



Pacific Community Park Pool Audit Report

TO: Steve Roth – City Administrator

December 6, 2019

RE: City of Pacific, Missouri – Pacific Community Park Pool

Westport Pools appreciates the opportunity to assist your team as you continue discussions concerning the vision for the aquatic facility at Pacific Community Park. We have prepared this report with the goal of providing your team with the information necessary to make an educated decision about the direction of the aquatic portion of Pacific Community Park. We welcome the opportunity to continue to serve the citizens of Pacific. Please do not hesitate to reach out to us should you have any questions.

Executive Summary

The City of Pacific, Missouri commissioned Westport Pools, Inc. to provide an assessment of the Pacific Community Park aquatic facility. The purpose of the project was to identify existing aquatic conditions and provide key stakeholders with recommendations to replace/renovate the Pacific Community Park amenities.

On September 17, 2019 Westport Pools, Inc. conducted a project kick-off meeting which included the following individuals:

- J. Ryan Casserly, President, Westport Pools, Inc.
- Wayne George, Vice President, Westport Pools, Inc.
- Chris DePaul, Project Manager, Westport Pools, Inc.
- Matt Cappello, Director of Design, Westport Pools, Inc.
- Steve Roth, City Administrator, City of Pacific
- Rob Brueggemann, City of Pacific

Westport Pool also contacted Angela Virtudazo, City of Pacific swim team manager to discuss current swim and dive team usage at the Community Park Pool.

The above team members agreed to an aligned vision for the project which included site review, observations and design considerations for the aquatic facility. This report is designed identify existing conditions which require action for renovation of the aquatic facility.

Report Methodology

- ✓ Conducted on site investigation, visual observations and teleconferences with staff and swim team manager.
- ✓ Conducted visual inspection of piping, pumps, filters and other mechanical systems.
- ✓ Reviewed construction specifications of the existing facility. Specifications refer to pool plans, but drawings not available for review.

Pool Summary Information

The pool was designed in 1979 by Lankford, Thompson, Dressen & Dornier Consulting Engineers and constructed by Brundick Construction. Over the past 40-years the facility has been maintained adequately with various renovation projects occurring including filter replacement, pool renovations and VGBA compliance. The approximate size of the L-shaped pool is 5,400-square feet with six lap lanes at 25-meters and a deep end with 1-meter diving stand. Per contract documents, the pool contains 285,120-gallons of water with an original designed turnover rate of 8-hours (594-gpm). Pool recirculation pump capacity is listed in contract documents at 480-gpm (10-hours) with a 7-1/2-hp pump at 40-feet of total dynamic head. Both turnover rates are compliant with the current International Swimming Pool and Spa Code - 2015 (Code) but not for most State and Local health codes at 6-hours maximum and commonly accepted industry practices.





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Filtration for the pool is served by vacuum diatomaceous earth filter with effective area of 396-square feet at 1.5-gpm/sq. ft. Sodium hypochlorite (liquid chlorine) is utilized as a sanitizer while muriatic acid is used to buffer pH. Chemical feeds are controlled by a water chemistry controller. An overflow perimeter gutter conveys surface water to the surge tank adjacent to the DE filter tank.

Pool, Finish, Shell and Deck Structural Conditions:

- ✓ **OBSERVATION:** Due to cloudy water in pool, the main drains and grate age was not confirmed. Drain system (sump and grates) need to be reviewed for conformance to ANSI/ASME A112.19.8 standard (Virginia Graeme Baker Pool and Spa Safety Act). If sumps are not in compliance or if grates are expired, then they need to be replaced to meet ANSI/ASME A112.19.8 standard.
RECOMMENDATION: Replace main drain sump and grates if not compliant to ANSI/ASME A112.19.8 standard (Virginia Graeme Baker Pool and Spa Safety Act) or if grates are expired.
- ✓ **OBSERVATION:** Primary means of Americans with Disability Act Accessibility Guidelines observed (ADA) with a fixed lift at the shallow end of pool. The pool is greater than 300-lineal feet and requires two means of access, primary and secondary.
RECOMMENDATION: Confirm operation of fixed lift. Install railings at stair entry with 24-inch separation to meet secondary means of ADA access.
- ✓ **OBSERVATION:** Sections of pool gutter have been reported to be replaced over the past several years and concrete was reported to be soft and crumbled during previous demo and repairs.
RECOMMENDATION: Coring of the pool shell (floor) and Windsor Pin testing of pool floor and walls should be conducted and samples tested for compressive strength to determine integrity of concrete. If compressive strength of samples is below 3,000-psi, then we recommend replacement of the entire pool shell.
- ✓ **OBSERVATION:** Pool water loss was reported by staff as minor, but 34” of water loss in the pool was observed since Labor Day. Due to substantial water loss reported 4-5 years ago, a section of pipe and valve were replaced. Voids in the pool floor and deck granular support fill layer may be present.
RECOMMENDATION: Perform static water test on pool shell, gutter and piping to determine source(s) of water loss. Perform geotechnical analysis of pool and deck areas to confirm granular support layer is intact. Study will also provide recommendations for pool shell and deck renovations or replacement.
- ✓ **OBSERVATION:** Pool deck slopes toward pool which is non-compliant with current ISPSC. Cracking observed in several locations around the deck. Minimal differential settlement observed between pool wall and deck. Anchors for fixed lifeguard stations that have been replaced sit proud of deck creating a toe stubbing condition.
RECOMMENDATION: Demo and replace pool deck with appropriate slope to new drain system / grade or demo concrete pool gutter and install a stainless-steel gutter with integral deck drain system. If deck remains, repair deck cracks and remove fixed guard station anchors.
- ✓ **OBSERVATION:** Pool water reported to be cloudy during normal operation. Existing turnover rate (8-hr or 10-hr) not sufficient to meet current bather demands. Current State and County health department requires 6-hour turnover rate maximum. Commonly accepted industry practices recommend a 4- to 6-hour turnover rate.
RECOMMENDATION: Provide 6-hour turnover rate for this type of pool and bather capacity. Refer to Pool Mechanical section for additional equipment requirements.





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- ✓ **OBSERVATION:** Based on discussions with the swim team manager who stated a survey was performed, the pool depth profile does comply with current ISPSC for 1-meter springboard diving but per deck depth markings observed, not FINA minimum rule for pool depths which governing bodies like USA Diving, NFSHS, NCAA and manufacturer of current diving board follow. An additional 1-meter springboard was desired by the swim team manager.

RECOMMENDATION: Meet FINA diving profile for springboard diving by removing and replacing pool floor to meet contours listed in their rule book or remove diving board. Provide an additional 1-meter springboard to meet aquatic programmatic request.

- ✓ **OBSERVATION:** Six-lane by 25-meter (82-ft - 0.25-in) pool shallow water racecourse provided. Six-lane by 25-yard (75 ft) racecourse with starting blocks in deep water desired by the swim team manager.

RECOMMENDATION: Provide starting blocks and anchors at deep end of pool.

- ✓ **OBSERVATION:** Construction joint / sealant in pool wall observed to be worn.

RECOMMENDATION: Replace sealant as required.

- ✓ **OBSERVATION:** Paint finish reported to be redone this past season but observed to be worn.

RECOMMENDATION: Repaint pool and gutter trough.

- ✓ **OBSERVATION:** Expansion joint sealant at pool gutter and deck interface observed to be worn.

RECOMMENDATION: Replace expansion joint sealant.

- ✓ **OBSERVATION:** Underwater lights reported to be non-functional. Junction boxes not compliant with current Electric Code.

RECOMMENDATION: Replace underwater lights, niches, wiring and junction boxes.

Mechanical Conditions – Pool Filtration Equipment:

- ✓ **OBSERVATION:** Pool filtration pump (7.5-HP *Marathon* motor) undersized to meet design filtration rate at 8-hours. Existing pump reported to be non-functional and a new 7.5-HP pump has been purchased by the City but not yet installed.

RECOMMENDATION: Install 7.5-HP pump for 2020 season and afterwards, install pool filtration pump that meets commonly accepted industry practices for turnover rate (6-hour turnover rate requires 800-gpm pump flow rate).

- ✓ **OBSERVATION:** The approximately 3,330-gallon pool filter / balance tank is undersized to meet current code requirement of approximately 5,400-gallons. Gutter capacity observed to be approximately 625-gallons.

RECOMMENDATION: Install balance tank sized to meet current code requirement.

- ✓ **OBSERVATION:** Pool main drain and gutter piping (6-in cast iron) undersized to meet current Code requirements and exposed pipe observed to be corroded.

RECOMMENDATION: Replace piping from main drains and gutter header piping at pool sized to meet commonly accepted industry practices at 800-gpm.



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- ✓ **OBSERVATION:** Sixty-six DE filter sleeves providing 346.5 sq. ft. of filter area observed in the concrete filter tank. Filtration rate at 1.7-gpm/sq. ft meets current code but not commonly accepted industry practices at the 800-gpm flow rate.
RECOMMENDATION: Refurbish existing filter sleeves and piping for 2020 swim season and then provide new filter system meeting commonly accepted industry practices.
- ✓ **OBSERVATION:** Pool water liquid chlorine and muriatic acid feeders and storage tanks observed to be in fair to good condition. Pool water chemistry controller observed to be installed in 2017 and in good condition.
RECOMMENDATION: Salvage pool water chemical feeders, storage tanks and water chemistry controller.
- ✓ **OBSERVATION:** No signage provided on pool chlorine and muriatic acid storage tanks and eyewash station or gloves or goggles not observed.
RECOMMENDATION: Provide signage, eyewash station, gloves and goggles.
- ✓ **OBSERVATION:** Electrical circuit panel for pool equipment room observed to be replaced in 2017.
RECOMMENDATION: Confirm electrical service is sufficient for recommended pool renovations.





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Additional Recommended Studies				
Item Description		Quantity	Unit Cost	Total
1	Perform coring sample analysis and Windsor Pin testing of pool shell concrete and replace concrete and perform geotechnical study of pool area, includes private utility locate service	LS	\$7,700	\$7,700
2	Perform static water test on pool shell and piping	LS	\$5,000	\$5,000
Testing to analyze integrity of pool shell concrete, piping and pool / deck subgrade conditions.				
			Items Subtotal	\$12,700
			10% Contingency	\$1,270
			Total	\$13,970

Immediate Repair – 2020 Season				
Item Description – Aquatic Repairs		Quantity	Unit Cost	Total
1	Add pool railings at stair entry	2	\$1,000/EA	\$2,000
2	Install new main drain grates	2	\$1,500	\$3,000
3	Install pool filtration pump provided by City	1	\$1,000/EA	\$1,000
4	Refurbish filter sleeves and piping	Lot	\$3,000	\$3,000
5	Repaint pool shell	8,000	\$4/SF	\$32,000
6	Provide chemical storage signage, eyewash station and protective gloves	LS	\$500/LS	\$500
7	Provide training and system start up	Lot	\$500	\$500
			Items Subtotal	\$46,000
			10% Contingency	\$4,600
			Total	\$46,200



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Scenario 1 – Repair Only				
Item Description – Aquatic Repairs		Quantity	Unit Cost	Total
1	Site Preparation & Mobilization	Allow.	\$5,000	\$5,000
2	Utility Allowance	Allow.	\$5,000	\$5,000
3	Demo/replace concrete gutter with stainless steel gutter	340	\$1,250/LF	\$425,000
4	Demo/replace pool floor section for FINA approved	1,400	\$100/SF	\$140,000
5	Demo and replace entire concrete pool deck, includes gutter to deck joint and sealant	14,200	\$13/SF	\$184,600
6	Install deck drain system to daylight	LS	\$20,000 LS	\$20,000
7	Replace pool shell sealant at construction joints	LS	\$3,500/LS	\$3,500
8	Repaint pool shell	8,000	\$4/SF	\$32,000
9	Repair pool underwater lighting fixtures*	13	\$1,500/EA	\$19,500
10	Replace pool filtration pump*	1	\$7,500/EA	\$7,500
11	Install balance tank	LS	\$25,000/LS	\$25,000
12	Install pool suction, gravity and return piping	LS	\$125,000/LS	\$125,000
13	Demo/replace pool filter system	LS	\$75,000/LS	\$75,000
* Contingent on electrical power for new pump available from existing panel. Should power at existing panel not be available for new pool equipment, an allowance of \$5,000 should be provided.				
			Items Subtotal	\$1,067,100
			10% Contingency	\$106,710
			Total	\$1,173,810



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Scenario 2 – Renovation				
Refer to Exhibit “B”				
Item Description – Aquatic Renovation/Upgrade		Quantity	Unit Cost	Total
1	Site Preparation & Mobilization	Allow.	\$5,000	\$5,000
2	Utility Allowance	Allow.	\$5,000	\$5,000
3	Demo/replace concrete gutter with stainless steel gutter	340	\$1,250/LF	\$425,000
4	Demo/replace pool floor section for FINA approved diving profile, includes new main drains and grates	1,400	\$100/SF	\$140,000
5	Demo/replace shallow end of pool with zero entry and spray features	LS	\$130,000/LS	\$130,000
6	Install deck waterslide	EA	\$100,000/LS	\$100,000
7	Install climbing wall	EA	\$30,000/EA	\$30,000
8	Install basketball goal and volleyball stanchions/net	EA	\$6,000	\$6,000
9	Provide starting blocks and anchors at deep end wall	6	\$2,500/EA	\$15,000
10	Provide 2 nd diving board at deep end	EA	\$25,000	\$25,000
11	Repaint pool shell	8,000	\$4/SF	\$32,000
12	Install separate spray pad with separate filtration	LS	\$250,000	\$250,000
13	Demo / replace entire concrete pool deck, includes gutter to deck joint and sealant	14,200	\$13/SF	\$184,600
14	Install deck drain system to daylight	LS	\$20,000 LS	\$20,000
15	Replace pool shell sealant at construction joints	LS	\$3,500/LS	\$3,500
16	Repair pool underwater lighting fixtures*	13	\$1,500/EA	\$19,500
17	Replace pool filtration pump*	1	\$7,500/EA	\$7,500
18	Install balance tank	LS	\$25,000/LS	\$25,000
19	Install pool suction, gravity and return piping	LS	\$125,000/LS	\$125,000
20	Demo / replace pool filter system	LS	\$75,000/LS	\$75,000
<p>* Contingent on electrical power for new pump available from existing panel. Should power at existing panel not be available for new pool equipment, an allowance of \$5,000 should be provided.</p>				
			Items Subtotal	\$1,623,100
			10% Contingency	\$162,310
			Total	\$1,785,410



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Demo and Replace – New Pool				
Item Description – Aquatic Repairs		Quantity	Unit Cost	Total
1	Demo existing pool, deck, bathhouse, mechanical building and install new bathhouse, pool deck, mechanical building, drains, fencing, landscaping and other non-pool related items	LS	\$1,000,000	\$1,000,000
2	Install new 5,400 sq. ft. pool with combined 6-lane x 25-yard competition & leisure pool areas	LS	\$1,500,000	\$1,500,000
3	Provide two additional 25-yard lanes to item #4 for a new 6,450 sq. ft. pool with combined 8-lane x 25-yard competition & leisure pool areas	LS	\$300,000	\$300,000
4	Additional Pool Play Features & Spray Pad	Allow	\$1,000,000	\$1,000,000
			Items Subtotal	\$3,800,000
			Total	\$3,800,000



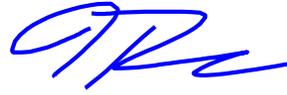
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Westport Pools' relationship with the City of Pacific is deeply valued and we look forward to building on that relationship as your partner for this project. Our knowledge of Pacific Community Park provides us with an understanding of the facility conditions and systems which will ensure a meaningful evaluation. Should you have any questions, please do not hesitate to contact any of us.

Sincerely,



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EXHIBIT A PROJECT PHOTOS

Aquatic Assessment Report

Pacific Community Park Pool Facility ■ Pacific, Missouri

Date Photos Taken: September 17, 2019



Photo #1 View of main entry from parking lot.



Photo #2 View of entry onto pool deck.



Photo #3 View of bathhouse lifeguard area.



Photo #4 Typical shower.



Photo #5 View of lavatories and toilet stall.



Photo #6 View of pool deep end and one-meter springboard diving stand and underwater lighting fixtures.

Aquatic Assessment Report

Pacific Community Park Pool Facility ■ Pacific, Missouri

Date Photos Taken: September 17, 2019



Photo #7 View of pool shallow end and ADA access lift.



Photo #8 View of concrete gutter trough and stair entry.

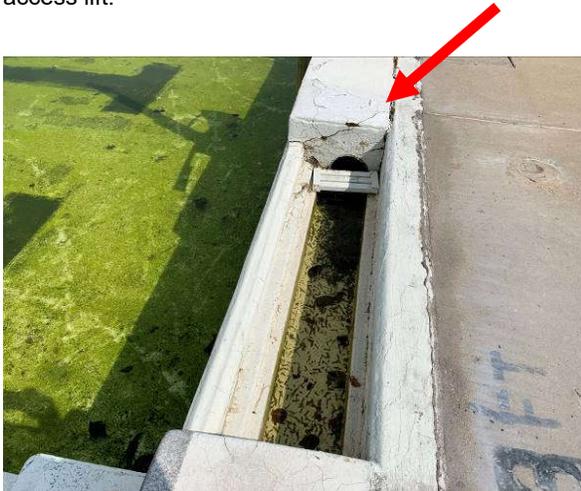


Photo #9 View of cracked concrete at gutter and deck to wall joint.



Photo #10 View pool deck sloping toward pool looking west.



Photo #11 View pool deck sloping toward pool looking north and site lighting fixtures.



Photo #12 View of pool deck shade structure and filter house on east side of pool.

Aquatic Assessment Report

Pacific Community Park Pool Facility ■ Pacific, Missouri

Date Photos Taken: September 17, 2019



Photo #13 View of seating area on southeast side of pool deck.



Photo #14 View of covered storage area and lane line storage reels.



Photo #15 View of cracked deck and abandoned lifeguard chair anchors.



Photo #16 View of portable lifeguard chair and water fountain.



Photo #17 View of pool water muriatic acid storage tank and enclosed area.



Photo #18 View of pool water liquid chlorine storage tank.

Aquatic Assessment Report

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Date Photos Taken: September 17, 2019



Photo #19 View of chlorine and acid feed pumps.



Photo #20 View of pool water chemistry controller.



Photo #21 View of pool surge tank and cast-iron piping from main drains and gutter.



Photo #22 View of DE filter tank and sleeves.



Photo #23 View of pool filtration pump and piping adjacent to filter tank.

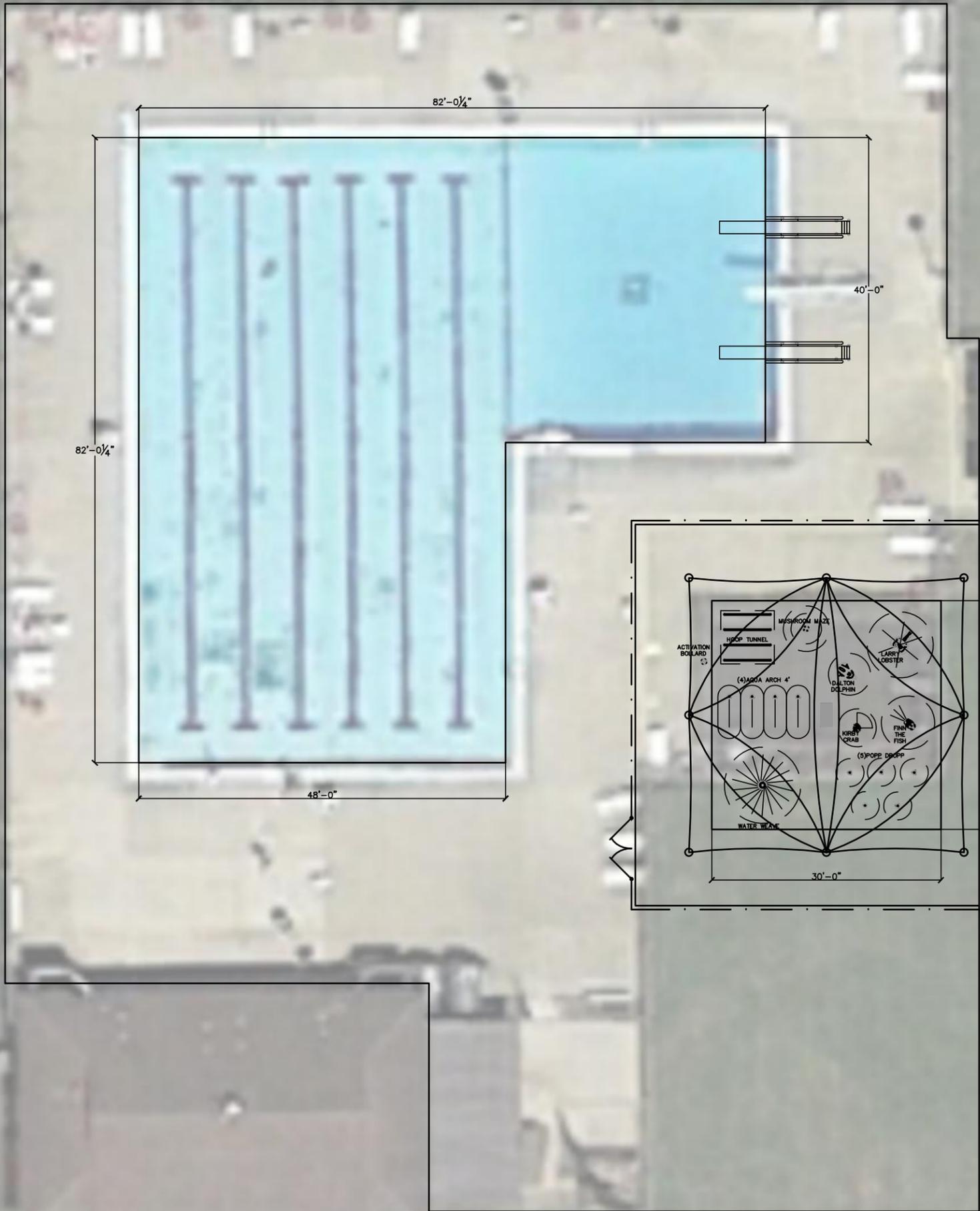


Photo #24 View of pool equipment electrical circuit panel.



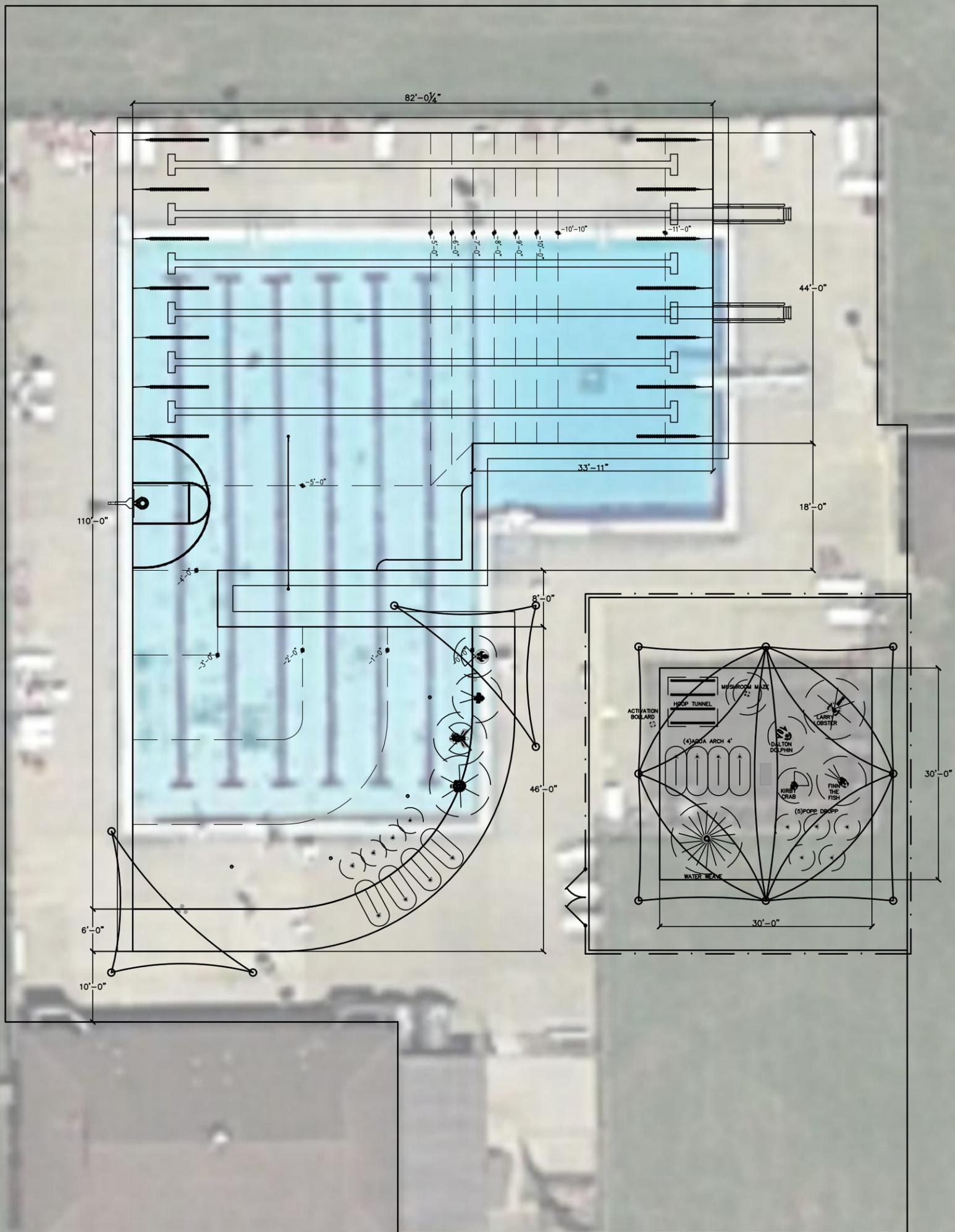
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EXHIBIT B SKETCHES



PRELIMINARY POOL PLAN REPAIR W/ SPLASH PAD

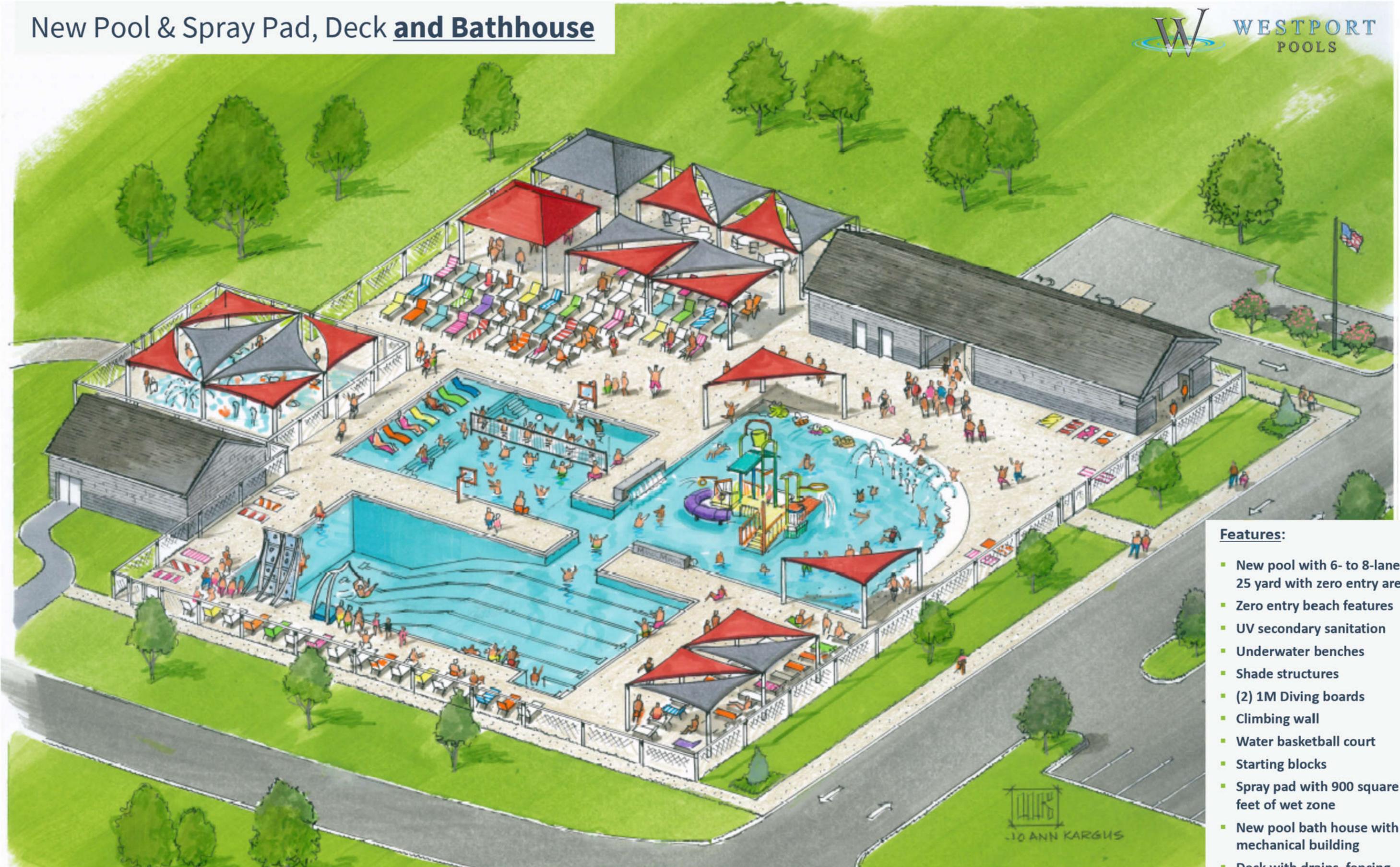
SCALE: 1/16"=1'-0"



PRELIMINARY POOL PLAN RENOVATION & UPGRADE

SCALE: 1/16"=1'-0"

New Pool & Spray Pad, Deck and Bathhouse



Features:

- New pool with 6- to 8-lanes x 25 yard with zero entry area
- Zero entry beach features
- UV secondary sanitation
- Underwater benches
- Shade structures
- (2) 1M Diving boards
- Climbing wall
- Water basketball court
- Starting blocks
- Spray pad with 900 square feet of wet zone
- New pool bath house with mechanical building
- Deck with drains, fencing, overhead lighting