



Reston Community Center Terry L. Smith Aquatics Center

Preliminary Assessment





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INTRODUCTION

In February 2017, Hughes Group Architects (HGA) was commissioned to perform a Preliminary Assessment of the condition of the Terry L. Smith Aquatics Center (TLSAC) at Reston Community Center (RCC) and to recommend improvements that would broaden market appeal and improve operational effectiveness. The observations and recommendations in this report reflect the input of the Reston community, the facility staff and the Board of Governors of Reston Community Center.

BACKGROUND

Originally constructed in 1976-79, the TLSAC includes a 25-Meter, 6-Lane pool with a t-shaped deep end and a warm-water spa with associated locker rooms and pool equipment rooms. The TLSAC has been through a number of improvement cycles during its nearly 40 years of operation including the replacement of the HVAC and lighting systems, renovation and expansion of the locker rooms, new steel special coatings, and other improvements. Of note was the structural shoring of the pool deck in 2008 with over 30 piles which was necessitated by a partial collapse of the deck. The basic configuration of the aquatic facility features has remained the same throughout its history.



Operational and maintenance improvements, including replacement of the TLSAC HVAC systems, are currently scheduled and budgeted for FY 2018-2019. Before investing in these upgrades, the RCC Board of Governors will use this analysis to determine the feasibility of consolidating the scheduled improvements with proposed improvements to the features and operational capability of the TLSAC. The objective is to simultaneously increase facility capability and utilization while improving HVAC, lighting and pool systems and features. The result will be a consolidated construction period with less down time for patrons than making improvements on an incremental basis.

DESIGN PROCESS

Listening to the observations of the patrons of the TLSAC, the facility staff and the Board of Governors has been the formative basis of the recommendations and the conceptual design contained in this report. Detailed records of these meetings are available from Reston Community Center and are posted on their web site. Community engagement meetings were held beginning with a Board strategic planning session in January, 2017 and continuing through April, 2017. HGA staff has also taken the time to observe program activities and talk to patrons “in the water” to gain a hands-on perspective of how current users enjoy the pool.

EXISTING FACILITY ASSESSMENT

The existing lap pool shell has settled over time and has created an imbalance that renders the pool gutters ineffective. The pool shell high point is along the north-east wall and the pool gutter generally slopes to the deep end. The pool expansion joints have expanded to the point that caulking is ineffective. The shell currently loses about 1500 gallons of water a day. Each of these observations indicates the need to replace the pool shell.

There are 45 underwater lights in the pool shell that have been replaced a number of times. It is recommended that underwater lights not be included in the new design. Special lighting effects are better accomplished with overhead fixtures. Underwater light fixtures have always been problematic to maintain and can present leak opportunities.

The pool deck appears to be stable after the shoring procedures were completed in 2008. This work included the removal of the original deck, the drilling of over 30 piles with pile caps and then replacement of the original Deck with a structural slab. During the excavation process, observations regarding the soil conditions indicated “swamp-like” and “cotton candy” conditions of the soil beneath the original deck. Based on these observations and the pervasive scope of the work to shore up the deck, it is clear that existing soil conditions are not optimum.

A surge tank (approx. 4,000 gallons) is located under the pool deck adjacent to the northwest pool wall. The surge tank has deteriorated and needs to be replaced.

A sanitary sewer structure located on the south



building exterior has deteriorated and needs to be replaced.

The spa surface tile has been patched a number of times. It is recommended that the spa tile be re-surfaced with tile that matches the new color patterns in the main pool area. The spa shell appears to be in good condition.

The combination of the pool shell settlement and the subsequent deck shoring strongly indicates sub surface soil cavitation.

The interior building shell and finishes appear to be in good condition. The special coating on the steel frame appears to be in good condition and should be protected during the construction to prevent damage.

New boilers (4) were installed in 2005. Their location and the location of the domestic hot water heater may have to change to accommodate new mechanical equipment.



The clearstory windows above the current diving well are double pane glass with a textured inner pane and a mullion system which was typical for the time period of the original construction. During the winter months, condensation coats the windows and collects along the window sill and most likely finds its way to the supporting structure. It would be prudent to replace this system with a thermally broken system with insulated glass to reduce heat loss and save energy. This situation will merit a more in-depth analysis when the project moves forward.

The following issues should receive additional investigation:

- Below deck soil cavitations assessment
- Building shell insulation assessment
- Clearstory glazing system assessment
- Assessing the need for shoring existing foundations in the pool area

Air Quality

The most consistent negative comment made by pool patrons is “poor air quality”. This situation was addressed recently with the installation of an “Evacuator” air exhaust system along the north wall. While slightly improving the situation, the “Evacuator” system alone does not provide a long term solution. The best solution must address air quality and air circulation with a single, integrated approach and should be modeled using Computational Fluid Dynamics (CFD). The existing HVAC dehumidification units

serving the pool and the entire air distribution system should be replaced with a new system, specifically designed for use in natatoriums, that uses more fresh air to improve air quality and utilizes both high and low air distribution elements. This includes the replacement of the spa HVAC unit.

Water Quality

The existing pool water filtration and purification system is serviceable but does not include advanced technologies that are now available. The effectiveness of the pool water filtration and purification system is undermined by the flooded gutter which inhibits the balanced distribution and return of water.

The existing pool water filtration and water purification system should be replaced with contemporary technologies that include a regenerative media filtration system and ultra violet water treatment. This includes the replacement of the spa filtration and water treatment systems.

A new roll out, deck level, gutter system is recommended to improve water circulation, wave quelling effectiveness, and general serviceability.

The Fairfax County Department of Health should be consulted early in the design process regarding the disposal of effluent which currently goes to the storm water system. The regulatory requirements have changed since the original construction of the pool and may have an impact on this issue.

Aquatic Programming Limitations

The TLSAC has served the Community for nearly 40 years. During this time period, aquatic programs have expanded and adjusted to the changing demographics and desires of the community. The current aquatics program provides a balance of recreation, competition, instruction and therapeutic exercise options with limited access and flexibility.

- **Recreation aquatic programs** are provided in the lap pool and the diving well. Both areas are linked together in a T-shape and the water temperature is the same for both areas. The limited water surface area and the single water temperature limit the flexibility of this body of water to best serve each of the program options noted above.
- **Competition and fitness swimming** is accommodated in the main lap pool. In order to accommodate recreational and therapeutic exercise users, this pool is usually kept at a warmer temperature than is ideal for rigorous exercise and competition.
- **Instructional program offerings** are limited in their scope because of the relatively cool water temperature of the lap pool (for younger swimmers) and an absence of alternative instructional areas. Learn-to-swim programs are essential to a balanced aquatic program menu.
- **Therapeutic exercise** requires warmer water temperatures and both shallow and deep water areas. None of the available water areas satisfy these objectives appropriately.

Accessibility

Patron access to the existing pools is limited. A limited ramp, wall-mounted stairs and a pneumatic chair lift provides access to the existing pool. None of these are optimal when considering the wide range of patron needs. The conceptual design proposed includes ramp access to each body of water to enhance access for all participants.

Patron access to the family changing room is limited. The conceptual design proposed includes an additional family changing room to improve access for patrons who need more privacy.

Privacy in the locker rooms is limited. The conceptual design includes modesty screens in both the Men's and Women's locker rooms. Consideration should be given to converting the existing storage room in the women's locker room to a private changing area.

Lighting and Acoustics

The existing facility has poor lighting and very poor acoustics both of which contribute to an auditory atmosphere that is too loud. Swim instructors, coaches and their students have great difficulty communicating thus limiting program effectiveness.

- Lighting. The existing metal halide light fixtures have a limited life and produce an acute glare. We recommend replacing them with Light Emitting Diode Fixtures (LED) fixtures to improve the quality of light and extend the life of the fixtures. Low-cost tube lighting can be added to create a range of color settings that can be used to vary the atmosphere for special events.
- Acoustics. The acoustics in the TLSAC are uncomfortable when the facility is in full program participation mode. We recommend the use of lapidary acoustic panels to mitigate the high range of sound. This will result in a more welcoming family, teaching and coaching atmosphere.



CONCEPTUAL DESIGN

A conceptual design is proposed which seeks to maximize the utility of the existing building shell and infrastructure while introducing new program elements that will reduce scheduling conflicts and increase customer satisfaction. The fundamental conceptual change is that of going from a single T-shaped pool configuration with one water temperature to three separate bodies of water which will have a variety of depths and water temperatures. The result will be a more flexible array of aquatic program elements that better satisfy customer preferences.

New Lap Pool (80-83 degree temperature):

- The new lap pool concept reduces the existing 25 meter distance to 25 yards to better address the needs of competition and fitness swimmers. A new deep end (10 foot depth) is positioned under the starting blocks and a new 4 foot depth on the west wall has been designed to make both start and turn depths compliant with US Swim regulations. By dedicating this pool primarily to competition and fitness swimmers, the water temperature can be kept cooler to best absorb dissipated body heat. The deep end (10 feet deep) exceeds the US Swim requirement of a minimum depth of 6 feet at the starting blocks and has been designed to support Red Cross instruction certification programs as well as scuba classes and other deep water activity. The new zero- depth entry ramp will provide ADA compliant ramp access to the lap pool and the existing pneumatic chair lift will be relocated to the new pool configuration.

New Zero-Depth Ramp Zone (83-84 Degree Temperature):

- Making best use of the area vacated by reducing the length of the lap pool, a zero depth ramp area is proposed to accommodate family activities and learn-to-swim programs. The graduated depth and warmer water temperature will be ideal for this activity segment. Three interactive water features (pressure sensitive water features) are included to provide an element of fun and acoustic masking noise.

New Therapy Pool (84-86 Degree Temperature):

- The most dynamic program enhancement is a proposed separate warm water therapy pool which has been designed to accommodate both deep- and shallow-water therapy programs. It also will address more learn-to-swim programs with wide “teaching steps” that provide graduated water access.

Existing Whirlpool Spa (104 Degree Temperature):

- The existing whirlpool spa remains in good condition and is recommended to be fully cleaned and serviced for the future. A design modification to be considered is that of opening the spa to the rest of the aquatic space. Many patrons consider the spa an essential part of their aquatic needs; some would like a less removed environment and others comment that it is peaceful retreat where the isolation is appreciated.

Drawings of the existing aquatic facility as well as the conceptual plans are located in Attachment A.



DEVELOPMENT ANALYSIS

The Reston community will be best served by consolidating the scheduled operational and maintenance improvements and the proposed program enhancements recommended in this report into a single, comprehensive design and construction effort. Such a consolidation will minimize down time and will result in a more cost effective design and construction process.

Schedule

A design and construction schedule has been developed to best sequence the construction phase with the opening and closing of the outdoor pools in Reston. RCC is fully committed to identifying alternative facilities for RCC patrons during the shut-down period. Key target dates include the following:

A/E Procurement	5/1/2017 - 8/1/2017
Design and Engineering	8/1/2017 - 2/1/2018
Permitting	1/1/2018 - 4/1/2018
Bidding	4/1/2018 - 6/1/2018
Construction	6/1/2018 - 3/1/2019

Costs

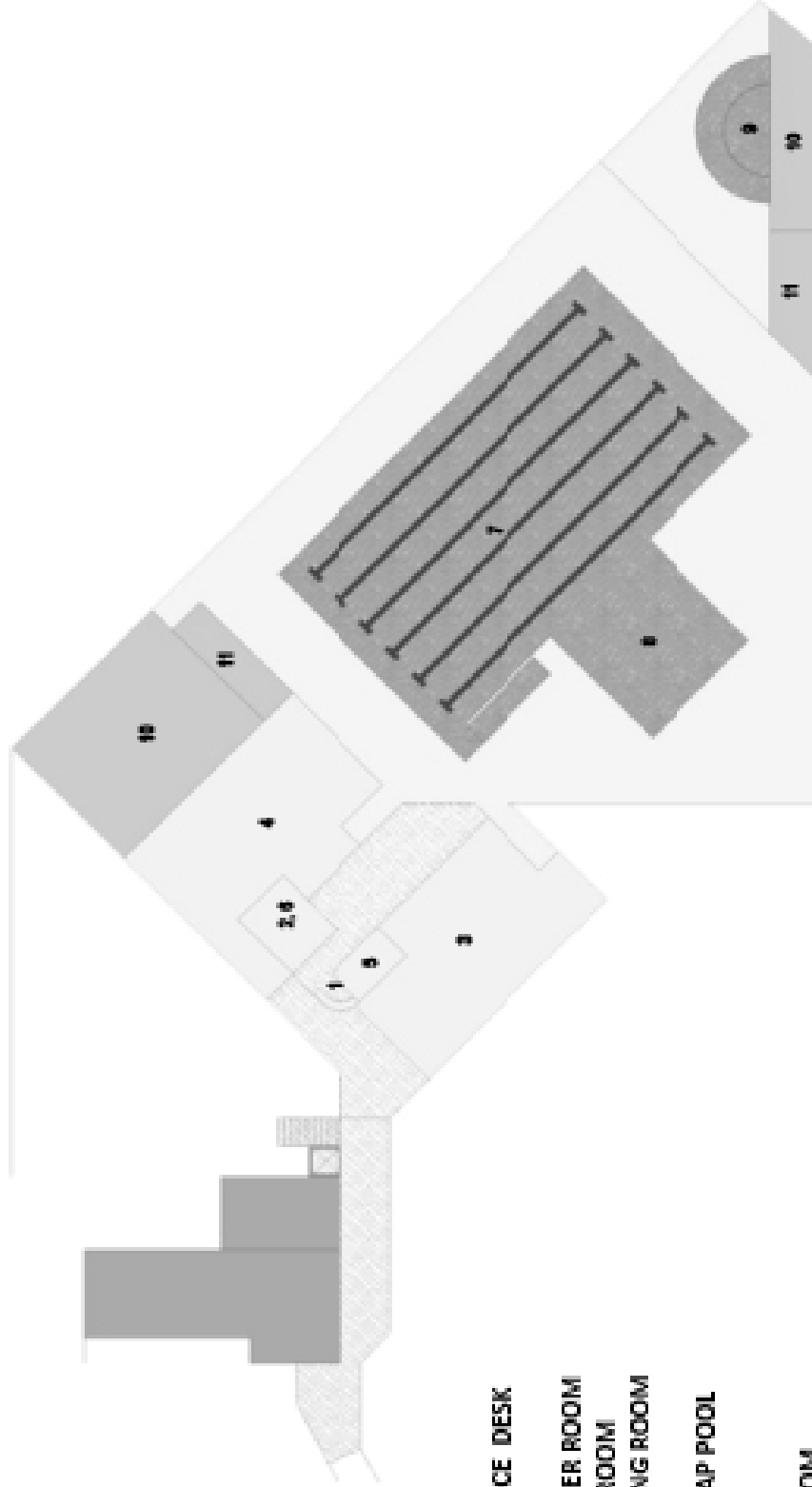
Construction cost information has been developed to provide a realistic perspective of anticipated costs. However, detailed cost estimates should be developed as the existing conditions are analyzed and the design is refined. Contingencies have been estimated to factor the unknown conditions which exist below the pool and the pool deck and concealed conditions which will be uncovered during the demolition of existing building systems.

Construction costs and anticipated contingencies are estimated to be \$4,255,000. A breakdown of these costs is included in report Attachment B.

RCC must also budget A/E Fees, Permitting Fees and Fairfax County Administrative Costs. Typically, these costs will add 20% - 25% to this construction cost estimate.



ATTACHMENT A: CONCEPTUAL PLANS



- 1 AQUATICS SERVICE DESK
- 2 OFFICE
- 3 WOMEN'S LOCKER ROOM
- 4 MEN'S LOCKER ROOM
- 5 FAMILY CHANGING ROOM
- 6 SAFETY CENTER
- 7 6-LANE X 25M LAP POOL
- 8 DIVING WELL
- 9 SPA
- 10 POOL FILTER ROOM
- 11 STORAGE

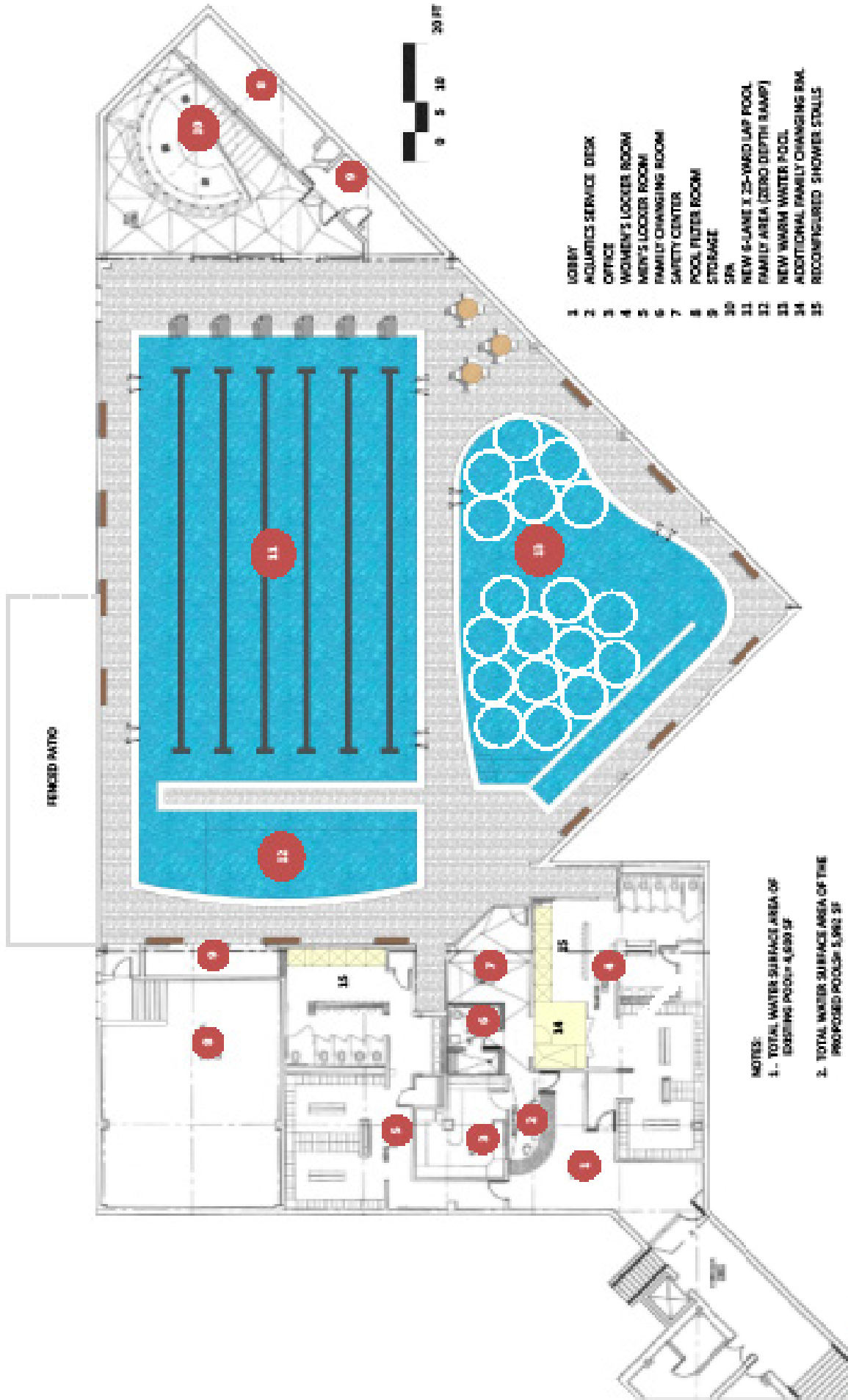
WATER TEMPERATURE:
 6-LANE X 25M LAP POOL: 78 - 83 F
 SPA: 103-104 F

EXISTING POOL AREA FLOOR PLAN



RESTON COMMUNITY CENTER POOL STUDY

March 13, 2017



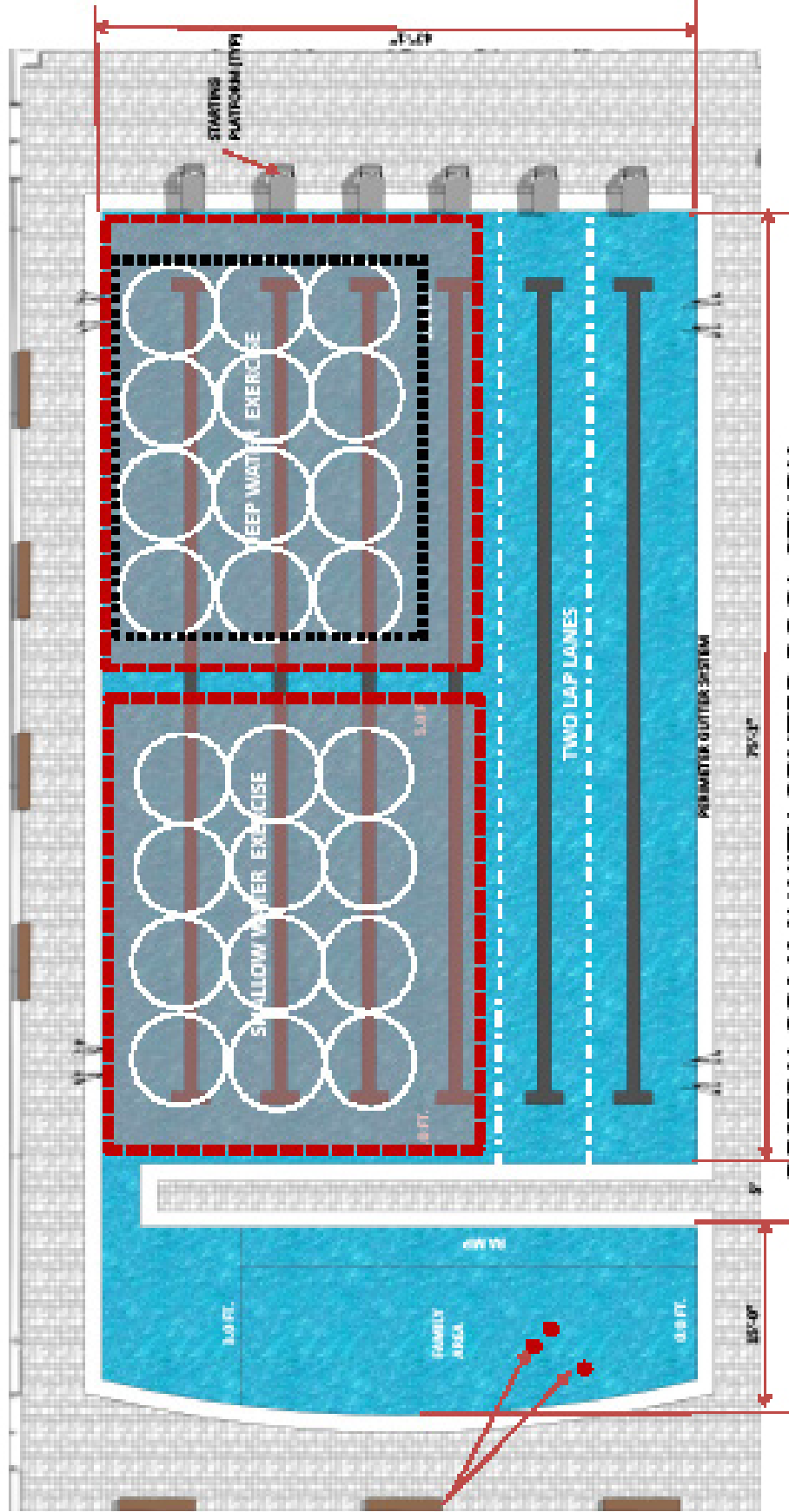
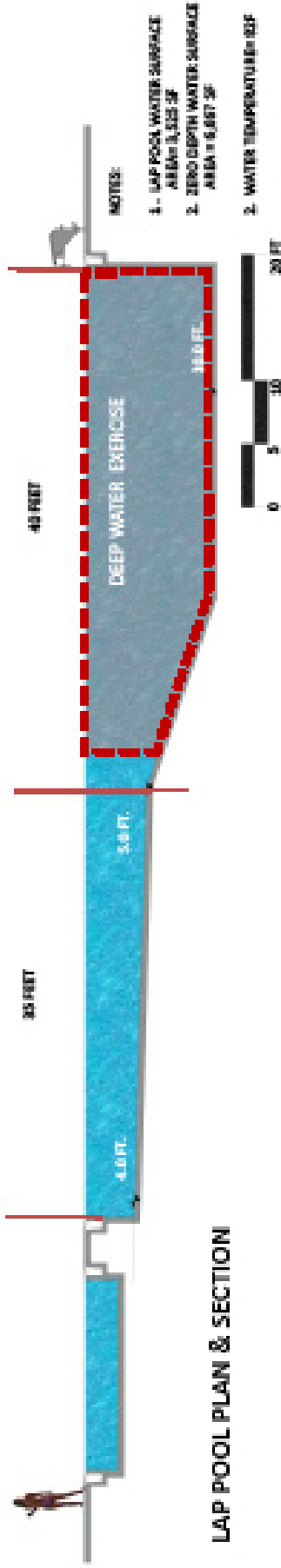
- 1 LOBBY
- 2 AQUATICS SERVICE DESK
- 3 OFFICE
- 4 WOMEN'S LOCKER ROOM
- 5 MEN'S LOCKER ROOM
- 6 FAMILY CHANGING ROOM
- 7 SAFETY CENTER
- 8 POOL FILTER ROOM
- 9 STORAGE
- 10 SPA
- 11 NEW 8-LANE X 25-YARD LAP POOL
- 12 FAMILY AREA (ZERO DEPTH BAMP)
- 13 NEW WARM WATER POOL
- 14 ADDITIONAL FAMILY CHANGING RM.
- 15 RECOMMENDED SHOWER STALLS

- NOTES:
- 1. TOTAL WATER SURFACE AREA OF EXISTING POOL= 4,600 SF
 - 2. TOTAL WATER SURFACE AREA OF THE PROPOSED POOL= 5,962 SF



RESTON COMMUNITY CENTER POOL STUDY

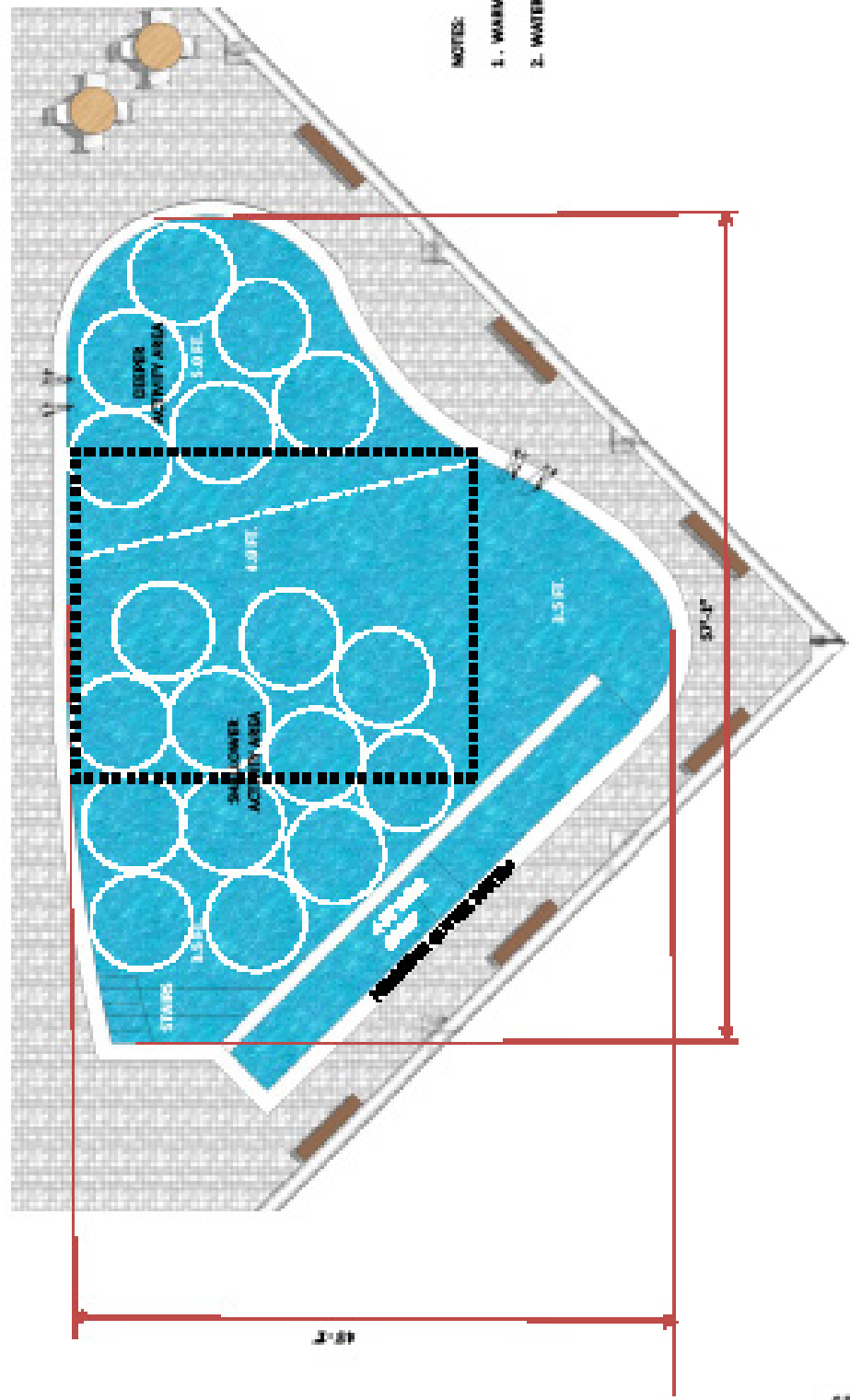
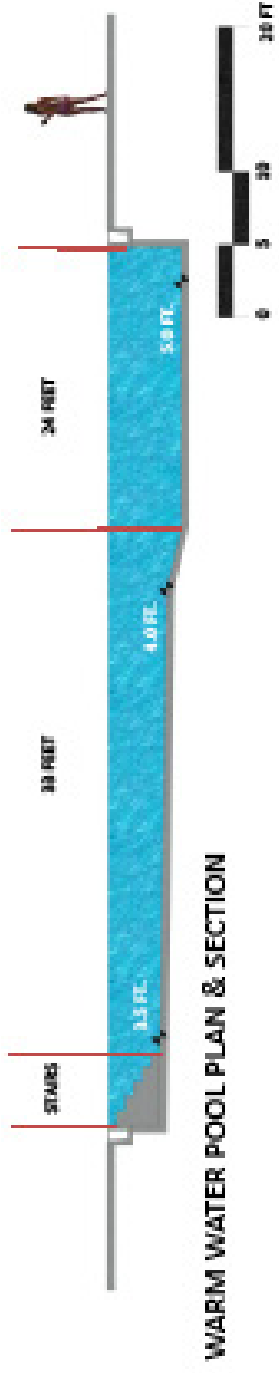
March 13, 2017



March 13, 2017

RESTON COMMUNITY CENTER POOL STUDY







ATTACHMENT B: CONCEPTUAL COST

RCC Cost Estimate Worksheet

Div	Item	QTY	Unit	Unit Price	Extension
1	General Requirements	1	LS	\$50,000.00	\$50,000
2	Demolition & Disposal				
	New Masonry Openings (Demo)	400	SF	\$10.00	\$4,000
	Clearstory Demolition & Temp Encl.	840	SF	\$25.00	\$21,000
	Pools and Deck Demo	10532	SF	\$8.00	\$84,256
	Existing Pile Work Modifications	1	LS	\$24,000.00	\$24,000
3	Concrete: New Supported Deck	4540	SF	\$15.00	\$68,100
4	Masonry Patching	200	SF	\$10.00	\$2,000
5	Metals	0			\$0
6	Wood, Plastic, Composites	0			\$0
7	Proposed Re-Roofing	0	SF	\$0.00	\$0
8	Doors & Windows				\$0
	New Glazing on Pool Deck	256		\$45.00	\$11,520
	New Clearstory System	840		\$80.00	\$67,200
9	Finishes				
	New Tile Deck	4540		\$16.00	\$72,640
	Spa Tile Replacement	1476	SF	\$16.00	\$23,616
	New Paint	3000		\$8.00	\$24,000
	Locker Room Privacy walls	1	LS	\$12,000.00	\$12,000
	New Family Changing Room	1	LS	\$65,000.00	\$65,000
13	Special Construction:				\$0
	New Pool Shell, Filtration and Water Purification Systems				
	New Lap Pool and Zero Depth Area	4100	SF	\$240.00	\$984,000
	New Warm Water Therapy Pool	1800	SF	\$260.00	\$468,000
	Play Features	1	LS	\$10,000.00	\$10,000
	Refurbish Surge Tank	1	LS	\$10,000.00	\$10,000
	Aquatic Equipment Costs				
	Deck Equipment	1	LS	\$24,000.00	\$24,000
	Competition Equipment	1	LS	\$24,000.00	\$24,000
	New Spa Filtration and Treatment	1	LS	\$36,000.00	\$36,000
14	Conveying	0			\$0
21	Fire Supression Rehab	1000	SF	\$5.00	\$5,000
22	Plumbing: New Deck Drains	4540	SF	\$15.00	\$68,100
23	HVAC and Exterior Duct Work	17414	SF	\$50.00	\$870,700
	Demo Existing Ductwork and Units				
	Exterior enclosure of new ductwork				

26	Electrical				
	Service Upgrades	0			\$0
	New LED Lighting	10532		\$15.00	\$157,980
27	Communications				\$0
31	Earthwork				
	Foundation Shoring (Allowance)	1	LS	\$50,000.00	\$50,000
	Sub Deck Excavation	4000	CY	\$12.00	\$48,000
	Sub Deck Fill	4000	CY	\$12.00	\$48,000
32	Exterior Improvements	0			\$0
33	Utilities (Service Upgrade)	0			\$0
	Sub Total				\$3,333,112
	Development Costs				
	GC Mark Up and Overhead	10%			\$333,311
	Escalation	3%			\$99,993
	Contingency	15%			\$499,967
	Total Estimated Construction Bid Cost				\$4,266,383