Feasibility Study
for the
BUDLONG POOL

198 Aqueduct Road
Cranston, Rhode Island

22 April 2022

Federal Hill Group, LLC
ARCHITECTS
222 Atwells Avenue
Providence, RI 02903
401.404.4930

Introduction

The Budlong Pool is located at 198 Aqueduct Road Cranston, Rhode Island and the campus consists of an in-ground, outdoor pool, an accessory shower/locker facility, a stand-alone shed building housing the pool filters, as well as four baseball fields and two basketball courts.

This Feasibility Study was commissioned by the City of Cranston, Parks & Recreations Department with the goal of examining the pool and the overall site to determine the best course of action with respect to maintaining the existing facilities. This also incorporates the exploration of the campus as a whole to modernize the facilities and potentially introduce new facilities / attractions. This would be done to better serve the needs of the citizens of Cranston and stay relevant with the trends that would make the campus a more viable service to the community.

This report will focus on the evaluation of the existing pool and facility, the potential to rehabilitate the facility, and evaluate the economic impacts any options may have.

Description

The Budlong Pool is one of the largest outdoor swimming pools in the United States with the outside dimensions of 84' wide by 260' long. By comparison, a regulation Olympic sized swimming pool is 82' by 164' long. This represents a pool approximately 40% larger than an Olympic sized pool and contains over 900,000 gallons of water. The pool slopes gradually along its length and is two feet deep at its shallowest and approximately ten feet at the deepest end.

To the immediate north of the pool is a concrete with masonry veneer support structure that contains communal spaces, changing and restroom spaces and showers. Spread over two stories, this building is approximately 5,380 square feet in area and has its main entry from Aqueduct Drive into the upper floor while access to the pool area is through the lower level.

On the south-western edge of the pool is the filter and valve building that serves the outdoor pool mechanics. A stand-alone building approximately 620 square feet, the building contains the large sand-filter system, the valve assemblies, along with the power and controls for the pool.

The pool was installed in the 1950's and the support building was constructed just prior to the pool and dates to the later 1940's. The building was an administrative building and served as a civil defense shelter location due to its construction.

Site & Zoning

The site containing the Budlong Pool campus, according to the Cranston GIS maps and Planning, is 976,179 sf (22.41 acres) in area and is located in an S-1 (Open-Space) zone. This site is not located within a historic district designated by the City of Cranston.

Per Section 17.20.030 of the Cranston Zoning Ordinance, permitted uses within the S-1 zone include municipal services other than those specifically listed in the table of uses. This will translate into and structures built in support of the outdoor activities should be allowed per the zoning ordinance guidelines but any design will need to re-verify this when any design work is actually undertaken.

Parking in the district is covered by Section 17.64.010 – I- Part 16 and requires one off-street parking space per 300 sf. of building area. This must be taken into consideration with the anticipated occupant load associated with the outdoor venues as well.

The site is relatively level over the course of its length and the most prominent natural feature is a stream that runs north to south along the western site boundary. This stream drains the Blackamore Pond to the north of the site and represents a wetlands feature that demands any new construction maintains the proper clearances and offsets.

Running along the north boundary, from west to east, is Aqueduct Drive. This is a two-way street that is a single lane each way with a shoulder on each side. This road is a main artery route connecting the neighborhood to Reservoir Avenue to the west and Pontiac Avenue to the east. The south and east of the site is bordered by residential neighborhoods consisting primarily of single family residences.

Other zoning constructions with regards to the potential for new buildings or structures are as follows at the time of this study:

- Front setback: 40’
- Rear setback: 100’
- Side setback: 20’
- Max. lot coverage: 10%
- Max. height: 35’

Existing Conditions - Pool

Research has shown that the pool was initially built in the late 1930's but may have been built as late as the early 1950's according to various sources. Over the service life of the pool, various upgrades have been made from drains being installed, liner installations, and removal of a dive tower to name but a few. In its current configuration, the pool has a full liner and is served by a sand filter fed by a perimeter gutter system that was retrofitted to the pool.

The pool, while being a landmark to the City of Cranston as well as being one of the largest outdoor pools in the nation, is facing several performance issues that are severe enough for the City to consider the pool is close to the end of its serviceable life. The issues include, but are limited to, the following points:

- The pool substrate has settled to the point where the casing has cracked to the point where the pool is constantly losing water. When in use, the pool must have a hose attached to the water supply at the pool house feeding a constant supply of water to the pool to ensure it stays full enough to safely host swimmers. A recent estimate has estimated the rate of water loss at 40-60 gallons per minute.

- In consideration of the above, the added water changes the pool water's latent Ph and alkalinity levels. Numerous additional chlorine / shock treatments are required to keep the biologic levels at an acceptable level.

- The pool, when closed, is not drained of its water. The low water table of the later summer / early fall months receives the water from the pool and the numerous cracks in the drains which eventually drains the pool of its water. This leaking water adds to the areas water table.

- During the spring months, the water table of the area is elevated due to snow and ice melting in the soil along with the additional water flow from Blackamore Pond and elevated rain fall. The system works in reverse with regards to the above mentioned leaking and the raised water table actually adds untreated water back into the pool. The water seen in the pictures included is groundwater and not rain/snow melt.

❖ When the pool needs to be filled in the spring, the liner actually floats on the ground water and water needs to be consistently added to create enough weight for the liner to settle into place. This adds stress to the liner and adds micro-fissures that cause more water to leak out of the pool during the warmer months.

❖ Pool equipment must comply with the Title XIV – Pool and Spa Safety Act (aka the Virginia Graeme Baker Pool and Safety Act) and the RI State Building Code. Also known as the VGB guidelines, these rules cover the size and configurations of mechanicals under the surface of the water to prevent suction entrapment to swimmers. The pool mechanicals have not been updated to meet these requirements and present a potential hazard to swimmers.

❖ The sand filter is an older system and requires a significant overhaul and replacement of filtration media to keep the system in operation at great cost to the City. The backwash of the filters (to establish proper suction in the system) discharges outside the filter building and discharges the pool water in the system directly into the area adjacent to the stream connecting the site to the Blackamore Pond.

Taking these items into consideration, the pool is fast approaching, if not already at the end of its serviceable life and any future plans must take into consideration these costly repairs and safety modifications. In addition, these repairs would also represent a considerable loss of use to the citizens of Cranston.

Existing Conditions - Pool House Building

Located along the north end of the site along Aqueduct Drive, the existing pool house that supports the operations of the pool is a stone veneer structure that was built almost 80 years ago and is in a critical state due to its age and programmed spaces.

Issues and concerns with this building include, but are limited to, the following points:

- The number of bathing facilities and lavatory fixtures are significantly less than the amount required by building code, are in need of maintenance / replacing, and are not accessible as required by the American with Disabilities Act (ADA).

- The locker and restrooms are separated by gender; one set is located on the upper level and the other is located on the lower level. These levels are connected by a concrete staircase inside the building. This means the restrooms and the path between them and the pool is not accessible as required by the ADA.

- The required building access and egress paths are not ADA accessible

- Families do not have private sanitary facilities (separate unisex, accessible restrooms). The provision of family restrooms would also address the needs of the LGBT population and would foster inclusion throughout the facility.

❖ The required egress and building access are not accessible per the ADA.

❖ With the age of the building, it must be expected that hazardous containing materials are present in the building. Such expected hazardous materials may include asbestos and lead with a high probability. In addition, there is a lesser possibility of the presence of PCB's.

❖ The existing roof is compromised in several locations and evidence of active leaks is present throughout the upper floor ceilings.

❖ A roof drain has been leaking for an extended period of time and has saturated the structural slab separating the two floors. This is evidenced through a partial ceiling collapse in the lower level mechanical room. The structural slab has spalled its lower layer of concrete and one can view the exposed rusted and deteriorated steel reinforcing bars. These bars have mostly rusted away and resulting slab is starting to become compromised structurally.

❖ The exterior chimney that serves the communal meeting space on the upper level is sinking from subsidence of the soils. This has resulted in the entire stone chimney structure to pull away from the building exterior by as much as six inches. The risk of collapse is so evident that at some point a bent steel brace was installed around the upper portion of the chimney and anchored into the surrounding stone in an attempt to prevent full collapse. The gap created from the chimney pulling away has been filled with grout that has since cracked and become loose; thereby indicating that water is still infiltrating and that the chimney has not been fully stabilized.

❖ The mechanical and electric systems appear to be dated and in need or replacing / maintenance.

❖ Required life safety devices such as extinguishers, emergency lighting, and exit signs are missing, et.al.

Proposal - Option One

The first proposal for the property is to maintain as much as possible as is and focus on bringing all elements up to code compliance and ensuring all issues are rectified to ensure the equipment is working as designed.

The pool itself will be comprehensively overhauled to correct all deficiencies and to address the structural failures of the pool shell and the substrate that is causing the pipe and valves to crack and leak. This will require the removal of the liner, excavation and removal of the unsuitable soils, installing new substrate materials, and reinstallation of the new pool basin with new drains, and the completion of the interior pool finish / liner.

Upgrading the existing building will focus on rectifying the envelope issues, upgrading the restrooms and locker rooms with the intent of increasing their capacity, updating the accessibility issues, repairing the roof and structural slab, and properly identifying and abating the hazardous materials on site.

This proposed approach preserves as much of the existing functions as is and does not focus on upgrading or changing the overall site programming.

Pros

- *Keeps the fuctions as they are presently are now which should reduce construction time minimally*
- *Allows the existing functions to now proceed safely and efficiently without "band-aid" measures*
- *Code compliance is achieved*

Cons

- *High-cost relative to programmatic goals achieved*
- *Invasive construction procedures*
- *Design compromise to make an existing building "work" for the intended uses*
- *This approach minimally addresses / improves the user experience from a visual perspective*

Proposed Investment: $2.5 – 2.8 million

Proposal - Option Two

Proposed option two focuses on the approach that the pool size and condition is not directly relevant and cannot reconcile both to the citizens of Cranston in the 21st century. These include the fact that pets are an integral part of the new family unit, grandparents are fast becoming daytime children caretakers, and the elderly are choosing to age-in-place wherever possible.

In contrast with option one, the existing pool will be removed and the area that the pool occupied will be modified to provide the following:

- A wading pool that will be approximately 8,000 sf with a depth ranging from two feet in depth to approximately five foot in depth. The pool should also explore being heated to extend the swimming season
- A water splash pad with a combination of slab mounted water jets and vertical play features.
- A children's playground
- An outdoor fitness area that will allow for senior citizen's work out area, tai-chi, balance and cardio, and cognitive exercise.
- A potential to install an enclosed / fenced dog park.

The existing pool house structure will remain as-is and will be upgraded and repaired as outlined in the Option One.

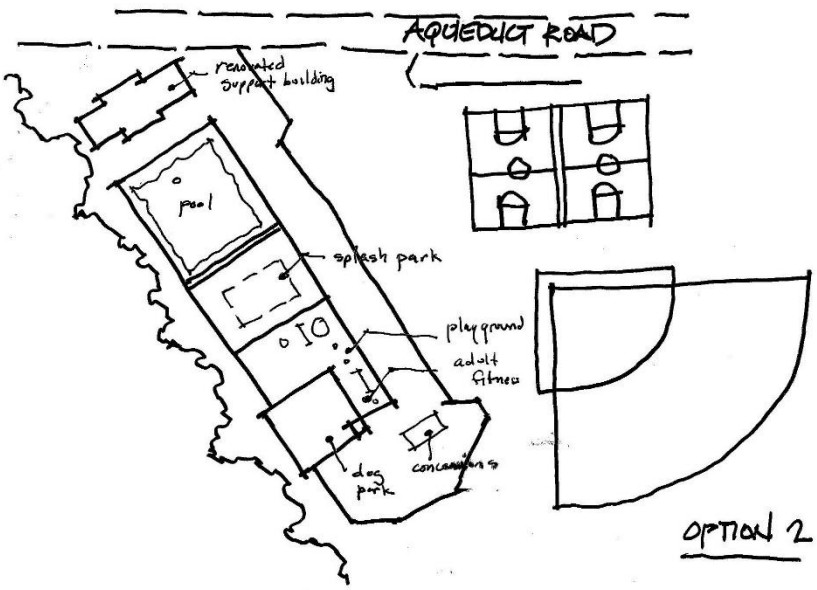
Pros

- *Allows the site functions to align more closely to the current and future needs of the City of Cranston*
- *A wider demographic of users will be accommodated into the site and will result in more visitors to the site*
- *Code compliance is achieved*
- *The site is used for a longer portion of the year and not just limited to a "swimming season"*
- *The opportunity of secondary vendors to use the site may offset initial investment costs and defray maintenance costs starts to become an option*

Cons

- *Higher-cost despite a better ROI on initial capital expenditure*
- *Invasive construction procedures*
- *Design compromise to make an existing building "work" for the intended uses. These costs increase as the existing building must also respond to the needs of a more diverse user demographic.*

Proposed Investment: $3.3 – 3.7 million



Proposal – Option Three

Proposed option three includes the site improvements that are identified in option two and accepts the approach that the existing building is more of a liability than an asset to the site and will be demolished in favor of providing a new stand-alone pool house / recreation facility that will serve as a gate-piece to the site and properly addresses the project's programmatic needs and will economically address the recreational support needs.

Pros

- *Allows the site functions to align more closely to the current and future needs of the City of Cranston*
- *A wider demographic of users will be accommodated into the site and will result in more visitors to the site*
- *Code compliance is achieved*
- *The site is used for a longer portion of the year and not just limited to a "swimming season"*
- *The opportunity of secondary vendors to use the site may offset initial investment costs and defray maintenance costs is maximized*
- *The building can now service a large demographic of users and creates a civic presence along Aqueduct Road.*

Cons

- *Higher-cost however this solution presents the best ROI on initial capital expenditure*

- *Invasive construction procedures that will affect a larger part of the site to accommodate more parking and other transportation needs.*
- *Higher potential of regulatory approvals required on the state level to address the presence of wetlands and setbacks from the streams.*

Proposed Investment: $3.9 – 4.4 million (Add $2.2 million for additional Rec Bldg.)