The background of the page is a light cream color with a pattern of numerous thin, wavy, orange lines that create a sense of movement and depth. The lines are arranged in a somewhat chaotic but rhythmic pattern, resembling a woven texture or a stylized water pattern.

# 7 AQUATICS



# CHAPTER 7 SUMMARY

## KEY CONCEPTS

- 1. Each Facility Has A Distinct Role In The System, But All Face Capacity And Condition Constraints** - From the year-round indoor Roosevelt Center to the seasonal outdoor pools, the system needs a clearer strategy for which facilities to reinvest in, repurpose, or replace.
- 2. Deferred Maintenance Is Compounding Over Time** - Filters, heaters, pool surfaces, and support structures across multiple sites are simultaneously approaching end of life, making a proactive capital replacement plan essential to avoid emergency closures or accelerated deterioration.
- 3. Facility Upgrades Are The Clearest Path To Expanded Programming And Revenue** - Staff across aquatics identified improvements - not new programs - as the primary lever for increasing capacity, improving the user experience, and strengthening cost recovery.

# RAPID CITY AQUATICS SUMMARY

The City operates four aquatics facilities, including

- The Roosevelt Center – indoor (built in 2003) and outdoor (built in 2014)
- Horace Mann Outdoor Pool (built in 2015)
- Jimmy Hilton Outdoor Pool (built in 2000)
- Parkview Outdoor Pool (built in 1997)

These facilities provide popular aquatic center amenities, including

- Zero-depth entry
- Shallow leisure water at approx. depths of 3 ft.
- Interactive play structure
- Current channel (Roosevelt)
- Large water slides
- Lap lanes
- Competition lap lanes (Roosevelt)
- Deep water/diving

## Overall Condition

The two newest facilities include the Horace Mann Pool and the outdoor lap pool at the Roosevelt Center. Each of these are a little over 10 years old, and the remaining facilities are approximately 25 years or older. The oldest facility is Parkview Pool, which is approximately 29 years old, with Jimmy Hilton Pool just a few years newer.

Each facility is in fair structural condition with some deteriorating conditions consistent across each. Most notable is differential movement (settlement) for the pool deck at each of the facilities, causing significant cracking and trip hazards. All of the facilities could be improved by removing and replacing the pool deck to improve the conditions.

Additionally, three of the facilities have aging pool filtration systems that are nearing their end of life, and will need to be replaced in the near future. Additionally, the Jimmy Hilton Pool has a perimeter stainless steel gutter system that also appears to be near its end-of-life span.

An assessment for each facility is shared within this report, along with recommendations and an Opinion of Cost to improve the deteriorating conditions and extend the life of the facility.

## Potential Enhancements

The recommendations provided with this assessment are focused upon preserving the existing aquatic centers as is, with no significant changes to the configuration or amenities provided. There is, however, potential to enhance the facilities and increase participation along with cost recovery. Additionally, reconstructing a facility at a new location could add new interest and participation at a location that best serves the community.

With the aquatics facilities having remained unchanged for a period of time, adding enhancements and new amenities would spark increased interest and participation.

Some popular additions/enhancements include

- Lazy rivers often in the range of 300 ft to 700 ft long and utilized for open-swim leisure or for popular programs such as water walking classes. We anticipate the magnitude of cost for adding a lazy river to a facility could range from \$2M to \$5M.
- Enhanced lounge areas often by providing additional shade and softened landscape areas. The magnitude of cost for this can range widely from \$10,000 to \$200,000 (or more) per facility.
- Expanded splash pad/play areas are popular additions to recent modern aquatic centers that include large wet deck areas with a variety of spray and play structures. Additionally, synthetic turf and playground structures are integrated to produce a large, connected play area. The cost for adding small splash pad and play areas can cost a few hundred thousand dollars but typically cost a minimum of \$600K up to \$2M.
- Thrill slides – while the typical open flume and enclosed slides serve a wide user group, unique slides targeting the thrill seekers will expand participation/attendance. These slides can be attached to a pool or can terminate with a runout flume. The cost ranges widely, starting at approximately \$400,000 and rising from there.
- Surf riders include standalone surf machines such as the FlowRider that target more active thrill seekers and offer a unique experience. The cost for adding

one would generally be in the range of \$2M to \$4M.

### **New Facility Considerations**

One area of development and growth within the metro area is to the east. The easternmost pools include the Roosevelt Center and Parkview Pool. Parkview Pool is the oldest swimming pool in the system and according to staff the interest and participation is low relative to the remaining pools. It is also geographically located more remotely at the southern edge of the community.

If there is interest in increasing swimming opportunities for the south and east regions of Rapid City, an opportunity would be to construct a new facility in the overall southeast region. However, simply adding an additional outdoor pool in the region would further decrease participation at Parkview Pool. A successful strategy to provide access for the community and also financial efficiency would be to convert Parkview Pool to a splash pad that serves the remote south region along with a new outdoor aquatic in the southeast region.

We anticipate converting Parkview Pool to a splash pad would be a magnitude of cost of approximately \$2M, and a new 9,000 s.f. aquatic center would be a magnitude of cost in the range of \$10M to \$15M.

The overall operating conditions would be improved with increased participation for the Parkview location and a new facility. The byproduct of improved participation would also be improved cost recovery over the current situation.

# HORACE MANN POOL

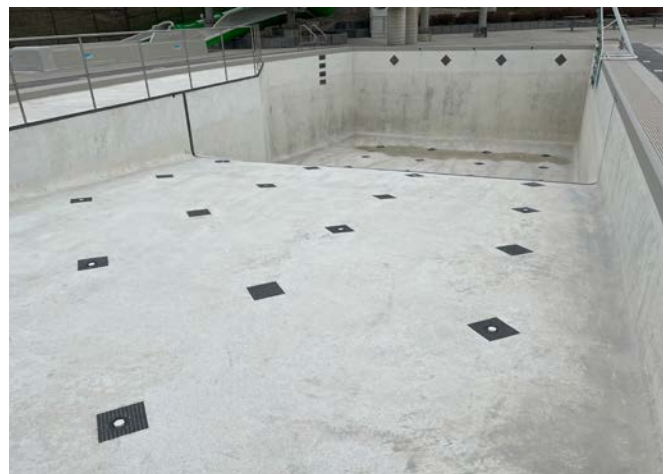


## GENERAL DESCRIPTION

Horace Mann Pool was constructed in 2016. It includes a recreation pool, a lap pool with diving, and a pair of water slides with runouts. The recreation pool includes zero-depth entry, shallow water and an aquatic play unit (APU). The lap pool includes 4 lap lanes, a deep end with diving and drop slide, and a shallow sun shelf.

## Areas in Good/Fair Condition

- The lap pool basin appears in fair condition, although the exposed aggregate plaster coating is significantly worn.
- The pool equipment, piping/valves are in fair condition.
- Chemical controllers and chemical feed systems.
- The bathhouse restrooms are in good condition. They appear inviting, clean, well lit, and ventilated.
- The pool heaters include an indirect-loop system which has proven to be much better for maintenance.





### Areas of Concern

- The swimming pool structures were constructed on piers, while the pool deck was not- allowing the pool deck to move differentially from the pool structures. There is some cracking and differential movement on the pool deck.
- The recreational pool has a significant amount of shrinkage cracks in the structure which are reflecting through the pool coating.
- The epoxy resinous floor in the bathhouse appears very dingy. Staff can't get the coatings fully clean.
- The breezeway has a coating with flakes in the surface. It initially has the appearance of an epoxy resinous flooring, but upon closer review it appears very thin and more resembles a paint coating.

### Upcoming Maintenance

- The aquatic play unit is in fair condition, although some portions have worn. Staff has replaced original netting with solid panels. Staff also reports that the acrylic components are not very resistant to hailstorms, which has damaged some to the point they have been replaced.

### COST & RECOMMENDED IMPROVEMENTS

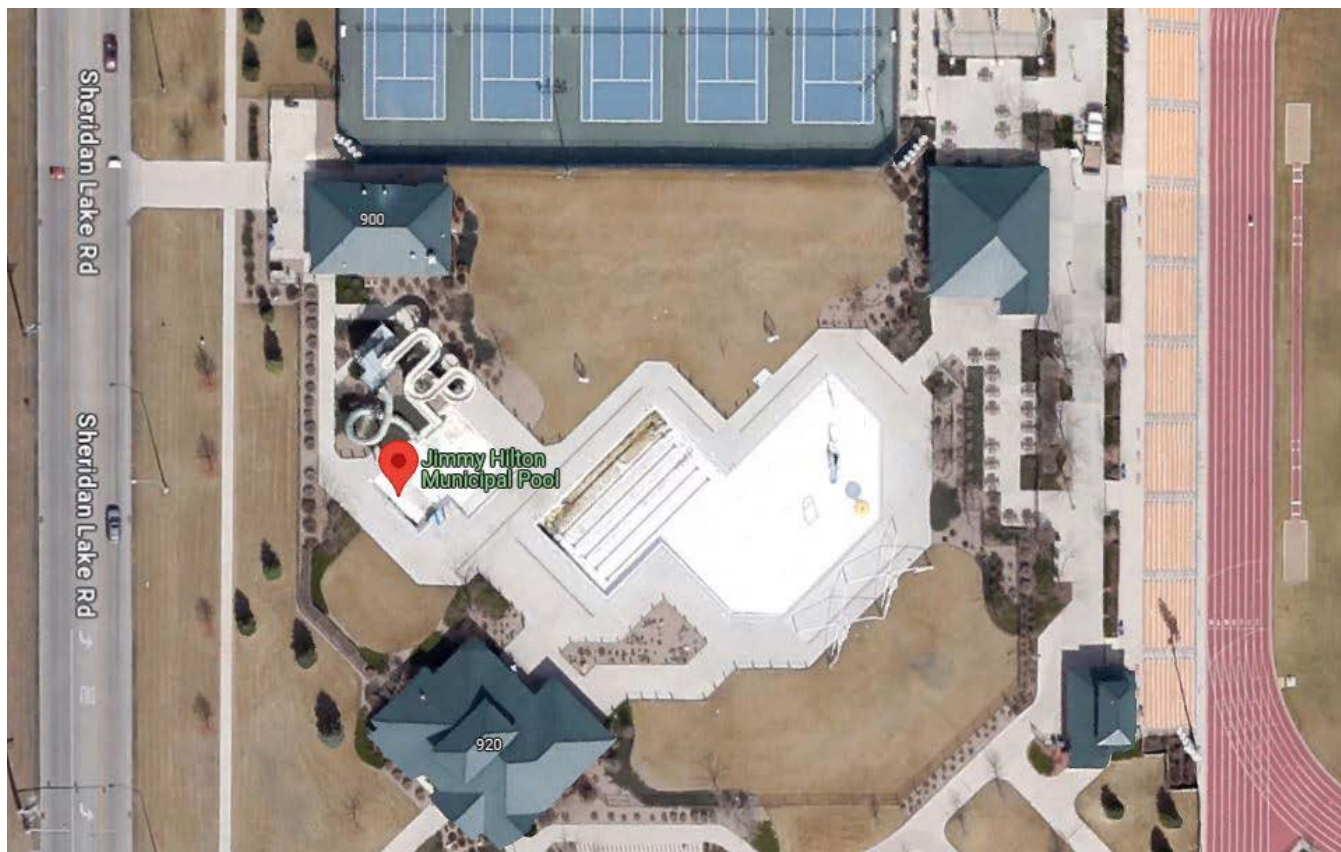
*Deferred Maintenance Cost: \$2,058,000.00*

*New Construction Cost: -*

*Total Construction Cost: \$2,058,000.00*

- Replaster the pool, repair cracks in pool shell
- Consider replacing the play structure (APU)
- Plan for replacing the pool deck – future
- Replace floor coating in bathhouse
- Recoat bathhouse entry breezeway floor coating
- Refinish waterslide flume surfaces

# JIMMY HILTON POOL



## GENERAL DESCRIPTION

The Jimmy Hilton Pool is one of the older pool facilities in the system, having been constructed in the late 1990s. It includes a main pool that contains zero-depth and a lap pool with diving. A second pool is the plunge pool for a pair of water slides.

The pool structure appears to include a cast-in-place concrete floor and a shotcrete wall. The perimeter includes a deck-level stainless steel gutter system. The basin includes an epoxy paint coating.

## Areas in Good/Fair Condition

- For its age, the pool structure in general appears in fair condition.
- Chemical controllers and chemical feed systems
- The waterslide fiberglass has been recoated and in good condition.
- The bathhouse appears to be dated but is structurally sound.
- The roof was replaced and in good condition (~10 years ago).



## Areas of Concern

- Staff believes that each of the two pools could be losing a significant amount of water.
- The stainless-steel gutter is approximately 25 years old, and requires annual welding and repair. Converter boxes are often a weak link, and could be cause for water loss.
- The pool deck has moved significantly. It appears to have settled in some areas and heaved in other spots. Some locations have been ground to mitigate offsets and trip hazards.

## Upcoming Maintenance

- The floor appears to have an epoxy-resinous flooring which has worn and is dingy.
- The filter system is older and approaching the end of life. While there are no signs of immediate failure, we anticipate no more than 5 to 10 years remaining service life.
- The bathhouse could use a “freshen up” to make it more appealing and inviting to the guests. In particular, lighting and floor coatings could be replaced and would make the space more inviting.
- The pool heaters are original, and have been rebuilt. They are also reaching end of their service life.
- The painted pool surface has worn. Staff has scheduled the pool to be plastered in 2027.
- The coating on the water slide tower and columns has worn.



## COST & RECOMMENDED IMPROVEMENTS

Deferred Maintenance Cost: \$4,150,000.00

New Construction Cost: -

Total Construction Cost: \$4,150,000.00

- Recoat the pool basin
- Replace the stainless steel gutter system
- Replace the pool deck along with gutter system
- Plan for filter replacement
- Refresh bathhouse interior
- Recoat the water slide tower support structures



# PARKVIEW POOL



## GENERAL DESCRIPTION

The Parkview Pool is the oldest pool facility in the system, having been constructed in 1997.

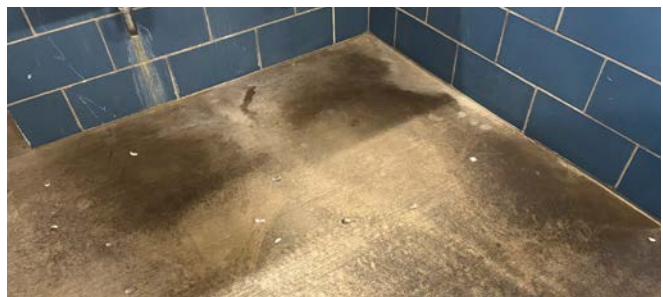
The pool is built on expansive soils and constructed on piers. The pool structure is constructed of cast-in-place concrete with construction joints. The perimeter includes a gutter with precast concrete gutter blocks.

### Areas in Good/Fair Condition

- For its age, the pool structure in general appears in fair condition.
- The bathhouse appears to be dated but is structurally sound, and has inviting vaulted ceilings with an open space.
- The roof was replaced and in good condition (~ 10 years ago).
- The shallow area spray feature has been recoated and appears in good condition.

### Areas of Concern

- There are a few locations in the pool structure that have stress cracking and in need of repair- including along the top of the wall in the diving, and on the interior corner wall between the laps and diving.
- A few locations in the gutter blocks need to be reset onto the wall with a new mortar bed.



- The pool deck has moved significantly. It appears to have settled in some areas and heaved in other spots. Some locations have been ground to mitigate offsets and trip hazards.
- The cmu block includes bands with glazed faces. The faces have spalled off of many of the blocks on the dressing room entry screen wall.

### Upcoming Maintenance

- The exposed aggregate plaster coating is original and has worn. It is scheduled to be replastered soon.
- The bathhouse lighting could be updated.
- The floor is broom finished concrete and is dingy- which could be addressed. There may not be enough floor slope and drainage.
- The filter system is older and approaching the end of life. While there are no signs of immediate failure, we anticipate no more than 5 to 10 years remaining service life.
- The fiberglass flume appears to be in good condition, but the tower structure includes wood railings that have weathered. The railings and tower treads are scheduled for replacement soon.



## COST & RECOMMENDED IMPROVEMENTS

Deferred Maintenance Cost: \$3,359,000.00  
 New Construction Cost: -  
 Total Construction Cost: \$3,359,000.00

- Repair portions of the pool structure
- Repair portions of the precast gutter (check that gutter blocks still available)
- Recoat the pool basin
- Repair glazed block face on screenwall? Or remove and replace- perhaps with different materials
- Redo bathhouse floor
- Replace the filter
- Renovate slide tower rails and treads



# ROOSEVELT CENTER INDOOR POOL



## GENERAL DESCRIPTION

The aquatic center includes both indoor and outdoor swimming. The indoor facility includes a lap pool, a separate shallow leisure pool, and a spa. The lap pool includes 8 - 25 yd lanes, with diving located in one end. The leisure pool includes a shallow/ zero-depth entry area, an aquatic play unit, a lazy river, and a water slide.

### Areas in Good/Fair Condition

- Pool Basin is in good condition. The exposed aggregate finish was replastered in 2021. Staff does a good job of keeping the coating clean.
- Aquatic play unit (APU) is in fair condition. The color has faded some, but staff has also replaced parts to keep it maintained and working order.
- Water slides in fair condition. Fiberglass surfaces were recently recoated. Some rusting in base plates, fasteners, hangers, etc..
- Piping/valves are in fair condition. Staff maintains and replaces as needed.
- Chemical controllers and chemical feed systems

### Areas of Concern

- The swimming pool structures were constructed on piers, while the pool deck was not- allowing the pool deck to move differentially from the pool structures. Settlement of pool deck, causing offsets and issues in deck tile. Staff has done an admirable job in fixing and adjusting tiles and offsets as they develop - replacing tiles each year.
  - *There seems to be a couple of possible known likely causes for the deck movement, each relating to granular fill placed over softer native soils. Regardless of the cause, the pool deck has settled as much as 1" to 1 ½".*





- Some piping has sheared and broken, presumable from stress exerted by the settling of the deck and subgrade. The locations of failure have been where pipes extend through building footings into the pump pit.
- Slippery deck tile. Tiles are 2" square and have a fairly smooth top texture.
- Access hatches in deck have bound, making it difficult to open for maintenance staff.
- Stainless steel hangers/cables under tension near the ceiling are susceptible to stress corrosion cracking due to the exposure to warm chlorine-laden air. It can result in cracking and pitting stainless steel under tension and result in sudden brittle failure. Staff reports that they have replaced some hangers in recent past that appear to have failed and continue to monitor them.

### Upcoming Maintenance

- Filters are approximately 22 years old. Filters typically fail by corroding through structure from the inside out, with the first evidence as pin holes that start rust stains on the surface. No signs are evident now, but we anticipate a need to replace the filters within 10 years.
- One of the three pool heaters scheduled for replacement in 2027.

### Further Study

- Staff measuring and recording deck settlement to see if it is continuing.

## COST & RECOMMENDED IMPROVEMENTS

*Deferred Maintenance Cost: \$3,836,250.00*

*New Construction Cost: \$4,000,000*

*Total Construction Cost: \$7,836,250.00*

- **Replace pool deck**
  - Have corings/borings performed / get geotechnical investigation and recommendations
  - Remove and replace pool deck per geotechnical engineer recommendations. Decide upon floor type – tile, epoxy resinous, broom finished concrete
  - Replace below-deck piping when deck is removed to start life-cycle and correct any damage from additional stress exerted from settlement/shifting.
- **Remove and replace access hatch**
- **Consider inspection of stainless steel hangers-** could result in recommendations to replace all. Or continue current process of inspecting and replacing. Risk is that failure can be sudden. If one breaks not an issue. If one breaking causes chain reaction, whole supported items can fall unexpectedly.
- **Prepare for filter replacement within 10 years.**
- **Ongoing pump and pool equipment maintenance and replacement.**

# ROOSEVELT CENTER OUTDOOR POOL



## GENERAL DESCRIPTION

The outdoor pool was added to the facility a little more than 10 years ago. It consists of a 10-lane by 50 meter lap pool. Similarly to the indoor pool, the outdoor pool area was raised by approximately 4 feet to place it above the flood plain. The pool structure is built on piers while the pool deck is built on fill.

### Areas in Good/Fair Condition

- Pool Basin is in good condition. The exposed aggregate plaster finish is original from 2013, and is wearing. Staff does a good job of keeping the coating clean and relatively free from stains.
- The pool equipment, piping/valves, etc. are relatively new and in fair condition.
- Chemical controllers and chemical feed systems
- The bathhouse restrooms are in good condition. They appear inviting, clean, well lit, and ventilated.

### Areas of Concern

- The swimming pool structure was constructed on piers, while the pool deck was not- allowing the pool deck to move differentially from the pool structures. While pinned to the edge of the pool, the outer portions of the deck settled causing it to hinge at the pool edge.



- The result of the deck settling on the outer edge caused a stress crack to form approximately 24" from the pool edge. Staff reports this occurred soon after construction. In attempt to improve the appearance, the first 5' feet width from the pool was coated with an epoxy resinous quartz coating to cover the crack. However, the crack reflected



through the coating.

- The pool heater has been a source of ongoing maintenance and repairs. Staff has the same heater at another facility, but operates on a closed loop system versus directly heating the pool water. Staff speculate that the direct-heat configuration for this heater is causing maintenance and repairs.

### Upcoming Maintenance

- Replacement of the exposed aggregate plaster finish
- Fiberglass gel coating on bulkhead has worn and in need of recoating.

## COST & RECOMMENDED IMPROVEMENTS

*Deferred Maintenance Cost: \$3,836,250.00*

*New Construction Cost: \$4,000,000*

*Total Construction Cost: \$7,836,250.00*

- Replace pool deck
- Replace pool coating
- Replace pool heater
- Refinish fiberglass bulkhead
- Cover outdoor pool

