

Town of Cutler Bay

Aquatic Facility Condition Assessment

For

Cutler Ridge Park

Pool and Mechanical Equipment



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TABLE OF CONTENTS

EXECUTIVE SUMMARY

1.0	PURPOSE.....	2
2.0	SCOPE.....	2
3.0	POOL DECK AND FACILITIES ASSESSMENT.....	3
3.1	POOL DECK ASSESSMENT.....	3
3.2	POOL INTEGRITY AND FINISH ASSESSMENT.....	6
3.3	FACILITIES ASSESSMENT.....	8
4.0	MECHANICAL EQUIPMENT.....	11
4.1	EQUIPMENT ASSESSMENT.....	11
5.0	EVALUATION.....	20
5.1	POOL DECK.....	20
5.2	POOL SHELL AND FINISH.....	22
5.3	POOL FACILITIES.....	23
5.4	MECHANICAL EQUIPMENT.....	24
6.0	RECOMMENDATIONS.....	28
6.1	POOL DECK.....	28
6.2	POOL SHELL AND FINISH.....	29
6.3	POOL FACILITIES.....	30
6.4	MECHANICAL EQUIPMENT.....	31
6.5	COMPARATIVE DISCUSSION.....	34
7.0	SUMMARY.....	37

APPENDIX

Executive Summary

The Town of Cutler Bay owns an aquatics facility in the Cutler Ridge Park directly adjacent to Cutler Ridge Elementary School. The pool has been an active part of the community since the late 1950's when it was originally constructed by Miami-Dade County. There is some evidence that deck and pool improvement work has been performed over the years but the pool, pool deck, equipment yard and building are basically the same as when constructed.

The Town contracted Stantec Consulting Services Inc. to provide an assessment of the facilities in order to develop a long-term plan for repairs and/or upgrades to the pool, pool deck and mechanical equipment. Currently there is distress in the pool deck in the form of cracking, delamination of the surfacing and settlement of some of the deck slabs. In addition, the pool surface is showing signs of permanent discoloration embedded into the plaster finish throughout the pool and there are leaks noted along the gutter system. The mechanical equipment is predominantly contained in an exterior equipment yard enclosed with a fence and there is a notable high percentage of wear and tear in the equipment and the exposed piping. In order to develop the condition assessment summary, we needed to determine the existing condition of the pool, pool deck and mechanical equipment.

To that end, we have assessed the site and evaluated the condition of the existing pool facility with the intent of determining the overall condition with respect to long term sustainability with potential repair methods to assist with discussions related to possible renovations and/or upgrades to bring the pool back to its original condition. This included the pool surface, pool deck, deck drains, equipment and overall general condition of the facility.

The results of the condition assessment are included herein.



1.0 PURPOSE

The Town seeks to make improvements to the pool facilities at Cutler Ridge Park. The intent is to renovate the aquatic facilities and return it to as near its original condition as possible. To that end, the Town has engaged Stantec Consulting Services, Inc. to complete a condition assessment of the pool, pool deck mechanical equipment and develop repair and/or upgrade schemes for use in developing an adequate financial plan under the Town's Annual Budget for advertising and selection of a pool contractor to perform those improvements. The condition assessment was intended to determine the cause of some of the distress noted in the pool and deck and provide suitable repairs to provide a relatively new condition for the pool and deck. Additionally, the mechanical equipment was assessed to determine current relative age and potential life expectancy to gauge the need for replacement of the equipment.

The determination of cause of any and all distress on the pool is of importance because it provides a benchmark for creating a sustainable facility and is considered in the development of the repairs so that the Town is not just applying band-aids to the surface when real issues lie beneath.

2.0 SCOPE

The facility condition assessment involved the field inspection of all required elements in the existing aquatics facility to determine the current condition and suitability for implementation of repairs or replacement. Those elements included:

- Pool surface inside the pool and in the gutter
- Pool deck and joints
- Deck Drains
- Ancillary features, such as ladders, backstroke flag poles, lifeguard stands, etc.
- Fencing and security
- Light poles
- Mechanical equipment

The assessment incorporated a visual inspection of the deck with regard to spatial layout of deck joints and equipment and is compared to standard in the industry as far as expected quality. Additionally, all mechanical equipment was inspected and the operations observed during typical use of the pool.

3.0 POOL, DECK AND FACILITIES ASSESSMENT

3.1 POOL DECK ASSESSMENT

As mentioned in the Executive Summary, the pool deck was inspected thoroughly for the current conditions. Due to the age of the facility, the Town was unable to supply any plans from the original construction performed by Miami-Dade County in the early 1960's. The Town supplied inspection reports from the Florida Department of Health and some maintenance records from vendors when repairs had been made or equipment replaced. Fortunately, we were able to obtain a relatively recent survey from some drainage and paving improvements in the park that provided the base for the entire pool facility.

The current pool deck is a concrete deck slab of unknown thickness that has a relatively thin surface of some type of deck coating material. The thickness appears to be between 1/16 and 1/8 of an inch and has a non-slip texture on the top. Sawcut joints were spaced out at various intervals around the deck. The deck also contains singular deck drains on the southside of the pool between the building and pool and they appear to be interconnected to a master storm drain on the eastside of the pool deck immediately outside the fenced enclosure. There is also a linear deck drain between the small concession building to the east and the edge of the pool deck. It is assumed that this is also tied into the same drainage system, since original plans are not available for review.

The pool gutter system is separated from the pool deck with a raised concrete gutter curb that forms the back wall of the gutter. It is approximately 7 inches tall by 12 inches wide and the gutter and deck elevations are at the same level. Along the back of the gutter along the pool side curb wall are inlets that feed to the water collection system. There is a gutter ledge on the pool side that is tiled with small rectangular pool tiles.



Other items on the deck included movable pool stairs, backstroke flag poles and deck light poles. The bases from old lifeguard stands are also still existing but are not being used. There is evidence of abandoned pool ladders and starting blocks but those have been removed and the inserts filled in or covered up. A picket style fence surrounds the deck on three sides and also encloses the outdoor mechanical equipment yard at the southwest corner. There is a pool building with restrooms, offices, storage and some equipment on the southside of the pool facility and the entry and exit points lie on the same level as the pool deck. An assessment of the building is not included in this scope of services, but there is some associated discussion regarding the chemical and equipment rooms that bears consideration.

For the most part, the pool and deck are functioning normally and can continue to do so with some repairs and improvements. To that end, an assortment of issues and distress were noted in the pool deck and can be summarized as follows:

1. Delamination of the deck surface coating at numerous locations throughout the deck.
2. Shrinkage cracks in the pool deck concrete.
3. Settlement and deterioration cracks around the back of the raised pool curb and around some of the drainage structures, deck inserts and old lifeguard stands.
4. Deterioration on the backside of the raised pool gutter curb.
5. Cracking around some of the deck drains.
6. Previous repairs and cracking around the diving board pedestals.
7. Corrosion of the dive platform pedestals and rust from reinforcing steel bleeding through.
8. Exposed copper wire on old lifeguard stands and on back of gutter curb at pool light locations.



A detailed pool and deck plan, exhibiting the noted distress, along with photographic documentation of the issues and noted distress is included in the Appendix.

It should be noted that the different types of distress that were observed, most notably the cracking in the decks, varied greatly in the severity and extent of the damage. In some locations, the cracks were typical of shrinkage cracks, which were observed at locations where control joints should have been cut. Other cracks appear to be the result of settlement of the deck illustrated by differential elevations on either side of the crack, most notably along areas which appear to have had previous repairs. Additionally, in that same area, the deck has also settled behind the pool curb as much as $\frac{1}{2}$ of an inch below the curb.

The deck drain and valve cover lid (or lack of lid) issues offer a different situation. In some of those areas, the shrinkage cracks around the grates/lids have deteriorated to the point where there is substantial distress and weakening of the concrete slab around the drains. This has allowed the lids to move and become somewhat dislodged and, in some instances, extend above the deck to the point where they can become a potential hazard to bare feet.

To assist in the evaluation of the deck with regard to necessary repairs, we also checked the cross slope of the deck behind the curb at each deck drain location. The State of Florida Swimming Pool Code as well as the ADA requirements in the Florida Building Code are very specific with cross slope deck requirements. The slopes measured at each location averaged a little less than 2%+/- with variations that ranged from 1.4% to 2.1%. This topic will be discussed in the evaluation portion of this report.

Additional photos are provided in the Appendix of this report along with brief descriptions and narratives of each issue noted.



3.2 POOL INTEGRITY AND FINISH ASSESSMENT

Inside the pool, there is noticeable minor permanent staining and discoloration of the pool finish throughout the bottom of the pool and along some of the side walls. In lieu of a more contemporary exposed quartz aggregate finish, such as Diamond Brite or PebbleTec, the existing pool finish is a plaster finish, typically referred to as marcite, that was popular back in the 1950's and 60's. That is not to imply that the current finish is still the original because it would not be in this fair condition at 50 years of age. Normally, the pool finish would last between 20 to 25 years at most, so it can be assumed that the finish in this pool has been reapplied at least once in its lifetime.

A further inquiry with pool staff indicated that the pool finish has also been painted with a light blue pool resurfacing paint, typically obtained from a home improvement store. In addition, the lane lines have been painted a contrasting black. Pool staff members recall that the pool had been professionally cleaned in the past, including acid treatment, and the current stains and discoloration noted in the paint can now be assumed to be permanent at this point in time. The overall staining noted (see tan-green staining in photo on bottom), although not highly noticeable due to the blue coloring in the finish, is most probably the result of long-term detritus (leaves, dust, etc.) that has allowed tannins and ferrous oxides to leach into the pool and cause a permanent stain. Aside from the stains and some obvious issues with the gutter, there are no observable cracks or spalls in the pool bottom or walls, although the recent paint may be covering up small cracks throughout the pool.



The gutter system includes an infinity level gutter ledge about 12 inches wide that is set with small light blue tiles on the bottom of the gutter and larger pool tiles (Daltile) on the backsplash and below the ledge on the face of the pool wall to a depth of about 8 inches below the water line. At periodic intervals, there are round openings in the back of the gutter that allow pool water to be collected and returned to the equipment yard for treatment. The spacing of the inlets seems to be about every 40 linear feet, which would have been standard in the industry at the time of original construction. The water elevation at the gutter line around the entire pool appears to indicate that the pool is still level.



The gutter tiles are in fair condition but there are noticeable repairs and/or missing tiles observed throughout the pool area, most evident near the pool gutters closest to the building, especially in the southeast corner area near the dive platform. We have been informed that then tiles are no longer available and therefore cannot be repaired in kind. To complicate the issue, the current Florida Swimming Pool Code requires that all edges of any in- or underwater ledges (gutters, swim outs, sunledges, steps, etc.) needs to be a contrasting color to the pool and gutter tile which means that the gutter does not conform to current code requirements. We understand that Town staff is in the process of obtaining quotes to perform the necessary repairs.



It should be noted that there is a large, single main drain in the bottom of the pool at the center of the dive well. It can be assumed that the drain cover meets the Virginia Graham Baker requirements since it has passed inspection from the Department of Health since installation. However, pool staff has indicated to us that it can no longer be removed or replaced because the mounting frame is no longer accessible due to repairs in the pool.

In the northeast corner of the pool, the gutter curb has deteriorated to the point that water from the pool can leak out of the pool through cracks in the back of the gutter. This was observed in our inspection. The expansion joint behind the gutter curb on the pool side is exposed at that location and water can be observed leaking through the gutter and draining down into the soil below the pool deck slab. This may also be occurring at other gutter locations but could not be observed because the expansion joint at other locations still contained a sealant blocking any visual observation below that. Pool staff believes that there are other similar leaks that cannot be located based on the amount of refill water needed to maintain the pool level.

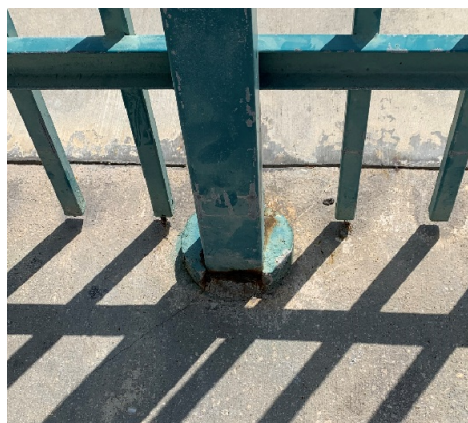


There are five (5) in pool lights located on the north (3 lights) and south (2 lights) walls of the pool. We were informed by pool staff that the lights are not currently functioning and have been decommissioned from service due to age. There are small access hatches in the top of the gutter curb at each light and we must assume that was the maintenance access for the lights. The transformers and controls for the lights are located in the building office. We were informed by pool staff that they had contacted vendors in the past to make repairs to the lights and were informed that they could not be repaired or upgraded due to age and code issues.

3.3 FACILITIES ASSESSMENT

In addition to assessing the pool and pool deck, we observed other ancillary features that warrant discussion. These included the fencing, light poles, swimming starting platforms, lifeguard stands, ladders and backstroke poles. We also evaluated the spectator slabs and stands outside the fence as they are an integral part of the facilities.

Most noticeable of these items is the fencing which completely surrounds the pool for security and provides enclosure for the equipment yard. The fence is a powder coated steel picket style fence with gates in the northeast corner and between the pool deck and the equipment yard. The fencing has been painted at some time in the past as evidenced by observation of brush strokes and fading noted at many locations. The age of the fence is not known but appears to be in the 20-to-30-year range. There is a considerable amount of corrosion (rust) at numerous locations, especially around the bases of the support poles. In many instances, the corrosion is so severe that openings have been created completely through to the interior of the columns. The base plates and anchor bolts are also highly corroded at many locations. It appears that over 25% of the fencing is exhibiting some corrosion from moderate to severe at this time.



The gates are constructed of the same materials as the fencing and are working as designed and move freely. The gates do show some level of corrosion around the bases of the posts as well as around the hardware on the hinges.



The associated deck light poles are also showing the same level of corrosion as the fencing. Similar in construction to the fencing, the poles were fabricated from steel and many



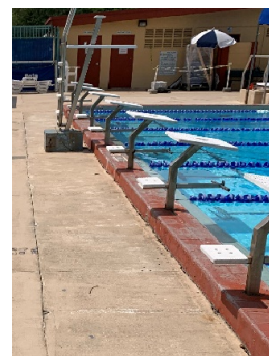
of the bases, pole bottoms and anchor bolts showed severe corrosion. We have been informed that the lights are working and, in fact, appear to be quite bright. The lighting level shall be discussed further in the evaluation section of this report.

Many of the pool associated features have been abandoned over the years. These include the in-pool ladders and lifeguard stands, although the lifeguard stands are still functional. The seats have been removed to protect them during this time of year when the pool is not as active as in summer. It appears that the ladders have been placed out of use due to deterioration as evidenced by the condition of the inserts in the deck. To

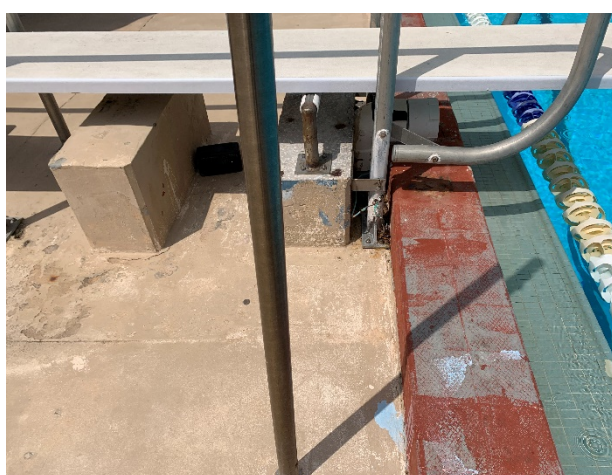
compensate, pool staff has incorporated moveable stairs located at two (2) locations in the pool. These are manufactured from fiberglass and resin with metal handrails and are currently functional for use. However, the stairs do show some damage with cracking along the sides. The old ladders have been discarded but the inserts around the perimeter of the pool still exist in the deck. Many of these indicate distress in the concrete around the inserts and are rather rough to the touch with bare feet. The lifeguard stand pedestals are permanent type with concrete bases that still exist around the pool but are not in use at this time with the actual seats having been removed from the pedestal and frame. In lieu of those, pool staff utilizes a movable stand fabricated from recycled plastic lumber which is resistant to corrosion and deterioration. There is also a newly installed "Sunbrella" between the pool, and the building that is evidenced by a cut out in the pool deck for the footing.



The existing starting blocks on the east side of the pool are embedded in the gutter curb with anchor bolts on each base plate. The bases of the starting platforms show some corrosion and there is some minor cracking around a couple of the bases. We have been informed that the blocks are not used currently for competition purposes, but long term, pool staff would desire to have functional competition pool if the pool can accommodate it. To that end, the backstroke flag poles are not really needed, but currently exist on the deck. There is some cracking in the pool deck around a couple of the inserts, which are potential hazards.



The existing 1-meter springboard dive platform appears to be of original construction since the concrete pedestals are aligned with the deep end of the pool and there is no evidence of any structural repairs to the deck associated with the springboard platform. It makes sense that the pedestals are original since the pool was originally constructed with a deep area specifically established for diving. The concrete pedestals show signs of deterioration and the springboard itself is outdated and inefficient. The frame also shows levels of corrosion near the back of the gutter curb.



4.0 MECHANICAL EQUIPMENT ASSESSMENT

4.1 EQUIPMENT ASSESSMENT

The mechanical equipment is situated in an outdoor equipment yard adjacent to the east end of the pool building. Some of the chemical storage tanks are located inside the building along with some miscellaneous piping and the main electrical control panels. The equipment yard is enclosed by the same steel fence that surrounds the pool plus there are metal pickets



across the top of the compound to prevent access to the yard. The elevation of the yard is 10 inches below the pool building finished floor elevation. The equipment is set on concrete slabs which are surrounded by gravel throughout the rest of the yard. A concrete ramp from the back door up the pool deck slab elevation runs along the eastside of the building and allows for equipment, chemicals and parts to be moved on wheels if needed.

The general pool equipment consists of the following:

- An in-ground concrete collector tank with metal lids
- Two (2) 7.5 HP pool pumps
- Two (2) Horizontal sand filters
- A backwash system attached to the filters
- A BCES Chlorination System
- A CO2 Chemical Injection System
- Two (2) Symbiont Geothermal Heaters
- Miscellaneous piping and valve controls

The in-ground collector tank is of unknown age but appears to be original which dates it over 50 years old. The concrete tank has a volume of 160 CF (1200 Gallons) and the top is about 16 inches above ground with the rest set below ground, about 3.5 feet down. The collector tank has two (2) separate line feeds from the pool; one from the main drain and one from the gutter system. It is assumed that each has their own piping system from the pool to the tank. Additionally, there is an effluent suction line to the two pool pumps. There are also two (2) infill lines feeding the tank from the top; one small $\frac{3}{4}$ inch diameter line set with a manual control valve and another larger 2-inch set with a separate manual valve for emergency large volume water needs. There is a larger 3-inch line with a manual valve that can be used for flushing the system, but we have been informed by pool staff that it is not used.



The tank has a painted sheet metal lid in two (2) pieces that slides on and off when maintenance of the tank is required. It covers most of the top but has openings for the piping and some miscellaneous opening at one location. These openings can allow some rainwater to enter the system, but that also occurs in the pool. The concrete tank walls are showing severe signs of distress with spalling occurring on the eastside wall above ground and the corner exhibiting a large spall out of the northeast corner that is

currently exposing all of the reinforcing steel in that area. The steel also exhibits a high degree of corrosion. The tops of the tank walls are also chipped and spalled all around the opening.





The two (2) pool pumps are 7.5 HP pumps set in parallel that work simultaneously to move the pool water through the system. The pumps are Baldor Reliance Model JMM3616T pool pumps; each with an NSF Pentair strainer basket and independent motor control units (MCC). The size of the pumps appears to be at the lower end of suitable for the volume of water in the pool (130,500 gallons) for a pool load of 100 bathers, and the flow rate of 501 gpm. However, with somewhat lower operating pressures and flow rates than desired (but still acceptable) as noted in our inspection, the pump sizes may just be on the lower limit of being too small. The two (2) pumps are of differing ages as evidenced by the different colors and conditions. We have been informed by pool staff that one was replaced in 2016 and the other repaired in 2020. There is some

corrosion on the housing of the pumps with the north pump looking a little older than the south pump, but both are in fair condition from the outside. The pumps were operating at the time of inspection and there was no indication from the sound of operation that they are currently or imminently running with any difficulty. Most of the piping associated with the pumps appears to be relatively new and suggests that the piping was replaced the last time that at least one of the pumps were replaced.



There are two (2) horizontal sand filters adjacent to the pumps that are set in parallel so that both can operate in tandem at the same time. The controls are set on the east side



near the viewing panels. All of the filtration piping is above ground and contains valves for manual operation. The valve and controls are placed on a metal bracket that shows a considerable amount of corrosion. Similarly, the top mounted bleeder valves have a lot of corrosion as well around the connection to the tanks and they appear to have had their hardware recently switched out since the bolts et al are shiny metal at this time.



The sand is traditional quartz sand and is the original filter media that was supplied with the filters. The actual age of the filters is not known by any evidence such as labels or certificates, but the filter tanks appear to be in good condition. We were informed by pool staff that the filters were replaced in 2019 and the good condition corroborates that. It is the ancillary items noted previously that are corroding and showing signs of distress. The backwash system had automatic capabilities, but we were informed by pool staff that the

backwash is processed manually and that the automatic controls, especially the flow rate, are not working properly. The piping is identified as to being influent, effluent and backwash, and appears to be in good condition, most probably having been replaced at the same time as the filter units.



There are chemical feed systems for chlorine and CO2 which are located immediately in front of the sand filters so as to have access to the return piping to the pool. As the piping exits the filters, they extend down to the yard surface level but stay on top of the ground and provide the location for the chemical feed piping. The chlorine controls are mounted on a panel in front of the filters and feed chlorine from tanks that are located in the adjacent equipment room in the building. The feeds come in small diameter flexible tubing that come in overhead from the building and then feed down into then controller and then to the return piping.



Although functioning adequately, the system is dated, and new systems are available. It would also be advantageous to have the chemical feed tubing more protected than it is. The CO₂ is stored in a tank situated on the slab next to the chlorine controller. The tank is fed remotely from an overhead piping system that is accessed outside of the fencing for safety and convenience for the delivery truck/tank. Both chlorine and CO₂ are injected into the above ground piping right before it goes below ground. There are manual valves on either side of the feeds so that the systems can be worked on or replaced without cutting the piping. The CO₂ system appears to be relatively new and in good working order.



There are two (2) "Symbiont" geothermal heaters on the southside of the equipment yard. They are set lengthwise along the southside fence, and the pumps, wells and controls are set to the east of the units. The heaters appear to be in good working order and have had recent maintenance by the vendor's work forces. But we have been informed by pool staff that they are no longer operational, even with the recent replacement of parts and such. The original date of installation for the two (2) units was in 2010 and subsequent repairs and maintenance indicates that the loop and booster pumps were replaced in 2019. Additionally, one of the display panels was replaced in 2020.



The intake well is located directly adjacent to the heaters to the south, but it is not known where the return well is located on site. Typically, the return well is set far enough



away from the heater and intake well that there is no underground draw from the one well to the other. There was little visual evidence of severe corrosion or damage to the pumps, valves, piping or heater units with some small areas of rust showing at isolated locations. However, as mentioned herein, the units are not



operating at this time. It is assumed that since the pumps are only a few years old, that at least the associated piping and hardware was replaced at the same time.

In general, most of the piping in the equipment yard is in good condition. But many of the valves, especially the older metal valves, show a good deal of corrosion, especially the main valve for the return line. The piping is not entirely identified by tag or color as is most typical in newer pool facilities, except the piping associated with the sand filters. However, the fact that most of the piping has been painted or is colored protects the PVC from UV radiation which breaks down the material. The flow meter attached to the piping in front of the chemical feed systems is placed in a traffic area and looks like it has been replaced recently, but pool staff could not divulge when that would have occurred.



We also inspected the adjacent containment and storage rooms at the end of the building that houses the chlorine tanks, electrical panels and some of the piping. Although the building in general was not in the scope of this assessment, we felt that it has bearing on the overall impact to the pool. There is a small 7' by 7' containment room inside the building that houses two (2) liquid chlorine tanks. That room sits within a larger storage room that surrounds the containment room. There is a separate door accessing the containment room on the northside of the building facing the pool.



The containment room is constructed of masonry block, as is the entire pool building, and has a small containment curb inside the door to contain any chemical spills. The tanks are plastic and in good condition. The tubing that takes the liquid chlorine to the controller outside runs up above the tanks and out through the side wall to the equipment yard and those appear to also be in good condition and working as intended.





However, the condition of the actual containment room as well as the remainder of the storage room is in very poor condition. The chlorine fumes have eaten the matrix out of the masonry block along all of the lower levels of block both inside and outside the smaller room. The fumes have also started corroding the edges of the metal electrical panels in the room; not to the point where they will cease functioning, but noticeable even at a glance. There is some miscellaneous piping that runs along the ceiling suspended by hangers that we have

been informed by pool staff is for rapid large volume filling of the pool. We have been informed by pool staff that the piping actually fills the pool in reverse through the main drain. There is an air gap in the down piping that is usually associated with backwash of the filters,

but we again have been told by pool staff that the backwash is separate from that. The metal piping, fittings, especially around the flange connections, and supports are showing signs of corrosion as well. There is a

separate vacuum piping system with pump in the room that is constructed of PVC piping which appears to be in good condition, although the pump itself appears to be an older model.



The electrical panels consist of two (2) main power panels for the entire building, one sub panel for the pool and the breaker panel for the pool equipment. Conduit runs up through the floor to feed the mains and from there, conduit runs up to the ceiling and to the west to feed the remainder of the building. It should be noted that many of the conduit and piping runs that extend through the walls are not sealed to prevent weather or small animals from accessing the interior of the room.



There is a floor drain in the containment/storage room (separate from the chemical containment area) that is corroded to the point of non-usable condition, and we were informed by pool staff that it does not actually work. The larger room surrounding the chlorine containment room is used for storage of dry chemicals for the pool and miscellaneous equipment not in use. Access to the room is by two (2) doors; one on the northside facing the pool, and one

on the eastside facing the equipment yard. The metal doors are all severely corroded, especially the jambs and hinges, which do not function well at this time. Although the wall vents in the storage room are comprised of concrete and in fair to good condition, there is no flow through ventilation to remove fumes and move air. The one metal vent in the containment room is severely corroded and the concrete surrounding it is starting to spall.



As mentioned previously, there was no overall assessment of the building itself for structural integrity or conformance to current building codes.

5.0 EVALUATION

The main tenets of any condition assessment are to identify current condition, determine expected lifespan of the item, provide recommendations for repairs and/or replacement and to develop an opinion of probable cost (OPC). In this report, we looked at each of the elements individually to develop recommendations that would encompass the entire facility collectively.

In the previous sections of the report, we have presented the findings of the investigation. In estimating the lifespan of any particular item, one must take into account the desired outcome. The Town would typically have to choose between repairing the items to maintain operation, replacing the items with the same product, if available, or replacing those items with current industry standards. Based on our findings, and the age of the pool, we do not feel that it is feasible to repair or replace individual items in kind because the parts in most cases are not readily available and the repairs are only short-term band-aids aimed at keeping equipment operational for a short period of time. Therefore, our evaluation and recommendations centered on providing a state of the art replacement or a full reconstruction of the material so that it would function as intended when the pool was initially constructed.

In our development of estimation of lifespan, we had to consider that the pool was over 60 years old and as such, most original items cannot be replaced in kind, since many of the original items no longer exist. That is one of the problems with issues such as matching pool tile, repairing fences, replacing pool lights and, in general, replacement of any of the pool equipment. The recommendations should always visit the current industry standards and pool safety codes even if capital costs are higher because the long-term maintenance benefits will outweigh the initial costs because of longer expected lifespans and more resilient materials. Additionally, the newer, digital, pool equipment can be monitored and controlled remotely for more cost-efficient operation. With that said, we focused on repairs and/or replacement with the current industry standard materials and equipment.

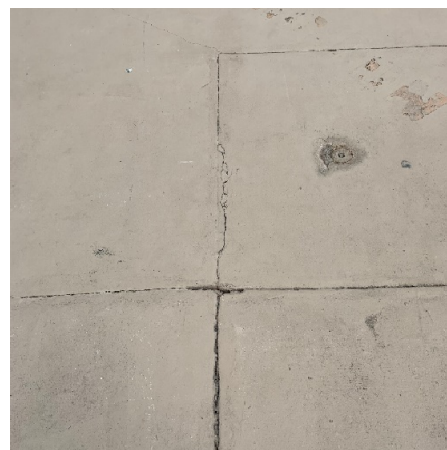
5.1 POOL DECK

As noted in the field inspection, the pool deck has a wide variety of observable features of distress; some of which are cosmetic while other issues appear to be more structural in nature and in need of actual repair. This was complicated due to the existence of a concrete coating that has been placed on top of the original deck. The cracking observed in the deck can be categorized into three (3) different types.

1. **Shrinkage cracks** – these are isolated cracks typically isolated and running from one point to another. Many of these were observed at midspan (between sawcut joints) locations or running from corners or objects embedded in the slab such as equipment inserts or light pole bases. In these cases, those cracks reflect what should have probably had a sawcut joint applied during the original construction.



2. **Distress cracks** – these are groups of cracks associated with a common focal point with multiple cracking around an object or location. These were observed near some of the deck features, such as drains, valves, pole inserts, lifeguard stand, etc., as well as the starting platforms. These also were observed at locations of apparent previous deck repair beneath the coating that is now on the deck. The geometry of the cracking is such that it runs in straight geometric lines with 90 degree turns and such that is unusual in normal concrete cracking.



3. **Settlement cracks** – these were observed mainly behind the gutter curb and around the dive platform pedestals and are exemplified by movement of the slab and/or expansion joint with loss of joint sealant and differing height of the gutter curb from the adjacent slab at various locations around the pool.



The slabs on the outside of the immediate pool deck area were newer and show considerably less cracking than the deck around the pool. However, there is also cracking in these slabs, and they should also be addressed.

The main issue with repair of any deck involves applying a new surface treatment to the concrete slab that provides a non-slip surface for the safety of the swimmers as well as an aesthetically appealing surface for the overall appearance of the facility. To that end, there are a lot of good products available that can be applied. However, the application of a surface treatment on top of a distressed concrete slab will eventually succumb to the stresses in the concrete and the cracks that currently exist will reflect through the newly applied treatment. The texture may still be adequate, but the appearance will not be consistent throughout. The key will be to determine a repair methodology that will eliminate as much of the concrete stress as possible and mitigate the rest as best as can be accomplished with cost considerations being involved.

Since many of the ancillary features on the pool deck are no longer functional, consideration should be given to replacing them with newer permanent items to replace the temporary moveable items such as the stairs, lifeguard stands and valve boxes around the deck.

Drainage on the deck should also be considered, especially if the deck is going to be repaired or replaced. The old, smaller diameter drains are less functional and efficient than strip drains, similar to what was installed between the pool deck and the concession building to the east.

5.2 POOL SHELL AND FINISH

As mentioned previously, the pool interior finish appears to be in relatively good condition except for the staining on the pool bottom and the leak in the gutter in the northeast corner. However, with a pool paint coating over the plaster finish, there is no way to determine if the concrete shell has cracks in it or not. Pool paint does not last as long as a real paster or aggregate finish and has a tendency to eventually peel, especially when the pool is drained or lowered for cleaning.

There was no physical evidence of any cracking in the pool shell, but this inspection did not include an in-water inspection, so the entire pool bottom was not inspected up close. Based on conversation with the pool staff, the pool is losing water at an elevated rate and that typically can be attributed to cracks in the pool or cracks in the piping. In any case, if the piping is also 60 years old, then it is nearing the end of its intended lifespan as well.

There are chipped pool tiles along the gutter overflow but in general, those tiles (light blue) are in good condition. These tiles are not readily available and difficult to replace. In addition, the tile edge is supposed to be a contrasting color to the gutter and pool walls. Since the blues are so close together, the gutter edge will need to be replaced even if the pool is repaired, per industry standard.

The gutter curb itself is in poor to fair condition and needs some major repair work. At many of the corners, it has been physically chipped and there are cracks at different locations. The pool light access points are no longer accessible which means the pool lights cannot be replaced without adding new access panels, transformers and conduit.

Since a nighttime inspection was not included in the scope, the level of the lighting from the pole lights could not be determined. It should be noted here that the Florida Swimming Pool Code requires a minimum of 3 foot-candles in the water from the underwater lights, or at least 15 foot-candles on the surface in the middle of the pool if the pool is to be operated during non-daylight hours. We were informed by pool staff that the pool is closed at night, but having the lighting verified would provide the opportunity for special nighttime events, especially during the summer when children are not in school.

5.3 POOL FACILITIES

The ancillary features around the pool deck area have also been evaluated. First and foremost is the fencing. As mentioned earlier in the report, it is a steel picket style fence that has been in place for a relatively long time. It is not quite as old as the pool itself but appears to be on the order of at least 20 to 25 years old based on the condition assessment. There is severe corrosion in many of the fence post bases and some are in serious poor condition. In general, the fence was solid to the touch and under normal circumstances, will continue to function for a couple more years with some paint and minor repairs. However, we do not feel that the fence would hold up under severe weather conditions, especially hurricane force winds should any solid object be blown into the fence with high velocity.

The light poles are somewhat similar in that they are showing a considerable amount of corrosion around the bases and anchor bolts. Based on their condition, they appear to be of about the same age as the fencing.

The starting blocks are not currently being used much, if at all. If the Town decides to utilize them, they should consider long term that since the platforms are attached by anchor bolts directly into the top of the gutter curb, With the recommendation that the curb should be replaced, then the platforms would also need to be replaced as well. Removing them and resetting them into a new curb would not work due to the condition of the base plates, which are showing signs of serious corrosion.

Although the lifeguard stands were not being used at the time of the inspection, we were informed by pool staff that the chairs are removed from the top and stores them out of the

sun to protect them during the winter when the pool is not used as much as the rest of the year. To remove the deck and gutter curb, the lifeguard stand bases will need to be removed as well. The Town should explore better stands in the market that can be moveable or fixed and are made of resilient materials. The advantage would be to remove and store them when a severe weather threat is approaching so that damage is mitigated.

The dive springboard should be addressed as well. The recommended depth of the pool off the end of a 1-meter springboard should be a minimum of 3.5 meters which is 11.4 feet. The current pool depth is 10.0' at the pool edge and 10.5' at the main drain beneath the springboard. Due to the age of the pool, and the Swimming Pool Code that existed at the time of the original design, the Department of Health will allow the existing depth to be acceptable. However, if any major repairs are made to the pool, the Department of Health will require the depth to be adjusted to meet the new Code. This alone will drive the decision-making policy in our recommendations because it will require the entire pool shell as well as the deck et al, to have to be reconstructed.

As to the condition of the existing springboard, we mentioned earlier in the report that the pedestals themselves appear to be original construction but have been repaired over the years. The iron staining of the concrete is indicative of rebar rusting from within. Plus, the actual metal of the frame is starting to corrode as well near the gutter curb. Our experience with dive platforms indicates that the same make and model are no longer available, and a new setup will need to be employed if the Town desires to keep the platform at the pool. This item could be removed from the facilities without impacting the rest of the use of the pool.

Since the bleacher stands outside the fence are in good condition and are removable, they can be removed and replaced once all repairs are performed. Same with the shade structures which appear to be in good condition.

5.4 MECHANICAL EQUIPMENT

Mechanical equipment is always in a state of flux since it suffers loss of integrity from constant operation in a corrosive environment. In this case, with the bulk of the equipment being located outdoors, the Operation and Maintenance degradation is accelerated due to weather implications on top of the constant use. Metal succumbs to corrosion and PVC and some plastics degrade under sunlight. While it is common to find larger units such as sand filters and heaters outdoors, the controls, chemical feeds and pumps are typically housed in a ventilated room inside a building or at the least in a fiberglass vault large enough to fit the system. Based on the size of the pool, the existing vault seems inappropriate.

The layout of equipment in the yard is somewhat efficient and none of the equipment appears to interfere with the operation of any adjacent equipment. Historically, it is evident that geothermal heaters were added after the fact and the enclosure was expanded to the south to accommodate those items. There has obviously been replacements and

additions to the equipment over the years, but the collection tank appears to be original. The pumps, chemical feeds, filters and geothermal units have all been added or replaced since the original pool was installed in the late 1950's. It is not known if any of the piping to and from the pool has been replaced, but some of the piping in the equipment yard has been installed since the original installation; most probably associated with replacement of specific equipment items.

The collector tank is in serious need of full replacement. It is severely corroded, and the concrete has severe spalling and cracking. The collector tank also needs some automated infill lines that work with water levels in the pool and tank. The lid should be completely sealed to the outside elements and should also contain a latching mechanism that holds the lid up for maintenance and cleaning and rests when the latch is released. The volume seems to be adequate for the system but should be verified if there are other major changes to the equipment.

The two (2) 7.5 HP pumps appear to be adequate to move the water through the filters and back to the pool with minimal back pressure or too much suction to drain the collector tanks. However, the pump size is on the low end of suitability for this size pool, and we might recommend increasing the size a little to 10 HP each. These types of pumps tend to burn out every 3 to 5 years maximum under constant use and being located outdoors with no covering, so the existing pumps will need to be replaced within a year or two anyway. Exposure to the sun tends to run the motors too hot and that diminishes the life of the pumps. The current pumps have obviously been changed at different times in the recent past based on the fact that the housings are of different colors.

The two (2) horizontal sand filters are in good shape and appear to be working adequately at the time of the assessment. The ancillary features of the filters, such as gauges, controls, piping and hardware show indications of current and previous corrosion as evidenced by the rust stains on the tanks below the blow off lines and the severe corrosion on the controller bracket near the gauges. But in general, the filtration system is working as intended. The backwash system works according to pool staff, but they have to run it manually since the automatic system does not work. We were also informed by pool staff that the flow rate controller needs some adjustment or replacement because they have to set it to maximum for it to work.

Currently it appears that the backwash water goes to the manhole on the deck outside the fence on the eastside and from there, it goes to a soakage pit that is not identified. However, it seems to work since the system does not back up when backwash is in operation. That same manhole receives the deck drain water as well. It is possible that the system is connected to the parking lot drainage system, but that cannot be confirmed. However, it was confirmed that it is not connected to the sanitary system.

The chemical feeds for chlorine and carbon dioxide (CO₂) are working adequately but the chlorine system could use a complete upgrade. Part of that is due to the condition of the containment room in the building and its associated tubing and part is due to a need for

an upgrade to a better controller with more efficient applications as well as remote sensing and control capabilities. The current BECS system was installed in 2017 and is working adequately but is already dated due to recent improvements in technology. And being outdoors, it does not have the life expectancy that it would if located indoors. A newer BECS 7 System has been researched by the pool staff. The CO2 tank appears to be in good condition and is in even better condition than the chlorine system. The controllers and feeds are in good enough shape to substantiate the four-and-a-half-year age since installation.

The Symbiont geothermal heaters appear to be in good visual condition, but pool staff has informed us that they are not operable at this time even though they have had recent work on them. The well pump and loop pump appear to be in fair to good condition even though not in use at the time of inspection. There is some corrosion of the hardware around the flange connections on the piping and the heat exchanger, and those should have been stainless steel, but are not so far corroded that they cannot be changed out. The housing on the eastern pool heater is more tarnished than the western one which indicates that the western one might be somewhat newer or had more recent work. The associated piping appears to be in good condition. However, based on the 12 year age and the information provided by pool staff that the equipment is not operable, we recommend that the two (2) units both be replaced in their entirety.

The condition of the storage room and containment room is extremely poor. The amount of damage to the masonry block and interiors of the rooms needs to be corrected as soon as possible before they get too far along for repairs. The floors have spalls, and the drains don't work. The containment curb is damaged and needs repair separate from the rooms themselves. There is inadequate ventilation and that will lead to further damage. The electrical panels should be upgraded to a newer National Electrical Contractors Association (NECA) approved panel box that can be used in a corrosive environment. To that end, the two (2) rooms should be gutted and redone as a minimum and should be considered in an overhaul for the entire building.

The summary of the assessment is included in Table No. 1 below.

Table No. 1

Item	Relative Condition	Approx Age (yrs)	Remaining Life (yrs)	Recommendation (see Section 6)	Opinion of Probable Cost
Pool Deck	Poor to fair; it functions but is deteriorating significantly	50+	3 to 5 with minor resurfacing.	Replacement for entire deck, plus inserts for equipment	\$181,310
Pool Shell and Finish	Poor to fair; painting of shell is not efficient	50+	2 on gutter 4 on finish	Repair shell, replace finish and gutter system	\$310,110
Pool Facilities	Poor for most; fence and light pole bases are in worst condition	50+	1 to 2 on fence, but less with storm impacts. 3 for light poles	Replace fence, lights, ladders and lifeguard stands	\$219,067
Mechanical Equipment	Poor to good; heaters are non-functional and collector tank badly deteriorating	Varies from 3 to 50 years depending on equipment	Variable but 2 on collector tank and heaters already not working. Filters have another 10 years.	Replace collector tank and heaters, upgrade chemical controls, major repairs to building rooms. Replace UG piping, install shade structure.	\$302,694

A detailed opinion of probable costs is included in the Appendix that outlines many of the major components for each of the categories listed in the table. The total of all recommended improvements is estimated to be **\$1,013,180.45** and with burdened overhead and mobilization costs included will be **\$1,063,839.47.**

6.0 RECOMMENDATIONS

6.1 POOL DECK (COSTS: \$181,310)

There are various levels of repair that can be applied to the deck which range from a simple resurfacing to full deck replacement. The primary issue in simple resurfacing approach is the reflection cracking that will invariably show through at all of the crack locations. The amount of cracking on the deck was significant to the point that cracks repairs would be costly and would not guarantee that they would not reflect through to the surface once a surface texture is applied. No surface texture manufacturer or installer will warranty against existing cracks even when treated with a crack repair system. And those treatments are really only good for the shrinkage cracks and typically do not apply to the settlement cracks observed around the perimeter of the gutter curb

Our recommendation on repairs would be to remove and replace the pool deck specifically in those “flags” of concrete indicating the worse cracking. But our inspection indicated that there was actually quite a bit of microcracking in the other flags that can barely be seen because of the previous deck sealant applied on the surface. Plus, we cannot estimate the amount of cracking that might be present beneath the sealant that was not observed. The resulting mix and match pattern of separate flag replacement would also not be very aesthetically pleasing for the pool facility.

There are also obvious issues to be concerned about between concrete replacement and crack repair including quality and cost. Will the repair of cracks with a texture coating suffice, or will it need to be resurfaced within the next 5 years again? There is no guarantee with crack repair regardless of what many manufacturers will try to tell you. Plus, the cost of the overall repairs will include not only the crack repair, but also some concrete patch work around the deck drains and the settlement cracks and a subsequent textured overlay. We estimate that the cost for that will only be about 10% to 15% less than replacing the concrete deck entirely. The obvious advantage to replacing the entire deck will be that there will be limited maintenance, other than cleaning, required for at least another 15 to 20 years.

So, while our recommendations could address both of these as well as some middle ground that provides a combination of repair and replacement, we feel strongly that the most viable option will be to replace the entire deck and eliminate all of the previous issues that have been observed during our inspection.

The intent would be to remove all of the decking from the back of pool curb to the outside edge of deck. The deck drains could then be removed and replaced with linear strip deck drains (such as Accu Drain) which work better, do not clog and move water a lot quicker than the small diameter round drains. Any of the ancillary features on the deck, such as valve covers, ladder inserts, flap pole inserts can all be reset with new inserts for long term Operation and Maintenance improvement.

It should be pointed out that the deck area outside the fence is in better condition than the pool deck itself with only some minor cracking that could be treated with a crack repair program. However, when a Contractor mobilizes to remove the pool deck during demolition, it is felt that the outside deck areas will most likely suffer enough damage from heavy equipment, soil undermining and vibration to require replacement. That could afford the Town an opportunity to extend the fencing and bring the bleachers into the enclosed pool deck area which would provide some much-needed pool deck shading.

6.2 POOL SHELL AND FINISH (COST: \$310,110)

With regard to the pool shell and finish, at a minimum, the pool should be drained, and the paint and plaster stripped down to the original concrete pool shell. Simultaneously, the gutter curb should be removed in its entirety and the piping for the gutter drops be replaced back to the main trunk line leading to the equipment yard. This will ensure no leaks in the gutter system and will eliminate the leaks through the raised curb around the perimeter.

In replacing the pool bottom and sidewall finish, there are two (2) options for applying a new bottom and side wall pool finish. One option would be to replace the plaster finish as originally designed, and the other option would be to apply a quartz type finish such as Pebble Tec or Diamond Brite. In comparing both options, the plaster finish is not as resilient and would require more cleaning with acid and resurfacing every 12 to 15 years at best. The new quartz finishes have a life expectancy on the order of 25 to 30 years with proper maintenance and come in a variety of colors, whereas the plaster comes in white and light blue, although color can be added to the plaster, it is hard to match with each batch and invariably, patrons would see patches of slightly off color in the pool. We recommend the quartz finish. There are numerous finish colors to choose from, but it is highly recommended that a lighter color in the blue and blue-green range be selected. That color will last longest and also show dirt and stains more readily and that will promote maintenance at the first sign of discoloration. Darker colors tend to hide dirt and staining but that is not necessarily good for maintenance of the pool.

As a feature of the pool, the gutter would basically be reconstructed as part of the curb replacement and new piping. This will involve the installation of new tile along with the contrasting color for the gutter ledge around the entire perimeter of the pool. This time would also allow for new underwater lights and niches to be installed and new conduit run back to transformers located in the office or in the equipment center with digital timers to control them.

It is recommended that the swimming lane lines and wall targets be installed with small (2 inch by 2 inch) black pool tiles which would be set prior to the application of the quartz finish so that the thicknesses could match. The recommended pool tiles would invariably last as long as the pool finish.

Finally, the one main drain and the sixteen (16) pool return inlets should be addressed. The inlet covers will need to be removed and reset again after the new finish is applied. And with the age of the pool, it is probably prudent to just go ahead and replace them at that point, so that the contractor is not left to work with old equipment. Care should also be taken around the existing pool bottom return inlets to ensure the finish is installed flush with those and no damage occurs to them or inadvertently fills the inlet with grout. Most contractors will remove the tops and place a cover over the inlet to prevent damage and keep from filling the pipes with material.

6.3 POOL FACILITIES (COST: \$219,067)

The existing fencing has just about reached its expected lifespan. The corrosion noted at the bottom of many of the posts is severe to the point that the structural integrity of the fence post has been compromised. But because the fence is a framework of numerous posts and lattice, the fence remains solid to a point, such as for everyday use. As mentioned previously, we do not feel that the fence will hold up to severe weather (hurricane) impacts, and as such, we recommend that the fencing be replaced in its entirety. This includes the equipment yard should the Town determine that the equipment yard should be kept outdoors. It is a great opportunity to do so, if the entire deck is going to be replaced, as both can be done at the same time.

The existing light pole bases also show quite a bit of rust, although not quite as severe as indicated in the fencing. Given a scenario of complete deck removal, the light pole bases should also be replaced as well, so that new, resilient style pole with LED fixtures can be installed. These would provide lighting with less power and use materials that are much more suitable for this environment than the existing lighting on the deck.

With demolition of the deck, permanent lifeguard stands could be considered again as well as the installation of an ADA chair lift into the pool. Most municipal pools use the moveable lifeguard stands and this provides the added benefit of storage and protection during storms events. Permanent stands are not recommended for the repairs and upgrades. While the 5-foot depth in the east side of the pool does not lend itself to providing new swim start platforms, the Code does allow it at the very minimal depth allowed. However, the 3 feet for flip turns on the west side works against any real competition swimming.

One more item for consideration is the fact that when the ladders and backstroke flags are removed and the new inserts embedded in the new concrete decking, those metal inserts must be attached to the existing bonding grid that encircles the pool below deck. Once the old deck is removed, the bonding grid should be visible and shall be reattached as per the Swimming Pool and Electrical Codes. If the bonding grid is damaged or removed inadvertently during demolition, it needs to be reinstalled as per the Code.

Although not really a part of the deck itself, the dive platform is in serious condition and somewhat non-functional in that the deck around the pedestals has settled, the gutter curb beneath the platform is deteriorating and the platform supports are showing signs of cathodic corrosion right behind the gutter. The concrete pedestals themselves show staining from rebar corrosion and there are cracks and joints from previous repairs. Since the pool itself was built with a deep area dive well, we can assume that the current pedestals exist as part of the original dive platform, or they have been set over the original location. In any event, the platform is very dated and newer platforms have adjustable springboard tension that is lacking in this model. However, it should be pointed out that since the new Swimming Pool Code requires a depth of at least 12 feet for dive wells, the installation of a new springboard platform to replace the existing board, will require a variance from the Department of Health, and there is no guarantee that the State Department of Health Board will allow it.

One noticeable item lacking on the pool deck is shade for swimmers, mainly because of the lack of room inside the fence line. Canopy columns would impede foot traffic and cause issues with metal being within four feet of the water which requires attachment to the electrical bonding grid. If the complex is going to be undergoing renovations, it is recommended that the fence line on the north side be extended past the bleacher pad area and that way, some shade can be incorporated into the actual pool facilities.

6.4 MECHANICAL EQUIPMENT (COST: \$302,694)

Given the age of the pool and the fact that the original equipment layout has been established for over 50 years, repairs and replacement of specific components must fit into the given geometry provided in the layout. This is most evident when the two (2) geothermal pool heaters were added after the fact. To accommodate that, the equipment yard was expanded to the south by about 6 feet across the entire width of the yard. At this time, there are two (2) five-foot-wide gates that allow access to the yard and the top screening must be removed if the Town needs more room for equipment to be handled and installed. The smaller equipment is not a problem, but larger units that might require a crane or large forklift might be a problem.

We recommend that the collector tank needs to be replaced. The concrete is in extremely poor condition and is well beyond its normal life expectancy. Repairs could possibly be made but we cannot attest for any possible damage below ground. Based on the visual evidence at the surface, we must recommend full replacement; not just of the tank but also the associated piping running to the pumps and coming from the pool to at least some distance to allow for proper alignment into the tanks. Most new tanks are fiberglass or High Density Polyethylene (HDPE) and are much more resilient than the older concrete tanks. But they also come with limited options for influent and effluent piping locations unless custom built. It appears that the current tank might require a custom tank for replacement.

In addition to the tank itself, the infill lines, sensors, and water level controls need to be replaced. In fact, the infill lines were being controlled manually at the time of our inspection and the automatic feature works but is being overridden due to water loss in the pool.

The two (2) 7.5 HP pool pumps have indicated constant maintenance and that is to be expected since pool pumps are the most short-lived pieces of equipment in any pool facility. And not just the pumps, but also the motor controls and associated electrical systems. Plus, the pumps are on the small side of suitability for the 110,000+ gallons of water in the pool. The units are variable frequency drive units, which is good, but the system is old enough to need a serious upgrade. New motor controls would allow the Town to more closely monitor the pumps for variations in the system (temperature, backflow pressure, etc.) and accommodate fluctuations in power to the units. The strainer baskets appear to be in good condition so the impellers and baskets can be maintained but will need to be re-inspected within the next five years. Considering the age, we recommend that the pumps be switched out and the motor controls upgraded to ten HP each.

The two (2) horizontal sand filters are next on the list but having been installed new in 2019, those should last at least another 10 to 12 years. However, the associated piping, controls, sensors and hardware are already starting to show signs of corrosion and will not last as long as the filters. The booster pump, solenoids and gauges typically require replacement every 5 to 7 years and one of the gauge brackets on the filters is corroding at a significant pace and will need repair work soon. Since we were told by pool staff that the control system is not working entirely as intended, especially the controller unit, and it is recommended that replacement of that unit be considered in the near future. In addition, since the filter media is standard silica sand, the new activated glass media is recommended to replace the sand. It has a higher filtration rate, uses less water and removes more impurities than the standard silica sand. The backwash solenoids and sensors from the chemical feeds should also be upgraded when the media is changed.

It should be noted here that we highly recommend that all of the pool piping, with the exception of the main drain line, be replaced when the pool deck is demolished for the new deck. This is the only opportunity to change the 50-year-old piping network without having to cut through any of the deck later. Since staff states that they believe there is leaking occurring beyond what would be expected from those areas that were observed in our inspection, it is likely that the underground pipes may be leaking at some locations now. Replacement of the pipes will provide long term relief against future leaks.

The chemical feeds are also in need of upgrade due to age and technology. The newer BECS-7 system allows for better monitoring, programmable control and has a system that makes adjustments automatically when it senses changes in the water quality. The CO₂ and Chlorine tanks are in good condition but not strategically located with the CO₂ tank set in the middle of the equipment yard and the chlorine tanks stored in the containment room of the adjacent building. The chemical feed tubes are somewhat unprotected in that they run along the top of the equipment yard security cage and can be damaged by incidental impact such as storm related or carelessness when working on other equipment.

The adjacent pool equipment and supply rooms in the building are in very poor condition and that needs to be addressed. We cannot justify the continued use of those rooms based on our inspection. This is not a matter of safe structure review, but instead, it speaks to the fact that the building is suffering from lack of foresight in the original design and corrosive materials being kept in a confined space. This has led to the deterioration of the walls and containment curbing as well as the doors, frames and louvers. The chlorine containment room itself should be completely rebuilt with adequate ventilation and material controls. The water lines suspended from the ceiling really do not belong there unless they serve a secondary purpose of building fire suppression which we were not aware of.

The two (2) rooms are not large enough for any of the major equipment that currently resides outdoors to be relocated into the building, but with some rehabilitation of the space and some electrical and pool piping relocation, the chemical feed controls could be relocated into that space. This would leave the collector tank, filters and pumps out in the equipment yard. The tubing to the pool piping can then be run in conduit below ground until it comes to the point of collection at the pool water lines. The building was not part of this scope, so the findings herein are not to suggest that the building needs any other repairs other than for the pool equipment and materials rooms.

As mentioned earlier in the report, the two (2) geothermal heaters appeared visually to be in good condition, but we were informed that they are not operating even with the recent maintenance and equipment replacement from the Symbiont staff. We recommend that the two (2) main heater units be replaced in their entirety along with any of the other original elements in the system bearing in mind that many of the components have relatively short lifespans and typically require maintenance every two to three years.

One final note, the Town should consider in providing a shade structure over top of the entire equipment yard to reduce the amount of UV radiation to the piping and eliminating some of the exposure to rain and wind driven items. This will provide some measure of increase in life expectancy of most of the equipment as well as protect the staff while working in the yard.

6.5 COMPARATIVE DISCUSSION

Aside from the overall cost for the potential upgrades and repairs, The Town should consider the expenditure of funds to rehabilitate this pool as compared to the cost of construction of a completely new pool facility. The short-term benefit of making repairs to the facilities needs to take into consideration the mid- and long-term maintenance and operational costs of working with a facility that may have been upgraded but will still have components that are older than 60 years in age. The pool shell and the pool building are two (2) areas that are not being considered in this report but warrant some discussion.

As mentioned, we did not assess the building, but it is obvious from walking through the facility, that the entire building could use an overhaul; not just to bring some elements up to better working condition, but to provide improvements such as more effective room layout, more efficient restrooms and showers, adequate room for pool equipment controls and chemicals, a more secure entry feature and more resilient materials and contemporary features that are in keeping with the appearance of the Town of Cutler Bay.

The Town might want to consider the option of constructing a modern pool facility with new pool, building and equipment. In doing so, the Town should look at the potential use of the pool with activities in mind as follows:

- Learn to Swim Programs
- Youth Recreation and USS Swim League Teams
- Lifeguard Training
- Platform and Springboard Diving
- Adult Recreation Swimming
- Water Aerobic Classes
- Underwater Dive Certification Classes
- Summer and Weekend Evening and Night activities (movies, music, etc.)
- Water Polo

These activities will guide the Town into the right size and type of pool, which in turn will provide the minimum requirements for pool size and deck requirements. It should be noted here that this list does not include some of the other typical aquatic features such as splash pads, water slides and water moving features. Those are singular use features that are not necessarily associated entirely with swimming pools but are often placed adjacent to a pool within the complex, so that equipment yards and pool buildings can be shared.

The following is a table that illustrates the absolute minimum requirements for pool facilities based on desired use along with associated costs for new facilities complete with pool, decking, equipment, pool building, security and standard pool deck features.

Table No. 2

Activity	Minimum Pool Requirements	Cost
Learn To Swim	25 Meter by 15 Meter, 1.5 Meter Depth	\$1,800,000.00
Competition Swimming and Lifeguard Training	25 Meter by 25 Yards, 2 Meter Depth (Fla Rec.)	\$4,500,000.00
	50 Meter by 25 Yards, 2 Meter Depth (US Swim)	\$8,300,000.00
Competition Diving	25 Meter by 25 Yards, 4 Meter Depth	\$5,200,000.00
Adult Recreation	25 Meter by 15 Meter, 1.8 Meter Depth	\$1,950,000.00
Water Aerobics	25 Meter by 15 Meter, 1.5 Meter Depth	\$1,800,000.00
Underwater Diver Cert	25 Meter by 25 Yards, 4 Meter Depth	\$5,200,000.00
Family Recreation	25 Meter by 25 Yard, 2 Meter Depth	\$4,000,000.00
	50 Meter by 25 Yards, 2 Meter Depth	\$7,800,000.00
Water Polo	25 Meter by 20 Meter, 2 Meter Depth	\$2,200,000.00

Many pools are designed with multiple intended functions to allow for various activities in the recreation schedule. For instance, a 50-meter swim competition pool could have a deep end for diving and an L shaped swim out that could be used for learn-to-swim and water aerobic classes. That pool could be used for all of the activities mentioned in the table. A major consideration will be the associated pool and equipment support facilities. The larger the pool, the greater the allowable bather load. And the bather load, based on pool volume, dictates the size of the pool equipment as well as the restroom fixture count required for the pool building. Competition swimming requires locker room areas as well as restrooms, office support and timing system considerations. The associated property for the pool will need adequate space for deck, spectators and the building and equipment. One of the advantages of designing and constructing an aquatics facility from scratch, is that you do not have to work with any restrictive geometry that might require the elimination of a neighboring sports field or parking lot and the equipment yard can be laid out in the most efficient network for operations and maintenance.

In moving forward, the Town's decision on moving forward should be based on the programs that the Town desires to offer. We discussed the direction with pool staff and determined that some activities that had previously been offered at the existing pool are no longer desired for various reasons. Diving is no longer desired by the pool staff as the diving board and pool lighting do not function anymore and there is little demand by the residents. On the other hand, recreational and exercise-oriented swimming are most common, especially swimming laps.

With the changing demographics throughout all of South Florida, the trend to younger families in the area and the need to teach children to swim at an early age, we recommend that the Town consider replacing the pool in its entirety with a new facility based on a combination of family recreation, learn to swim and competition swimming in either the South Florida Recreation League or US Swimming. Based on this, a 50 Meter by 25 Yard Pool at 2 Meters in Depth would be ideal for providing a venue for all three activities. Additionally, it could serve to handle Water Polo and Training as well.

7.0 SUMMARY

In summary, an assessment of the Cutler Ridge Park Pool has been performed. The intent of the assessment was to evaluate the existing condition of the pool deck, finish and equipment and determine a path forward with recommendations for repairs and/or replacement. Included in the assessment were the pool deck both inside and outside the fence, the gutter system, the pool finish and all ancillary items inside the pool, the fencing, deck lights, equipment yard and the two rooms in the building associated with the operations of the pool mechanical equipment.

Our evaluation of the pool deck and finish indicated that both of those elements should be replaced in their entirety. Repairs were considered, but the extent of the cracking in the pool deck, and the age and condition of the inside pool finish both indicated that they should be replaced. This will allow for better long-term maintenance and operation of the facility as well as provide a very aesthetically pleasing pool area for residents. As for the mechanical equipment, recommendations were made for specific items in the equipment yard (collector tank, chemical controls, pump MCC's, geothermal heaters, etc.) as well as suggestions for modification to the building rooms for needed repairs and better efficiency.

We also recommend that the Town consider the design and construction of a new aquatics' facility directed towards programs aimed at family and competition-oriented swimming.

The attached Appendix contains additional photographic documentation and graphical representation of the findings of this assessment, including opinions of probable costs for the repairs and/or replacement of specific items.

APPENDIX

Photos
Graphics / Plans
Opinion of Probable Cost