March 12, 2021

Sundance Hills Metropolitan District
Park and Pool Facility Assessment Report
Revision 1

ESSENZA ARCHITECTURE

Sundance Hills Metropolitan District

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ARCHITECTURAL ASSESSMENT

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ESSENZA ARCHITECTURE
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Sundance Hills Metropolitan District
Facility Assessment Report

Methodologies and Objectives:

On December 7, 2020 – 2:00 p.m. we held a site visit to investigate the existing Sundance Hills Pool and Park facility located in Greenwood Village, Colorado. The purpose of the investigation was to provide a report to assess the current facilities for all Architectural and Engineering components.

The structure of this report will cover the following:

- Introduction
  - Project construction history
  - Existing facility patron user load and future analysis
  - Existing building construction
- Existing observations
  - Code and standards deficiencies
  - Recommendations based on observation and deficiencies
- Synopsis & Closing Statements
- Engineer assessment reports

Introduction:

Project Construction History:

Below is an outline of the original construction date and major remodels that have taken place at the Sundance Hills park and pool facility:

- 1972 – According the county records, the original construction of the facility occurred. The facility included all three existing pools, the fenced enclosure, the open air shade pavilion, a smaller pool equipment building, a volleyball court, the four tennis courts, the playground on the south side of the property, the accessory structure south of the tennis courts, and the parking lot on the north.
- 2000 – A major renovation to the pool equipment building occurred. Most of the building was demolished, except the pump room and equipment, and replaced with the building currently on site. The existing open-air shade structure was repainted at this time as well.
- 2003 – A series of plumbing and AC/Furnace repair work was permitted, and a new backflow device appears to have been installed in the pool equipment room.
- 2007 - 2008 – The tennis courts were resurfaced, and the eastern portion of the playground was renovated and expanded, and the south accessory building was demolished
- 2014 – The open-air gazebo south of the tennis courts was constructed
- 2015 – The main building and open-air shade structure were re-roofed
- 2017 - 2018 – The main building AC was replaced along with various HVAC updates.

Existing Facility Patron User Load & Future Analysis:

Per information in the existing drawings, the only mention of occupancy is a handwritten note stating that a sign in the community room must be posted with a maximum occupancy of 154. This sign was not located during the site visit. Based on a preliminary code study, the existing facility appears to have a maximum occupancy of 100 for the building itself and the pool deck calculates to over 1,100 occupants, which may be the occupancy load the jurisdiction will require us to use. Using these occupancy numbers would require additional restrooms to be installed, up to 5 men's and 13 women's additional toilets would be needed. There also may be jurisdictional requirements to add some emergency egress gates throughout the site to accommodate exiting for the pool deck occupancy. We have had success negotiating the plumbing counts to be lower if we provide the exiting requirements for the larger occupancy count. Our suggested approach would be to ask the jurisdiction to accept a reduced occupancy load based on historical data of the pool and by adding maximum occupancy signs to the facility. According to historical data provided by the ownership team, the facility sees an average of 50 to 150 people on a typical day, and an average of 600 people on 4 days during the season when swim meets occur.

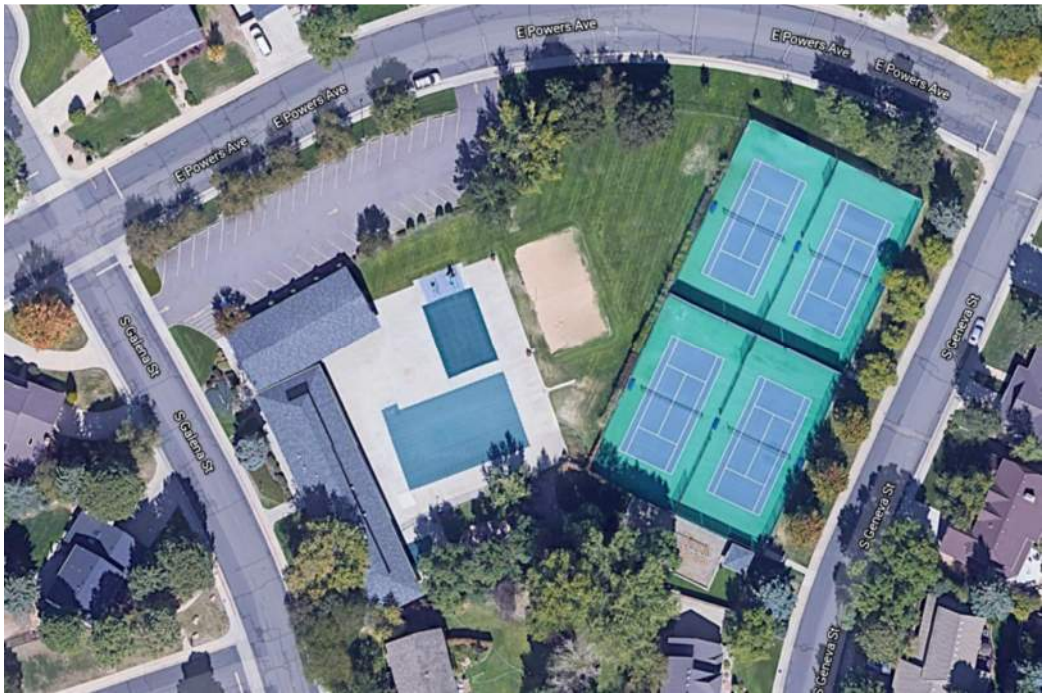
- 320 Occupants - This would be the maximum number of occupants for both the building and the pool deck that we need to post in order to meet plumbing counts per current codes with the existing number of toilets that exist in the building. This may be a reasonable occupancy to ask the building department to accept for the plumbing counts since it's about an average between the typical day occupancy and maximum occupancy days. Based on the existing number of toilets (6) and urinals (2) we would also be required to make at least one of the two single occupant toilets in the community room a uni-sex toilet or add a uni-sex toilet near the pool restrooms for access from the pool deck.
- 600 Occupants – If the jurisdiction requires us to meet plumbing fixture counts for the actual maximum occupancy from historical data it would require the addition of 4 toilets to the women's locker room and no additional restrooms to the men's locker room. This would also require us to make at least one of the two single occupant toilets in the community room a uni-sex toilet or add a uni-sex toilet near the pool restrooms for access from the pool deck.

In either scenario of the occupancy count, we would suggest still providing egress for the full 1,100 occupancy which would require two 6' egress doors/gates and one 3' egress door/gate. The front doors could be fitted with egress hardware, as could the gate on the north side of the building. This would mean we'd only need to add one 3' egress gate at another location in the fence. This is often a successful bargaining approach to allow them to reduce our plumbing count requirements since egress is a matter of life safety.

We will also need three additional shower facilities to meet health department requirements as their shower count numbers are based on the sizes of the pool water surface area, which is calculated differently than the building department occupancy counts. These can be outdoor pool deck mounted shower towers to save cost and space rather than adding showers inside the locker rooms.

Existing Building Construction:

Based on existing drawings, the original building is constructed of 2x4 wood studs with 5/8" gypsum board interior walls, 4" concrete slab, and pre-engineered wood roof trusses. The exterior walls appear to be 2x6 wood studs with exterior sheathing, and fiber cement board siding. The concrete slab under the pool mechanical room appears to be the original slab constructed in the 1970's.



Existing Sundance Hills Swim and Tennis Facility Site

Site:

Parking lot, Tennis Courts, Playgrounds, and Surrounding Site Existing Observations:

1. Site is currently zoned as a R .25 PUD in Greenwood Village, Colorado.
2. There is an existing one-way traffic asphalt parking lot in the north west corner of the site. It has 38 standard parking spaces and one space indicated as accessible.
3. The parking lot is in fair condition, with long cracks forming in several areas and fading striping. The exit drive from the parking lot is much steeper than the rest of the lot.
4. Two parking lot site lights are on the north side of the parking lot. Lights appear to be from the original 1970's construction. Site visit occurred during daylight hours, so operation of lights was not observed.
5. The entrance to the pool facility is centered in the building on the west side of the property, approximately 120 feet from the parking lot to the north, connected by a concrete sidewalk.
6. The pool facility and volleyball court are surrounded in a six-foot-high, vertical rail metal fence that appears to be in good condition. There is a shorter metal rail fence separating the baby pool area from the rest of the pool facility that is in good condition as well. There is a low point in the fence on the south east corner near the tennis courts and playground because of the sharp grades that may be a weak security point.
7. There is also a 6-foot-high vertical rail metal fence surrounding the playground on the southern side of the site, except on the south where the residential wood fences provide an enclosure on the south side. The fence seems to be in fair condition, but it has been noted that there are a few locations where bars fall off and the steep grades in some area allows kids to crawl under it.
8. The fences around the tennis courts is a vinyl coated chain-link fence, it is embedded on top of the retaining walls where they occur. The wind screens were rolled up during the site visit and not observed. IT was noted that the windscreens may have been replaced

recently due to hail damage and they may be in the storage room. Ownership team will follow up.

9. The concrete retaining walls surrounding the tennis courts is in poor shape. Paint is failing and causing concrete spalling at several locations. There are some noticeable cracks and repair jobs on the west and east retaining wall. There are also some cracks and failures where the chain-link fence is embedded in the top of the retaining walls.
10. There is one duplex electrical outlet mounted on the side of the retaining wall inside the tennis courts on the north side. We have been told these outlets are connected to a timer and are not always operational. Follow up information revealed that this outlet is connected to the pool deck lights, so it is likely only operational when the power to the deck lights is operational.
11. Tennis court surfaces appear to be in good condition, though much of it was covered in snow at the time of visit. It was noted that one of the corners may need to be touched up as some spray painting may have occurred on the court.
12. There are no plumbing or restroom facilities open year-round for the tennis courts or playground. Adding a sink, drinking fountain, and restroom is a request from users.
13. Playground equipment varies in condition. Some of the older pieces are in poor condition, while some is in good condition. The mulch in the playground areas appears low and uneven and access between the two playgrounds is difficult due to the steep terrain. Neither playground appears to have any handicap accessible features or access. There is good shade coverage from the trees on the south side.
14. The west landscape area at the pool facility entrance is heavily landscaped, but visual clues as to where the pool entrance is as it relates to the parking lot could be improved. There are several pieces of mechanical equipment, such as an air conditioning unit and gas meter, visible along the entry façade.
15. The south west corner of the site has a concrete pad for bike parking and space for two small trash cans.
16. A new monument sign and flagpole have been installed on the north west corner of the entry landscape area.

Parking Lot Entrance

Retaining Walls at Tennis Courts

South East Playground

South West Playground

Pool Deck / Pool Facility Site Existing Observations:

1. Pool deck concrete appears to be in good condition, there is still a noticeable texture finish. There are a few spots that could be repaired, noticeably by the open-air shade structure foundations.
2. Drainage on the pool deck could be improved. Much of the roof drainage dumps directly on the deck between the building and pool and can puddle and ice over. The roof downspout on the north east corner creates a puddle of water between the shade structure and building.
3. The safety surfacing below the diving boards is cracking and in poor condition.
4. The volleyball posts and net have been noted as old and in need of replacement, as well as the sand in the volleyball court. It has been noted that kids hang on the nets, which takes an extra toll on the equipment.
5. Drainage on the east side between the pool deck and tennis courts is not performing well. Much of the water is negatively impacting the tennis court retaining walls and not being directed properly away from the site and structures. There are some steep slopes in the sod area between the pool deck and tennis courts that could be exacerbating the drainage issues as well.
6. Five globe style site light fixtures are around the perimeter of the pool deck. One fixture is missing the globe enclosure, but the ownership team has noted that there is a backup globe in the guard closet that can be used to replace it. Lights do not appear substantial enough to provide code required light levels for evening swimming. One light fixture has an electrical outlet at the base, the others have just junction boxes at the base.
7. A few areas of the pool coping and skimmer tops are cracking, but appear in good condition in most locations.
8. The existing open-air shade structure on the north west corner of the pool deck appears to be in good shape. A new coat of paint is needed throughout the structure, especially on the wood components. The existing light fixtures in the shade structure are in poor condition and are mismatched. There is existing exposed conduit which should allow for ease in light fixture replacements.

Safety Surfacing

Drainage at North East Corner

Cracked Skimmer To

Drainage between Tennis and Pool

Open-Air Shade Structure

Pool Facility Building:

Entry / Check-in:

1. Building entry is at the center of the building, with an open-air breezeway that can be closed off with a metal gate on the west and an overhead garage door on the pool deck side. There were lots of leaves present on the floor of the breezeway at the time of visit.
2. Finishes in the check in area are a mixture of exterior materials, such as the fiber cement siding, and interior materials, such as gypsum board and plastic laminate cabinets. The interior type materials, such as gypsum board, paint, cabinetry appear to be in poor condition, the exterior materials appear to be in good condition.
3. The work area behind the counter is spacious but does not appear to be designed to adequately meet current needs. Countertops and cluttered and very visible to patrons entering the facility.
4. Millwork is constructed of plastic laminate cabinets and stone like large format tile countertops on some surfaces, and a combination of Corian type counters plastic laminate counters on others. Work surfaces do not appear to meet ADA standards.
5. Trophies fill up the top of the upper cabinets and could use a dedicated trophy case.
6. The floor of the check in area behind the counters appears to be peeling paint on top of concrete and exposed conduit in the walkway. It was noted that the ownership team has had difficulty getting any material to stick to the concrete because it is very sandy. The slab has been sand blasted, etched, and resurfaced many times, likely due to it being slippery as there is no drainage in the floor and there are likely water moisture or water vapor issues below the slab.
7. There is a mixture of dated recessed can lights and surface mounted fluorescent light fixtures throughout the space.
8. A storage closet sites to the west of the check in counter and is lined with shelves in full use, and houses the electrical panels, lighting controls, and a small security closet with a safe.

Breezeway Hall at Check-In

Check-In Counter

Back of Check-In Counter

Storage Room off of Check-In Desk

Pool Deck Restrooms:

1. There are three toilets, two showers heads sharing one stall, two sinks, and a large changing area with wall mounted benches in the women's restroom. There is one toilet, two urinals, two shower heads sharing one stall, two sinks, and a large changing area with wall mounted benches in the men's restroom. Both restrooms have a door that leads directly out to the pool deck.
2. Both restrooms appear to be remodeled recently, however the finishes appear that they may be of residential grade. The benches in the restrooms do not appear to be updated and are in poor condition. The vinyl plank tile flooring may begin to fail over time if the floor is sprayed down or wet often.
3. None of the toilets, showers, or sinks meet current ADA standards.
4. It was noted that a previous pipe leak may have caused some soil erosion issues below the slab edge at the west side, running between the men's toilet and women's showers. It created a void below the slab about 1'-6" deep, extending about 3' off the edge of the wall into the restroom area. This means the slab is cantilevering over a void space and could cause settling and slab breakage issues in the area. Cutting out the slab and providing proper compacted fill below should be explored.

Sink and Bench Area

Men's Restroom

Shower Area

Pool Equipment and Pool Storage:

1. Pool equipment room walls and ceilings are in poor condition. Drywall is falling off the ceiling and walls in some location, tapped joints are failing, and none is painted. This could lead to rotted wood in the structure behind the drywall, especially with corrosive nature of pool equipment.
2. Drywall walls in the storage rooms is worn with some damage.
3. The concrete floor appears to be in good condition.
4. Fluorescent surface mounted strip lights appear to be in working order.

5. Pool chemicals are being stored in the pool equipment room. To preserve the life of the pool equipment and prevent addition corrosion, chemical storage should be in a separate, fire rated room to meet current code standards.


Pool Equip Room


Chemicals in Pool Equip. Room


Pool Storage Room

Sailfish Community Room and Restrooms:

1. Finishes in the community room are in good condition. Walls and ceilings are painted gypsum board, floor is “pergo” style wood, cabinets and countertops are plastic laminate. Paint, especially at doors, could benefit from a new coat of paint.
2. The community room includes a stone fireplace, a kitchen, seating areas, a small closet, and two single occupant restrooms off of a hallway that has access to the pool check-in desk area. These areas are the only portion of the building that are insulated and therefore are the only spaces that can support year-round activities. Adding heating or cooling to other spaces in the building may require additional insulation to the building envelope per jurisdictional requirements.
3. The room has a vaulted ceiling and high windows that provide lots of filtered natural daylight.
4. The stone fireplace is operational but is not intuitive to light. Ownership team would like an easier to operate fireplace.
5. The existing light fixtures consist of pendant mounted, exposed bulb, incandescent fixtures around the perimeter of the room
6. There are several pieces of furniture providing flexible use of the space, including sofas, dining style tables and chairs, a work surface table, wall mounted tv, kitchen island table, and benches. Furniture does not have a cohesive style and varies in age and condition.
7. Kitchen appliances are reaching the end of their life cycle. There is a countertop microwave, refrigerator with upper freezer, and a oven with cooktop. Current codes, depending on local jurisdiction interpretation, may dictate that a hood be installed over the cooktop if a new one is provided.
8. The single occupant restrooms adjacent to the sailfish community room have painted drywall walls and sheet vinyl floors. Plumbing fixtures and accessories are utilitarian and durable. The access to the rooms, as well as the rooms themselves do not meet current ADA design standards.
9. It was noted that the water line to the sailfish room and restrooms will freeze every few years when it gets cold. This is likely due to it running across the ceiling space that is not insulated between the pool equipment room and sailfish room. Insulating this pipe would help alleviate the freezing problems.


Kitchen in Community Room


Community Room


Single Occ. Restroom

Pool Facility Building Exterior:

1. Building exterior consists of a fiber cement horizontal lap siding which is a typical material for this application as it provides durability with a more residential style look to blend into a neighborhood setting.
2. The roof is asphalt shingles and has been replaced less than 6 years ago after hail damage and is in good condition.
3. Windows are vinyl frames with green glass. These types of windows usually have a life expectancy between 20 and 40 years.
4. Existing roof top exhaust fans and duct are not painted and have a dull grey finish that does not coordinate with the color scheme.
5. Existing doors are hollow metal and in good condition, but paint shows signs of use.
6. The south east corner of the building near the baby pool has a large overhang and space could be built out for additional storage in a cost-effective manor if needed.
7. There are only a few signs around the exterior of the building. If new signage is provided it should incorporate ADA requirements such as braille.
8. The exhaust for the fireplace on the east side of the building protrudes farther than ADA allowable extents and could be a head hitting hazard.
9. There are two vending machines on the north elevation of the building that do not appear to work properly as there are signs up saying they may take money.
10. The existing entry gates are open-air, allowing the elements, leaves, debris, and small animals access to the check-in area.


West Entry Façade


East Façade at pool


South East Corner Overhang

Project Recommendations Timeline:

Below is a list of facility improvement recommendations with a suggested timeline for improvements. Anticipated costs do not include other engineer scope items, unless noted otherwise.
*Anticipated cost includes potential MEP scope items

1 Year Improvements

#	Description	Priority (High, Medium, or Low)	Anticipated Cost (ROM)
1	Minor repairs and refinish retaining wall around Tennis courts	High	$20,000
2	Equipment screening and entry improvements at West elevation.	Medium	$5,000
3	Provide emergency egress gates	High	$20,000
4	Repaint open-air shade pavilion	Medium	$20,000
5	Provide two outdoor shower towers on pool deck	High	$15,000
6	Check-in area remodel, reconfiguration, and ADA updates	High	$90,000
7	Pool side restroom remodel and ADA updates, including the addition of 3 new toilet stalls in the women's restroom.	Medium	$95,000
8	Provide a Unisex restroom for pool deck occupants	Medium	$25,000
9	Pool Equipment and Storage room repairs, new chemical room, and expansion into storage room if needed for additional equipment.	High	$20,000
10	Pool storage room expansion under existing overhang.	Medium	$60,000 *
11	Community room improvements, including, new paint throughout, updated kitchen cabinets and kitchen equipment	Medium	$15,000
12	Community room restroom ADA updates	High	$25,000 *
13	Provide residential style hood if providing a new cooktop	Medium	$1,000
14	New community room furniture	Medium	$25,000
15	Paint exterior siding and soffits	Medium	$65,000
16	Paint existing rooftop vents and exhaust fans	Low	$5,000
17	Replace signage throughout facility (excluding monument sign)	Medium	$5,000
18	Provide rail / structure below fireplace exhaust to maintain ADA clearance.	High	$1,000
19	Replace entry gates with solid doors. Reuse gates in new location.	Medium	$2,000
		Total:	**$514,000**

2 - 5 year Improvement Recommendations

#	Description	Priority (High, Medium, or Low)	Anticipated Cost (ROM)
1	Replace wind screens at tennis courts (this may not be needed based on follow up conversation)	Medium	$20,000

2	New Outdoor Furniture (approx. 90 pieces, tables, chairs, umbrellas) / refinish existing picnic benches	Medium	$30,000
3	Outdoor vending area upgrades for sinks and ice machine	Medium	$10,000
4	Additional shade structures on the pool deck / surrounding landscape	Medium	$30,000
		Total:	**$90,000**

6 - 10 year Improvement Recommendations			
#	**Description**	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1	Replace vinyl windows	Medium	$45,000
2	Update lighting in the Sailfish Room	Low	$6,000
3	Add solar panels to roof structures. Cost is unknown until further studies on structural capacity of the existing structures can be confirmed.	Low	?
4	Add pickleball lines and portable net to one tennis court	Medium	$1,500
5	Accessible vault toilet facility for tennis courts	Medium	$12,000
6	Drinking Fountain at tennis courts (requires winterization)	Medium	$6,000
7	Add new pickleball court	Low	$20,000
8	Add half basketball court	Low	$13,000
9	Mill and overlay asphalt parking lot (10+ years)	Medium	$100,000
		Total:	**$203,500**

The Architect has no control over the cost of labor, materials, equipment, or over the Contractor's methods of pricing. Opinions of probable cost are representative only. The Architect cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from the provided anticipated opinion of probable costs.

Synopsis & Closing Statement:

Due to the age of the facility there are several renovation components that are key to prolonging the life of the existing facility. The pools are one of the oldest components of the facility and will require significant attention. With any facility improvement there are also jurisdictional requirements that must be met as well, such as ADA improvements and emergency egress upgrades. The use of space in the facility has changed over and areas like the check-in desk and entry require upgrades to meet current needs. The district's maintenance provides excellent services to maintain the existing facility as much of it is in good condition for the age. A renovated facility with lower maintenance and more durable materials can be expected to last longer with similar or less maintenance.

AQUATICS ASSESSMENT

02

Counsilman · Hunsaker
AQUATICS FOR LIFE

Introduction

Essenza Architecture commissioned Counsilman-Hunsaker to perform a site visit to the Sundance Hills Metropolitan District Pool and Park, located at 5626 S Galena St in Greenwood Village, Colorado. The design team visited the site on December 7th, 2020. Based upon observations from the site visit and discussions with the Owner/Operation team, Counsilman-Hunsaker has produced a narrative outlining the aquatic deficiencies of the facility, as well as an opinion of probable cost for recommended or requested facility improvements.

Improvements will be divided into three categories: 1-year improvements, 2-5 year improvements, and 6-10 year improvements. Each improvement will have a magnitude of importance based upon existing conditions when compared to modern aquatic facility standards and Colorado Pool Code (CDPHE 5 CCR 1003-5 Swimming Pools and Mineral Baths).

Overview

Based upon information from conversations with the Owner/Operations group, the Sundance Hills Metropolitan District Pool was constructed in the early 80s. Given this information, the pool is approximately 40 years old. A majority of large-scale, commercial-grade swimming facilities are built and designed to have an active lifespan of 50 years. There are three bodies of water in the facility. Each body of water is described below:

- **Lap Pool –** Six (6) lane 25-yard pool with accompanying starting blocks, lane lines, and stair entry. Approximate surface area of ~3400sf, with depths ranging from 3ft to 5ft.

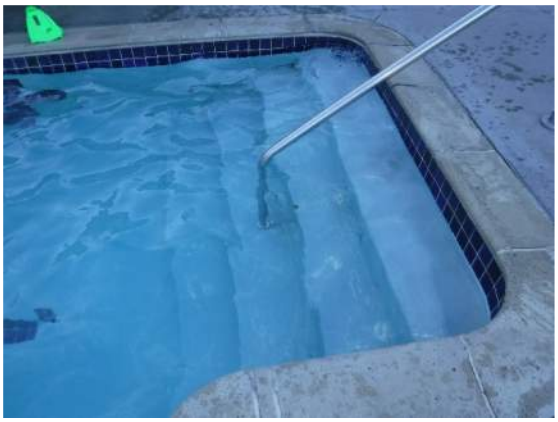
- **Dive Pool –** Deep-water pool with one (1) 1-meter and one (1) 3-meter diving board and accompanying safety padding. Approximate surface area of ~1350sf, with depths ranging from 6ft to 12ft. The dive pool was winterized and covered during the C-H site visit.

- **Wading Pool –** Shallow-water pool with an approximate surface area of ~300sf and a constant depth of 1ft. The wading pool was winterized and covered during the C-H site visit.

All three (3) of the pools utilize a skimmer perimeter overflow system, pre-cast coping stones, and a plaster finish. Underwater lights are in place at the lap pool. All three (3) pools utilize high rate sand filtration, natural gas fired heating, plastic commercial pool pumps, and TriChlor erosion feeder systems.

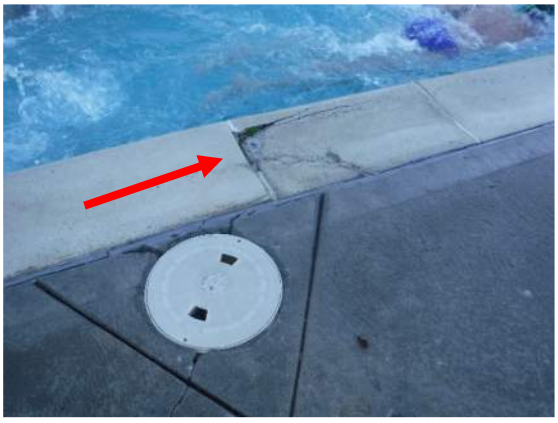
Observations & Recommendations

1. Vertical depth markers are beginning to fade, and contrasting nosings are not provided at the Lap Pool stair entry per code. C-H recommends various tile work around the pools to remedy these issues.



2. All pool plaster is in poor condition and is approaching the end of it's useful life. C-H recommends resurfacing all three bodies of water with a proprietary quartz aggregate cementitious finish (Diamond Brite).

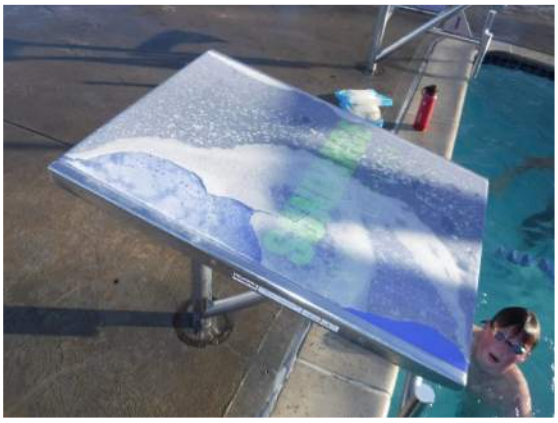
3. In several locations, the precast coping stone and caulking at the expansion joint shows signs of aging, cracking, and damage. Select stones and caulking around the Lap Pool are in need of replacement. Condition of stones and caulking could not be confirmed for the Diving Pool and Wading Pool.



4. According to staff, several underwater lights are not working within the Lap Pool. C-H recommends replacement all of the wiring and niches with White LED Underwater Lights.

5. Staff mentioned that the Lap Pool has been repaired several times for leaks, and water is currently being lost from the pool at an approximate rate of ¼" per day. While about 1/8" is accounted for with splashout and evaporation, C-H recommends pressure testing all piping to ensure leaks are not present beneath the pool deck, and performing a water tightness test on all pool structures during the re-plastering process.

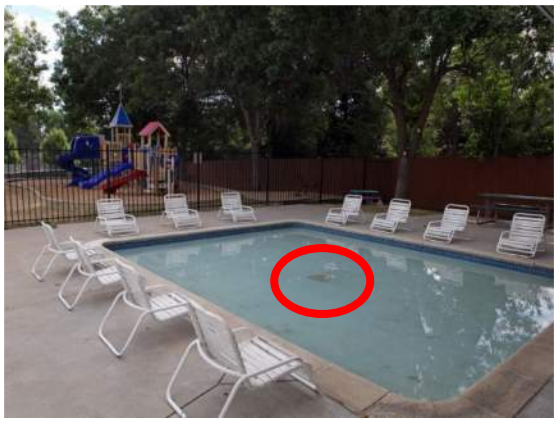
6. Six (6) starting blocks are provided at the Lap Pool. The platforms show signs of aging and delamination. C-H recommends resurfacing starting blocks to renew non-slip material. It is important to note that the Lap Pool maximum depth of 5ft meets USASwimming starting platform requirements for competition and experienced swimmers, but not for teaching racing starts.



7. Various deck equipment is in fair condition and is beginning to show signs of aging. C-H recommends replacing backstroke stanchions, lane ropes, pool covers, cover reels, and safety covers for use during winterization.

8. A portable ADA lift was observed, but it was not anchored pool-side as required by ADA. C-H recommends providing ADA access for all three (3) pools: permanent installation for existing lift at the Lap Pool, new ADA lift installation at the Diving Pool, and include a zero-depth entry at the Wading Pool replacement. Lifts cannot be moved from pool-to-pool, as this requires staff assistance for disabled patrons.

9. Based on website pictures, one (1) drain is provided at the Wading Pool. A minimum of two (2) drains must be provided in each pool to meet VGB compliance and state code. C-H recommends installing an additional main drain sump and grate. Additionally, VGB requires all main drain grates to be replaced every ten (10) years. C-H recommends replacement of all main drain grates at all pools.



10. The wading pool is outdated and does not meet modern aquatic industry standards. C-H recommends a replacement of the existing wading pool with a larger, zero-depth entry wading pool with ground sprays, interactive spray features, a toddler slide, a play structure, or a combination of these items.

11. The diving board locations were measured while on-site. Both springboards are within 10ft of the side walls of the diving pool, which violates code. The dive stand guard rails do not protrude past the pool wall, which creates a safety hazard. C-H recommends re-installing dive stands to provide adequate dimensions to side walls. C-H also recommends replacement of dive stand guard rails.

12. The diving pool envelope could not be measured on-site due to the safety cover installation. The pool's maximum depth could not be confirmed while on-site. The envelope must comply with the minimum dimensions shown in section 3.1 of Colorado Pool Code – staff to confirm. If dimensions are not met, Diving Pool modification is recommended. Refer to Appendix C for discussion of options.

13. The safety padding located underneath the diving boards is deteriorating and requires repair (short term) or replacement (long term). C-H recommends installing watertight foam protection - SoftSide by RenoSys at diving board locations.

14. TriChlor is currently added to the pools using Pentair gravity erosion feeders. pH buffer feed systems and water chemistry controllers are not present per aquatic industry standards. C-H recommends providing dedicated chemical storage rooms and installing the following for each pool system: automated calcium hypochlorite erosion feeder, automated pH buffer chemical feed system, and a dedicated water chemistry controller.

15. Exposed pool piping within the mechanical room is made of several different materials. Select runs of piping are not properly supported. Cross-connections were observed between pools, which goes against modern aquatic industry standards. C-H recommends replacement of all exposed pool piping to Schedule 80 PVC that is properly supported in all locations and is labeled/colored per code.

16. Recirculation pumps for the Lap and Dive Pools are Pentair Commercial Plastic Pumps. Staff indicated that these pumps are roughly six (6) years old. Staff mentioned that pumps shake during operation. This is due to the pumps being located above water level. C-H recommends replacing the recirculation pumps in kind, but providing a pump pit, VFDs, gauges, and concrete housekeeping pads for proper operation.

17. Vertical high rate sand filtration tanks are provided at the Lap and Dive Pools. The filter tanks and piping show signs of aging. Schedule 40 PVC face piping is provided which does not meet industry standard. Gauges are missing from the face piping. C-H recommends providing horizontal high rate sand filtration tanks with Schedule 80 PVC face piping, backwash valves with mechanical linkages, and influent/effluent gauges.

18. Two natural gas fired pool heaters are provided: one is by Laars (~20 years old) and the other is by Raypak (~12 years old). Heaters are in working order, but show their age and are reaching the end of their lifespans. C-H recommends like-kind heater replacements (manufacturer selection by Owner). Heaters should be provided with CPVC influent/effluent piping and shall be sized for pool use during shoulder seasons.

19. The existing Wading Pool equipment is included in the corner of the room. In order to meet all applicable codes and industry standards, C-H recommends providing new recirculation and heating equipment when the Wading Pool is replaced.

OPINION OF PROBABLE COST

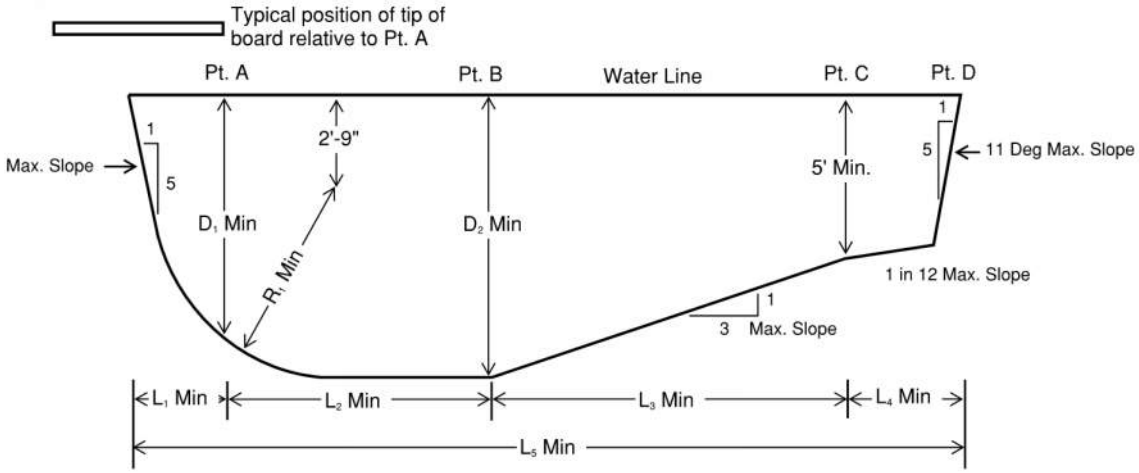
Counsilman · Hunsaker
AQUATICS FOR LIFE

Sundance Hill Metro District Pool and Park Renovation
*PRELIMINARY Opinion of Probable Construction Cost — 3/11/2021

ITEM	PRIORITY	COST
1 Year Improvements		
Depth Marker and Contrasting Nosing Tile Work - Lap Pool	MEDIUM	$4,500.00
Plaster Replacement - All Pools	HIGH	$131,500.00
Pre-Cast Coping & Caulking Selective Replacement - All Pools	MEDIUM	$3,000.00
Water Tightness Test for Piping and Structures - All Pools	HIGH	$8,000.00
ADA Lift Installations - Lap & Diving Pools	HIGH	$10,500.00
VGB Main Drain Modification - Wading Pool	HIGH	$18,000.00
Safety Padding Minimum Patch Repairs - Diving Pool	HIGH	$1,500.00
VGB Main Drain Grate Replacement - All Pools	HIGH	$2,500.00
1 Year Subtotal		$179,500.00
2-5 Year Improvements		
Starting Block Top & Step Resurfacing - Lap Pool	MEDIUM	$6,000.00
New Pool Covers & Reels - Lap & Diving Pools	MEDIUM	$30,000.00
New Backstroke Stanchions - Lap Pool	LOW	$1,000.00
New Lane Ropes - Lap Pool	MEDIUM	$2,500.00
Pool Safety Covers Replacement - All Pools	LOW	$14,000.00
LED Underwater Light Fixtures & Cord - Lap Pool	MEDIUM	$6,000.00
Pool & Mechanical Equipment Replacement (~1200sf) - Wading Pool	MEDIUM	$490,000.00
Dive Stand Options - Diving Pool	HIGH	Refer to Appendix C
Safety Padding Replacement - Diving Pool	MEDIUM	$32,500.00
Replace Recirculation Pumps - Lap & Diving Pools	HIGH	$14,500.00
Recirculation Pump Gauges and Housekeeping Pads - Lap & Diving Pools	HIGH	$3,000.00
Add Pump Pit	HIGH	Refer to Structural
Replace Filters & Face Piping - Lap & Diving Pools	HIGH	$65,000.00
Replace Pool Heaters (Standard Efficiency) - Lap & Diving Pools	MEDIUM	$81,000.00
2-5 Year Subtotal		$745,500.00
6-10 Year Improvements		
Automatic Sanitizer System (Calcium Hypochlorite) - Lap & Diving Pools	LOW	$21,000.00
pH Buffer System (Muriatic Acid) - Lap & Diving Pools	LOW	$8,500.00
Automated Water Chemistry Controllers - Lap & Diving Pools	MEDIUM	$22,000.00
Replace all Exposed Mech Room Piping & Supports - Lap & Diving Pools	HIGH	$45,000.00
Provide Recirculation Pump VFDs - Lap & Diving Pools	LOW	$11,000.00
Add Chemical Storage Rooms	MEDIUM	Refer to Architectural
6-10 Year Subtotal		$107,500.00
TOTAL AQUATICS COST ESTIMATE (Inflation & general contractor mark-up not included)		$1,032,500.00
Contingency	15%	$1,187,375.00
TOTAL AQUATICS COST ESTIMATE		$1,188,000.00

The Consultant has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable cost are representative only of the Consultant's judgment as a design professional familiar with the construction industry. The Consultant cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinion of probable costs.

APPENDIX A: Colorado Pool Code Section 3.1 - Required Diving Envelopes



Note: L_4 Is a minimum dimension to allow sufficient length opposite the board. This may of course be lengthened to form the shallow portion of the pool.

Related Diving Equipment		Minimum Dimensions								Minimum Width of Pool at		
Max Diving Board length	Max Board Height Over Water	D_1	D_2	R_1	L_1	L_2	L_3	L_4	L_5	PT.A	PT.B	PT.C
210'	26" (2/3 meter)	7'-0"	8'-6"	5'-6"	2'-6"	8'-0"	10'-6'	7'-0"	28'-0"	16'-0"	18'-0"	18'-0"
12'	30" (3/4 meter)	7'-6"	9'-0"	6'-0"	3'-0"	9'-0"	12'-0"	4'-0"	28'-0"	18'-0"	20'-0"	20'-0"
16' 1	1 meter	8'-6"	10'-0"	7'-0"	4'-0"	10'-0"	15'-0"	2'-0"	31'-0"	20'-0"	22'-0"	22'-0"
16' 3	3 meter	11'-0"	12'-0"	8'-6"	6'-0"	10'-6"	21'-0"	0	37'-6"	22'-0"	24'-0"	24'-0"

L1, L3, L4, combined represent the minimum distance from the tip of board to pool wall opposite diving equipment.

APPENDIX B: Short Narrative Regarding Energy Efficiency at Aquatic Facilities

Counsilman-Hunsaker has designed many facilities at varying levels of efficiency. The unfortunate truth is that pools are inherently very costly in terms of energy. However, there are many different techniques that can be applied to reduce these costs. One major technique is already used at Sundance: applying pool covers nightly while the facility is closed is one of the best ways to conserve energy. Pool Covers significantly lower the energy required for heating, and they also conserve water by preventing evaporation at the pool surface.

Other techniques can be applied to increase efficiency. In most modern pool designs, pumps are supplied with Variable Frequency Drives (VFDs) to prevent the pump from overworking. Automated water chemistry controllers and feed systems can also save yearly costs by reducing the amount of chemicals required. Pool Heating technology has come a long way – ultra-high efficiency indirect gas fired pool heaters are now available. Generally, these heaters cost more upfront, but pay for themselves with longer warranties, less maintenance, and lower natural gas costs. Supplemental technology provided by the Mechanical Consultant can also be used to increase efficiency, such as Solar Panels or rejected heat loops from Dehumidification Units.

APPENDIX C: Options for Diving Boards at Sundance

Diving envelopes must be measured at the Sundance Diving Pool. During the site visit by C-H, the pool was winterized with a safety cover so the diving pool could not be observed, and measurements could not be taken. The options below describe different avenues the Owner could take, based upon findings once measurements are taken.

Option 1: Grandfathering – C-H discussed with a representative (John Bergstrom) at the local Tri-County Health Department to see what would be required if renovations are completed at the existing Diving Pool. The equipment such as pumps, filters, heaters, exposed piping, and plaster could be replaced without disrupting the current Grandfather Status of the 1-meter and 3-meter diving boards; so long as the pool structure is not modified. While this would result in minimal costs required at the pool for the dive stands, C-H still highly recommends conforming to the Colorado Pool Code standards. Ultimately, this would be an Owner decision on how to proceed with the existing conditions and the accompanying liability.

ESTIMATED COST OPTION 1: ~$5,000 - Guard Rail Replacement at Dive Stands Only.

Option 2: Remove/Replace Dive Stands as Needed – Once the pools are measured and compared against the Colorado Pool Code Diving Envelope, it can be determined if the pool meets code criteria for both 1-meter and 3-meter diving. If criteria are not met, there is an option to replace one (2A) or both (2B) dive stands with features that have less deep-water requirements.

ESTIMATED COST OPTION 2A: ~$36,500 – Remove the existing 3-meter dive stand and replace with an Aquatic Climbing Wall Feature. Relocate the 1-meter dive stand and replace 1-meter dive stand guardrails.
ESTIMATED COST OPTION 2B: ~$39,000 – Remove both existing 3-meter and 1-meter dive stands. Replace the two dive stands with an Aquatic Climbing Wall Feature and a Zipline Feature.

Option 3: Modify/Replace Pool to Accommodate Diving - Once the pools are measured and compared against the Colorado Pool Code Diving Envelope, it can be determined if the pool meets code criteria for both 1-meter and 3-meter diving. If criteria are not met, there is an option to modify or replace the existing Diving Pool to accommodate the water depth and area requirements for the boards.

ESTIMATED COST OPTION 3A: ~$340,000 – Revise water depths and slopes within the existing Diving Pool to meet Colorado Pool Code. This pool depth revision is only feasible if deep spread-footing structures are used to support a CIP pool structure. With no existing drawings available for the pool, destructive/invasive testing would be needed to see if this option is viable.
ESTIMATED COST OPTION 3B: ~$475,000 to $575,000 – Provide a new Diving Pool at the Sundance facility that meets required depths for 1-meter and 3-meter diving. A new pool structure (as well as new piping and mechanical equipment) would be provided. Pool cost will vary based on the surface area of the new pool and the quality of new equipment provided. It is important to note that selecting option 3B would replace any Diving Pool Improvement suggestions listed in the Opinion of Probable Cost.

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CIVIL & LANDSCAPE ASSESSMENT 03

March 3, 2021

Alyssa Tharrett
Essenza Architecture
685 S. Arthur Ave., Unit 12B
Louisville, CO 80027

RE: ***Sundance Hills Pool and Park Renovation***
Civil and Landscape Site Assessment

Ms. Tharrett:

Kimley-Horn and Associates, Inc has been retained by Cherry Creek Vista Parks Recreation District (the "Client") to provide civil engineering and landscape architecture services to support the proposed improvements at the existing Sundance Hills pool and park facility.

To facilitate the project's programing and determine which site improvements may be required, Kimley-Horn has prepared an initial site assessment. The assessment is based upon a site visit by Kimley-Horn staff on March 2, 2021.

Site Overview
The site is located at 5626 S Galena Street in Greenwood Village, CO. The site contains a small parking lot, one occupied pool building, one large metal canopy, three pools, four tennis courts, one volleyball court, and playground equipment.

Grading and Drainage
Overall, the site drains from west to east into E. Powers Avenue and S Geneva Street, and the adjacent public storm drain system. There are no on-site water quality or detention ponds. Stormwater is conveyed via sheet flow, concrete valley gutters, and vegetated swales.

No trench drains were observed in the pool deck, and all stormwater appears to drain outward towards the perimeter. Building roof drains surface discharge, resulting in ice accumulation during the winter. Select modifications to the existing roof drain system could improve the ice accumulation. Isolated sidewalk settling has resulted in stormwater ponding adjacent to building and should be corrected.

The lack of water quality and detention facilities does not meet current City design standards. Any increase in impervious area may trigger additional drainage requirements.

Accessibility

There is one existing non-conforming accessible parking stall north of the metal canopy and a sidewalk connecting this stall to the main entrance. The existing ADA stall does not meet current ADA requirement, lacking the adjacent loading zone. Based on the number of existing parking stalls, a minimum of two ADA stalls are required. The main entrance is accessed via two sidewalk connections.

Utility

The site currently has water, sanitary, gas, electrical and communication services. The building is served by a 1.5" water meter, located near the southwestern building corner. The building is served by either a 4" or 6" sanitary sewer connection, with a visible cleanout near the southwest building corner. The existing services are assumed to be adequately sized to serve the project, and no significant changes are proposed.

Site Paving

The site is served by an asphalt paved parking lot. In general, the pavement appears to be in good condition, with limited cracking as would be expected at a facility of this age. We recommend a crack seal application be applied to extend the existing asphalt pavement life. The existing concrete sidewalk and curb and gutter generally appear to be in good condition; however, certain sidewalk panels have settled or heaved. We recommend replacing all damaged concrete panels to eliminate tripping hazards and ponding adjacent to the building.

Misc.

There is no existing trash enclosure. A dumpster is placed each summer in the parking lot adjacent to S Powers Ave with no screening. We recommend a permanent trash enclosure with gate be installed. Two light poles illuminate the parking lot, and while still operational, are near obsolete. We recommend the existing poles be replaced with LED fixtures.

Retaining Walls

The existing concrete retaining walls adjacent to the tennis courts have weathered paint and moderate concrete spalling, but no apparent structural failure. These issues are likely caused by high moisture content behind the walls. Adjacent grading and wall drainage should be evaluated and improved. Also a Structural Engineer should review walls for any excessive damage or spalling that may require a more significant repair.

Landscape

The existing landscape is in good condition and well maintained. We suggest landscape around the perimeter of the site, in the parking lot and adjacent to the building be salvaged were possible. Enhance landscape to showcase the main entry has been requested.

Irrigation

The existing irrigation is in good working order. Irrigation additions and changes should be design build and incorporated into the existing system.

Playground Equipment and Open Active Space

There are 2 main playground areas and 1 shade structure.
The upper playground area is in working condition and the playground curb is in good condition.
Contents:

- (1) Multilevel play structure with a slide – Condition: Fair
- (1) Chain climbing structure – Condition: Fair
- (1) Spring toy – Condition: Poor
- (1) Picnic Table – Condition: Good

The lower playground area is in working condition and the playground curb is newer and very solid. It may create a bathtub affect as all water drains toward the playground. (I could not identify any drains)
Contents:

- (1) Swing set with (6) bays (2 infant, 4 child) – Condition: Good
- (1) Bars set – Condition: Good
- (1) Merry-go-round spinning toy – Condition: Poor
- (1) Picnic Table – Condition: Fair

The Shade Structure is in good condition and appears to be newer. The concrete slab is in good condition and the structure is strong.
Contents:

- (3) Trash Receptacles – Condition: Good
- (1) Picnic Table – Condition: Fair

The volleyball court is in good condition. The net posts are old but functional.
The open grass area below the volleyball court is healthy and well maintained.

Project Recommendations Timeline:

Below is a list of facility improvement recommendations with a suggested timeline for improvements.

1 year Improvement Recommendations

#	Description	Priority	Anticipated Cost (ROM)
1	Sidewalk repair	High	$5,000
2	New accessible parking stalls	High	$1,500
3	Crack seal parking lot	Medium	$7,500
4	Landscape area grading/drainage improvements	Medium	$10,000
5	Retaining wall drainage improvements	Medium	$20,000
6	Upper Playground	Low	$40,000

2 - 5 year Improvement Recommendations

#	Description	Priority	Anticipated Cost (ROM)
1	New trash enclosure (wood)	Low	$6,000
2	Replace light poles	Low	$5,000
3	Volleyball Court pole and net replacement and sand refresh	Low	$4,000

6 - 10 year Improvement Recommendations

#	Description	Priority	Anticipated Cost (ROM)
1	Lower Playground	Low	$40,000

STRUCTURAL ASSESSMENT

04

March 3, 2021

Alyssa Tharrett
Essenza Architecture
685 S. Arthur Ave, Unit 12B
Louisville, Colorado 80027

Re: Sundance Hills Pool House Site Assessment
Martin/Martin, Inc. Project No.: 20.1404.S.01

Ms. Tharrett,

As requested, Martin/Martin, Inc. performed a site investigation of the existing structures at the Sundance Hills Pool in Greenwood Village, Colorado.

Our scope included a site visit to view the structural condition of the existing pool house, pre-engineered pavilion structure, retaining wall at tennis courts, and a review of the existing building drawings that were available.

The statements within this report are based on our current, limited, understanding of the structure and its structural systems. Our report is based on our observations during the site walk, review of the building drawings available, and our knowledge and experience. We have not performed any destructive testing or non-destructive testing related to structural systems except as specifically described herein.

1. Background

We performed a site observation of the structures on December 7th, 2020. Our visual observations were supplemented by the provided building construction drawings.

The original construction drawings for the pool house were prepared by Kephart Architects in 1999. The structure is composed of pre-engineered wood roof trusses at 24" on center with 5/8" OSB sheathing. The trusses span to 2x4 wood bearing walls or steel header beams supported by wood or steel columns. Foundations were shown as a continuous 18" wide footing under an 8" concrete stem wall. No geotechnical report was provided for review, but the drawings indicate they used an assume bearing pressure of 2000 pounds per square foot. Several deviations from the structural drawings were observed, most notably due to exterior grade changes on the south and west side, but they look to have been made at time of original construction. If there are marked up as-built drawings that show these updated conditions, we recommend that ownership group share them with the design team.

There were no existing drawings provided for any of the pool structures, the shade pavilion, or the tennis court retaining walls.

2. Observations

2.1. Shade Pavilion

The exterior shade pavilion is comprised of wood decking spanning to C shaped light gage metal rafters supported by custom manufacturer steel main frames. Diagonal rod bracing was observed below the roof forming a lateral load path that includes supplemental steel framing at each end bay. Main frame column bases appeared to bear at a consistent elevation, which in combination with the sloping concrete slab creates ever larger pedestals as the columns go to the east. Anchor bolts and extents of foundations below grade were not observable.

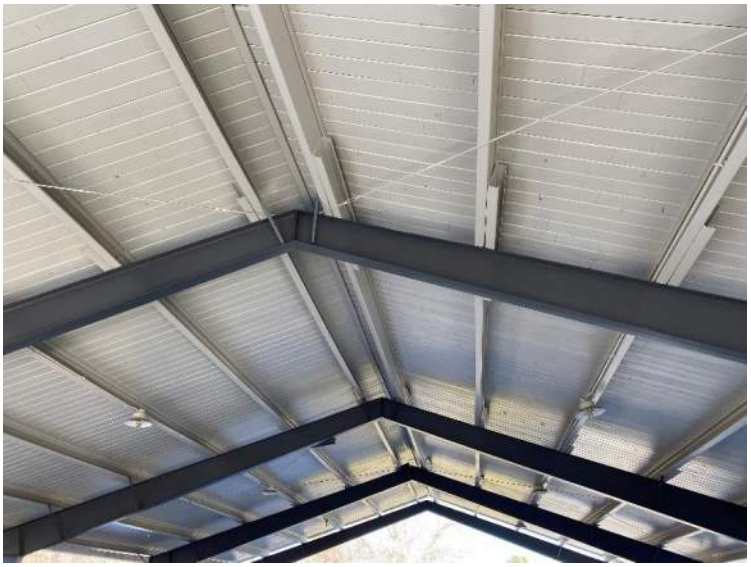


Photo 1: Pavilion Structure

No existing issues with the pavilion were observed. Structures like this are designed custom to each site and the main frame steel is optimized to the original loads typically leaving limited excess capacity for modifications. Without original design drawings, a detailed site visit taking measurements of the steel shapes including flange and web thicknesses would be needed to determine any excess capacity available for alterations.

2.2 Pool House

The pool structure appeared to be in generally good shape. A few small cracks were noticed in the interior gypsum wall panels and the west concrete stem wall but that is to be expected in a building of this age. Roof trusses were not able to be observed as they were concealed by a hard lid ceiling. At one location on the west side a significant amount of concrete has spalled from the stem wall exposing steel reinforcing and was subsequently painted over. The paint should be removed from this area and the concrete should be patched.

Photo 2: Exposed stem wall rebar

The slab on grade inside the building appeared to be in generally good shape and does not show visible effects of excessive heave or settlement. The site paving showed signs of movement, most notably on the west side of the building. At several slab on grade locations a top coat has been applied and is starting to bubble and crack including the center walk through entry and the community room bathroom. These flooring coatings do not last forever and they appear to be nearing the end of their lifespan and should be considered for replacement.

Photo 3: Cracking floor coating at central walkway

At the request of Councilman-Hunsaker, we have been asked to address feasibility of adding a pump pit inside the existing building. Pit depths can be commonly up to 5-6' in depth. Existing foundations were shown on a markup to have their bottom 3'-8" below the slab. If pit needs to be deeper than that special care will need to be made to not undermine the existing foundations including potholing to verify foundation depths, shoring of existing structure, and potentially lowering of foundations. A site-specific geotechnical report should be commissioned to address construction methods and concerns for the new foundations if the pit undermines the existing foundations.

2.3 Tennis Court Retaining Walls

The existing coating at the concrete retaining walls separating the pool facility from the tennis courts had noticeable deficiencies. It was reported that this condition has been observed and repaired multiple times in the past. It is our opinion that the wall coating material has provided a barrier to moisture migration from the soil to the open-air side. As such the barrier forces failures in the coating resulting in the appearance of spalling and cracked paint. It is our recommendation the coating be removed in its entirety from the wall or it will continue to have issues. If a coating is desired, special care must be taken to address moisture migration through the concrete. This could be achieved with a topically applied crystalline waterproofing coating such as Xypex that would modify the in-place concrete to create a barrier to the moisture mitigation. Future topcoats should then be selected that can work in combination with the waterproofing coating. M/M does not believe the visible appearance is of structural concern, but after removal of the coating, M/M should be engaged to observe the concrete condition.

Photo 4: Coating failure at tennis court retaining walls

On the east side of the tennis courts some concrete spalling was observed at the interface between the court and concrete pour down edge. Concrete tennis courts are often post-tensioned to limit cracking and what is being seen here could be related to the court "pulling away" from the poured down edge. While not of major structural concern, we recommend removing all damaged concrete and coatings in the areas of concern, having Martin/Martin observe the condition and select an appropriate concrete patching material to repair the condition.

Photo 5: Spalling at east side of tennis courts

3. Existing Structure Capacity

Per the 2018 International Existing Building Code, any existing gravity load carrying element for which an alteration increases the design load by more than 5% shall be replaced or altered as needed to carry the gravity loads as prescribed in the current new building code. Similarly for lateral loads, alterations that cause any element of the lateral load resisting system to have its demand-capacity ratio increased by 10% will trigger a complete building lateral upgrade to meet the current building code.

Due to the lack of existing structure drawings for the pavilion, as well as no design information on the existing drawings for the pool house roof trusses, estimations of building excess capacity cannot be made. Lateral load path of the pool house is not explicitly detailed on the existing drawings which will limit flexibility in new openings in the exterior wall. If the building or pavilion need to be extensively remodeled structurally, we recommend any changes be limited to a 5% or less change in anticipated gravity loading from the current condition. Adding solar panels to the roof without exceeding the 5% allowance is not feasible without the original truss design drawings.

If more extensive renovations are required, there will likely need to be a more detailed structural site visit and analysis to take detailed measurements of framing size, thickness, and spacing as well as limited

excavation (potholing) to verify existing foundations at the pavilion, and selective demo of roof and walls to determine existing sheathing connections to framing. Substantial strengthening, including a full lateral upgrade, could be required to meet modern codes if renovations exceed the 5% for gravity and 10% for lateral load allowances.

4. Limitations

Our investigation was limited solely to the visual observation of the structure located at 5626 S Galena St in Greenwood Village, Colorado

Martin/Martin, Inc. does not accept responsibility for deficiencies evident or not evident during an evaluation of this type. Neither the investigation nor this report is intended to cover civil, mechanical, electrical, architectural, or other nonstructural features beyond those described above.

We appreciate this opportunity to be of service. Please call if you have any questions regarding this report or our recommendations.

Sincerely,

Edward Sabia, PE
Associate

Project Recommendations Timeline:

Below is a list of facility improvement recommendations with a suggested timeline for improvements.

1 year Improvement Recommendations

#	**Description**	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1	Repair spalled concrete and exposed rebar	Medium	$1,000
2	Remove tennis court retaining wall coating	Medium	$1,000-$10,000
3	Remove spalled concrete at east tennis wall for review and repair	Medium	$1,000-$5,000
4			
5			
6			
7			
8			
9			
10			
11			

2 - 5 year Improvement Recommendations

#	**Description**	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1	Provide crystalline waterproofing coating on tennis court retaining wall and re-coat	Medium	$5,000-$30,000
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

6 - 10 year Improvement Recommendations

#	**Description**	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

MECHANICAL & PLUMBING ASSESSMENT

05

HVAC:

Existing Observations:

1. The existing Women's and Men's Locker Room exhaust fans are operational and provide 12.5 air changes per hour or 700 CFM of exhaust without means of makeup air. This exhaust airflow quantity exceeds code minimum. Ceiling mounted exhaust grilles appear to be sized correctly, but are dirty and show some wear.
2. The existing Women's and Men's Locker Rooms do not have supplemental heat to temper the raw makeup air when in operation during the cooler months of the open season.
3. The existing horizontal furnace with cooling coil, split outdoor condensing unit and thermostat serving the community room and adjacent toilet rooms have been replaced within the last (5) years. There are no known issues with this system.
4. Exhaust fans serving the toilet rooms adjacent to the Sailfish Room are operational and have been designed to exhaust 200 CFM. This exhaust airflow quantity exceeds code minimum. Ceiling mounted air devices appear to be sized correctly, but are dirty and show some wear.
5. Pool chemicals are stored within the pool equipment room.
6. The pool equipment room is not ventilated and corrosion to piping is present in the room.
7. The existing pool boilers and domestic water heater utilize outdoor combustion air provided to the pool equipment room by the two-permanent opening method. The existing outside air opening to the space is not sufficiently sized to meet the requirements of the International Fuel Gas Code.
8. The existing pool heater flues appear to be in good condition.
9. The existing pool heater flue and exhaust fan terminations appear to be in good condition.
10. Pool equipment room supplemental heat is provided by an existing electric unit heater controlled by a line voltage thermostat. We were unable to confirm the operation and capacity of the unit heater.
11. An existing emergency power off switch (EPO switch) is installed adjacent to the pool equipment room man door. We were unable to confirm proper operation of the switch.
12. The gas fired domestic hot water heater vent connection shows signs of severe corrosion and possible blockage. If the vent connection is blocked flue gases could enter the room.
13. The main domestic water lines that run to the Sailfish room sometimes freeze in the winter.

GAS PIPE AND HANGER CORROSION

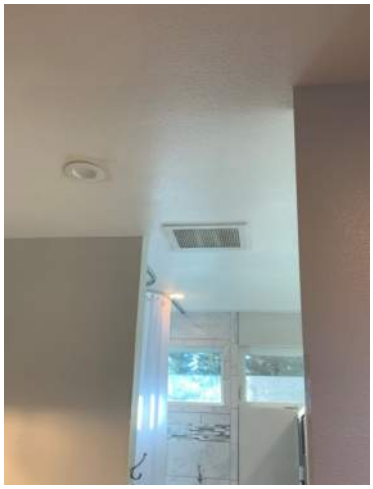
POOL BOILER PIPING CORROSION

POOL CHEMICAL STORAGE AREA

POOL HEATER AND ASSOCIATED FLUE

POOL EQUIPMENT ROOM CA OPENINGS AND EPO SWITCH

POOL EQUIPMENT ROOM COMBUSTION AIR LOUVER



TYPICAL LOCKER ROOM EXHAUST FAN

COMMUNITY ROOM SUPPLY DUCTWORK AND RETURN GRILLE

ROOF TERMINATIONS

SAILFISH AIR DEVICES

DOMESTIC WATER HEATER VENT CONNECTION

Project Recommendations Timeline:

Below is a list of facility improvement recommendations with a suggested timeline for improvements.

1 year Improvement Recommendations

#	Description	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1	Provide a dedicated chemical storage room / cabinet for storage of pool chemicals with a dedicated all plastic chemical exhaust fan system to ventilate the space to eliminate corrosion to the pool equipment room equipment and piping. *Note that the ROM cost is only inclusive of the ventilation components of the room that would be added.*	High	$20,000
2	Add a roof mounted exhaust fan to ventilate the pool equipment room to promote a fresh environment and reduce corrosion to new non-plastic pipes.	High	$10,000
3	Replace the existing pool equipment room combustion air louver and ductwork with a new larger louver / ductwork to comply with the requirements of the International Fuel Gas Code.	High	$10,000
4	Replace the pool equipment room unit heater with an electric unit heater appropriately sized to prevent freezing within the space while the facility is in operation during the cooler months of the open season.	High	$5,000
5.	Repair/replace gas fired domestic water heater venting system.	High	$3,000

2 - 5 year Improvement Recommendations			
#	**Description**	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1	Provide a means of makeup air to the Women's and Men's Locker Room to promote airflow for a fresh space when the man doors are closed. This can be done by adding louvers to the existing doors.	Medium	$10,000
2	Add electric unit heaters to the Men's and Women's Locker Rooms to temper the raw makeup air for occupant comfort during the colder months when the facility is operational.	Medium	$10,000
3	Consider adding ceiling fans to the Guard Station and Administration Rooms to promote airflow for space comfort.	Medium	$15,000
4	Replace Sailfish room supply and exhaust air grilles at time of remodel.	Low	$1,000
5	Replace Men's and Women's Locker Room exhaust air grilles at time of remodel.	Low	$2,000

Plumbing:

Existing Observations:

1. The existing 2" domestic water service and the existing 4" sanitary system is sized adequately and can support a limited renovation.
2. The existing water closet and urinals appear to be in good shape, but we did not flush them because the building is winterized.
3. The existing lavatories are in good condition, but they do not meet ADA requirements because the waste piping is not insulated
4. The existing shower valves and heads are in good condition.
5. The existing floor drains in the restrooms show some wear.
6. There are two hose connections serving the pool deck, which does not meet the code requirement that the entire pool deck should be able to be cleaned with a 50' hose.
7. The building's domestic hot water is generated by a 50,000 BTUH gas fired water heater that was installed in 2007. The average life expectancy of a tank-type water heater from is 8-12 years, and although this water heater is only used for part of the year, it will likely need to be replaced soon. The water heater shows significant signs of wear. It is exposed to the corrosive environment of the pool equipment room which seems to have led to accelerated deterioration of system components. Most concerning is the condition of the vent connector which may be partially blocked and could lead to flue gases entering the room. Because the building was winterized during the site visit, the water heater was not running so we could not identify any operational deficiencies.
8. The existing domestic cold water piping in the pool equipment room is poorly insulated and show signs of surface corrosion.
9. The natural gas serving the building is a 6 in. W.C. system and can support a limited increase in load. The abandoned relief vent pipe that routes from the gas meter to the roof can be removed.
10. The pool deck is drained in two primary ways. On the north side of the pool deck, there is a catch basin that receives water from one roof drain downspout and the portion of the pool deck west of the diving pool and north of the lap pool. On the east side of the pool, there is a swale that leads water down to the tennis courts. This water is, according to the owner, responsible for much of the corrosion along the tennis court walls.
11. The gas fireplace is not working. It is unclear what has failed.
12. The drinking fountain is not leaking and it appears to be in good condition.
13. Currently, there is no emergency eyewash or shower in the pool equipment room.

LAVATORIES NOT ADA

TYPICAL SHOWER VALVE

TYPICAL SHOWER HEAD

CATCH BASIN ADJACENT TO POOL DECK

INOPERABLE FIRE PLACE

ABANDONED GAS VENT RELIEF PIPE

PONDING FROM DOWNSPOUTS

EXISTING WATER HEATER

SWALE TO TENNIS COURT WALL

ADA RESTROOM

WATER ENTRY

DRINKING FOUNTAIN


ADA SHOWER VALVE


SERVICE SINK

Project Recommendations Timeline:

Below is a list of facility improvement recommendations with a suggested timeline for improvements.

1 year Improvement Recommendations

#	Description	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1	Replace existing water heater.	High	$10,000
2	Consider adding emergency fixtures to pool equipment room due to chemical hazards. If the domestic hot water heater is replaced, the total cost would be $15,000, or only $5,000 more than just replacing the domestic water heater.	Medium	$15,000 Or $5,000
3	Consider cleaning & adding insulation to domestic water pipes in the pool equipment room.	Medium	$1,000
4	Reroute storm drainage to new catch basins or stand pipes along the pool deck. During our site visit, there was a swimming group using the pool. If it is common for people to use this facility in the winter, this is a high priority for liability/safety reasons.	High	$20,000
5	Replace domestic water piping insulation in attic, and/or add blown-in insulation in attic to prevent water pipes from freezing.	High	$1,000 (pipes) $5,000

2 - 5 year Improvement Recommendations			
#	**Description**	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1	Consider replacing existing plumbing fixtures with water savings fixtures. The existing water closets in the ADA restrooms are 1.6 gpf. The other water closets were physically inaccessible, so we were not able to verify the gpf for them. The urinals are either 0.5 gpf or 1.0 gpf. New water closets and urinals would only require 1.28 gpf and 0.125 gpf, respectively. This would certainly help with water savings. The showerheads are 1.75 gpm, and they can be replaced with 1.5 gpm heads for further water savings. Anticipated cost is for replacing all water closets, lavs, urinals, and showerheads. This would provide roughly 20% in water savings for plumbing fixtures.	Medium	$20,000
2	Add insulation and mixing valves to existing lavatories to meet current code.	Medium	$1000

6 - 10 year Improvement Recommendations			
#	**Description**	**Priority** (High, Medium, or Low)	**Anticipated Cost** (ROM)
1	Replace existing service sink	Low	$1,000

ELECTRICAL SYSTEMS ASSESSMENT

06

AE DESIGN

Integrated Lighting and Electrical Solutions

DETAILED ASSESSMENT REPORT FOR SUNDANCE HILLS POOL

5626 S Galena St.
Greenwood Village, CO 80111

ELECTRICAL SYSTEMS
March 4, 2021

DETAILED ASSESSMENT REPORT

PURPOSE OF THE DETAILED ASSESSMENT REPORT

This detailed assessment report is intended to serve two primary purposes. First, it is intended to give the Owner and Estimator a basic understanding of the electrical systems. Second, this package is intended to be a coordination document for Design Team discussions.

PROJECT DESCRIPTION

The Sundance Hills Pool bathhouse was built in the 1970's. Minor finish improvements have been completed in recent years including upgraded finishes within the community room space, as well as updated restrooms accessed from the pool deck. Portions of the building are in disrepair and are not necessarily as functional of a layout for the intended use. This assessment is intended as a tool for documentation of the current facility systems in anticipation of remodeling the locker rooms, and considerations of improvements which will include reorganization of the amenities and upgrades/improvements for equipment.

The existing space has a large separate shade structure with access to vending machines and seating, with limited lighting. The interior spaces include a check-in open air / office area, as well as a community space (better known as the Sailfish Room) available as rentable space, which has a small kitchenette with stove and a gas-fired fireplace.

The team visited the site on December 7, 2020. Existing drawings were not available at the time of observation.

APPLICABLE CODES AND STANDARDS

1. International Building Code 2018 (IBC)
2. International Energy Conservation Code 2018 (IECC)
3. International Swimming Pool and Spa Code 2018
4. NFPA 72, 2018 IFC
5. NFPA 101, 2018 IFC
6. National Electric Code 2017 (NEC)
7. Greenwood Village Amendments

ELECTRICAL SYSTEM RECOMMENDATIONS

A. **Electrical Distribution**
   a. Existing Conditions:
      i. Main Distribution:
         1. An existing pad-mounted utility transformer east end of the property provides 120/240V 1-Phase service to the utility meter and disconnect located on the south side of the existing bathhouse. The utility transformer appears to be a 100kVA transformer, and it is owned and operated by Xcel Energy. The pad mounted transformer is located adjacent to the fence line at the south side of the property, within the neighbor's backyard, adjacent to the existing playground, and shared with neighborhood properties.
         2. The exiting disconnect, CT and utility meter are located on the exterior of the bathhouse on the south side of the building.
            a. The existing Meter is #93.100.534.
            b. The 400A service disconnect is for the bathhouse. It is anticipated to feed Panel L1, which is located within the employee space of the check-in area. Panel L2, is

located adjacent to Panel L1. A mechanical panel was also observed in the pool equipment room, Panel 'ML1'.

3. Panel L2 – Located within Storage Room off Check-in Area
    a. SIEMENS, 42-Pole Power Panel, with (8) bussed spaces. Rating however, was not observed for the amperage. It is assumed that this panelboard is a 400A Panelboard, but it should be verified with a licensed electrician or previous engineered drawings when available.
    b. Generally, this panel is newer, and in good condition.
    c. It is anticipated that there is a feed-thru condition to Panel 'L2'.
    d. The panel schedule is handwritten, and also indicates this as panel 'A'. It generally includes support to the interior spaces including receptacle loads, and locker room loads.
4. Panel L2 – Located within Storage Room off Check-in Area
    a. SIEMENS, 42-Pole Power Panel, with available bussed space in approximately half of the panel. Rating however, was not observed for the amperage. Its assumed that this panel is a 225A or 400A Panelboard, but it should be verified with a licensed electrician or previous engineered drawings when available.
    b. Generally, this panel is newer, and in good condition.
    c. There is a 150A Feed to Panel 'ML1'
        i. This particular breaker was not sitting in correct location and needs to be adjusted/reinstalled with panel front for safety considerations.
    d. The panel schedule is handwritten, and also indicates this as panel 'B'. It generally includes Exterior lighting loads, check-in loads including gate and canopy, as well as loads for the interior community space including range, microwave, air conditioning.
5. Panel ML1 – Located within Pool Mechanical Room
    a. CUTLER-HAMMER, 20-Pole Power Panel/Load Center, with (5) available bussed spaces. Rating is anticipated to be 150A however it was not clearly indicated on the panelboard.
    b. Generally, this panel is older, and in reasonable condition.
    c. The equipment it serves is limited to pool equipment and pool room receptacles. It also includes the sprinkler system.
    d. And EPO is provided within the pool equipment space for the boiler systems.

b. New Equipment Considerations:
    i. It is assumed that the existing 400A Service, and associated panelboards, with the addition of new breakers, should be sufficient to power any pool equipment that is to remain as well as minor pool equipment additions/replacements per the current pool recommendations, however considerations for future or additional pool improvements can significantly impact these considerations.
        1. Generally, the size of the panel is not recommended for pool equipment, and typically additional amperage would be required.

This is a similar consideration for the 120/240V-1Ph voltage, which is less commonly associated with commercial grade equipment which is more typically 120/208V and 3-Phase.

2. Additionally, should additional improvements with additional equipment load be considered service size and panel sizes may need to be further evaluated. This would include significant increases in pool size or quantity of features. With significant load increase, it would be recommended that a 208/120V 3-Phase service be provide, and new electrical panels be provided at an amperage to be determined. It is of note that the nearest 3-Phase power available is likely approximately half a mile to the north, in the direction of Belview avenue, and would require some significant considerations on the utility side. Improvements that are likely to impact this would be:
    a. Increases to pool dimensions/scale or quantity which likely result in increased heating loads.
    b. Increased feature equipment resulting in additional pump loads.
    c. Respecified pump equipment for efficiency that requires 3-Phase voltage configuration.
3. The current anticipated equipment replacement is primarily 'in-kind replacement' and therefore it is anticipated that the existing improvements would be limited for the distribution. Alternate pricing has been included for considerations of the full upgrade for reference.

ii. In the check-in area storage, both Panel L1 and L2 appear to be in good condition. With minor improvement work the facility, its anticipated these could be maintained and reused. Equipment served is likely not to change. There is space for the addition of power for minor improvements.

iii. Panel ML1 in the mechanical space appears to be in reasonable condition.
    1. With minor improvements, this panel could be maintained, however it is recommended that it be replaced in 5-10 years if condition begins to deteriorate due to corrosion.
    2. Should more significantly pool equipment improvements be made, it is recommended that this be replaced with a 30 to 42-pole more commercial-style power panel, with a NEMA 4X rating for better resiliency against corrosion and moisture within the pool equipment space.
        a. Should the Pool Equipment Room be remodeled, it is recommended that this replacement occur concurrently.

iv. Conduit provisions to the roof for Future PV shall be installed.

v. Should a 'Concessions Stand' be provided in the future, and additional dedicated 60A/3P Panel shall be provided. This is anticipated a small concession space with limited food prep equipment (warming and cool storage only). Additional load could be accommodated if service upgrade occurs.

c. General requirements:
    i. Major mechanical system and pool system connections are briefly described in the sections below as part of this report. Please also refer to the mechanical systems and pool systems due diligence reports within this package.

ii. Branch circuit wiring shall be routed within conduit and concealed within new walls or above ceilings. Where conduit is anticipated to be exposed, all routing shall be coordinated with the architect prior to rough-in.
iii. All electrical raceway systems shall be Electrical Metallic Tubing (EMT) for feeders and where branch circuits are exposed. A GRC or PVC raceway system shall be used in all pool equipment and chemical spaces.
iv. All feeders and conductors shall be copper.
v. All new panels shall have a minimum of 25% spare capacity for future expansion.
vi. New panels shall be fully rated.

ROOM: Exterior
Existing pad-mounted transformer service to pool building.

ROOM: Exterior (South side of Bathhouse)
Existing Disconnect, CT, and Meter

ROOM: Check-in Storage
Existing Panel L1

ROOM: Check-in Storage
Existing Panel L2

	
ROOM: Pool Equipment Room	
Existing Panel ML1	

B. **Power Requirements**

a. Existing Conditions:

i. Generally, few power/convenience devices were observed in restroom spaces, but they appear to be GFI.

ii. Generally, power devices were observed in the Check-in Area; anticipated all devices in this area will be demolished and replaced due to their condition.

iii. Devices in the pool equipment room appear to be in generally functional condition. Convenience devices, however, are limited.

iv. GFI devices with While-in Use covers were observed in select areas around the building, however access for serviceability and pool maintenance may merit additional exterior devices.

v. Motorized door system was observed on the check-in area.

vi. A pace clock is currently sitting on the ground and plugged into a device on the interior of the check-in space.

vii. One wet-location receptacle was observed at the tennis courts, but is not consistently functional. It appears to be switched or controlled.

b. New considerations:

i. All new circuits and major conduit runs are to be well documented within the as-built documentation created by the Contractor.

ii. All circuit conductors are to be labeled with typed adhesive labels for future reference.

iii. No more than (6) receptacles shall be circuited together on one 20A/1P circuit. Special circuiting requirements and new receptacle locations are anticipated in the following area designations.

1. Storage areas and custodial rooms shall be provided with (1) duplex receptacle for convenience. The receptacle shall be GFI where mop sinks or other water sources are present within the space.
2. Anticipate connection for replacement of irrigation system.
3. Circulation and Check-in Spaces
    a. A duplex receptacle shall be provided every 20 feet along the walls for convenience.
4. Check-in
    a. A quad receptacle location at each desk/check-in location, and accommodate point of sale equipment.
    b. Dedicated devices above counter to accommodate the equipment (microwave, coffee, etc.) and allow for more functionality.
    c. Considerations for additional 'snack bar' equipment should be accommodated with additional dedicated power to support additional refrigeration or heating considerations, "prep/storage/warming" only.
        i. Cooking/Kitchen would not be anticipated in this area without significant increased power demands.
5. Restroom/Changing Rooms
    a. Duplex receptacles shall be located throughout for convenience, GFI protected and above standard mounting height.
    b. GFI protected, dedicated, duplex receptacles shall be located at vanities for convenience.
    c. Connections for new electric hand dryers are also anticipated.
6. Pool Deck
    a. Each of the existing light poles on the pool deck is equipped with a GFCI receptacle near the base. It is assumed that these are operational and sufficient for pool vacuum use and maintenance. No additional locations would be required. If these poles are replaced (see lighting) the new poles would be provided with new GFCI extra duty receptacles with waterproof in-use covers.
7. Tennis Courts
    a. Route additional power for convenience devices to court area for better accessibility for maintenance. These shall be GFI/WP While-in Use. Provide with lockable covers to restrict use for maintenance.

iv. At a minimum, all pool and electrical equipment, metal fittings, and metal wiring methods shall be connected in accordance with NEC 680.26 with minimum #8 Solid AWG Bare Copper. This includes metal handrails and any mounting within the Pool Mechanical Room.
    1. Existing grounding was visible at pool pumps. New equipment shall also follow this requirement.

v. If/when the pool itself is refurbished, the reinforcing steel grid within the pool and deck shall be connected to the same system.

C. Lighting Systems Summary

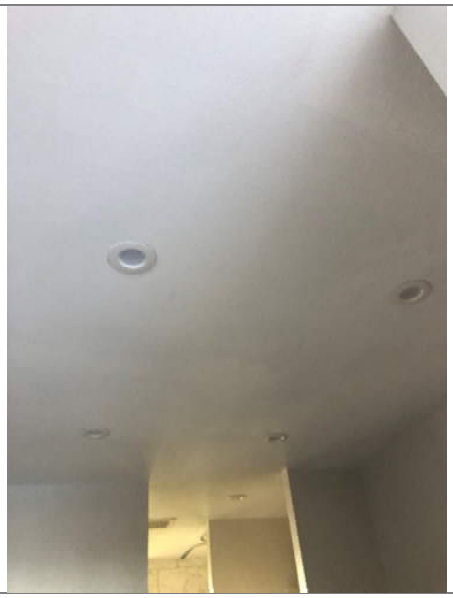
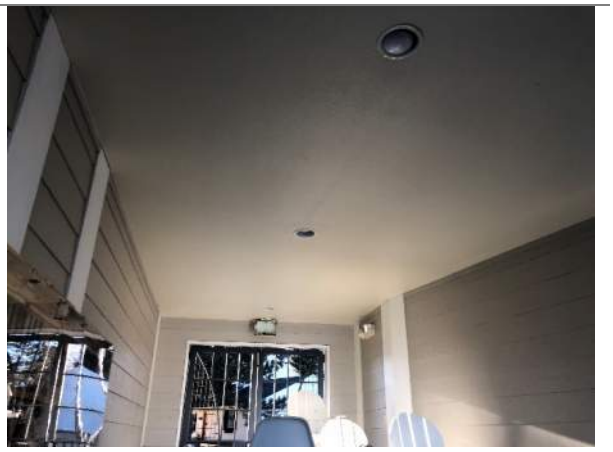
a. Existing Conditions:

i. Exterior Lighting:

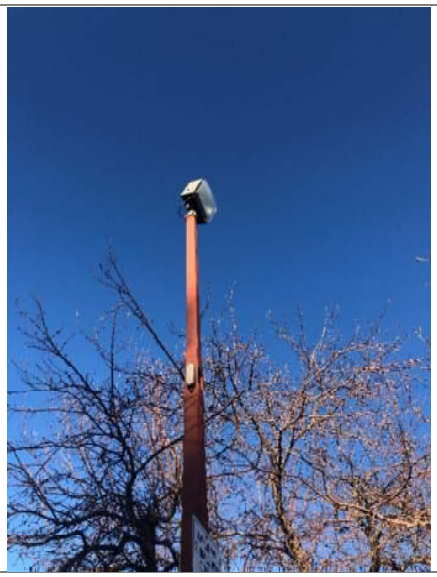
1. There are currently (4) single head post-top lights around the pool, all mounted on approximately 12' tall poles. These are not full-cut off, more a post-top style, and appear to be lamped with screw-base compact fluorescent lamps, although a few of the lamps have been replaced with LED consumer style lamps. One was observed to be missing a globe. Currently, the light output of these fixtures is not sufficient for night swimming.
2. There are in-pool lights within the existing pool. It was noted that some of these work, but not consistently. These are also anticipated to be a traditional lamp source (non-LED). These were observed in both the diving portion and the lap portion of the pool.
3. There are (2) existing pole-mounted area lights in the parking lot, mounted at approximately 20'. These appear to be metal halide fixtures, and have a forward distribution and are not full-cutoff.
4. There are (2) screw-base RLM-style surface mounted fixtures per bay beneath the large canopy structure. It was noted that events often are held under the canopy and it provides some of the only shade currently on the property with the exception of the interior spaces. The lighting beneath the canopy could be considered for replacement for more functional light levels when needed.
5. The existing lighting around the perimeter of the building is achieved with recessed downlights. These appear to be dated, but could be considered for reuse and relamping.
    a. This is consistent with the 'front entry' which does not necessarily have a means to differentiate or a 'sense of entry', which is not helped by the uniform lighting around the building.
6. Motion-sensing security lights were also observed on the underside of the canopy near the baby pool, as well as at corners of the free-standing canopy structure.
7. There were (2) Landscape light positions adjacent to the newer signage. One location appears to have been damaged/removed, and the aiming of the second does not appear to be appropriate (and is fixed).
8. An adjacent flag-pole was observed with no lighting.
9. There is no existing court lighting at the Tennis Courts.

ii. Interior Lighting:

1. The existing lighting within all areas is typically fluorescent. Screw-base incandescent sources were also observed.
2. Within the check-in area, screw-in standard downlights and surface mounted wrap-around fluorescent fixtures were observed.
3. The community space appears to have been refinished more recently than other areas. Pendants were installed throughout with an RLM-style shade and screw-in lamp. These could be reused and appear to be in good condition.
4. Interior Restroom (off community and office area) have Fluorescent Wrap-Around surface mounted fixtures.

	
ROOM: Recently Renovated Restroom/Changing Area, accessible from pool deck	ROOM: Check-in/Main Entry
Existing Downlights	Existing Downlights, Damaged Exit Sign, Existing Emergency Lighting Unit

	
ROOM: Check-in	ROOM: Community Space
Surface Mounted Strip Lighting	Existing Lighting, Exit Signage, and Emergency lighting unit

	
ROOM: Exterior – Parking Lot	ROOM: Exterior – Canopy Structure
Existing Parking Lot Area Lighting	Existing Lighting beneath Canopy

	
ROOM: Exterior – Pool Deck	ROOM: Exterior – Pool Deck
Existing Post-Top Area Light – Globe Missing	Existing Post-Top Area Light with Globe

b. New Lighting Considerations:
   i. Exterior Lighting:
      1. For the pool to be used at night without underwater lights, the 2018 Model Aquatic Health Code requires a minimum illumination level of 15 footcandles on the water surface. To achieve these light levels, the (4) existing 12' pool deck poles would need to be replaced with approximately (8) 15-20' poles. The existing

locations could be evaluated for reuse. However, since the new poles are taller, the pole bases would need to be replaced with new in order to ensure adequate wind loading. Each pole would be fitted with a new 414 W LED fixture head, approximately 48,000 Lumens each. Additional considerations may be required depending on the final sizing considerations of the pool if expanded or reformatted.
    a. Alternatively, the existing poles could be fitted with new LED fixture heads. However, at 12' tall, light levels required for night swimming are not achievable, and it is understood that the pool is currently used well into the evenings.
2. Interior pool lighting is recommended to be replaced with LED Modules. This could replace existing in kind, or new layout pending pool layout considerations. The light levels within the pool could supplement the considerations above.
3. Additional building mounted lighting shall be provided to accommodate egress lighting levels. Anticipate all new. All fixtures shall be full-cut off LED fixtures.
4. To improve light levels in the parking lot, it is recommended that the existing fixture heads be replaced with new LED, full-cut off, fixture heads. It is anticipated that the existing poles and circuitry feeding these lights would remain and be re-used. House-side shields provided as needed to limit leak towards the neighboring houses.
    a. Considerations for (2) additional lights may be recommended to supplement light levels at the entry/exit drives, and (1) security light at new trash enclosure for safety.
5. Provide new lighting beneath canopy structure for after-hour events, and more functional light levels. It is anticipated that the (2) fixtures per bay will be replaced in kind with a new LED fixture.
6. Provide new signage lighting for sign. These could utilize the (2) existing locations with a more robust fixture to hold up within the landscaping area.
7. Provide new flag-pole light to allow for flag to be left up at night per the U.S. Flag Code:
    a. The Flag Code states it is the universal custom to display the flag only from sunrise to sunset on buildings and on stationary flag staffs in the open. However, when a patriotic effect is desired, the flag may be displayed 24 hours a day if properly illuminated during the hours of darkness.
8. Tennis Court lighting does not currently exist; however, it is anticipated that increased light levels from high-output fixtures are not ideal for the residential setting and would be difficult to prevent light intrusion to neighbors, therefore it is not recommended. Shielding of Tennis Court Lighting is difficult and likely to be directly intrusive to nearby neighbors. Pricing considerations have been included for review, including tennis court lighting and required timer system.

a. It is anticipated (4) Dual-Head fixtures and (8) Single-Head fixtures would be required to accommodate the even illumination required for court lighting.

ii. Interior Lighting:

1. Storage areas and custodial rooms shall be provided with LED strip lighting, approximately $1.00 per SF for fixture material costs.
2. Community Space
   a. Ambient lighting shall be provided primarily by high output linear lighting and downlights.
   b. Minimal decorative lighting is anticipated to include a selection of sconce and wall washing fixtures.
   c. Existing lighting within community space shall be, at a minimum, relamped with LED sources.
   d. Anticipate approximately $6.00 per SF for fixture material costs if fully remodeled or reconfigured.
3. Restrooms
   a. The deck accessible restrooms were remodeled in recent years, and currently have LED Downlights provided throughout. These are anticipated to be maintained.
   b. The Community Room restroom is dated. New surface mounted fixture and vanity fixture are recommended to be provided.
4. Check-In
   a. Check-in area shall be provided with dimmable LED fixtures with damp or wet-location listing to limit pest intrusion and debris. Anticipate $6.00 per SF for fixture material costs.
5. Food Service/Prep Areas:
   a. If additional food/concessions is anticipated, 50 fc shall be provided in areas where food is being handled. This is anticipated to be provided via LED sealed fixtures. Anticipate $4.00 per SF for fixture material costs.
6. Mechanical/Pool Equipment Rooms
   a. Considerations for new LED vapor tight and corrosion resistant fixtures are recommended for longevity. Anticipate $4.00 per SF for fixture material costs.

D. Emergency/Egress Lighting

a. Existing Conditions:

i. Emergency lighting units were observed on the canopy areas along the building. However, the functionality of these fixtures was not tested. The overall condition of these fixtures is dated, and anticipated that they are approaching their end-of life. These do not appear to be LED sources.

ii. Exit signage at the check-in area (for direction out of the front gate area) is damaged (no faceplate).

iii. Exit signage (white thermoplastic with green lettering) and Emergency Lighting Units were observed within the community space. These appear to be in decent condition; however, they are dated.

b. New equipment considerations:

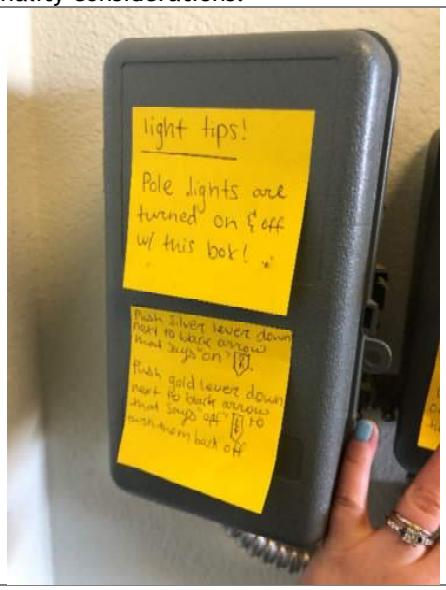
i. All emergency egress lighting for the spaces is anticipated be to provided integral to select fixtures along the path of egress to provide 1fc average of emergency lighting for 90 minutes.

ii. In more recently renovated spaces, it is anticipated that new LED emergency units shall be provided.
iii. New exit signs shall be provided along the path of egress, circuited to the nearest lighting circuit, ahead of any local switching.

E. Lighting Control System

a. Existing Conditions:

i. The existing lighting controls for interior spaces are switches. Exterior fixtures are controlled by timeclocks. It was indicated that the existing timeclock and 'override' button condition often fails, and often require reset. Multiple 'sticky notes' were included on power panels and at reset switches to provide clarification, as it's not otherwise clear to the user. All interior lighting controls will need to be upgraded to meet current energy codes and functionality considerations.

	
ROOM: Check-in Storage	ROOM: Check-in Storage
Existing Time-clock and Switch Control Setup	Hand-written notes for functionality and useability. Indicates that it is -not- intuitive with current configuration for the user.

b. New Equipment Considerations:

i. All exterior lighting shall be removed from existing timeclocks and circuited via a new lighting relay panel for programmable on/off capabilities. The controls shall be programmable from a remote location.
ii. Smaller, interior spaces, including Storage and Restrooms shall be provided with local controls and vacancy devices for automatic controls.
iii. Daylighting controls shall be provided in daylight areas only as required, including the interior spaces. It is anticipated that the main spaces in the main building, locker rooms and administrative spaces, have limited daylight and are not anticipated to require daylighting controls.
iv. Line Voltage switching means shall still be utilized in equipment rooms that require regular maintenance and may result in injury should automatic functions be provided. Per safety concerns, these areas shall have a manual switch.

v. Anticipate $1.50/SF for new lighting controls (material only) for IECC 2018 minimum requirements.

F. Mechanical Impact on Electrical System

a. Please refer to the mechanical systems narrative for more specific equipment sizing guidelines, and for further description of anticipated scope. The existing and new equipment is anticipated to be supported by the existing distribution at this time.

b. A summary of the anticipated equipment for the mechanical systems is as follows:

i. Water Heater Replacement- Anticipate existing electrical can be reused.

ii. Chemical Exhaust Fan System- Anticipated fan is 1/4 HP, 120/1/60 circuit is required for power.

iii. New Pool Equipment Room Ventilation Fan - Anticipated fan is 3/4 hp, 120/1/60.

iv. Replace Pool Equipment Room Unit Heater with new - Anticipated heater is 7.5 kw, 240V.

v. Add (1) electric unit heater to each locker room - Anticipated heater is 5 kw, 240V.

vi. Add ceiling fans to the guard station and administration room – (3) fans at 120/1/60.

G. Pool System Impact on Electrical System

a. Please refer to the pool systems narrative for more specific equipment sizing guidelines, and for further description of anticipated scope. Pool pump room remodel is considered a critical consideration for this facility. If equipment of comparable size and 120/240V-1PH voltage can be utilized for new equipment, the impact on the distribution can be minimal, however, with any significant increases, major distribution upgrades (and likely utility upgrades) will be required. A summary of the anticipated equipment for the pool systems is as follows:

i. In-Kind Replacement (similar to existing load and voltage requirements) for pumps and heater equipment.

ii. New Water Chemistry Controller (120V Circuit) per body of water.

iii. New 1HP Chemical Feed Pump for each body of water.

iv. New 1/30HP pH Buffer pump for each body of water.

v. Addition of a new UV System, 20A 120V connection, 1500W Load.

H. **Fire Alarm System**

a. Existing Conditions:

i. No fire alarm system currently exists.

b. New Equipment Considerations:

i. It is not anticipated one will be required for the new building based on occupancy, building type, and size.

I. Music System

a. Existing Conditions:

i. The existing audio system is located within a lower cabinet in the check-in area. There is no formal rack and most of the associated equipment is dated or worn, and recommended for replacement.

ii. Observed Equipment includes:

1. Sennheiser True Diversity Receiver

2. Shure Microphone Receiver

3. TEAC 6-Disk CD Changer Audio System

4. TCA 900A Amplifier
5. REALISTIC STA-2150 Digital AM/FM Stereo Receiver

iii. Two speakers were observed on the pool deck area, but it is understood they are not frequently used, and (2) additional were mounted under the large canopy structure.
iv. What appear to be loudspeakers are also located along the existing lighting poles.

b. New Equipment Considerations:
   i. Replacement of rack mounted mixer with new digital mixer.
   ii. Replacement of CD changer with new professional media player, with Aux, USB, and SD inputs, or streaming receiver.
   iii. Replacement of wireless microphone system with new digital wireless system, and remote directional antennas.
   iv. Audio power amplifier may be salvageable for reuse depending on its performance, but at a minimum, is recommended that the fans be thoroughly cleaned.
   v. New loudspeakers – column array loudspeakers are recommended to achieve the throw and SPL required.
   vi. New wiring for full system.

J. Voice/Data and Cable Systems

a. Existing Conditions:
   i. Existing voice/data systems were limited. Only select devices for connection to a single phone, small security device, and computer system were observed. No rack was observed within the administrative area.
   ii. The pedestal was observed on the exterior, west side of the building, adjacent to the gas meter.

b. New Considerations:
   i. Additional devices are anticipated to be necessary for new functions, and community space. A new wall mounted rack is likely to be required to accommodate new distribution, which will function as the facility's main telecommunications equipment room (MTER). New cabling plant is anticipated primarily for the administrative functions and the new community room and check-in area; however, new cabling is anticipated to be minimal for the locker room areas/restroom areas (serving only wireless network devices as needed).

K. Security Systems

a. Existing Conditions:
   i. Existing security systems were limited. An existing security camera, adjacent to the amenities space was observe on the eave of the roofline. It was noted that the security operating budget is limited, and the functionality is very limited. It was noted by the staff that occasionally they are able to look to see 'who's been there.'
   ii. Limited Intrusion Detection/Motion Detection was observed at the community room.

b. New Considerations:
   i. Considerations for an upgraded security system may be recommended for the administrative areas, as well as exterior areas depending on the Owner's requirements.

ii. It was noted that a Keycard/Access Control upgrade is desired as a consideration to provide better recording and control of entry points. This was noted at gate areas around the pool spaces, as well as for building conditions, and potentially for the tennis court areas. Anticipating (4) Main Gate locations, (2) Door Locations, and (4) potential locations at the tennis courts.

L. Summary of Recommended Improvement and Probable Cost Considerations

a. Refer to following table for a list of recommendations, including timeline of improvement, priority of improvement, and opinion of probable cost.

Project Recommendations Timeline:

Below is a list of facility improvement recommendations with a suggested timeline for improvements.

1 year Improvement Recommendations

#	Description	Priority (High, Medium, or Low)	Anticipated Cost (ROM)
1	(**)Electrical Distribution Upgrades - Replacement of Panel ML1 Only	High	$10,000
2	(*)Electrical Distribution and Utility Upgrades (Alternate)	High	$100,000
3	Pool Equipment Room Remodel: New Lighting	HIgh	$5,000
4	Conduit to Roof for Future PV System on Roof	Medium	$1,500
5	Pool Entrance Remodel: Replace Exit Signage and EM Lighting Only	High	$1,000
6	Pool Deck Remodel: New Power, Lighting, and Controls	High	$40,000
7	General: Relamping and Fixture Replacement with LED	Low	$10,000
8	Tennis Court Power	Medium	$5,000
9	Pool Bonding; Equipment Room	High	$10,000
10	(***)Pool Bonding: Deck	High	$20,000
11	Signage: Landscape Lighting	Low	$1,000
12	Flag Pole Lighting	Low	$3,000
13	Security: Access Control at Main Entry and Primary Doors, Headend Upgrade	Medium	$5,000

2 - 5 year Improvement Recommendations

#	Description	Priority (High, Medium, or Low)	Anticipated Cost (ROM)
1	Pool Entrance Remodel: New Power and Lighting, and controls	Medium	$12,000
2	Pool Entrance Remodel: New Tele/Data Infrastructure, and Wireless System Modernization and Expansion	Medium	$8,000
3	New Lighting for Existing Shade Structure	Medium	$10,000
4	Outdoor Enhancement - Concession Stand: New 60A Panel and Disconnect, New Power Lighting	Medium	$35,000
5	Community Room Restroom Remodel: Replace Lighting and Controls with Refinish Work	Low	$1,500
6	Parking Lot Lighting: New (2) LED Heads + (2) New Locations	Low	$15,000
7	Music and Paging System Replacemnet: Modernize Equipmen	Low	$15,000
7	Security: Access Control at Secondary Entrances, and Gates	Medium	$12,000

6 - 10 year Improvement Recommendations

#	Description	Priority (High, Medium, or Low)	Anticipated Cost (ROM)
1	Tennis Court Lighting	Low	$75,000

NOTES:

(*) Where significant improvements or renovation to the pools and associated equipment are being considered and require increase in load and varied voltage considerations, distribution and utility upgrades to a -3-Phase System are anticipated to be required. This is not applicable for minor improvement considerations, but is considered an alternate at this time.

(**) In scenario where minor improvements are provided, or load and voltage considerations can be mainted, minor improvements anticipated (this is in lieu of item (*)). This is recommended to occur concurrently with the Pool Equipment Room Remodel work, and consisitent with currently anticipated equipment replacement.

(***) Anticipated to be completed when Pool Deck Redone or reconfigured