The multizone air handling unit appears to be functioning normally, except for the temperature control setpoint adjustment problem mentioned above. We recommend that this system be included in the retro-commissioning recommended for the natatorium air handling system.

It is also recommended that this system be balanced and cleaned.

PLUMBING – EXISTING SYSTEMS & DISCUSSION

The original carbon steel domestic water supply piping was replaced with copper in 2001. The domestic hot water tank was replaced in 2001 as well. This tank has is connected to the hydronic heating system for generation of hot water. The hot water supply was reported as a little short when under heavy use such as when competition swimmers all shower at the same time. Otherwise, no problems are reported.

Plumbing fixtures were generally replaced in 2001. They are generally serviceable, and would only need to be replaced wholesale for aesthetic reasons, or piecemeal as maintenance issues arise. One maintenance issue was with the men's restroom on the second floor, the urinal is cracked and the water closet is pulling off the wall.

There are no floor drains located in the women's staff changing room.

The floor slopes in the main changing areas appear to be insufficient for proper drainage. Corrective measures should be taken to ensure proper drainage.

PLUMBING – RECOMMENDATIONS

Repair or replacement of the fixtures in the men's restroom upstairs is recommended.

Floor drains for the women's staff changing room could be added for drainage in those areas.

If possible, fixing the floor slope issues in the general changing areas to promote drainage would be recommended.

POOL WATER SYSTEMS – EXISTING SYSTEMS & DISCUSSION

The pool water circulation system is mostly original. The carbon steel pool filter/balance tank was provided with a fiberglass lining in 2001. The pool water heater was replaced at that time as well, and the chemistry control system upgraded with the Chemtrol chemistry controller.

The original pool water circulation system consisted of the following major components:

- A carbon steel balance tank, with integral pool water heater and vacuum DE (diatomaceous earth) filter). "Harborlite" media is currently used, rather than DE. The filter media is replaced every other year, with 2013 being the most recent replacement. The vacuum DE filter system is so named because the pool

circulation pump pulls water through the media. The media is located in the open balance tank.
- Carbon steel piping for the pool inlets.
- Many of the original pool inlets have been replaced with a custom fabricated 2" plastic cap with drilled holes.
- Drain piping (probably cast iron).
- Main drains. There are two main drains in the pool. Both of these, along with the drain sumps, were replaced in 2010 by Orca Pacific, and comply with current Federal VGB (Virginia Graeme Baker) requirements for anti-entrapment. Hydrostatic relief valves are located at the bottom of the main drain sumps.
- Gas chlorine, probably with soda ash or something similar for pH control. Liquid chlorine is currently used, with an older electronic chemistry control system.

Most of the mechanical room piping, valves and the like are the original installation.

Original flow design for this is:
- Pool tank volume: 215,820 Gallons
- Pump flow: 650 gpm, constant flow maintained via Griswold flow control valve

The circulation system is reported to have full flow based on the Griswold flow control valve differential pressure gauges. The flow control valve and gauges appear to be original construction, and their accuracy should be verified. It is common for valves and carbon steel piping of this age in pool water systems to show degradation in performance. It was reported that pool water makeup was about what would be expected for use (splashing and evaporation). It did not appear that any leakage in the piping was evident.

Pool heating is provided by a hydronic heat exchanger, mounted inside the balance tank. The heat exchanger was replaced in 2001.

Makeup water is supplied to the balance tank from the domestic water system via a Cla-Val modulating valve.

The "feet" on the balance tank are corroding badly and should be either replaced or supplemented with additional support.

Four general variables are involved with control of swimming pool water systems:

1. Temperature Control: Pool water temperatures vary depending upon use. Competitive swimmers like water temperatures in the 79°-80° range. Recreational swimmers like temperatures in the neighborhood of 84°. Therapy use is usually around 88°. Younger people like cooler temperatures than older people. We would expect this pool to be around 84°, and it operates in fact at 85°-86°.

2. Disinfection: Control of bacteria is usually accomplished by means of chlorination. Other methods, such as bromine, ultraviolet and ozone, are available. Bromine is not as effective as chlorine. It is mainly used for outdoor pools because it does not react as rapidly to sunlight as chlorine does. Ultraviolet and ozone systems do not add chemicals to the water, and are attractive for that. However, state law requires that residual chlorine be maintained in a pool regardless of other methods of disinfection. The measurement of this is usually through "ORP", or

oxidation/reduction potential. It is anticipated that UV systems will be incorporated into law sometime in the near future, because they provide disinfection immediately, rather than after a time in contact with a chemical.

3. pH Control: pH is a measure of the acidity or alkalinity of a substance. The addition of chemicals drives the pool water towards acidity or alkalinity, depending upon the method of disinfection. An acid or base must be added in order to drive the pH towards neutral.

4. Total Dissolved Solids (TDS): The addition of chemicals for disinfection or pH control, as well as normal matter added from other sources, contributes to a constant increase in the suspended solids in a pool. TDS is usually controlled by default, though the filter backwash process. When a sand filter is cleaned, some of the pool water is discharged through "backwash". An explanation of this process is provided further along in the text. This backwash is usually sufficient to control TDS by default. TDS is usually monitored by the chemistry control equipment, and should be periodically monitored to maintain proper control.

Swimming Pool Filtration

There are three basic categories of pool water control and filtration systems. These three basic types are high-rate sand, diatomaceous earth (DE), and cartridge filters. The following narrative summarizes each of these categories.

High-Rate Sand: The most common filtration technology is high-rate sand. These filters offer comparatively low maintenance and high reliability. High-rate sand filters operate by forcing water through a sand bed. The sand bed strains out hair, lint and debris. Running water backwards through the filter, called "backwashing", removes the debris from the sand bed and renews the filter for operation. The sand media is re-used. Recycled glass is sometimes used in place of sand. Glass media has superior maintenance characteristics. High-rate sand filters need a sump, backwash pit, or large standpipe drain in the building to contain a portion of the backwash. The backwash flow rates are often limited by the size of the sanitary sewer piping system serving the building, as this system is generally not large enough to convey the maximum backwash flow all at once. This necessitates the provision of a larger backwash pit or tank, which allows the backwash water to drain to sewer over a longer period of time.

Diatomaceous Earth: Another type of filtration is with "loose" media, such as diatomaceous earth (DE) or other similar media. Water is run through a porous screen. DE is added to the water, and the water is affixed to the screen by the water pressure. The DE strains out the debris in the water. When the filter needs to be cleaned, the DE must be removed from the screen and disposed of. DE filters come in pressure filters (located after the pool water pump) and vacuum filters (located on the suction side of the pool water pump). Filter media, such as DE, can provide superior filtration, but are more maintenance intensive. The loose media must be disposed of, which usually means flushing down the sewer. Such operations are messy. Also, many waste treatment facilities will not accept the loose media discharge into the sewer. There are now alternate materials to DE, one of which is called "Harborlite", which are somewhat more benign to the waste treatment facilities. The overall mess and time are still greater than with high-rate sand. DE filters also should have a sump for backwash. Newer pressure filters, called "regenerative DE" systems, have what amounts to an "internal" backwash,

where the filtration media is removed from the filter membranes, then re-used. This process reduces the amount of filtration media sent to the sewer system, may reduce the amount of water loss during the cleaning process, and reduces the amount of filtration media required since most of the filter media is reused.

Cartridge Filters: Pool water is circulated through a housing that contains filter cartridges. Hair, lint and debris collect on these filters. When the filters load up (the pressure drop through the filter housing increases to a set value), the filters must be cleaned. The housing is disassembled, and the cartridges removed. The filters are usually provided with two sets of cartridges. The alternate (clean) cartridges are then installed in the filter. The dirty cartridges are then cleaned and stored for the next time a change is required. Cartridge filters do not need a sump for backwash, but they are more maintenance intensive than high-rate sand filters. Cartridge filters are also generally available in smaller sizes than sand or DE filters, and are not as commonly used on larger pool circulation systems.

Chemistry Control

Maintaining good chemistry control is critical for a properly pool environment. Inadequate chemistry control results in formation of excess chloramine, the byproduct of chlorine offgassing from the pool water. Chloramines are generally what pool users recognize as “the chlorine smell”, but the more serious problem is that some varieties of chloramines have been linked with various health issues in swimmers and facilities staff. Pools with good chemistry control, combined with properly designed and balanced ventilation, have less problems with a “pool” smell.

Current practice for monitoring pool water chemistry, and automatically adjusting/controlling it, is to provide a digital pool chemistry controller that continuously monitors chlorine, acidity (pH) and total dissolved solids. Some controllers are also capable of monitoring & controlling other items, such as pumps, heaters, water levels, etc. The controller is connected to chemical feeders that deliver the various chemicals to the pool water system. The controller adjusts the chemical dosing to achieve the desired water chemistry setpoints. While not required by current pool regulations, most facilities use automatic chemistry controllers, as they offer the ease of automatically maintaining good water quality and chemistry. Shoreline Pool has a Chemtrol automatic chemistry controller installed.

Most pool water quality control problems are a result of poor chemistry control. Pool water chemistry also has an effect on natatorium air quality.

There are several chemistry control methodologies. These general categories are gas chlorine, liquid chlorine, solid chlorine and salt.

Gas Chlorine: Gas chlorine has been the traditional means if disinfecting swimming pool water. Chlorine gas is injected into the circulating pool water. This chlorine reacts with and kills bacteria. All chemistry control systems must control the pH, or acidity, of the water. Gas chlorine tends to drive pool water acidic, therefore a “base” chemical must be added in order to control the water to neutral. The “base” chemicals used are usually sodium hydroxide and soda ash. These require separate feeders and metering equipment. Gas chlorine systems have lost most of their favor. Chlorine gas is a highly toxic chemical, and its transportation is heavily regulated in some jurisdictions. Chlorine

gas requires many safety precautions, such as a separate chlorine room, chlorine gas release detection and alarm equipment, automatic fan controls, and breathing equipment that must be maintained on site. Chlorine gas is becoming harder to obtain, as some manufacturers have stopped producing the chemical.

Liquid Chlorine: The most common chemistry control equipment used today is liquid chlorine for disinfection, and either carbon dioxide or muriatic acid for pH control. Liquid chlorine is basically a dissolved salt. The most common salt is a solution of calcium hypochlorite. The salt separates in the water into free chlorine and calcium. The free chlorine is used up as a result of the reaction with bacteria and other chemicals. Total dissolved solids gradually increase when using this method of chemistry control, which requires some introduction of fresh water to control. The normal filter tank backwash process is usually enough to provide this fresh water introduction. The strength of liquid chlorine will degrade over time. This is not usually a problem, as pools are always in operation and a fairly constant turnover of the chlorine stock is assured.

Solid Chlorine: Solid chlorine is becoming increasingly popular as it is easy to handle and the application rate controls are proving reliable. This chlorine is provided in pellet form, and placed in a vessel. Water passes through the vessel and erodes or dissolves the solid chlorine. Once the solid chlorine is dissolved in the pool water, it is essentially the same as liquid chlorine to include the pH control measures.

Salt Systems: Salt systems operate on the principal that dissolved salt consists of ions of sodium and chlorine. The chlorine is the active agent for disinfection. The chlorine in the salt water is re-energized through an electrolysis process. Salt systems are gaining popularity because the chemical costs are less than those for other systems and saltwater can be more pleasant than water disinfected by conventional means. Salt systems have been reported to have issues with respect to corrosive action on building hardware, and with disinfection effectiveness. Sometimes, other systems have to be added to provide additional disinfection capability to supplement the salt system.

Supplemental Disinfection Systems: There are two types of systems that supplement traditional chemical-based disinfection systems. These are Ultraviolet (UV) and Ozone. Ozone is an oxygen molecule composed of three oxygen atoms (0^3). It neutralizes pathogens on contact. Ozone systems are expensive, difficult to keep in operation and are not recommended. UV systems shine light in ultraviolet frequencies that kill pathogens on contact with the light. UV systems are reliable, effective and less expensive than ozone. Both systems reduce the consumption of chlorine. While not currently mandated by Washington State code, it is very possible that UV systems will become a code requirement. Most new facilities are now constructed employing UV systems as both an added safety measure and a way to decrease owner liability for illness outbreaks.

<u>Piping</u>

Pool water piping is generally standardized on polyvinyl chloride (PVC). Conventional practice is to provide schedule 80 piping. The only exception is near the introduction of heated water. Some type of piping that is more resistant to heat is required, such as chlorinated polyvinyl chloride (CPVC) or copper. This is usually a short length, and not significant with respect to quantity.

We do not know the condition of the piping under the pool tank. It has doubtless experienced some scale and corrosion over the years, but no evidence of leakage or blockage is evident. In our experience, this piping is a candidate for failure. It is difficult to assess the condition of the small-bore inlet piping, and this is the system most likely to fail. A recommendation for replacement would be safe, but that doesn't "buy" anything with respect to function or operation right now.

Other Equipment

There are other equipment and components in a pool water circulation system. These are items such as pumps, strainers, pool heaters, flow instrumentation and the like. These items are generally commodity items, and offer the same general approach regardless of manufacturer.

It is current practice to provide pump speed control in order to account for differing pressure requirements because of filter loading. This is now an energy code requirement. The old method of a constant flow device ("Griswold") uses more pump energy. Pump speed control is typically accomplished by use of a variable frequency drive.

POOL WATER SYSTEMS – RECOMMENDATIONS

Filtration

High-rate sand filters are the easiest to maintain, but do not provide the water quality of the existing vacuum DE filters. The existing filters are nearing the end of their operational life, and sewer discharge regulations will restrict their use at some point. For these reasons, we recommend a pressure DE system. The filter efficiency is the same as the existing vacuum DE, and the residue can be placed in a garbage can instead of the sewer.

Chemistry Control

Chemistry Control: The staff at Shoreline Pool have no complaints with liquid chlorine as a means of chemistry control. The existing Chemtrol chemistry control panel is showing its age, and does not communicate over a LAN. Its replacement is recommended. Upgrades to this unit may include network or remote communications, as well as automating control of other pool system components, such as pump control, water level monitoring & makeup, etc.

We recommend the addition of a UV treatment system as a supplemental disinfectant. This will provide better disinfection when combined with liquid chlorine, and could shield the City from possible litigation in the event of a water-borne disease event.

Flow Meter

We recommend the addition of a digital, totalizing flow meter. Washington State code requires a means for measuring or indicating water flow rates. A flowmeter provides a convenient way to meet this requirement. The piping configuration is such that a specialized meter, such as an electromagnetic type meter rather than the more common paddlewheel meters, may be required, due to lack of available straight pipe

lengths. It will be increasingly important to monitor flow in the future as a measure of pipe condition, as well to meet Health Code requirements.

Makeup Water System

We recommend the addition of monitoring to the makeup water system. This could be accomplished by installing a submeter on the makeup water line to the pool system. Monitoring makeup water over time could provide staff with an indication of leakage in the aging supply & return piping systems under the pool, or in other pool system components.

Pool Cover

We recommend that a pool cover be added to the pool. A wall-mounted reel system would be preferable for storage of the cover when not in use.

Balance Tank

We recommend that the balance tank be provided with a cover. There would be a hatch in the cover for access, and a vent connection to the roof to allow for equalizing pressure when the tank water level changes. Removing the mechanical room from exposure to an open body of chlorinated water will extend the life of all mechanical, electrical, and other system components located in the pool equipment room.

The feet on the balance tank are corroding badly and should be either replaced or supplemented with additional support.

Sump Pit

We recommend that the drain valves in the existing sump pit be removed and the pipe permanently plugged.

Piping (Under Pool Tank)

The most cost-effective course of action would be to set aside a budget amount for possible failure of the piping under the pool tank, with the understanding that it could perhaps last twenty more years.

The pool inlets would likely be replaced at the same time as the under-tank piping.

Piping (Mechanical Room)

We recommend replacing all associated pool water piping system components and controls, to include the pump, valves, instrumentation, and pool water heat exchanger that are located in the mechanical room. Much of this equipment (besides the heat exchanger) is the original installation, and would have to be re-worked to replace the filter, heat exchanger, or other major components.

Pool Water Pump

A variable frequency drive (VFD) is recommended for the pool water system pump. This will save energy by allowing the pump to use only the minimum amount of energy required to maintain code-required recirculation rates. Use of a VFD controlling the pump speed based on a flow sensor would allow the removal of the Griswold valve from the pool water system, lowering pressure drops as well as removing a potential maintenance/failure item from the piping system. Installation of a VFD generally requires installation of a pump motor rated to handle VFD operation as well. Installing a VFD could save up to approximately $1,500 in annual energy costs.

Complete replacement of the pool water pump would be recommended, to be installed concurrent with the VFD.

Pool Water Heating

A plate & frame heat exchanger would allow for easier maintenance of that device, should any issues arise in the future. Replacement or repair of tubes in the existing tube exchanger is difficult, and the existing unit is approaching the end of its life expectancy. We recommend the installation of a new plate & frame heat exchanger.

Another option for the pool heating system would be to add a small high-efficiency condensing boiler to the pool water system. Refer to the "High Efficiency Pool Water Boiler" paragraph in the Energy Audit section of this report for further discussion on this option.

We also recommend that the facility review the needs of their users, and adjust the pool water temperature setpoint downward if possible. We would recommend a setting of about 84°F, down from the current 85-86°F operation.

Pool Water Heating (Solar Option)

Solar Hot Water was mentioned as a potential energy savings option, however it would require further investigation that was not part of the existing building assessment in this report. The building does have a sloped roof facing south, which could be ideal for the use of solar hot water. We would assume that the use of a stress-skin type system would minimize the risk of additional structural loads on the roof.

The total roof area available for panels (working around vents, etc.) and the cost to implement a solar hot water system would still need to be determined. However, based on an assumption of 2,500 SF of panels, we calculated that there may be an estimated energy cost savings of about $3,500 annually. The payback period is likely to be over 10 years. To verify this, the city may want to contact a solar manufacturer or installer who can analyze the system for you application and provide accurate pricing to install such a system.

ENERGY AUDIT

An Energy Audit was conducted under the auspices of the Carbon Footprint analysis of the City of Shoreline by Cascadia USGBC. The following items address the mechanical recommendations of the Audit, item by item.

Pool Cover

A pool cover is a good recommendation. While required by current code, Shoreline Pool is grandfathered under previous codes so a pool cover is not a requirement. It is unclear at this time of the cover will fit on the limited pool deck space of this facility. It may be possible to mount a cover reel system on the wall. Installing and using a pool cover may provide up to approximately $2,560 in annual energy cost savings.

Ventilation Control

This item is directed at the natatorium air handling system, and advocates turning down the ventilation rate when outside air is not needed. As long as good air distribution is maintained (refer to the discussion on replacing the floor grilles and associated dampers), we see no reason that the outside air ventilation rate can't be modulated down to minimum code requirement (0.48 CFM per square foot). We also advocate applying variable frequency drives (VFDs) on the remaining two exhaust fans for improved pressurization control. Modulation of the outside air through the entire control range based on indoor relative humidity control is also recommended. Reducing the outside air to a point less than code minimum when unoccupied, based on humidity control, is also recommended. The supplemental UV disinfection system should reduce the amount of chloramines in the water, aiding indoor air quality. In general, retro-commissioning will accomplish most of this, with the addition of the VFDs and UV system.

High Efficiency Pool Water Boiler

The concept here is to provide an 800 MBH boiler dedicated for pool water heating. The existing boiler is 80% efficient at best, and because of the relatively low water temperature required for pool water heating, a separate boiler for that would save money. This ECM is an idea with promise. However, the boiler size recommended is a bit large, and the corresponding energy savings are a bit optimistic. Pool heaters are normally designed to heat the pool for initial fill. This is so the pool will take two to four days to heat, rather than two to four weeks. That criteria is about four times that required for normal operation. Based on our experience with "Forward Thrust" pools over the last quarter century, normal operating requirements, including a safety factor, are around 400,000 BTU/hour. The existing boiler could then be employed for initial fill and backup. Energy savings for this retrofit would not exceed $3,500/year, assuming a 20% improvement in efficiency. It should be noted that utility incentives for natural gas retrofits with paybacks longer than around three or four years are not available through PSE at this time. This ECM would also take load off of the existing boiler in the summer, leaving domestic water as the main use. Operational difficulties with running the existing boiler at such low fire rates may occur. Also, low boiler loads can cause excessive condensation in boilers not designed to handle the acidic byproducts. We would review boiler operational parameters with the existing boiler manufacturer to insure that operating with such a low load would cause accelerated wear. If we were to implement this ECM, we would recommend a 400 MBH boiler, rather than the 800 MBH size called for in the Energy Audit.

Pool Filter Tank Insulation

The concept here is to insulate the body of the pool filter tank and a pool cover to the top. We recommend a hard cover (such as structural fiberglass), with a vent to outside, for maintenance purposes. A pool cover would be an item that would require more maintenance than benefit in such a small space. Other than that, addition of an insulation system would be of benefit.

Natatorium HVAC Unit VFD

The concept here is to reduce the natatorium airflow with a variable frequency drive for off-hours use. Implementation of this concept is strongly not recommended. These Forward Thrust pools were generally designed with minimal insulation, and generally require uniform airflow on the exterior exposures. This uniform airflow heats the inside surfaces and reduces condensation. Reducing airflow will result in increased condensation on exterior exposures, especially glazing.

Night Setback – Natatorium HVAC

This ECM recommends reducing the natatorium air temperature at night or during other unoccupied cycles. This ECM could be damaging to the building structural elements and could also be extremely expensive. It is possible that night setback temperatures will work in a natatorium with a pool cover. This must be examined carefully to get an accurate model of actual evaporation, as pool covers do admit some moisture to the air. Night setback temperatures will NOT work for an uncovered body of water. As the indoor air temperature is decreased, the rate of evaporation increases (2011 ASHRAE Applications Handbook, Chapter 5, Equation 2). Additionally, as the temperature drops, all other things being the same, the relative humidity increases (2013 ASHRAE Fundamentals Handbook, Chapter 1, "Psychrometrics"). Both of these conditions will act to increase the relative humidity in the space which will cause the mechanical system to admit more outside air and will cause the pool water heater to increase output, both resulting in an increase in energy consumption. The order of utility use increase may be up to several hundred percent during the time period the setback is employed, depending upon temperature. A good night setback control strategy during unoccupied times would be to set back the ventilation rate for humidity control only (below the code minimum ventilation rate for occupancy). The risk of a night setback cycle in concert with a pool cover is that significant condensation would occur if the pool cover was not deployed and the night setback enabled. If the lack of pool cover deployment happened frequently, there is a risk of structural damage to building components. We also recommend increasing the natatorium temperature setpoint, as that will save energy because of the reduced amount of outside air to maintain a relative humidity of 60%.

Night Setback – Peripheral Spaces HVAC

The approach suggested by this ECM is to set back temperatures in unoccupied zones to reduce energy use. We advocate implementation of this ECM, along with the controls checkout.

Heat Recovery Run-Around Loop

This ECM recommends retrofitting heat reclaim coils into the outside air intake and exhaust systems of the natatorium air handling system. Current energy code requires that pools over 200 square feet area be supplied with an exhaust air heat recovery

system, however Shoreline Pool is grandfathered under previous codes which did not have this requirement. As a concept it is a good one. However, both the cost given in the audit Report ($44,000.00), and the implementation methodology are a bit optimistic. The audit report graphic shows the outside air (OSA) heat reclaim coil retrofit into the mixing box of the air handling unit, and the exhaust air connected to one of the exhaust fans at the back (deep end) side of the natatorium. The indicated location would not work, as the mixed air temperature is too high for efficiency and the face velocity across the coil is too large. This coil could probably be located at the outside air intake. However, it must be designed for 29,000 CFM maximum, and normally operate in heat reclaim mode at less than 8,000 CFM. At the lower airflow, the heat reclaim effectiveness drops considerably below 50% as the air enters into laminar flow. At the higher range of airflows, the pressure drop will result in increased fan energy consumption. Similar issues exist with the exhaust fan location. A heat reclaim coil that handles 8,000 CFM requires about 16 square feet of coil. The size indicated on the drawings is optimistic, the actual requirements would best be accomplished by a separate air handling unit with an integral filter along with a fan and coil. The length on this unit will extend into the glazing. Additionally, if this unit is the “last unit running”, there will be no air movement in the spectator area. For these reasons, the best engineering solution appears to be separate air handling units for the outside air and exhaust. The cost range for a heat reclaim installation of 8,000 CFM is probably in the $100,000 to $200,000 range, depending upon the complexity of the installation.

Please direct any questions to the undersigned.

Regards,

Jesse Barksdale
President, LEED-AP

JNB/jnb

Enclosures:

Cc:

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F. ELECTRICAL ASSESSMENT

EXISTING ELECTRICAL CONDITIONS AND EQUIPMENT

ELECTRICAL RECOMMENDATIONS

CROSS ENGINEERS, INC.

o·r·b architects

EXISTING ELECTRICAL CONDITIONS AND EQUIPMENT

POWER

The existing electrical service to the building is underground and the servicing utility is Seattle City Light – Meter # 775158 – Facility address 19030 1st Avenue NE, Seattle, WA 98155.

The existing service size is 600A, 3Ph, 4W, 208Y/120V. The 2002 drawings indicate the serving voltage to be 120/240V, 3Ph, 4W. This is not a standard voltage offered by Seattle City Light. The serving voltage will be verified with Seattle City Light (or tested on site) before any new equipment is designed or specified for the facility.

The existing service equipment is Cutler/Hammer manufacture and was installed in 2002 along with new conductors to sub panels and items of equipment served from the main service panel. All equipment appears in good condition and spare conduit, breakers are available in the main service panel and branch panels as indicated in the 2002 drawings.

Utility meter

Main Panel 600A, 208V, 3Ph, 4W

LIGHTING - GENERAL

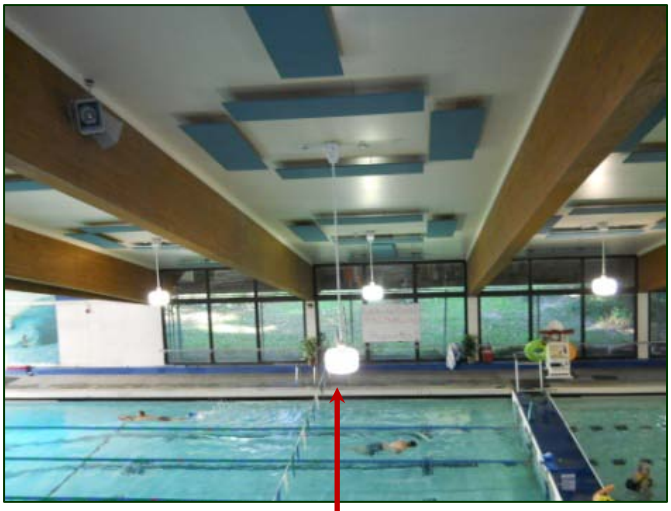
Portions of the building lighting were upgraded for energy efficiency in 2002. Storage areas, attic mechanical areas, mechanical equipment rooms and exterior building lights were not upgraded. These interior areas have incandescent lights, F40T12 fluorescent lights and no occupancy sensor controls. Exterior pole mounted (20') parking lot lights are believed to be 150W HPS and exterior building lights are believed to be 50-70W HPS. Lenses on the exterior building mounted lights are substantially discolored due to heat from the lamps.

Exterior Light Fixtures without glare shields

Exterior wall pack light fixtures with lenses yellowed by excessive heat from lamp

NATATORIUM

The natatorium lights are pendant hung from the sloped ceiling at approximately 12-14' above the pool water surface. The existing light fixtures are 400W metal halide. Maintenance personnel mentioned the ballasts typically fail on about the same operating time line as the lamps and when a light fixture is not operating it is a 50/50 occurrence of a lamp failure or a ballast failure. Ballast failure is not normal and may be related to the ballast location high at the ceiling (area of higher ambient temperature) or possibly the ballast is not natatorium rated. The existing light fixtures over the pool can only be serviced with a snorkel lift extended out over the pool surface from the pool deck.



400W, metal halide, pendant lights. Ballast located at ceiling.

Wall sconce light

Wire/rack mounted quartz lights

2ND FLOOR CONFERENCE/CLASSROOM

The existing lighting consists of four (4) wall mounted fluorescent scones and a wire track with (6) 100 watt quartz lamps. Existing lighting is not adequate for the room function.

SOUND SYSTEM

The original sound system and speakers mounted in the Natatorium are no longer functional.

Abandoned original speakers

New sound equipment has been added in a room adjacent to the Natatorium and wall mounted speakers placed on the South wall of the Natatorium. These are currently used for pool exercise background music but are not useful for any other function.

Sound system equipment

Wall mounted speakers

FIRE ALARM SYSTEM

The existing fire alarm system in the building is a Notifier 4010. In the Natatorium high ceiling area and in the spectator balcony area fire alarm beam detectors have been utilized in lieu of heat/smoke detectors. The system is tested yearly and appears in good working order.

TELEPHONE/DATA EQUIPMENT

The existing telephone/data equipment is located in a closed cabinet in the staff area. No problems have been noted.

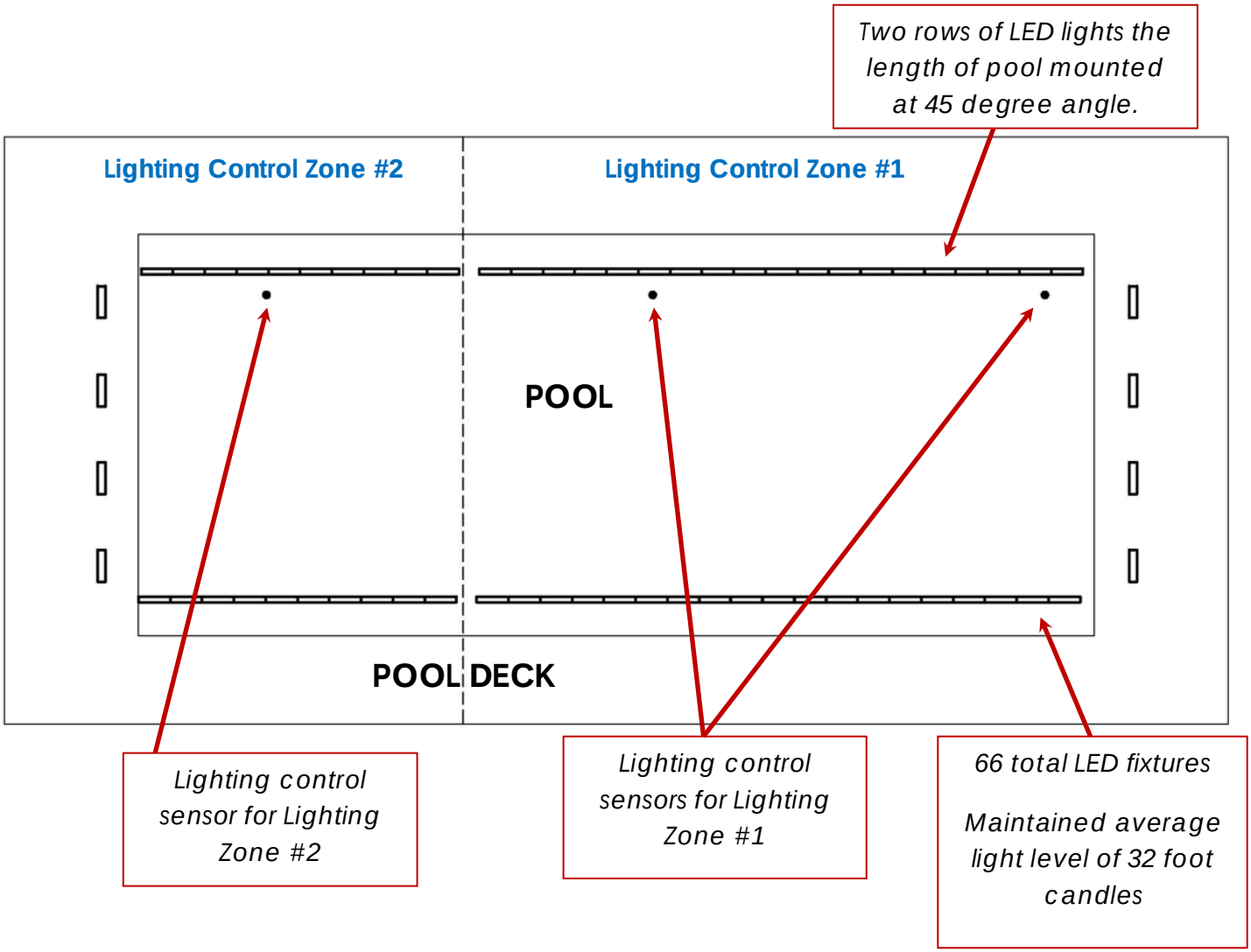
ELECTRICAL RECOMMENDATIONS

LIGHTING

Existing lighting in the entire facility should be upgraded to new LED style light fixtures with occupancy sensor and daylight controls meeting the current Washington State Non-Residential Energy Code (WSNREC).

ELECT. #1 NATATORIUM LIGHTS AND CONTROLS

Light levels for non-daylight hours could be increased by replacing the existing Metal Halide lights with LED style lights. These lights would also allow for installation of automatic daylight sensors to dim down the LED's in daylight areas when there is adequate daylight to meet Health Department required light levels.



ELECT. #2 CLASSROOM LIGHTS AND CONTROLS (2ND FLOOR CONFERENCE ROOM)

Recommendations for this room is to install a drop ceiling incorporating the existing HVAC and allowing for the installation of new LED recessed ceiling lights. With the addition of occupancy sensors and dimmer switches the room can be better utilized for meetings, presentations and computer classroom instructions.

ELECT. #3 EXTERIOR LIGHTS AND CONTROLS

Replace existing pole and wall mount lights with new LED "full cut off" light fixtures. Light levels will appear to be increased by changing from the HPS source (yellow light) to a LED (white light) source. Maintenance will be reduced and lenses will not overheat and reduce light levels. Controls can be added such as occupancy sensors so lights are at 50% reduced power until movement or infrared heat source is detected.

ELECT. #4 LOCKER ROOMS, ENTRY, STAFF OFFICE AND MECHANICAL AREAS

All of these areas are recommended to have existing light fixtures replaced with new LED style light fixtures, occupancy sensor and daylight controls. This will reduce current energy usage, standardize all lamps and reduce maintenance.

ELECT. #5 SOUND SYSTEM

The original existing sound system is non-functional and has been abandoned. The temporary sound system currently in use is not adequate for all the users needs. A complete new sound system should be provided capable of announcements with distributed speakers zoned for multiple functions.

POWER NO COST IMPACT

The existing electrical infrastructure is relatively new (2002), of adequate size, with spare capacity and circuit breakers for the buildings current and anticipated future functions. No modifications will be needed other than extending new branch circuits from existing panels to serve new receptacles and lighting circuits as needed.

FIRE ALARM NO COST IMPACT

The existing addressable Notifier 4010 fire alarm system is adequate for the facility and will not require upgrades other than normal testing and maintenance.

TELEPHONE/DATA EQUIPMENT NO COST IMPACT

The existing telephone/data system is functioning for the facilities current needs. Consideration should be given to relocation of the data head end equipment from the closet in the staff area to possibly the 2nd floor conference room. The 2nd floor space will have better temperature control

G. COST ESTIMATE

o·r·b architects

Shoreline Indoor Pool Construction Cost Estimates

Pricing is based on the following general conditions for construction:
A start date of Mid-Year 2014 is assumed for all items (No costs escalated to a future date).
The work will be competitively bid with qualified general contractors and subcontractors.
There will not be small business or minority business set aside requirements.
The contractors will be required to pay prevailing wages for the respective trades based on location of work.
There are no phasing requirements assumed for the individual scope items, normal work hours are assumed.
The contractor will have full access to the areas of work during normal business hours.

Pricing excludes the following items unless specifically noted otherwise:
Hazardous material testing, handling, abatement and disposal.
Testing, inspection or construction management fees.
Architectural, Engineering and other design fees.
Owner's administration costs, permitting fees and other soft costs.

Contingencies and Markups
The subcontractor markups will vary to reflect the various trades differences in overhead. The markups are listed for each item.
Due to the schematic or preliminary nature of this type of report, a design contingency factor is added to all estimated costs.
General contractor overhead and fees are assumed for a project of $100,000 or larger, smaller projects will increase these costs.
Contingencies & Contractor Markups are broken down as follows:

Design Contingency	15%
Home Office Overhead	4%
Site Overhead	6%
General Contractor Fee	6%
Bonds	1.50%
Insurance	2.50%
Sales Tax	9.50%
General Markups Total	44.5%

Escalation to Future Dates in Report Tables
As noted above, the pricing provided is at a mid-year 2014 level. When projecting costs to future dates in the report tables, a rate of 4% per year is used to escalate the cost to the future date. This escalation factor is based on historical building costs as published by Engineering News Record, with 2010 escalation being approx 4% and 2012 escalation being approx 2%. This rate varies month to month depending on economic conditions related to the construction industry.

Total Estimated Cost for all Scope Items as defined on the following pages	$2,357,598
Note: some scope items may overlap costs, a detailed review of proposed project scope will be required to eliminate any overlap.	
Estimated Cost of Work Completed during Feb. '14 Major Maintenance Shutdown	$26,600
Total Estimated Cost for all Remaining Scope Items	$2,330,998

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.1 - CHEMICAL GROUT CRACKS IN BOTTOM OF POOL (AT TIME OF RE-PLASTER)				
Expose cracks by removing plaster	26	LF	3.00	78
Remove tile bottom marking at cracks	4	SF	5.40	22
Chip out slab to expose rebar at areas of visible rust	4	LF	6.00	24
Clean and treat exposed rebar, patch surface	4	LF	40.00	160
Urethane grout crack (minimum specialty work job charge)	30	LF	30.00	900
Racing lane marker tile (w/ wproof, thinset, grout typ)	4	SF	16.00	64
Demolition load out & disposal	0.10	CY	90.00	9
Cleanup	1	EA	50.00	50
		SUBTOTAL		$1,307
	SUBCONTRACTOR OH&P		30%	$392
	TOTAL SUBCONTRACTED			$1,699
	GENERAL MARKUPS		44.5%	$756
ITEM P.1 - CHEMICAL GROUT CRACKS IN BOTTOM OF POOL		TOTAL		$3,000

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.2 - RE-PLASTER POOL				
Remove deteriorated plaster throughout w/ water blast prep	6,482	SF	3.20	20,742
Sawcut & chip out plaster along tile & fittings	1,600	LF	11.00	17,600
Patching & bond coat on prepared pool surfaces	6,482	SF	0.50	3,241
Plaster surface (pre-packaged Diamond Brite or similar)	6,482	SF	4.50	29,169
Demolition load out & disposal	10	CY	90.00	864
Cleanup	1	EA	300.00	300
Plaster & water quality maintenance during cure period	14	DAY	240.00	3,360
		SUBTOTAL		$75,277
	SUBCONTRACTOR OH&P		20%	$15,055
	TOTAL SUBCONTRACTED			$90,332
	GENERAL MARKUPS		44.5%	$40,198
ITEM P.2 - RE-PLASTER POOL		TOTAL		$130,000

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P)				
ITEM P.3 - REPAIR POOL & DECK TILE				
Remove damaged racing lane marker tile	40	SF	5.40	216
Remove water level bullnose tile & bedding	310	LF	6.00	1,860
Remove water line tile band	310	LF	2.70	837
Remove deck tile to 4"+- from edge of deck	310	LF	2.70	837
Remove vertical tile at edge of deck	310	LF	2.70	837
Remove tile at bottom of deck edge	310	LF	1.35	419
Diamond grind remaining surfaces	930	LF	2.25	2,093
Remove deck tile & prep for 6"x6" no diving tile insets	12	EA	25.00	300
Remove grout & scale from exist deck tile and regrout	550	SF	9.00	4,950
Racing lane marker tile (w/ wproof, thinset, grout typ)	40	SF	16.00	640
Break point to deep end - add marker tile at side walls	7	SF	16.00	112
Water level bullnose (2 corner tiles) tile & thickset bed	310	LF	25.00	7,750
Water line tile band (w/ wproof, thinset, grout typ)	160	SF	16.00	2,560
Replace tile at gutter access covers	6	EA	50.00	300
No diving tiles in exist field tile (w/ wproof, thinset, grout typ)	12	EA	35.00	420
Depth marking tiles on face of deck edge (cut to height)	22	EA	45.00	990
Lane marking tiles on face of deck edge (cut to height)	12	EA	45.00	540
Thru color tile with bullnose edge at deck perimeter band 4"+-	310	LF	12.00	3,720
Thru color tile with bullnose edge at face of deck edge 5"+-	310	LF	12.00	3,720
Thru color tile at bot of deck edge 2"+-	310	LF	8.00	2,480
Re-caulk sealant joints	60	LF	6.00	360
Demolition load out & disposal	2	CY	90.00	180
Cleanup	1	EA	300.00	300
		SUBTOTAL		$36,420
		SUBCONTRACTOR OH&P	20%	$7,284
		TOTAL SUBCONTRACTED		$43,704
		GENERAL MARKUPS	44.5%	$19,448
	ITEM P.3 - REPAIR POOL & DECK TILE	TOTAL		$63,000

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.4 - ADD DEPTH MARKINGS & NO DIVING SYMBOLS				
Remove vertical tile at edge of deck	12	EA	2.70	32
Remove deck tile & prep for 6"x6" tile insets	24	EA	25.00	600
Diamond grind remaining surfaces	36	EA	2.25	81
Diamond grind detail work along remaining tile edge	32	LF	3.00	96
No diving tiles in exist field tile (w/ wproof, thinset, grout typ)	4	EA	35.00	140
Depth marking tiles in exist field (w/ wproof, thinset, grout)	12	EA	35.00	420
Depth marking tiles on face of deck edge (cut to height)	12	EA	45.00	540
Demolition load out & disposal	0.1	CY	90.00	9
Cleanup	1	EA	100.00	100
		SUBTOTAL		$2,018
	SUBCONTRACTOR OH&P		20%	$404
	TOTAL SUBCONTRACTED			$2,422
	GENERAL MARKUPS		44.5%	$1,078
ITEM P.4 - ADD DEPTH MARKINGS & NO DIVING SYMBOLS		TOTAL		$4,000

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.5 - RECONFIGURE DIVING WELL BOTTOM PROFILE				
Sawcut bottom slab around area in violation	50	LF	8.00	400
Remove concrete and soil	200	CF	6.00	1,200
Temporary shoring at mid span of wall excavation	1	EA	500.00	500
Drill & set dowels at exist slab edge	30	EA	40.00	1,200
Epoxy bond new to existing slab edge	50	LF	5.00	250
Replace concrete slab, including reinforcing	4	CY	300.00	1,200
Bond coat on new concrete surfaces	120	SF	0.50	60
Plaster surface (pre-packaged Diamond Brite or similar)	120	SF	4.50	540
Racing lane marker tile (w/ wproof, thinset, grout typ)	40	SF	16.00	640
Demolition load out & disposal	8	CY	90.00	720
Cleanup	1	EA	300.00	300
		SUBTOTAL		$7,010
	SUBCONTRACTOR OH&P		25%	$1,753
	TOTAL SUBCONTRACTED			$8,763
	GENERAL MARKUPS		44.5%	$3,899
ITEM P.5 - RECONFIGURE DIVING WELL BOTTOM PROFILE		TOTAL		$13,000

Note: A 28 day cure period is recommended after placing concrete prior to installing plaster.
This is to reduce the possibility of plaster cracking associated with concrete shrinkage during cure.

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.6 - MOVABLE BULKHEAD REPLACEMENT				
Remove wheels (work on unit in place)	4	EA	200.00	800
Manually lift out of place and set outdoors for demolition	1	EA	500.00	500
Demolish bulkhead	1	EA	300.00	300
Fiberglass bulkhead similar to existing (Lincoln Equip Quote)	1	EA	72,500.00	72,500
Shipping to job site	1	LS	2,000.00	2,000
Set bulkhead in place	1	EA	500.00	500
Demolition load out & disposal	15	CY	90.00	1,350
Cleanup	1	EA	100.00	100
		SUBTOTAL		$78,050
	SUBCONTRACTOR OH&P		15%	$11,708
	TOTAL SUBCONTRACTED			$89,758
	GENERAL MARKUPS		44.5%	$39,942
ITEM P.6 - MOVABLE BULKHEAD REPLACEMENT		TOTAL		$130,000

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.6 - MOVABLE BULKHEAD REPLACEMENT				
QUOTE FROM LICOLN AQUATICS	1	LS	69,000.00	69,000
				0
ITEM P.6 - MOVABLE BULKHEAD REPLACEMENT		TOTAL		$69,000

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.7 - ADD SCREENED CAGE TO GUTTER OUTLET PIPE				
Removable stainless or FRP screened cage to fit pipe opening	1	EA	300.00	300
Install assembly in gutter	1	EA	35.00	35
		SUBTOTAL		$335
	SUBCONTRACTOR OH&P		25%	$84
	TOTAL SUBCONTRACTED			$419
	GENERAL MARKUPS		44.5%	$186
ITEM P.7 - ADD SCREENED CAGE TO GUTTER OUTLET PIPE		TOTAL		$600

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.8 - IMPROVE DRAINAGE AT POOL DECK				
Sawcut drain slot at areas of ponding to direct water to drain	4	EA	60.00	240
Drill drain hole from end of slot into lineal drain	4	EA	20.00	80
Cleanup	1	EA	50.00	50
		SUBTOTAL		$370
	SUBCONTRACTOR OH&P		25%	$93
	TOTAL SUBCONTRACTED			$463
	GENERAL MARKUPS		44.5%	$206
ITEM P.8 - IMPROVE DRAINAGE AT POOL DECK		TOTAL		$700

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.9A - REPAIR NORTH POOL DECK STRUCTURE				
Remove concrete where spalled- reinforcing to remain	15	LF	5.00	75
Clean & seal reinforcing in place, patch slab	15	LF	40.00	600
Patch cracks w/ epoxy injection	120	LF	25.00	3,000
Sawcut slot in surface for resilient coating termination	250	LF	1.75	438
Resilient deck coating from tile finish to curb at wall	700	SF	9.50	6,650
Demolition load out & disposal	1	CY	90.00	45
Cleanup	1	EA	300.00	300
		SUBTOTAL		$11,108
	SUBCONTRACTOR OH&P		25%	$2,777
	TOTAL SUBCONTRACTED			$13,884
	GENERAL MARKUPS		44.5%	$6,179
ITEM P.9A - REPAIR NORTH POOL DECK STRUCTURE		TOTAL		$20,000

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P) ITEM P.9B - REPLACE NORTH POOL DECK STRUCTURE				
Sawcut slab 1/2 depth at pool side of cracking	130	LF	1.75	228
Remove concrete - reinforcing to remain into exist	440	SF	4.00	1,760
Drill & set dowels at exist concrete duct wall	65	EA	40.00	2,600
Metal deck form at underside of slab	440	SF	8.00	3,520
Replace concrete slab, including reinforcing	8	CY	300.00	2,400
Add to concrete cost for exposed aggregate & color	440	SF	2.50	1,100
Reconstruct integral lineal diffuser curb complete	120	LF	62.76	7,531
Clear penetrating sealer	440	SF	0.90	396
Demolition load out & disposal	8	CY	90.00	720
Cleanup	1	EA	300.00	300
		SUBTOTAL		$20,555
	SUBCONTRACTOR OH&P		25%	$5,139
	TOTAL SUBCONTRACTED			$25,694
	GENERAL MARKUPS		44.5%	$11,434
ITEM P.9B - REPLACE NORTH POOL DECK STRUCTURE		TOTAL		$37,000

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
POOL TANKS & DECKS (P)				
ITEM P.10 - REPAIR LINEAL DIFFUSER CURBS AT POOL DECK PERIMETERS				
Sawcut curb each side of crack	460	LF	1.75	805
Remove concrete, reinforcing to remain	230	LF	4.00	920
Clean & seal reinforcing in place, patch face of curb	230	LF	40.00	9,200
Add thickness to face of concrete curb, including reinforcing	230	LF	12.00	2,760
Re-paint curbs	230	LF	2.00	460
Demolition load out & disposal	1	CY	90.00	90
Cleanup	1	EA	200.00	200
$62.76 / LF		SUBTOTAL		$14,435
		SUBCONTRACTOR OH&P	25%	$3,609
		TOTAL SUBCONTRACTED		$18,044
		GENERAL MARKUPS	44.5%	$8,029
ITEM P.10 - REPAIR LINEAL DIFFUSER CURBS AT POOL DECK PERIMETERS		TOTAL		$26,000

Note: If north deck slab is replaced at the same time, the cost for this item would be approx 50% of the total shown - balance of curb occurs at the area of north slab (integral with slab)

TOTAL ALL POOL TANKS & DECKS WORK ITEMS $496,300

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.1 - EXTERIOR CMU SEALING & REPAIR				
Pressure wash CMU exterior faces	8,600	SF	0.25	2,150
Re-point cracks w/ mortar & sealant joint	100	LF	12.00	1,200
Repair small holes w/ mortar	1	LS	150.00	150
Mobile lift	2	WEEK	850.00	1,700
Silane/siloxane clear penetrating sealer	8,600	SF	0.90	7,740
Cleanup	1	EA	200.00	200
		SUBTOTAL		$13,140
	SUBCONTRACTOR OH&P		20%	$2,628
	TOTAL SUBCONTRACTED			$15,768
	GENERAL MARKUPS		44.5%	$7,017
ITEM B.1 - EXTERIOR CMU SEALING & REPAIR		TOTAL		$23,000

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.2 - EXTERIOR METAL PANEL WALL REPAIRS				
Remove metal panel siding, flashings and weather barrier	1,200	SF	3.00	3,600
Replace weather barrier to lap over base flashing	1,200	LF	0.25	300
Scaffolding at exterior faces	84	CCF	11.00	924
Metal siding and flashings to replace existing	1,200	SF	9.06	10,875
Remove gypsum wallboard and insul from interior side	1,200	SF	0.50	600
Scaffolding at interior faces	81	CCF	11.00	891
Sprayed foam insulation in 2x8 stud cavities	1,000	SF	5.07	5,070
Replace gypsum wallboard, taped & level 4 finish	1,000	SF	1.24	1,240
Replace misc wood trim at interior perimeters	400	LF	1.94	776
Paint gypsum wallboard	1,000	SF	0.34	340
Demolition load out & disposal	4	CY	90.00	360
Cleanup	1	EA	200.00	200
		SUBTOTAL		$25,176
	SUBCONTRACTOR OH&P		20%	$5,035
	TOTAL SUBCONTRACTED			$30,211
	GENERAL MARKUPS		44.5%	$13,444
ITEM B.2 - EXTERIOR METAL PANEL WALL REPAIRS		TOTAL		$44,000

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.3 - ROOF STRUCTURE / CEILING REPAIRS				
Remove acoustic ceiling and grid above diving area	2,600	SF	0.50	1,300
Remove & salvage acoustic panels over pool	60	EA	11.00	660
Removing and re-hanging lights	1	LS	6,400.00	6,400
Remove & re-hang duct & pipe supports throughout	1	LS	6,500.00	6,500
Remove gypsum wallboard and insul from ceilings	14,900	SF	0.55	8,195
Scaffolding	1,275	CCF	11.00	14,028
Sprayed foam insulation in ceiling cavities	89,600	BF	0.70	62,720
Replace gypsum wallboard, taped & level 4 finish	6,768	SF	1.54	10,423
Replace gypsum wallboard, fire tape only	8,132	SF	1.20	9,758
Replace misc wood trim at perimeters	900	LF	1.94	1,746
Paint gypsum wallboard	6,768	SF	0.34	2,301
Paint gluelam beams & wood trim	4,032	SF	0.60	2,419
Replace acoustic ceiling and grid above diving area	2,600	SF	3.75	9,750
Reinstall salvaged acoustic panels over pool	60	EA	16.00	960
Provide additonal acoustic control panels	60	EA	250.00	15,000
Demolition load out & disposal	39	CY	90.00	3,500
Cleanup	1	EA	500.00	500
		SUBTOTAL		$156,160
	SUBCONTRACTOR OH&P		20%	$31,232
	TOTAL SUBCONTRACTED			$187,392
	GENERAL MARKUPS		44.5%	$83,390
ITEM B.3 - ROOF STRUCTURE / CEILING REPAIRS		TOTAL		$270,000

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.4 - ROOF REPAIRS				
Repair damaged shingles at north edge	1	LS	200.00	200
Re-work drip edge at north to drain into gutter	70	LF	6.00	420
Remove moss from north roof	5,000	SF	0.06	300
Trim back trees at east roof	1	JOB	350.00	350
Remove moss & tree debris at east roof	1,500	SF	0.12	180
Clean out gutters	270	LF	0.75	203
Replace downspouts	90	LF	7.00	630
Demolition load out & disposal	3.0	CY	90.00	270
Cleanup	1	EA	50.00	50
		SUBTOTAL		$2,603
	SUBCONTRACTOR OH&P		20%	$521
	TOTAL SUBCONTRACTED			$3,123
	GENERAL MARKUPS		44.5%	$1,390
ITEM B.4 - ROOF REPAIRS		TOTAL		$5,000

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.4a - REPLACE ROOFING				
Remove 2-3 layers asphalt shingles and weather barrier	15,300	SF	1.28	19,584
15# felt weather barrier	15,300	SF	0.12	1,836
Class A laminated composition shingles	15,300	SF	2.46	37,638
Misc penetration flashings	10	EA	30.00	300
Demolition load out & disposal	17	CY	90.00	1,530
Cleanup	1	EA	100.00	100
		SUBTOTAL		$60,988
	SUBCONTRACTOR OH&P		30%	$18,296
	TOTAL SUBCONTRACTED			$79,284
	GENERAL MARKUPS		44.5%	$35,282
ITEM B.4a - REPLACE ROOFING		TOTAL		$115,000

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.5 -CLERESTORY WINDOW REPLACEMENT				
Remove screens at clerestory windows	310	SF	0.35	109
Remove clerestory windows	310	SF	1.00	310
Remove wood trim	240	LF	2.46	590
Replace sill pan flashing	80	LF	6.00	480
Replace wood trim at perimeters	240	LF	1.94	466
Thermally broken alum framed laminated glass units	310	SF	50.55	15,671
Paint gluelam beams & wood trim	870	SF	0.60	522
Sealant joints	240	LF	1.80	432
Replace screens sim to exist with bottom drainage	310	SF	7.50	2,325
Demolition load out & disposal	4	CY	90.00	341
Cleanup	1	EA	100.00	100
		SUBTOTAL		$21,345
	SUBCONTRACTOR OH&P		30%	$6,404
	TOTAL SUBCONTRACTED			$27,749
	GENERAL MARKUPS		44.5%	$12,348
ITEM B.5 -CLERESTORY WINDOW REPLACEMENT		TOTAL		$40,000

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.6 - REPLACE DAMAGED EXTERIOR DOORS				
Remove metal door & frame, salvage hardware	4	EA	60.00	240
Metal frame, galvanized & grouted solid - single	2	EA	300.00	600
Metal frame, galvanized & grouted solid - double	1	EA	400.00	400
Insulated galvanized metal door	4	EA	600.00	2,400
Reinstall hardware	4	EA	120.00	480
Paint door & frame	4	EA	70.00	280
Demolition load out & disposal	2	CY	90.00	180
Cleanup	1	EA	100.00	100
		SUBTOTAL		$4,680
	SUBCONTRACTOR OH&P		20%	$936
	TOTAL SUBCONTRACTED			$5,616
	GENERAL MARKUPS		44.5%	$2,499
ITEM B.6 - REPLACE DAMAGED EXTERIOR DOORS		TOTAL		$8,000

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.6a - REPLACE BALANCE OF METAL EXTERIOR DOORS				
Remove metal door & frame, salvage hardware	4	EA	60.00	240
Metal frame, galvanized & grouted solid - single	2	EA	300.00	600
Metal frame, galvanized & grouted solid - double	1	EA	400.00	400
Insulated galvanized metal door	4	EA	600.00	2,400
Reinstall hardware	4	EA	120.00	480
Paint door & frame	4	EA	70.00	280
Demolition load out & disposal	2	CY	90.00	180
Cleanup	1	EA	100.00	100
		SUBTOTAL		$4,680
	SUBCONTRACTOR OH&P		20%	$936
	TOTAL SUBCONTRACTED			$5,616
	GENERAL MARKUPS		44.5%	$2,499
ITEM B.6a - REPLACE BALANCE OF METAL EXTERIOR DOORS		TOTAL		$8,000

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B) ITEM B.7 - ADD ENTRY VESTIBULE (115 sf, unheated, at exist canopy)				
Sawcut existing exterior slabs	30	LF	8.00	240
Remove exterior slabs	300	SF	5.00	1,500
Excavate for concrete curb/footing	32	LF	15.00	480
Pour concrete curb/footing	32	LF	50.00	1,600
Aluminum framed single glazed storefront	310	SF	40.00	12,400
Pair of storefront doors	1	PR	2,000.00	2,000
Sloped glazing outboard of exist CMU arc	40	SF	50.00	2,000
Sawcut horizontal reglet in exist CMU	14	LF	7.00	98
Install reglet and flashing over sloped glazing	14	LF	45.00	630
Replace slabs	6	CY	300.00	1,800
Add to concrete cost for finish & color	300	SF	2.50	750
Demolition load out & disposal	9	CY	90.00	810
Cleanup	1	EA	300.00	300
		SUBTOTAL		$24,608
	SUBCONTRACTOR OH&P		20%	$4,922
	TOTAL SUBCONTRACTED			$29,530
	GENERAL MARKUPS		44.5%	$13,141
ITEM B.7 - ADD ENTRY VESTIBULE (115 sf, unheated, at exist canopy)		TOTAL		$43,000

TOTAL ALL ARCHITECTURAL BUILDING ENCLOSURE WORK ITEMS	$556,000

See Structural for additional Building Enclosure/Structural Scope Items

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING INTERIORS (I)				
ITEM I.1 - REPAIR WALL TILE				
Remove damaged tile at bottom of walls	40	EA	2.70	108
Diamond grind remaining surfaces	40	EA	2.25	90
Match tiles in exist field tile (w/ thinset & grout typ)	40	EA	6.00	240
Grout behind base of projecting tiles in men's dressing	115	LF	2.50	288
Demolition load out & disposal	0.10	CY	90.00	9
Cleanup	1	EA	50.00	50
		SUBTOTAL		$785
		SUBCONTRACTOR OH&P	20%	$157
		TOTAL SUBCONTRACTED		$941
		GENERAL MARKUPS	44.5%	$419
	ITEM I.1 - REPAIR WALL TILE	TOTAL		$1,500

Item Description	Qty.	Unit	$/Unit	Total
BUILDING INTERIORS (I)				
ITEM I.2 - REMOVE ACCESS PANEL AT SECOND FLOOR MENS RR				
Remove access panel & wall tile around opening to full tiles	1	EA	100.00	100
Diamond grind remaining surfaces	30	EA	2.25	68
Infill framing of opening	12	SF	3.00	36
Replace gypsum wallboard, fire tape only	24	SF	1.20	29
Match tiles in exist field tile (w/ thinset & grout typ)	70	EA	1.50	105
Demolition load out & disposal	0.10	CY	90.00	9
Cleanup	1	EA	50.00	50
		SUBTOTAL		$396
		SUBCONTRACTOR OH&P	20%	$79
		TOTAL SUBCONTRACTED		$476
		GENERAL MARKUPS	44.5%	$212
	ITEM I.2 - REMOVE ACCESS PANEL AT SECOND FLOOR MENS RR	TOTAL		$500

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING INTERIORS (I)				
ITEM I.3 - REPAIR LOCKER ROOMS & LOBBY FLOORS				
Remove & salvage lockers	87	STACK	40.00	3,480
Remove & salvage benches	7	EA	40.00	280
Remove & salvage toilet partitions	6	EA	75.00	450
Remove dressing rooms floor slabs & soil for CWB & slopes	1,842	SF	5.00	9,210
Diamond grind remaining integral wall base	400	LF	4.00	1,600
Diamond grind flooring at lobby	425	SF	2.25	956
Capillary water barrier gravel at dressing rooms	35	CY	90.00	3,150
Below slab vapor retarder at dressing rooms	1,842	SF	1.75	3,224
Slab on grade finished to receive epoxy flooring	35	CY	300.00	10,500
Cast in place bench piers	14	EA	60.00	840
Cast in place locker bases	3	CY	300.00	900
Epoxy flooring	2,267	SF	9.50	21,537
Epoxy flooring coved base	450	LF	4.75	2,138
Flooring mfr's inspections & installer warranty	1	LS	3,551.10	3,551
Reinstall salvaged lockers	87	STACK	50.00	4,350
Reinstall salvaged benches	7	EA	60.00	420
Reinstall salvaged toilet partitions	6	EA	90.00	540
Dressing area slab and drains mechanical	1	Lot	9,813.00	9,813
Demolition load out & disposal	37	CY	90.00	3,333
Cleanup	1	EA	400.00	400
		SUBTOTAL		$80,671
	SUBCONTRACTOR OH&P		25%	$20,168
	TOTAL SUBCONTRACTED			$100,839
	GENERAL MARKUPS		44.5%	$44,873
ITEM I.3 - REPAIR LOCKER ROOMS & LOBBY FLOORS		TOTAL		$146,000

Note: A 28 day cure period is recommended after placing concrete prior to installing floor finish.
This is to reduce the possibility of the coating cracking associated with concrete shrinkage during cure.

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING INTERIORS (I)				
ITEM I.4 - REPLACE RUSTED INTERIOR DOORS				
Remove metal door & frame, salvage hardware	8	EA	60.00	480
Metal frame, galvanized & grouted solid - single	7	EA	300.00	2,100
Metal frame, galvanized & grouted solid - double	1	EA	400.00	400
Foam filled galvanized metal door	8	EA	600.00	4,800
Reinstall hardware	8	EA	120.00	960
Reinstall ADA operator	3	EA	100.00	300
Paint door & frame	8	EA	70.00	560
Replace door mounted signage	8	EA	45.00	360
Demolition load out & disposal	4	CY	90.00	360
Cleanup	1	EA	200.00	200
		SUBTOTAL		$10,520
		SUBCONTRACTOR OH&P	20%	$2,104
		TOTAL SUBCONTRACTED		$12,624
		GENERAL MARKUPS	44.5%	$5,618
ITEM I.4 - REPLACE RUSTED INTERIOR DOORS		TOTAL		$18,000

TOTAL ALL ARCHITECTURAL BUILDING INTERIORS WORK ITEMS $166,001

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
MISCELLANIOUS (M) ITEM M.1 - RECEPTION DESK MODIFICATIONS				
Remove projecting fins from customer side of counter	3	EA	20.00	60
Re-face counter to cover holes	25	SF	20.00	500
Modify soffit to receive coiling screen hood	10	LF	40.00	400
Add 10'x8' coiling screen to secure admin space	1	EA	4,500.00	4,500
Demolition load out & disposal	1	CY	90.00	90
Cleanup	1	EA	100.00	100
		SUBTOTAL		$5,650
		SUBCONTRACTOR OH&P	20%	$1,130
		TOTAL SUBCONTRACTED		$6,780
		GENERAL MARKUPS	44.5%	$3,017
	ITEM M.1 - RECEPTION DESK MODIFICATIONS	TOTAL		$10,000

MISCELLANIOUS (M) ITEM M.2 - REPAIR DRESSING ROOM SINK SUPPORTS				
Remove support from bottom of counter	2	EA	20.00	40
Replace wood / laminate support to match existing	2	EA	80.00	160
Demolition load out & disposal	0.1	CY	90.00	9
Cleanup	1	EA	25.00	25
		SUBTOTAL		$234
		SUBCONTRACTOR OH&P	20%	$47
		TOTAL SUBCONTRACTED		$281
		GENERAL MARKUPS	44.5%	$125
	ITEM M.2 - REPAIR DRESSING ROOM SINK SUPPORTS	TOTAL		$400

Item Description	Qty.	Unit	$/Unit	Total
MISCELLANIOUS (M) ITEM M.3- REPAIR FEET AT FILTER TANK				
Raise tank & remove existing flange feet	4	EA	120.00	480
New flange feet bolted to floor	4	EA	200.00	800
Cleanup	1	EA	50.00	50
		SUBTOTAL		$1,330
		SUBCONTRACTOR OH&P	20%	$266
		TOTAL SUBCONTRACTED		$1,596
		GENERAL MARKUPS	44.5%	$710
	ITEM M.3- REPAIR FEET AT FILTER TANK	TOTAL		$2,500

TOTAL ALL MISCELLANEOUS WORK ITEMS	$12,900

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
Accessibility (A)				
ITEM A.2 - ADA TOILETS VERTICAL GRAB BARS				
Add 18" vert grab bar above existing horizontal bar	2	EA	75.00	150
Cleanup	1	EA	25.00	25
		SUBTOTAL		$175
		SUBCONTRACTOR OH&P	20%	$35
		TOTAL SUBCONTRACTED		$210
		GENERAL MARKUPS	44.5%	$93
ITEM A.2 - ADA TOILETS VERTICAL GRAB BARS		TOTAL		$300

Item Description	Qty.	Unit	$/Unit	Total
Accessibility (A)				
ITEM A.3 - ADA SHOWER STALLS 3RD WALL				
Solid phenolic "shower panel" wall, floor & ceiling braced	2	EA	600.00	1,200
Folding seat	2	EA	300.00	600
30" long grab bar	2	EA	95.00	190
Cleanup	1	EA	100.00	100
		SUBTOTAL		$2,090
		SUBCONTRACTOR OH&P	20%	$418
		TOTAL SUBCONTRACTED		$2,508
		GENERAL MARKUPS	44.5%	$1,116
ITEM A.3 - ADA SHOWER STALLS 3RD WALL		TOTAL		$4,000

Item Description	Qty.	Unit	$/Unit	Total
Accessibility (A)				
ITEM A.4 - ADA SINKS TRAP INSULATION				
Insulated covers for trap assembly	4	EA	50.00	200
		SUBTOTAL		$200
		SUBCONTRACTOR OH&P	20%	$40
		TOTAL SUBCONTRACTED		$240
		GENERAL MARKUPS	44.5%	$107
ITEM A.4 - ADA SINKS TRAP INSULATION		TOTAL		$400

ARCHITECTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
Accessibility (A)				
ITEM A.5 - ADA LOCKERS				
Remove & salvage existing lockers to owner	6	STACK	50.00	300
Two tier lockers - bottom locker is ADA accessible	6	STACK	880.00	5,280
Cleanup	1	EA	50.00	50
		SUBTOTAL		$5,630
	SUBCONTRACTOR OH&P		20%	$1,126
	TOTAL SUBCONTRACTED			$6,756
	GENERAL MARKUPS		44.5%	$3,006
ITEM A.5 - ADA LOCKERS		TOTAL		$10,000

Item Description	Qty.	Unit	$/Unit	Total
Accessibility (A)				
ITEM A.6 - ADA DRESSING BENCHES				
Cut off existing bench for ADA bench space	2	EA	30.00	60
ADA bench 48"X24" with backrest, bolted to floor	2	EA	750.00	1,500
Cleanup	1	EA	50.00	50
		SUBTOTAL		$1,610
	SUBCONTRACTOR OH&P		20%	$322
	TOTAL SUBCONTRACTED			$1,932
	GENERAL MARKUPS		44.5%	$860
ITEM A.6 - ADA DRESSING BENCHES		TOTAL		$3,000

TOTAL ALL MISCELLANEOUS WORK ITEMS	$17,700

TOTAL ALL ARCHITECTURAL WORK ITEMS	$1,248,901

STRUCTURAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
BUILDING ENCLOSURE / STRUCTURE (B)				
ITEM B.8: Building Enclosure/Structure Item #10 - diaphragm/wall anchorage				
Metal Clips/strapping, wood blocking to anchor CMU walls to Roof	620	LF	70.00	43,400
Add/Upgrade collectors at roof level	3	EA	5,000.00	15,000
Improve/Upgrade plywood diahragm, add cross ties.	15,300	SF	3.50	53,550
				0
		SUBTOTAL		$111,950
		SUBCONTRACTOR OH&P	25%	$27,988
		TOTAL SUBCONTRACTED		$139,938
		GENERAL MARKUPS	44.5%	$62,272
ITEM B.8: Building Enclosure/Structure Item #10 - diaphragm/wall anchorage		TOTAL		$200,000
BUILDING ENCLOSURE / STRUCTURE (B)				
ITEM B.9: Building Enclosure/Structure Item #11 - non-structural item bracing				
Sprinkler Pipe Bracing	1	EA	7,500.00	7,500
Bracing of Tall Narrow Contents	1	EA	2,500.00	2,500
				0
		SUBTOTAL		$10,000
		SUBCONTRACTOR OH&P	25%	$2,500
		TOTAL SUBCONTRACTED		$12,500
		GENERAL MARKUPS	44.5%	$5,563
M B.9: Building Enclosure/Structure Item #11 - non-structural item bracing		TOTAL		$18,000
BUILDING ENCLOSURE / STRUCTURE (B)				
ITEM B.10: Building Enclosure/Structure Item #12 - dry rot repairs				
No Rot Found	0	EA	0.00	0
				0
		SUBTOTAL		$0
		SUBCONTRACTOR OH&P	25%	$0
		TOTAL SUBCONTRACTED		$0
		GENERAL MARKUPS	44.5%	$0
ITEM B.10: Building Enclosure/Structure Item #12 - dry rot repairs		TOTAL		$0
		TOTAL ALL STRUCTURAL WORK ITEMS		$217,999

MECHANICAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - HVAC/PLUMBING (MH)				
ITEM MH.1 - BALANCING AND CLEANING				
Balancing & cleaning	1	Lot		13,058
				0
		SUBTOTAL		$13,058
		SUBCONTRACTOR OH&P	25%	$3,265
		TOTAL SUBCONTRACTED		$16,323
		GENERAL MARKUPS	44.5%	$7,264
	ITEM MH.1 - BALANCING AND CLEANING	TOTAL		$24,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - HVAC/PLUMBING (MH)				
ITEM MH.2 - RETRO-COMMISSIONING				
Commissioning	1	Lot	25,000.00	25,000
				0
		SUBTOTAL		$25,000
		SUBCONTRACTOR OH&P	25%	$6,250
		TOTAL SUBCONTRACTED		$31,250
		GENERAL MARKUPS	44.5%	$13,906
	ITEM MH.2 - RETRO-COMMISSIONING	TOTAL		$45,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - HVAC/PLUMBING (MH)				
ITEM MH.3 - REPLACE LINEAR DIFFUSERS				
15 each at 8 llf	120	LF	73.25	8,790
				0
		SUBTOTAL		$8,790
		SUBCONTRACTOR OH&P	25%	$2,198
		TOTAL SUBCONTRACTED		$10,988
		GENERAL MARKUPS	44.5%	$4,889
	ITEM MH.3 - REPLACE LINEAR DIFFUSERS	TOTAL		$16,000

MECHANICAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - HVAC/PLUMBING (MH)				
ITEM MH.4 - REPAIR AC IN MEETING ROOM				
Lump Sum	1	LS	1,000.00	1,000
				0
ITEM MH.4 - REPAIR AC IN MEETING ROOM		TOTAL		$1,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - HVAC/PLUMBING (MH)				
ITEM MH.5 - REPLACE UPPER LEVEL RESTROOM FIXTURES				
Lump Sum	1	LS	4,000.00	4,000
				0
ITEM MH.5 - REPLACE UPPER LEVEL RESTROOM FIXTURES		TOTAL		$4,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - HVAC/PLUMBING (MH)				
ITEM MH.6 - ADD VFD TO EXHAUST FANS				
VFDs for propeller fans	2	EA	1,400.00	2,800
				0
		SUBTOTAL		$2,800
		SUBCONTRACTOR OH&P	25%	$700
		TOTAL SUBCONTRACTED		$3,500
		GENERAL MARKUPS	44.5%	$1,558
ITEM MH.6 - ADD VFD TO EXHAUST FANS		TOTAL		$5,000

MECHANICAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.1 - POOL FILTER CONVERSION (PRESSURE DE OPTION)				
FRP channel or I beam platform over filter pit	64	LF	60.00	3,840
FRP structure connections / connect to exist pit	1	LS	500.00	500
FRP solid surfacing w/ removable section for pit access	80	SF	45.00	3,600
Vent surge pit from FRP cover thru roof	1	EA	200.00	200
Electrical services for adding pressure DE system	1	LS	800.00	800
Pressure DE filter (includes valves, controller, & filter)	1	EA	75,000.00	75,000
Piping/fittings	100	LF	63.00	6,300
		SUBTOTAL		$90,240
		SUBCONTRACTOR OH&P	25%	$22,560
		TOTAL SUBCONTRACTED		$112,800
		GENERAL MARKUPS	44.5%	$50,196
ITEM MP.1 - POOL FILTER CONVERSION (PRESSURE DE OPTION)		TOTAL		$165,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.2 - CHEMISTRY CONTROLLER				
Chemistry controller replacement and connection to net	1	EA	8,000.00	8,000
				0
		SUBTOTAL		$8,000
		SUBCONTRACTOR OH&P	25%	$2,000
		TOTAL SUBCONTRACTED		$10,000
		GENERAL MARKUPS	44.5%	$4,450
ITEM MP.2 - CHEMISTRY CONTROLLER		TOTAL		$15,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.3 - UV SYSTEM				
Electrical services for adding UV system	1	LS	1,200.00	1,200
UV system (5.5kW, 8" connections)	1	EA	30,000.00	30,000
Piping to accommodate UV	50	LF	63.00	3,150
		SUBTOTAL		$34,350
		SUBCONTRACTOR OH&P	25%	$8,588
		TOTAL SUBCONTRACTED		$42,938
		GENERAL MARKUPS	44.5%	$19,107
ITEM MP.3 - UV SYSTEM		TOTAL		$62,000

MECHANICAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.4 - DIGITAL FLOW METER				
Digital pool water flow meter addition	1	EA	3,300.00	3,300
				0
		SUBTOTAL		$3,300
		SUBCONTRACTOR OH&P	25%	$825
		TOTAL SUBCONTRACTED		$4,125
		GENERAL MARKUPS	44.5%	$1,836
	ITEM MP.4 - DIGITAL FLOW METER	TOTAL		$6,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.5 - MAKEUP WATER FLOW METER				
Remote reading domestic water flow meter, 2"	1	EA	1,775.00	1,775
				0
		SUBTOTAL		$1,775
		SUBCONTRACTOR OH&P	25%	$444
		TOTAL SUBCONTRACTED		$2,219
		GENERAL MARKUPS	44.5%	$987
	ITEM MP.5 - MAKEUP WATER FLOW METER	TOTAL		$3,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.6 - POOL COVER				
Wall mounted cover system per quote by ALTA Enterprises	1	EA	101,882.00	101,882
				0
		SUBTOTAL		$101,882
		SUBCONTRACTOR OH&P	incl above	$0
		TOTAL SUBCONTRACTED		$101,882
		GENERAL MARKUPS	44.5%	$45,337
	ITEM MP.6 - POOL COVER	TOTAL		$147,000

MECHANICAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.7 - POOL FILTER COVER FOR VAPOR CONTROL				
FRP channel or I beam platform over filter pit	64	LF	60.00	3,840
FRP structure connections / connect to exist pit	1	LS	500.00	500
Add for hinges for full pit access from top	4	EA	250.00	1,000
FRP solid surfacing w/ removable section for pit access	80	SF	45.00	3,600
Vent filter pit from FRP cover thru roof	1	EA	200.00	200
		SUBTOTAL		$9,140
	SUBCONTRACTOR OH&P		25%	$2,285
	TOTAL SUBCONTRACTED			$11,425
	GENERAL MARKUPS		44.5%	$5,084
ITEM MP.7 - POOL FILTER COVER FOR VAPOR CONTROL		TOTAL		$16,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.8 - PERMANENT PLUG POOL DRAIN VALVES IN SUMP PIT				
Plug pipes in pit to eliminate possible cross connection	2	EA	200.00	400
				0
		SUBTOTAL		$400
	SUBCONTRACTOR OH&P		25%	$100
	TOTAL SUBCONTRACTED			$500
	GENERAL MARKUPS		44.5%	$223
ITEM MP.8 - PERMANENT PLUG POOL DRAIN VALVES IN SUMP PIT		TOTAL		$700

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.9 - REPLACE POOL TANK PIPING				
FURTHER INVESTIGATION REQUIRED	0	LS	0.00	0
				0
ITEM MP.9 - REPLACE POOL TANK PIPING		TOTAL		$0

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.10 - REPLACE POOL INLET COVERS				
FURTHER INVESTIGATION REQUIRED	0	LS	0.00	0
				0
ITEM MP.10 - REPLACE POOL INLET COVERS		TOTAL		$0

MECHANICAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.11 - REPLACE POOL PIPING (IN MECH ROOM)				
LUMP SUM	1	LS	50,000.00	50,000
				0
ITEM MP.11 - REPLACE POOL PIPING (IN MECH ROOM)		TOTAL		$50,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.12 - REPLACE POOL PUMP WITH VFD				
LUMP SUM	1	LS	12,000.00	12,000
				0
ITEM MP.12 - REPLACE POOL PUMP WITH VFD		TOTAL		$12,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.13 - REPLACE POOL WATER HEAT EXCHANGER				
LUMP SUM	1	LS	10,000.00	10,000
				0
ITEM MP.13 - REPLACE POOL WATER HEAT EXCHANGER		TOTAL		$10,000

Item Description	Qty.	Unit	$/Unit	Total
MECHANICAL - POOL (MP)				
ITEM MP.14 - HIGH EFFICIENCY BOILER				
LUMP SUM	1	LS	30,000.00	30,000
				0
ITEM MP.14 - HIGH EFFICIENCY BOILER		TOTAL		$30,000

TOTAL ALL MECHANICAL WORK ITEMS	$611,699

ELECTRICAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
ELECTRICAL - (E)				
ITEM E.1 - NATATORIUM LIGHTS AND CONTROLS				
Demolition	1	LS	2,000.00	2,000
LED LIGHTS	1	LS	39,000.00	39,000
LIGHTING CONTROLS	1	LS	10,000.00	10,000
MISC	1	LS	2,000.00	2,000
				0
		SUBTOTAL		$53,000
		SUBCONTRACTOR OH&P	25%	$13,250
		TOTAL SUBCONTRACTED		$66,250
		GENERAL MARKUPS	44.5%	$29,481
	ITEM E.1 - NATATORIUM LIGHTS AND CONTROLS	TOTAL		$96,000

Item Description	Qty.	Unit	$/Unit	Total
ELECTRICAL - (E)				
ITEM E.2 - MEETING ROOM LIGHTS AND CONTROLS				
Demolition	1	LS	500.00	500
LED lights	1	LS	3,000.00	3,000
Lighting controls	1	LS	1,000.00	1,000
Misc	1	LS	3,000.00	3,000
Mechanical Re-ducting	1	LS	2,100.00	2,100
Suspended ceiling 2'x2' tegular complete	312	SF	4.20	1,310
		SUBTOTAL		$10,910
		SUBCONTRACTOR OH&P	25%	$2,728
		TOTAL SUBCONTRACTED		$13,638
		GENERAL MARKUPS	44.5%	$6,069
	ITEM E.2 - MEETING ROOM LIGHTS AND CONTROLS	TOTAL		$20,000

Item Description	Qty.	Unit	$/Unit	Total
ELECTRICAL - (E)				
ITEM E.3 - EXTERIOR LIGHTS AND CONTROLS				
Demolition	1	LS	1,000.00	1,000
Poles	1	LS	5,000.00	5,000
LED lights	1	LS	9,000.00	9,000
Lighting controls	1	LS	2,000.00	2,000
Misc	1	LS	1,000.00	1,000
				0
		SUBTOTAL		$18,000
		SUBCONTRACTOR OH&P	25%	$4,500
		TOTAL SUBCONTRACTED		$22,500
		GENERAL MARKUPS	44.5%	$10,013
	ITEM E.3 - EXTERIOR LIGHTS AND CONTROLS	TOTAL		$33,000

ELECTRICAL SCOPE ITEMS

Item Description	Qty.	Unit	$/Unit	Total
ELECTRICAL - (E)				
ITEM E.4 - ALL OTHER LIGHTS AND CONTROLS				
Demolition	1	LS	4,000.00	4,000
LED lights	1	LS	20,000.00	20,000
Lighting Controls	1	LS	5,000.00	5,000
Misc	1	LS	9,000.00	9,000
				0
		SUBTOTAL		$38,000
		SUBCONTRACTOR OH&P	25%	$9,500
		TOTAL SUBCONTRACTED		$47,500
		GENERAL MARKUPS	44.5%	$21,138
ITEM E.4 - ALL OTHER LIGHTS AND CONTROLS		TOTAL		$70,000

Item Description	Qty.	Unit	$/Unit	Total
ELECTRICAL - (E)				
ITEM E.5 - SOUND SYTEM				
Demolition	1	LS	3,000.00	3,000
Equipment	1	LS	21,000.00	21,000
Installation	1	LS	10,000.00	10,000
				0
		SUBTOTAL		$34,000
		SUBCONTRACTOR OH&P	25%	$8,500
		TOTAL SUBCONTRACTED		$42,500
		GENERAL MARKUPS	44.5%	$18,913
ITEM E.5 - SOUND SYTEM		TOTAL		$60,000

TOTAL ALL ELECTRICAL WORK ITEMS	$278,999

H. APPENDIX

FORWARD THRUST POOLS

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forward thrust pools

FORWARD THRUST INDOOR SWIMMING POOLS

	Pool Name	Year Built	Current Status	Still Open
1	Auburn Pool	1973	Now Auburn School District Pool. 2009 passed Capital Improvement levy. Renovated 2011	Yes
2	Bellevue Pool	1970	2007 Aquatics Study	Yes
3	Enumclaw Pool	1975	2003 - Approved taking over pool from KC with passage of $110,000 Operations & Maintenance Levy	Yes
4	Evergreen Pool	1971	2006 - turned over to Northwest Center; KC closeD in Sept. 2009; 2010 becomes Evergreen Community Aquatic Center (ECAC) with WhiteWater Aquatics	Yes
5	Federal Way Pool	1971	Turned over to High School? Essentially replaced by the KC Aquatic Center in 1990 and Recreation Center in 2007	No
6	Issaquah Julius Boehm Pool	1972	Still owns and operates	Yes
7	Kent -Meridian High School Pool	1972	Closed briefly in 2003, Operated by Aquatics Management Group	Yes
8	Mercer Island Mary Wayte Pool	1973	Transferred to Mercer Island in 2003. Operated by Northwest Center	Yes
9	Mt. Rainier Pool (Des Moines)	1975	Turned over to the Mount Rainier Pool Coalition (Des Moines, Seatac, Normandy Park and Highline School District) in 2004. Operated by Aquatic Management Group. Closed in 2009. Created Des Moines Metro Park District in 2009 that now operates the pool	Yes
10	Northshore Pool	1973	Was operated by Northwest Center. Closed in 2008 Now owned by McMinimin's as part of hotel plans	No
11	Redmond Pool (Hartman)	1973	Operated by Northwest Center when turned over from KC. Now operated by WAVE Aquatic Master Plan has replacement on Civic Campus, but no	Yes

FORWARD THRUST INDOOR SWIMMING POOLS

	Pool Name	Year Built	Current Status	Still Open
12	Renton Pool	1970	Taken over by Renton School District around 2007.	Yes
13	Seattle - Ballard Pool	1972	Still Operated by Seattle Parks. Regularly maintained and upgraded; New UV & Covers 2013	Yes
14	Seattle - Helene Madison Pool	1972	Still Operated by Seattle Parks. Regularly maintained and upgraded; new plaster in 2010	Yes
15	Seattle - Meadowbrook Pool	1975	Still Operated by Seattle Parks. Regularly maintained and upgraded; new plaster in 2013	Yes
16	Seattle - Medgar Evers Pool	1970	Still Operated by Seattle Parks. Regularly maintained and upgraded; currently repairing concrete structure and skylights	Yes
17	Seattle - Queen Anne Pool	1977	Still Operated by Seattle Parks. Regularly maintained and upgraded; new plaster in 2013	Yes
18	Seattle - Rainier Beach Pool	1975	Replaced in 2013	No
19	Seattle - Southwest Pool	1976	Still Operated by Seattle Parks. Regularly maintained and upgraded	Yes
20	Shoreline Pool	1971	Open - Performing Assessment in 2014	Yes
21	South Central Pool	1975	Tukwila Pool - Formed Parks District basically for the pool	Yes
22	Covington / Tahoma Pool	1977	Established as the Tahoma Pool in 1977. City of Covington took over the Aquatic Center in 2005. Owned by City as Covington Aquatic Center as the Aquatics Division of the City of Covington Parks and Recreation Department	Yes

ATTACHMENT 2
RFP 9773

INNOVA architects

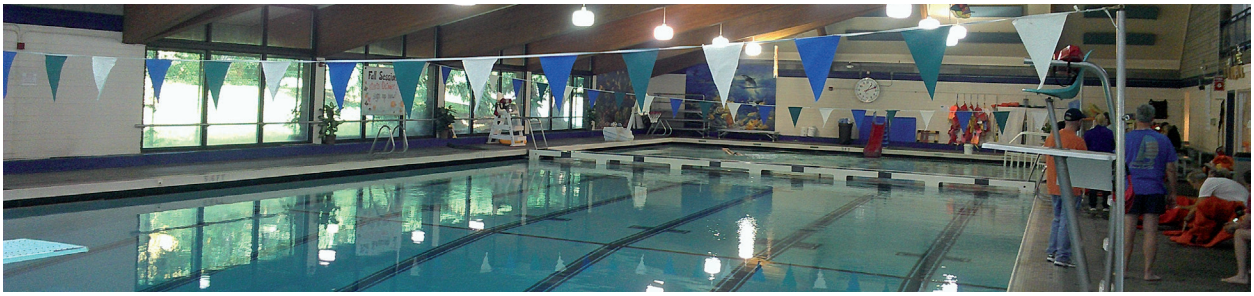
SHORELINE POOL ASSESSMENT
BUILDING MAINTENANCE AND IMPROVEMENT RECOMMENDATIONS

City of Shoreline, Washington

MAY 2014 (ADDENDUM MAY 2015)

COMMUNITY INSPIRED ARCHITECTURE

contents



A EXECUTIVE SUMMARY

B ARCHITECTURAL ASSESSMENT

C BUILDING SCIENCE ASSESSMENT

D STRUCTURAL ASSESSMENT

E MECHANICAL ASSESSMENT

F ELECTRICAL ASSESSMENT

G COST ESTIMATE

H APPENDIX

ADDENDUM - MAY 2015

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ADDENDUM

FUTURE PLANNING

OPERATE UNTIL 2022

OPERATE UNTIL 2035

REPLACEMENT

COST SUMMARIES

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FUTURE PLANNING

The purpose of this Addendum to ORB's Shoreline Pool Assessment – Building Maintenance and Improvement Recommendations Report, dated May 2014 is to provide our professional recommendations as to the best actions to invest in for the pool under the following scenarios:

1. What work would be required to keep the pool operational until the year 2022?
2. What work is required in order to add another 20 years of life to the existing facility to keep it operational until the year 2035?

The Cost Estimate breakdowns included at the end of this Addendum are created directly from the costs estimates provided in the original report. Refer to the original Cost Estimate for a summary of the cost estimate contingencies and mark-ups, as well as the exclusions of Soft Costs such as A&E fees and Owner Administration Costs.

For the purposes of planning future budgets, the costs have been broken out into separate phasing options as a means of considering budgets for the various scopes of work. Refer to the original report for the reference numbers assigned to each task. The reference numbers are unchanged in order to maintain consistency and avoid duplication.

The original report reflected work that was completed during the February 2014 annual shut down of the pool for maintenance and improvements. Included in this addendum is a breakdown of that 2014 work plus the task items that were reportedly completed by the City of Shoreline during the February 2015 shut down period.

Nearly all of the remaining scope of work items will require the City of Shoreline to hire an Architect and/or Engineering consultant in order to complete design packages that can be used for permitting and bidding purposes.

OPERATE UNTIL 2022

In the Executive Summary of the report, we identified five specific scope of work groupings under "Future Planning" that we believed should be completed within the next 3 years. (See the Executive Summary in the Original May 2014 Report) We define the Short-Term recommendations as those that will add 5 to 10 years of life to the existing facility. Therefore nearly all of the Short-Term Recommendations should be completed in order to operate the pool until 2022, which is 7 years from now.

The original Report identified $857,800 of Short-Term scope items. Upon completion of the 2014 and 2015 annual maintenance shutdown scopes of work the **remaining Short-Term Cost Estimate is $785,800.**

However, assuming that the plan would be to shut down and replace the pool after 2022, there are some possible exclusion to the Short-Term recommendations that we can consider, since the cost-benefit ratio may not be worth it for just the few years. These would be included again for the longer term plan.

Additionally, the recent failure of the north pool deck during the 2015 shutdown necessitates that a full replacement be included for the safety of the pool users in the near future.

Cost Items to be moved from Short-Term to Long-Term:

Building Interiors (I) Item #3: Replace Lobby & Dressing Room Floor Finishes, Replace Slabs at Dressing Rooms & Add Floor Drains, Provide Ground Water Control with VR & CWB Below Dressing Room Slabs

This is a costly item that may require additional maintenance to keep up for the next several years, but a full replacement of slabs and groundwater control may be overkill if it's all going away after 2022.

- Estimated Construction Cost Savings: $146,000

Mechanical – HVAC / Plumbing (MH) Item #2: Retro-Commissioning System with Controls

We recommend still completing MH Item #1 to Clean and Balance the HVAC System, plus an "abbreviated" commissioning for a control contractor to verify the sequencing of the natatorium air handling system for about $1,000.

- Estimated Construction Cost Savings: $44,000

Mechanical – Pool (MP) Item #6: Provide Pool Cover and Wall Mounted Storage Reels

The return on investment for this item would likely surpass 7 years

- Estimated Construction Cost Savings, (including electrical service) $147,000

The cost savings for moving the Short-Term items identified above to Long-Term items is $337,000.

During the recent 2015 maintenance shutdown, the north pool deck experience a structural failure. As a result we recommend that both the Deck Crack Repairs, (Item 9a) and Deck Replacement (Item 9b) options identified, be replaced with at third option (added as Item 9c) per the structural engineers recently completed drawings.

Replace:

Pool Tanks & Deck (P) Item #9a: Repair Pool Deck at North Deck Cracked Areas

- Estimated Construction Cost $20,000

With New Item:

Pool Tanks & Deck (P) Item #9c: Replace Pool Deck per Structural Details

- Estimated Construction Cost $64,000

The additional cost related to the deck replacement as a Short-Term item is $44,000.

Accepting the adjustments noted above to operate the pool until the year 2022, results in a **remaining total Short-Term Cost Estimate of $492,800.**

If the City of Shoreline opts to only operate the pool until 2022, then we recommend budgeting for those costs to be implemented within the first two years; either as one project, or phased over the next two-year period during the 2016 and 2017 shut down schedules. The reason is to get an appropriate return on your investment. In this way, all upgrades will be in place for a minimum of 5 years. The closer the date

is to shutting down the facility, the less reasonable the effort would be. If phased, the 2016 scope would include the deck replacement and any items that do not require lengthy design, engineering or a long permitting process.

Remember also that these short-term recommendations focus on the health, safety, and welfare of your patrons. They mostly all pertain to code related items, and or preserving the condition of the building for safety reasons.

OPERATE UNTIL 2035

Choosing to maintain the existing pool facility for another 20 years will allow it to be used by the next generation of users in Shoreline. The assessment report we prepared last year identified all the scope of work items that are recommended to add another 20 to 25 years of life to the facility. All recommendation in the report should be completed.

A decision as to which direction the city would like to go should be made sooner rather than later. I don't recommend doing the short-term items and then later deciding to do the long-term items separately as another project down the line. You should roll as much as you can into the long-term project. Otherwise you could be adding costs to the scopes of work by breaking them up into smaller tasks as well as due to the inflation over the years it may take to accomplish.

One recommendation for how the full scope of work could be accomplished together is to explore the concept of working directly with an Energy Service Company (ESCO) who can help you identify grants and rebates, as well as define a scope within your budget. As noted in the report we have completed a wide range of scopes of work beyond the energy savings required scope for the Tukwila Pool, and are currently under construction at the Issaquah, Julius Boehm Pool, which had a budget of approximately $5 million.

REPLACEMENT OR MAJOR RENOVATIONS

We noted in our cost estimate that the "in-kind" replacement for your pool facility is estimated at $4,500,000. This was provided to give a sense of the investment value as compared to overall value, as well as serving a code related value for when the scope of work might require bringing aspects of the building up to current codes regardless.

If the City of Shoreline is considering replacing the pool facility completely, or even if considering a major renovation effort, we recommend that a comprehensive Feasibility Study be performed. This study should look at the concept of a new pool for the City from a fresh perspective, considering the current trends in aquatics and even consider other appropriate sites for the facility. We have completed several similar types of studies for communities all over Washington State.

As you are probably well aware, the process for getting from a Feasibility Study to your realized project can take many years. A best case scenario for a schedule for something I'm imagining might be possible for you could be about 4-5 years.

Feasibility Study	1 year
Planning/ Design:	2 years
Construction:	1.5 years
	4.5 years

OTHER REGIONAL FEASIBILITY STUDIES FOR AQUATIC CENTERS

Listed below are several examples of regional Aquatic Center Feasibility Studies and the estimated cost for a new Aquatic Facility to use as a comparison for possible consideration in future replacement planning:

Peoples Community Center Pool (Rebuild)

- 2-lane lap pool
- Zero-Depth Recreation pool (Lazy River, Bubble Pool)
- Water Slide
- Indoor & Outdoor Spray Grounds
- Party Rooms, Concessions
- Offices and L:ifeguard spaces

Construction Cost Estimate: $6,600,000

North Whidbey John Vanderzicht Memorial Pool

- Zero-Depth Family Leisure Pool
- Lap Lanes
- Lazy River
- Water Slide
- Viewing Terrace
- Locker Room Expansion
- Accessible (ADA) Family Changing Rooms
- Additional offices and other support spaces

Construction Cost Estimate: $8,200,000

Lake Chelan Community Recreation & Aquatic Center

- 8-lane competition/lap pool
- Zero-Depth Recreation / Family Leisure pool
- 250-person community hall/banquet facility
- Gymnasium
- Walking Track
- Changing Rooms
- Fitness room
- Multi-Purpose and Community spaces
- Childcare
- Administrative offices and other support spaces

Construction Cost Estimate: $16,000,000

Kirkland Aquatic Recreation Center (ARC):

- 13-lane competition/lap pool
- Recreation pool
- 250-person community hall/banquet facility
- Child watch area
- Classrooms, party room, activity and art rooms
- Wood floor studios
- Single-court gymnasium
- Fitness room
- Community spaces
- Administrative offices and other support spaces

Construction Cost Estimate: $50,000,000

Listed below are two examples of recently completed major renovations of regional aquatic facilities. Both of these projects completed the scope of work using the ESCO procurement process:

Issaquah Julius Boehm Pool

- Refurbish Pool Tank & Systems (2 temp zones)
- Renovated Lobby and Changing Rooms
- Addition to add Family Changing Rooms
- ADA Upgrades
- New HVAC
- New plumbing systems
- New Lighting
- Roof and painting

Approximate Construction Cost: $4,115,000

Tukwila Pool:

- Refurbish Pool Tank / Main Drains
- Pool Filter Conversion, Add UV & VFD's
- Renovated Lobby and Changing Rooms
- ADA Upgrades
- Deck Surfacing
- New HVAC
- New plumbing systems
- New Lighting

Approximate Construction Cost: $2,275,000

cost summary

Shoreline Pool Assessment
February 2014 Completed Work

5/26/2015

Building Maintenance and Improvements

Ref #	Recommended Task	Short-Term Need	Long-Term Need	HSW Related	Operational Cost Savings	Cost Totals (actual)
Pool Tanks & Decks (P)						
4	Add Depth Markings and No Diving Symbol Tiles	X		X		$4,100
	SUBTOTAL	$4,100	$0			$4,100
Building Enclosure /Structure (B)						
4	Roof Repairs & Cleaning, Gutter & Downspout Repairs, Trim Overhanging Trees	X				$2,000
	SUBTOTAL	$2,000	$0			$2,000
Building Interiors (I)						
1	Repair Damaged Tile at Base of Walls	X				$1,600
	SUBTOTAL	$1,600	$0			$1,600
Building Site / Civil						
1	Maintenance - clean storm drains and downspouts	owner - service				$0
	SUBTOTAL	$0	$0			$0
Miscellaneous (M)						
2	Replace Damaged Dressing Room Sink/Counter Supports	X		X		$683
	SUBTOTAL	$683	$0			$683
Building Accessibility ADA (A)						
2	Add Vertical Grab Bars to ADA Toilet Stalls	X		X		$400
4	Install Insulated Cover at Waste Pipes and Traps	X		X		$270
	SUBTOTAL	$670	$0			$670
Mechanical - HVAC / Plumbing (MH)						
3	Replace Lineal Diffusers at Pool Deck (partially done Feb 2014)	X			X	$3,793
	SUBTOTAL	$16,000	$0			$3,793
Mechanical - Pool (MP)						
2	Replace Chemistry Controller	X		X		$4,050
	SUBTOTAL	$4,050	$0			$4,050
Electrical (E)						
	SUBTOTAL	$0	$0			$0
	Total All Scope Items	$29,103	$0			$16,896

* = Related to Shoreline School District Competitive Swimming and Diving Programs

Shoreline Pool Assessment

February 2015 Completed Work

5/26/2015

Building Maintenance and Improvements

Ref #	Recommended Task	Short-Term Need	Long-Term Need	HSW Related	Operational Cost Savings	Cost Totals
Pool Tanks & Decks (P)						
6	Replace Movable Bulkhead (complete w/refurbished one)		X			$130,000
	SUBTOTAL	$0	$130,000			$130,000
Building Enclosure /Structure (B)						
	SUBTOTAL	$0	$0			$0
Building Interiors (I)						
	SUBTOTAL	$0	$0			$0
Building Site / Civil						
1	Maintenance - clean storm drains and downspouts	owner - service				every year
Miscellaneous (M)						
	SUBTOTAL	$0	$0			$0
Building Accessibility ADA (A)						
	SUBTOTAL	$0	$0			$0
Mechanical - HVAC / Plumbing (MH)						
	SUBTOTAL	$0	$0			$0
Mechanical - Pool (MP)						
	SUBTOTAL	$0	$0			$0
Electrical (E)						
1	Provide New Lighting at Natatorium w/ Controls		X		X	$96,000
	*Budget may carry over into 2016					
	SUBTOTAL	$0	$96,000			$96,000
	Total All Scope Items	$0	$226,000			$226,000

* = Related to Shoreline School District Competitive Swimming and Diving Programs

cost summary

Shoreline Pool Assessment Recommendations

5/26/2015

February 2016 Proposed Work

Building Maintenance and Improvements
If phased, the 2016 scope would include the deck replacement and any items that do not require lengthy design,engineering or a long permitting process.

Ref #	Recommended Task	Short-Term Need	Long-Term Need	HSW Related	Operational Cost Savings	Cost Totals
Pool Tanks & Decks (P)						
9c	Option C - Replace Pool Deck at North Deck where failures have occurred per the structural details provided	X				$64,000
10	Repair Lineal Diffuser Concrete Curbs	X				$26,000
	SUBTOTAL	$90,000	$0			$90,000
Building Enclosure /Structure (B)						
6	Replace Damaged Exterior Metal Doors	X			X	$8,000
	SUBTOTAL	$8,000	$0			$8,000
Building Interiors (I)						
4	Replace Rusted Interior Metal Door Frames and Hinges; reuse balance of hardware	X				$18,000
	SUBTOTAL	$18,000	$0			$18,000
Building Site / Civil						
1	Maintenance - clean storm drains and downspouts	owner - service				every year
Miscellaneous (M)						
	SUBTOTAL	$0	$0			$0
Building Accessibility ADA (A)						
	SUBTOTAL	$0	$0			$0
Mechanical - HVAC / Plumbing (MH)						
1	Clean and balance HVAC systems (incl. "abbreviated commisioning)	X			X	$25,000
3	Replace Lineal Diffusers at Pool Deck (partially done Feb 2014)	X			X	$13,000
	SUBTOTAL	$38,000	$0			$38,000
Mechanical - Pool (MP)						
4	New Digital Flow Meter	X		X		$6,000
	SUBTOTAL	$6,000	$0			$6,000
Electrical (E)						
	SUBTOTAL	$0	$0			$0
	Total All Scope Items	$160,000	$0			$160,000

* = Related to Shoreline School District Competitive Swimming and Diving Programs

Shoreline Pool Assessment Recommendations

5/26/2015

February 2017 Proposed Work

Building Maintenance and Improvements

Ref #	Recommended Task	Short-Term Need	Long-Term Need	HSW Related	Operational Cost Savings	Cost Totals
Pool Tanks & Decks (P)						
1	Chemical Grout Cracks at Bottom of Pool	3-5 years				$3,000
2	Re-Plaster Pool	3-5 years				$130,000
3	Repair Pool and Deck Tile	X				$63,000
7	Provide a Screened Cage at Gutter Outlet Pipe	X				$600
8	Improve Drainage at Pool Deck (address ponding areas)	X				$700
	SUBTOTAL	$197,300	$0			$197,300
Building Enclosure /Structure (B)						
1	Re-seal masonry (water repellent), Patch Cracks and Voids	X			X	$23,000
2	Replace Metal Siding and Repair/Insulate Clerestory Walls	X			X	$44,000
5	Replace Clerestory Windows, Paint Trim & Beam Below	X			X	$40,000
	SUBTOTAL	$107,000	$0			$107,000
Building Interiors (I)						
	SUBTOTAL	$0	$0			$0
Building Site / Civil						
1	Maintenance - clean storm drains and downspouts	owner - service				every year
Miscellaneous (M)						
3	Replace Mounting Feet at Filter Tank	X				$2,500
	SUBTOTAL	$2,500	$0			$2,500
Building Accessibility ADA (A)						
3	Provide 3rd Wall with Grab Bar at ADA Showers	X		X		$4,000
5	Provide ADA Lockers in Dressing Rooms	X		X		$10,000
6	Provide ADA Bench in Dressing Rooms	X		X		$3,000
	SUBTOTAL	$17,000	$0			$17,000
Mechanical - HVAC / Plumbing (MH)						
4	Repair AC in meeting room	X				$1,000
6	Add VFD to exhaust fans	X				$5,000
	SUBTOTAL	$6,000	$0			$6,000
Mechanical - Pool (MP)						
5	Make-up Water Monitoring System	X		X		$3,000
	SUBTOTAL	$3,000	$0			$3,000
Electrical (E)						
	SUBTOTAL	$0	$0			$0
	Total All Scope Items	$332,800	$0			$332,800

* = Related to Shoreline School District Competitive Swimming and Diving Programs

cost summary

Shoreline Pool Assessment Recommendations

5/26/2015

Long-Term Proposed Work (in addition to 2016-2017 scope)

Building Maintenance and Improvements

Ref #	Recommended Task	Short-Term Need	Long-Term Need	HSW Related	Operational Cost Savings	Cost Totals
Pool Tanks & Decks (P)						
5	Reconfigure Diving Well Bottom Profile *		X	X		$13,000
	SUBTOTAL	$0	$13,000			$13,000
Building Enclosure /Structure (B)						
3	Roof Structure/Ceiling Repairs, Add Insulation & Acoustic Panels, Paint Trim & Beams (includes remove & re-hang ceiling light fixtures and ceiling supported pipes & ducts)		X		X	$270,000
4a	Replace Roofing		10 years			$115,000
6a	Replace Balance of Exterior Metal Doors		X			$8,000
7	Add an Entry Vestibule		X		X	$43,000
8	Seismic - Roof Diaphragm and Ties to CMU Walls *Note: This work also requires Items 3 and 5 to be done at same time for a complete system assembly*		X	X		$200,000
9	Seismic - Bracing Pipes/Furnishings		X	X		$18,000
10	Dry Rot Repair - Wood Roof & Wall Construction	None Identified in Investigations				$0
	SUBTOTAL	$0	$654,000			$654,000
Building Interiors (I)						
2	Remove Access Panel in Upper Level Men's Room		X			$500
3	Replace Lobby & Dressing Room Floor Finishes, Replace Slabs at Dressing Rooms and Add Floor Drains, Provide Ground Water Control with VR & CWB Below Dressing Room	X		X		$146,000
	SUBTOTAL	$146,000	$500			$146,500
Building Site / Civil						
1	Maintenance - clean storm drains and downspouts	owner - service				every year
Miscellaneous (M)						
1	Front Desk Upgrades, Remove Projections & Add Coiling Door		X			$10,000
	SUBTOTAL	$0	$10,000			$10,000
Building Accessibility ADA (A)						
	SUBTOTAL	$0	$0			$0
Mechanical - HVAC / Plumbing (MH)						
2	Retro-commissioning system w/controls	X			X	$45,000
5	Replace upper level restroom fixtures		X		X	$4,000
	SUBTOTAL	$0	$4,000			$49,000

* = Related to Shoreline School District Competitive Swimming and Diving Programs

Shoreline Pool Assessment Recommendations

5/26/2015

Long-Term Proposed Work (in addition to 2016-2017 scope)

Building Maintenance and Improvements

Ref #	Recommended Task	Short-Term Need	Long-Term Need	HSW Related	Operational Cost Savings	Cost Totals
Mechanical - Pool (MP)						
1	Replace DE filters with Pressure DE system (includes platform over existing tank and electrical service)		X			$165,000
3	ADD UV System (includes electrical services)		X	X		$62,000
6	Provide Pool Cover and Wall Mounted Storage Reels (includes electrical service for motor operators)	X			X	$147,000
7	Provide Solid Cover at Filter Tank for Vapor Control		X			$16,000
8	Permanent Plug Pool Drain Valves in Sump Pit		X			$700
9	Replace Pool Tank Piping Below Pool Bottom	Further Investigation is Required				
10	Replace Pool inlet Covers (at time of new piping)		X			
11	Replace Pool Water Piping (in mech room)		X			$50,000
12	Replace Pool Pump with VFD Pump (remove Griswold valve)		X		X	$12,000
13	Replace Pool Water Heat Exchanger (new in '01)		X			$10,000
14	Add High Efficiency Boiler for Pool Water (location?)		X		X	$30,000
	SUBTOTAL	$147,000	$345,700			$492,700
Electrical (E)						
2	Provide New Lighting at Meeting Room w/ Controls (includes ceiling and hvac grille work)		X		X	$20,000
3	Provide New Lighting at Exterior of Building w/ Controls		X		X	$33,000
4	Provide New Lighting at All Other Areas w/ Controls		X		X	$70,000
5	New sound system (includes lifeguard chair com system)		X			$60,000
	SUBTOTAL	$0	$183,000			$183,000
	Total 2016 Scope Items					$160,000
	Total 2017 Scope Items					$332,800
	Total All Scope Items	$293,000	$1,210,200			$2,041,000
	Estimated Replacement Cost for "like" building					*$4,500,000*

* = Related to Shoreline School District Competitive Swimming and Diving Programs

CITY OF SHORELINE

RFP 9773
Aquatics Management Services

Appendix 1 – HVAC Services Schedule

Description	Cycle	Estimate Cycles
Pool Filter and Equipment Maintenance	Quarterly	4
Pool Filter and Equipment Maintenance	Annual	1
Pool Automation Control Maintenance	Quarterly	4
Pool Automation Control Maintenance	Semi-Annual	2

CITY OF SHORELINE
RFP 9773

Shoreline Pool

Appendix 2

15,375 Sq. Ft

Cleaning Tasks

19030 1st Ave NE

		Mon	Tues	Wed	Thu	Fri	Sat	Sun
1	**Dust, wipe, spot clean and remove finger prints & graffiti to include:**							
a.	Tables	X	X	X	X	X	X	X
b.	Spot clean stairwell walls and hand rails	X	X	X	X	X	X	X
c.	Cobweb removal	X	X	X	X	X	X	X
d.	Low ledges	X	X	X	X	X	X	X
e.	Horizontal surfaces and moldings	X	X	X	X	X	X	X
f.	Balcony ledge and balcony area	X	X	X	X	X	X	X
g.	File cabinets	X	X	X	X	X	X	X
h.	Entryway, interior office and wet room windows, including sill and blinds	X		X		X		
I.	Vents/grilles/ceiling vents	X			X			
j.	Clean supply/mailrooms, stairway/hall area	X	X	X	X	X	X	X
k.	Balcony bleachers (spills/debris)	X			X			
l.	Clean counter and table tops		X			X		X
m.	Refill soap dispensers and paper products dispensers		X			X		X
n.	Clean surfaces of cabinets, appliances (i.e. microwaves, refrigerators; inside refrigerators and microwaves are NOT included)		X			X		X
o.	Clean outer surfaces of vending machines	X			X			
p.	Reposition furniture in an orderly manner	X	X	X	X	X	X	X
q.	Vendor will turn off any coffee makers, etc. left on after hours as a safety precaution	X	X	X	X	X	X	X
2	**Empty garbage to include:**							
a.	Pick up all trash cans from a centralized location and provide/replace trash liners - replace also when they become stained, soiled or torn	X	X	X	X	X	X	X
b.	Remove waste paper from office recycling containers and food waste items and place in appropriate bldg. containers (trash/recycle)	X	X	X	X	X	X	X
c.	Pick up loose debris from under tables and desks, etc.	X	X	X	X	X	X	X
3	**Clean all restrooms & showers (use*disinfectant to clean toilets, sink, showers and floor) to include:**							
a.	Sanitize all toilets, urinals, tile walls, floors and wash basins, etc.	X	X	X	X	X	X	X

b.	Use *disinfectant cleaner and clean entire locker room floor, shower floor, shower tiles and grout and shower walls	X	X	X	X	X	X	X
c.	Squeegees excess water from floors and wall	X	X	X	X	X	X	X
d.	Remove hair and other items at all traps, around shower trees, benches and changing areas	X	X	X	X	X	X	X
e.	Clean mirrors, wipe down front of lockers, wipe horizontal surfaces	X	X	X	X	X	X	X
f.	Clean chrome, mirrors, mirror frames, metal (shower fixtures) work, dispensers, vanity counters, doors, etc.	X	X	X	X	X	X	X
g.	Fill all paper towel dispensers, toilet tissue holders and soap dispensers	X	X	X	X	X	X	X
4	**Thoroughly **vacuum all carpeted areas (see noted below) to include:**							
a.	Office spaces	X			X			
b.	Entry area mats and office rugs	X	X	X	X	X	X	X
c.	Sweep all outside entrances, stairs, etc.	X	X	X	X	X	X	X
5	**Clean resilient, ceramic and vinyl floors with damp mop to include: DO NOT use any equipment in the locker rooms or the upstairs room that can damage the floor material at the corners:**							
a.	Dry mop	X	X	X	X	X	X	X
b.	Sweep floors including bleacher & balcony floors (prior to mopping)	X	X	X	X	X	X	X
c.	Wet mop floors (as needed)	X	X	X	X	X	X	X
d.	Clean floors of the men's, women's & staff locker rooms, lobby, office & hallway	X	X	X	X	X	X	X
6	**Clean chrome fixtures and drinking fountains with *disinfectant cleaner to include:**							
a.	Remove foreign objects from fountains	X	X	X	X	X	X	X
b.	Clean stall walls, locker room walls and locker doors	X	X	X	X	X	X	X
7	**Sweep within 10 feet of each entrance area.**	X	X	X	X	X	X	X
8	**Empty outside trash cans into proper receptacle.**	X	X	X	X	X	X	X
9	**Thoroughly scrub aggregate and grouted pool deck area.**	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**
10	**Thoroughly scrub the floors of men & women's locker rooms, lobby, office, and hallway.**	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**

11	**Thoroughly scrub on the on-deck handicap shower, unisex bathroom and break room.**	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**
12	**Thoroughly clean and scrub aggregate and grouted pool deck with the water wand broom.**	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**
13	**Thoroughly scrub pool deck (3,288 sg ft.) and rinse with water wand broom to inlcude: (Follow steps below).**	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**
a.	Move dirty water away from the wall (under the bleachers) to the drains without allowing any water to drain into the pool	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**
b.	Pick up hair and other debris	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**
14	**Clean entryway and auditorium windows.**			**APR**			**Sep**	
15	**Clean all interior and exterior windows.**			**APR**			**Sep**	
16	**Shampoo carpets.**			**APR**			**Sep**	
17	**Replace urinal mats.**	**Jan**				**Jul**		
18	**Thoroughly scrub showers and family tile floors (474 sq. ft.) and staff room.**	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**
19	**Thoroughly scrub grouted tile walls and grouted tile floors.**	**Jan**	**Mar**		**May**	**Jul**	**Sep**	**Nov**
20	**Remove gum, sticky debris and graffiti as needed daily.**	X	X	X	X	X	X	X
21	**Specialty cleaning to include:**							
a.	Shampooing Chairs	**Once Per Year**						

***The City requires the use of environmentally preferable janitorial disinfectant products that have been third-party certified by either Green Seal and/or Ecologo and that are bio-based products.**

****Vacuuming carpets - Janitors to pre-vacuum all carpeted areas with an upright roller brush vacuum. Janitor to only use an approved hot water extraction process equipment. Janitor must perform cleaning early enough to allow for full drying prior to 5:30am the following morning.**

Equipment and supplies will be purchased for cleaning tasks and will not be used for another site on campus. All cleaning supplies shall be maintained and stored in a manner that will not support growth and spread of pathogen organisms. Mops and rags shall be disinfected in a soaking solution after each service and replaced on a weekly basis. All cleaning equipment will be washed after each service with a germicidal solution, rinsed and air dried.