KING CITY CIVIC CENTER

CLUBHOUSE POOL ASSESSMENT

at:

King City Civic Association

From:

Bradford Consulting Engineers, Inc.

10800 SW Tualatin-Sherwood Road

Tualatin, Oregon 97068

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Prepared by
NEIL PIETROK P.E.

BCE Job Number: 23051

January 23, 2024

Updated: November 5, 2025

TABLE OF CONTENTS

Note: These appendices are not included at this time. They can be provided upon request

1.0 EXECUTIVE SUMMARY/PURPOSE/INTRODUCTION

The King City Civic Association (KCCA) in King City, Oregon requested Bradford Consulting Engineers (Bradford) to study the existing pool at the main KCCA Clubhouse. The pool was one of the first structures constructed in 1964-1965. The pool is past the expected lifespan of 50 years and the KCCA Board needs to plan a budget for future options for the pool.

This report analyzes the costs and effort to repair the pool, the cost to replace the pool in kind, and the cost to replace the pool area with a flexible space for future uses. The pool repair effort and analysis examine the major pool components that are failing due to lifespan expectancy. For purposes of budget and planning the replacement pool will match the plan view dimensions of the existing pool with the exception of the pool deep end depth which will be reduced to 6 feet. Replacing the pool with a multi-use space would require demolishing the pool and pool deck and replacing it with a paved surface that could be used for barbecues, pickleball, or other activities.

1.1 POOL REPAIR

The major component that makes repairing the pool difficult is the 3” copper pipe for pool recirculation and draining. Copper pipe has a typical lifespan of 50-years. The pipe for the pool runs under the Pro-shop building and under most of the pool deck. Copper pipe fails by corrosion which causes pin hole leaks and thinning of the pipe walls. The thinning of the walls makes it impossible to patch or attach to the pipe. Running new pipe around the Pro Shop building and replacing all the pipe under the pool deck and attached to the pool would trigger other code upgrades that would result in building a new pool.

1.2 POOL REPLACEMENT

The 2024 budget cost for replacing the pool are $2,089,300. Discussions with Cascade Pool and Spa report that it is taking at least a year to get through pool design and permitting at this time. This report recommends using budget numbers that are a year out for when the pool replacement is planned. Construction escalation costs in general in Oregon have been running as high as 10%-12% recently. The pool replacement costs for 2025 and 2026 with current escalation rates are:

- 2025: $2,340,000
- 2026: $2,620,800

1.2.1 REPLACE POOL WITH FLEXIBLE SPACE

The current area of the pool and pool deck is 5,100 square feet. The components for this effort include:

- Remove 5,100 square feet of pool deck and the top 3’ of the pool.
- Backfill pool and provide 5,100 square feet of base rock,3” thick.
- Asphalt pave 5,100 square feet with 3” of Asphalt Concrete pavement

This would cost $105,000-$135,000 in 2024 construction budget dollars. In 2026 budget dollars that is $169,400.

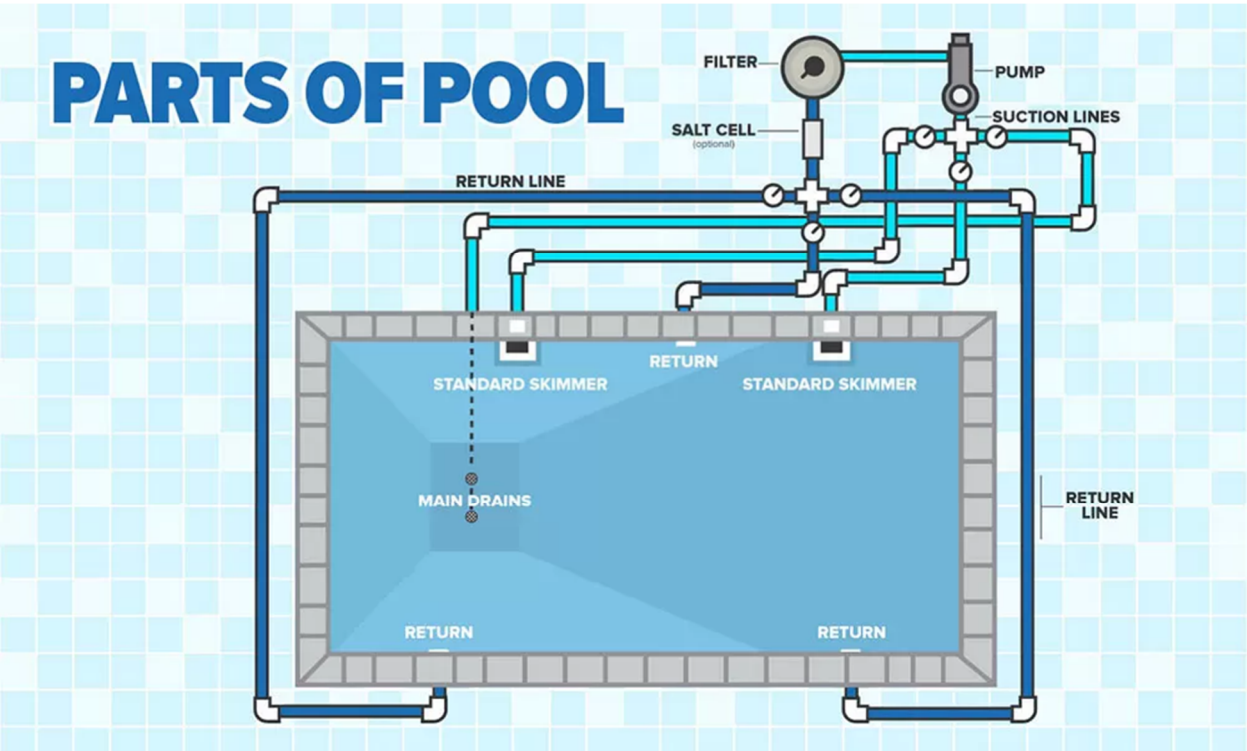
2.0 EXISTING CONDITIONS

The King City Civic Association (KCCA) in King City, Oregon requested Bradford Consulting Engineers (Bradford) to study the existing pool at the main KCCA Clubhouse. Bradford along with Cascade Pool and Spa evaluated the existing pool and compiled future budget cost estimate for replacing the pool or removing the pool and replacing it with a flex space.

2.1 BACKGROUND

The main KCCA Clubhouse includes the meeting hall, kitchen, library, wood shop, ceramics, offices. Exterior to the clubhouse is the golf pro shop, locker rooms, pool, shuffle board, and lawn bowling. The pool was one of the first structures constructed and it was built in 1964-1965 just north of where the pro shop building was constructed. The pool is past it's expected lifespan of 50 years.

Other components of the pool include the pump room which is on the south side of the golf pro shop building in the same room as the electrical panels for the pro shop building. Currently the supply piping and the drain piping run under the pro shop building to the pool. Water supply and sanitary sewer are on the south side of the building. Typical pool components for modern day pools are shown in the figure below:



Additional components in the figure above that aren't labeled, the circles with the half line in them are valves. The current KCCA pool only has one main drain with an anti-entanglement device retrofitted to it.

On October 10, 2023, Bradford attended the KCCA Board/Roundtable meeting and discussed the purpose of this study and the parameters for a new pool. It was decided at that meeting and further written up in Bradford's Engineering Proposal to the KCCA Board that the new pool would be roughly the same plan view dimensions as the existing pool. The one change would be the current pool depth at the deep end, which is currently between 8-9 feet. The new pool deep end depth would be 6 feet. This is for planning and budgetary purposes and does not commit KCCA to any specific pool configuration. The Board also asked for a budget cost to replace the pool area with a flexible space. This would mean removing the pool deck and replacing the area with a paved surface that could be used for barbecues, pickleball, or other outdoor activities.

2.2 PREVIOUS STUDIES

In 2020, Bradford completed a utility study for all KCCA structures. This study located all water, sanitary sewer, and storm drain connections at the main KCCA Clubhouse and pro shop, the golf maintenance shop, and the Crown Center. Also in 2020, Bradford, along with Cochran Electrical, provided an electrical study and arc flash study including evaluation of grounding of the current electrical systems. In 2022, Bradford provided a study of the current pool pump room and an alternatives analysis for replacement of the pumps and bringing the pool pump room up to code. This latest study will be further referred to in Section 3.0, Pool Repair Study and in Section 4.0 Pool Replacement Analysis.

2.3 RULES, CODES, AND REGULATIONS

Current public pools are regulated by local, state, and national rules, codes, and regulations. Appendix A includes the Oregon Health Authority (OHA), Public Health Division, Oregon Administrative Rules (OAR), Chapter 333 – Division 60, Public Swimming Pools. The report will refer to these rules when discussing mandatory upgrades during pool repairs and requirements for a new pool replacement.

3.0 POOL REPAIR STUDY

3.1 EXISTING POOL SUMMARY

As mentioned in Section 2.0, the existing pool was built in 1964-1965. The Pool depth ranges from the shallow end on the east to the deep end on the west of approximately 8-9 feet deep. The West end of the pool is 35' wide. The east end of the pool is 25' wide. The overall length of the pool is 50'. There are 5 valves set in the pool deck. There are 4 skimmers in the pool. The pool deck width ranges from 8' to 15'. There are two ladders in the pool near the deep end. There is a single drain in the deep end of the pool.

NOTE: PHOTOS FROM KCCA WEBSITE

The pool is surrounded by a fence. Locker rooms in the pro shop serve the pool also.

The pump room is in the pro shop building on the south side of the building. All the copper piping has been replaced in the pump room with PVC piping. The pumps have been replaced over the years several times (pool pump life expectancy is approximately 10 years, [ref.] Cascade Pool and Spa and Cornell Pumps). The existing pool pumps are nearing time for another replacement or rewinding (refurbishment) of the pump motors.

The piping from the pump room to the pool is under the pro shop building and pool deck. The supply and return lines are reportedly 3" copper lines. The pool drain line also runs under the pro shop. The drain pipe is also 3" copper pipe and the top of the pipe was observed when the outdoor shower was installed. The pipe also was observed to contain several 90-degreee fittings.

The five valves on the pool deck have had their valve stems replaced, however, the parts for the valve stems are no longer available. The valves all connect to copper pipe that runs under the pool deck. The pool deck is concrete. The pool has tile around the waterline. The pool heater is also at the end of its life expectancy.

3.2 POOL REPAIR COMPONENTS

Based on the summary above, the pool will require an extensive amount of maintenance over the next couple of years. Some of these items, such as, re-coating the pool deck, tile, and pool surface; replacing the pumps; and replacing the heater are expected ongoing maintenance items that happen over the life of a pool. It is not known at the time of this report the KCCA pool maintenance budget.

This report focuses on items that, if they failed, would cause the permanent or long-term closure of the pool. The length of the closure would be due to either expected repair costs, regulatory triggers that would require additional pool upgrades, or whole system replacements.

The key item that causes these items to be difficult or impossible to repair is the copper pipe supply, return, and drain lines. Issues with the copper pipe include:

- The life expectancy of copper pipe in the ground can range from 30-60 years in clean soil and clear water.
    - Two separate studies have been included in the Appendices detailing copper pipe failure and life expectancy.
    - The water that has been running in these pipes over the years includes pool chemicals which lowers the pH of the water, causing it to be more corrosive.
    - Copper pipe fails by experiencing pinhole leaks and thinning of the pipe walls. The thin walls of the pipe make it extremely difficult to patch or attach new pipe to the existing pipe. Jeff Halfman, the Golf Course Superintendent, maintains the pool systems. He has reported that he has talked with several Contractors about repairing pipes and related systems. Most recently, the pool valves needed to be replaced because the existing valve components are no longer manufactured. The Contractors that were asked for an bid could give a cost estimate for repairs because they cannot determine how far down the pipe, they would have to go to find a section they can attach new pipe to, and the pipe eventually runs under the building and under most of the pool deck as previously mentioned. Bradford has

independently confirmed this with separate piping contractors.

- The copper pipe is currently undersized per regulations. This fact and the unknown condition of the pipe walls preclude trying to re-line the pipe to extend its life expectancy. Pipe lining is installed by threading a liner into a pipe and then expanding it to the walls of the existing pipe through air pressure. This reduces the diameter of the pipe, thus reducing its capacity. If, during installation, the liner pushes up against a thin-walled section of pipe, the liner would push through the wall of the pipe and expand like a balloon. This would cause pipe and liner failure.
- Parts for the existing pool valves are no longer available. If a pool valve fails, the pool would need to be shut down. To replace an entire pool valve, the existing valve would need to be replaced. A new valve would need to be connected to the existing copper pipe, which, as discussed above is difficult to impossible.
- The existing water pipe to the pool and the recirculation piping leak. This report does not include the cost of make up water for the pool that has to be provided on an ongoing basis.

An example of the code requirements that would be triggered would be the Virginia Graeme Baker Pool and Spa Safety Act Drain Cover Standard. The current pool meets this standard with a retrofitted cover over the single pool drain in the bottom of the pool. The new supply, return and drain line replacement would trigger this standard for new pools which requires anti-entanglement and anti-suction and would most likely require a second drain in the bottom of the pool. The two drains would need to be far enough apart that a body could not cover both. This would require excavating and removing the entire deep end of the pool to install.

Bradford's previous study in 2022 reviewed the options for upgrading the pump room and piping. Based on that study, the preferred option was to build a new pump room north of the pool between the pool and the shuffleboard building. This option included new supply and return piping and a new drain line outside of the footprint of the pro shop. After evaluating this option further, it was found that this would trigger mandatory code upgrades to the pool. These upgrades would include removing large portions of the pool deck and pool walls to complete. The study was paused at that point because the cost and effort appeared to exceed the cost and effort for a new pool.

4.0 POOL REPLACEMENT ANALYSIS

4.1 BUDGET ESTIMATE COMPONENTS

As mentioned in Section 2.1, the KCCA Board would like to have a budgetary cost estimate to replace the outdoor pool. The cost estimate assumes the following components to the new pool:

- The pool footprint will remain the same with the exception that a new pool pump house will be constructed to contain the pumps and pool chemicals.
- The deep end depth of the new pool will be 6-feet.
- The pool deck and pool will be concrete or shotcrete.
- Ladders, lifts, and other pool amenities will be the minimum to meet current codes and regulations.
- A new drain line will connect to the current Clean Water Services manhole near the first Tee box. The budget estimate does not include a new SDC cost for this connection.
- The budget cost estimate includes demolition of the current pump room components.
- The budget cost estimate does not include any changes to the current pro shop locker rooms.
- The budget cost estimate is in 2024 dollars. Escalation costs for 2025 and 2026 follow the current construction trend of 10-12% (this is more than double the escalation cost 10-year average 2010-2020, but has been the trend since 2021, [ref.] CBRE Construction Market Trends).
    - Pool construction uses common construction materials such as concrete and, reinforcing steel bar. The trend for these materials over the past 3+ years has been a higher-than-average escalation costs due to several factors.
    - Pool construction labor is a specialty labor category and has seen a higher escalation trend over the past 3+ years.

4.2 CONSTRUCTION COMPONENTS

Major Construction Components for the new pool include:

- New concrete Pool Deck, 3,000 square feet
- Pool Shotcrete, 2,100 square feet
- New Pump house building, 500 square feet
- New Water line, 240 linear feet
- New Drain Line, 140 linear feet
- Pumps, skimmers, heater, filter
- Fencing, 150 linear feet (assumes two side of fence will be removed and replaced during construction)
- Ladders, lift, and other pool accessories.
- Pool Permit fees, SDC's, and building permits.

While the unit costs used to estimate the budget for replacing the pool are 2024 costs. The design and permit timeline for a pool is currently exceeding a one-year timeframe. Therefore, Bradford recommends that the KCCA use the estimated/projected 2025 costs and later budget numbers to forecast their budget for replacing the existing pool.

4.3 BUDGET ESTIMATE

Appendix 1 contains the spreadsheet for pool replacement costs. The table on the last page of the estimate breaks down the costs into categories. The estimate includes line items for a spa, these are left blank since no spa will be installed with the current request for a budget number.

The budget estimate in 2024 dollars is $2,089,300. With escalation costs the estimates for 2025 and 2026 are:

- 2025: $2,340,000
- 2026: $2,620,800

4.4 BUDGET LINE ITEM NOTES

- Budget unit price numbers come from pool suppliers, recent construction quotes, and MS Means Construction Cost Estimating tool.
- Base Pool Price is for a 450 square foot pool plus 330 square feet of concrete deck.
- Extra Pool Area is 5,100 square feet minus (450+330) = 4,320
- Permit costs are estimated for State and Local permits and SDC fees for utilities
- Bobcat costs are a general construction equipment cost for demolition and construction. Means and methods of construction may vary by contractor.
- Concrete removal and haul does not include 300 square feet of the deep end of the existing pool which will be below grade of the new pool.
- Utilities run to the new pump house are estimated to be approximately 100 feet. Multiple runs reflect the cost per conduit/pipe.
- This cost estimate does not include remote monitoring systems.
- The steel surcharge is for the additional reinforcing bar that will be required for this size of pool.
- The square foot cost for the pump building is estimated based on recent building construction square foot trends.

4.4 REPLACE POOL WITH FLEX SPACE

The cost to demo the pool deck and pool is included in the pool replacement estimate is $61,500. Allowing for the entire pool floor to remain in place this estimate would be reduced to $54,500. The pool volume is 300 cubic yards. A cubic yard of rock is approximately $50 ($15,000). A minimum paving section for the pool area would be 3” of base rock and 3” of asphalt. The base rock would cost approximately $5,000. Asphalt is between $7 and $13 a square foot at 3” of thickness. This gives a cost range of $36,000 to $67,000. The overall 2024 budget cost is between $135,000 and $169,000 for replacing the pool with a flex space.

5.0 CONCLUSION

The current outdoor pool is at the end of its service life including major components: piping, valves, and skimmers. The current pool can continue with ongoing maintenance until the piping fails. Because of the location, type of pipe, and code and regulation triggers from a large repair project to the piping system, repairing or replacing the piping to the pool would exceed in both cost and constructability effort of replacing the pool. This is explained in more detail in Section 3.0.

- The cost of replacing the pool in 2025 is approximately $2,340,000

The budget cost for replacing the pool with a flex space is between $105,000 and $169,000.

6.0 PROJECT PERSONNEL

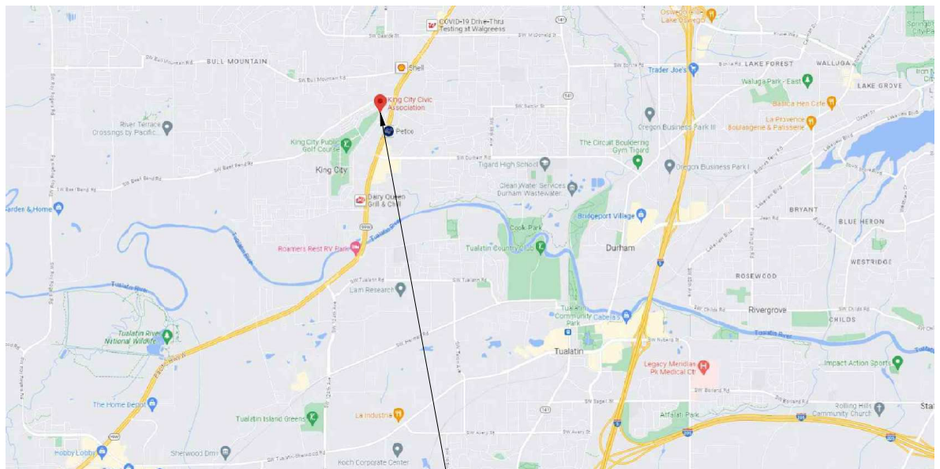
The following personnel provided assistance with this report:

Neil Pietrok	Bradford Consulting Engineers neilpietrok@bradfordengineers.com	(503) 793-3469
Phil Beatty	Bradford Consulting Engineers philbeatty@bradfordengineers.com	(503) 201-9702
Devon White	Cascade Pools and Spa	(503) 620-6174

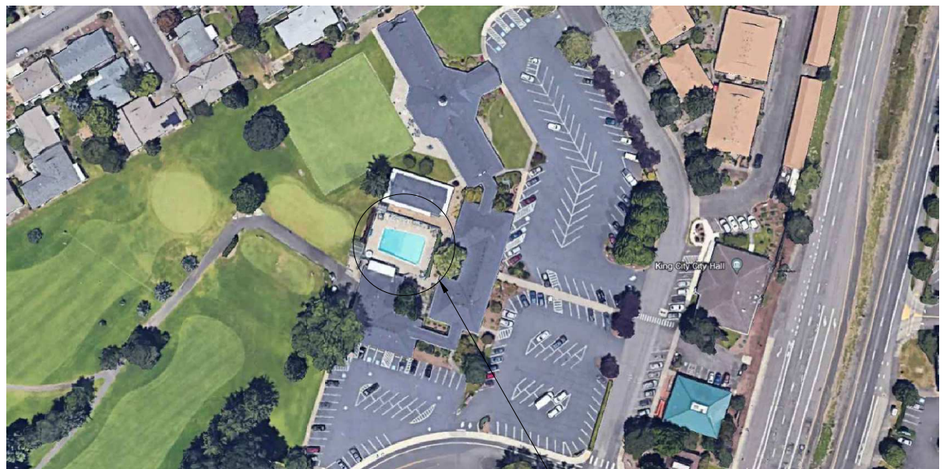
7.0 PROJECT DRAWINGS

KING CITY CIVIC ASSOCIATION
KCCA- POOL STUDY
ISSUED FOR STUDY - 01/16/2024

INDEX



VICINITY MAP



SITE LOCATION

KING CITY - POOL STUDY
15245 SW 116TH AVENUE, KING CITY, OR 97224
GPS: 45.408931, -122.796411

KING CITY
CIVIC ASSOCIATION
AN ADULT 55 AND OLDER COMMUNITY

BRADFORD Consulting Engineers, Inc.
16889 SW 65th Avenue, Suite 312, Lake Oswego, OR 97035
PH: 503-694-2437 www.bradfordengineers.com

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR STUDY	BCE	01/16/2024

DRAWN BY: DRAWN
ENGINEER: ENG
SCALE: AS SHOWN
ISSUED DATE: 01/16/2024

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DRAWING TITLE:
KING CITY CIVIC ASSOCIATION
POOL ASSESSMENT
KING CITY, OREGON

COVER SHEET

PROJECT NO: 23051
DRAWING NUMBER: G001

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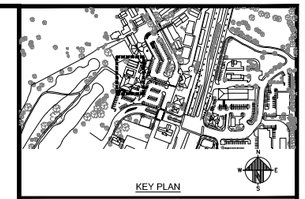
SCALE: 1 INCH = 20 FEET

1 SITE PLAN

SCALE 1" = 20'



KEY PLAN

KING CITY
CIVIC ASSOCIATION
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ISSUED DATE: 01/16/2024

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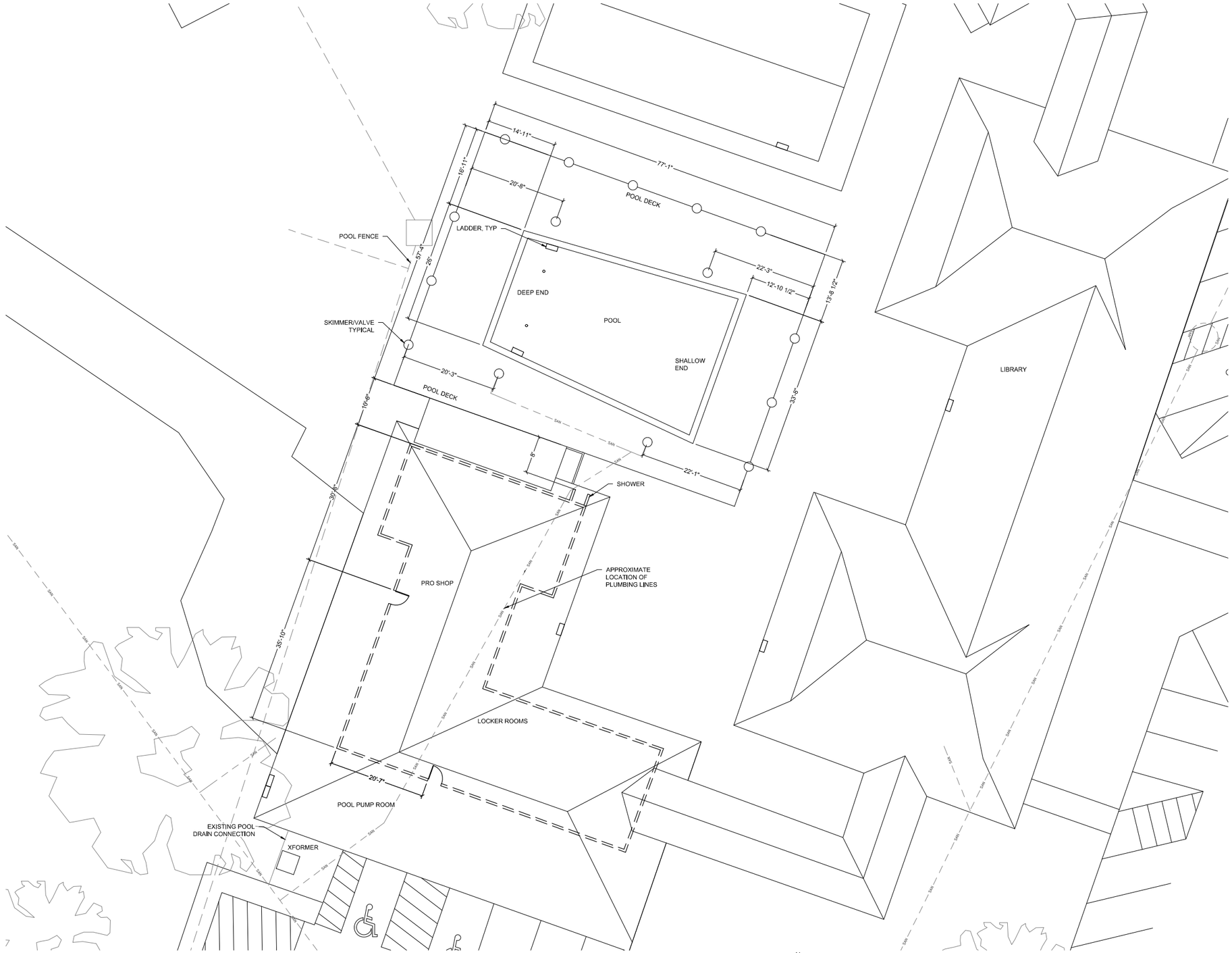
DRAWING TITLE:

KING CITY CIVIC ASSOCIATION
POOL ASSESSMENT
KING CITY, OREGON

SITE PLAN - EXISTING CONDITIONS

PROJECT NO: 23051

DRAWING NUMBER: G002



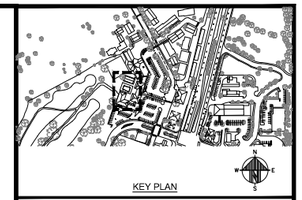
30' 0 15' 30' 60'

SCALE: 1 INCH = 30 FEET

1 ENLARGED SITE PLAN

SCALE 1" = 10'

N W E S



KEY PLAN

KING CITY CIVIC ASSOCIATION

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ISSUED DATE: 01/16/2024

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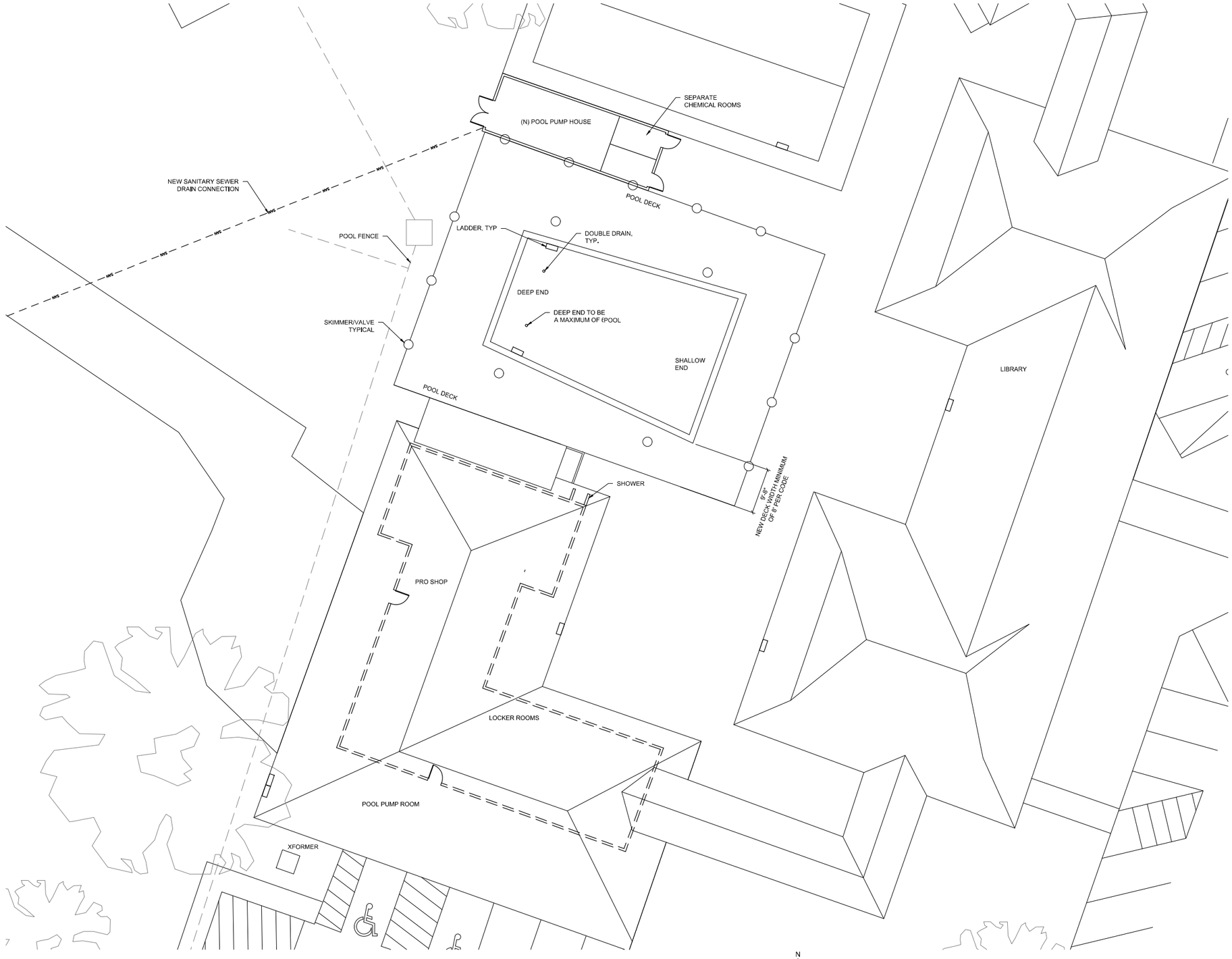
DRAWING TITLE:

KING CITY CIVIC ASSOCIATION
POOL ASSESSMENT
KING CITY, OREGON

ENLARGED PLAN - EXISTING CONDITIONS

PROJECT NO: 23051

DRAWING NUMBER: G003



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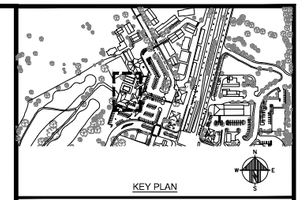
SCALE 1" = 10'



KEY PLAN

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KING CITY CIVIC ASSOCIATION
POOL ASSESSMENT
KING CITY, OREGON

NEW POOL REPLACEMENT

PROJECT NO: 23051

DRAWING NUMBER: G004

APPENDIX 1: POOL REPLACEMENT BUDGET ESTIMATE

Customer or Job Name:	KCCA				Total Area =	5100
Job Street Address:	15425 SW 116th Ave				Pool Area -	2100
City, State & Zipcode:	King City, OR 97224				Pool Deck =	3000
Home Phone				FAX:	Extra " +/-	0
Cell Phone				EMAIL:	Allowance -	0
Pool Type:	Concrete, In-Ground			neilpietrok@bradfordengineers.com	Net Deck =	3000
Base Price Area:	450	Per:	0	Bid Date:	Avg. Depth:	4.00
Actual Pool Area:	2100	Per:	0	Bid Ends:	IA =	2100
Depth:	2	3	6	Job No.	Gallons:	63000

Pool Specifications	QTY	Price	Total
Base pool price ($19,860.00 base)	1	38,000.00	38,000.00
Extra pool area (per sft.)	4320	250.00	1,080,000.00
Extra perimeter (per foot)	33	480.00	15,840.00
Diving pool w/ std 6' board	0	4,200.00	-
" add 6' baja board (upgrade)	0	1,200.00	-
Permit extra	1	113,384.00	113,384.00
Engineering	1	67,080.00	67,080.00
Spa Specifications	**QTY**	**Price**	**Total**
Base price - Inside Dia (6' dia.)	0	18,000.00	-
400,000 btu gas heater (upgrade)	0	585.00	-
Raised spa up to 12" (+ $125 spillway)	0	1,400.00	-
Add Separate pump (2 hp)	0	1,200.00	-
Add extra jets, per each (6 max. total)	0	240.00	-
Separate Cartridge Filter/Pump	0	1,800.00	-
Add separate AWL, Infloor valve, returns	0	2,375.00	-
Access	**QTY**	**Price**	**Total**
Fence	120	150.00	18,000.00
R & R block wall 75.00 per lin/ft	0	475.00	-
Gate	1	650.00	650.00
Wrought iron fence 5' high, per lin. ft.	0	245.00	-
Misc	0	-	-
Misc	0	-	-
3'-0" wide gate, each	0	600.00	-
3'-6" wide gate, each	0	750.00	-
R & R access-sod, irrigation per s/f	0	21.00	-
Excavation	**QTY**	**Price**	**Total**
Bobcat for 6'-8" to 8'-6" access	0	1,200.00	-
Bobcat for 5'-1" to 6'-7" access	7	1,600.00	11,200.00
Bobcat for 4'-7" to 5'-0" access	0	2,250.00	-
Bobcat for 3'-7" to 4'-6" access	0	3,100.00	-
Deep end ramp	0	550.00	-
Backwash pit (up to 20' from equip)	1	500.00	500.00
Walk out to truck over 75', per ft.	0	3.25	-
Pre grade per hour (3- hour min.)	0	550.00	-
Concrete removal & hauling, per sft.	4800	9.00	43,200.00

All Equipment Runs	Total	QTY	Price	Total
Electrical run (25' included)	300	275	21.00	5,775.00
Gas run (25' included)	125	100	24.00	2,400.00
Skimmer run (25' included)	175	150	80.00	12,000.00

Plumbing	QTY	Price	Total
Extra surface returns, over 3	0	125.00	-
Extra skimmer (hydromatic w/ 2" line)	3	775.00	2,325.00
Pool Vac line, (w/ valve)	1	220.00	220.00
Auto water leveler, 25' plumb	3	485.00	1,455.00
Fill line (3/4" pvc), per ft.	75	9.00	675.00
Waterfall line, (2" pvc), up to 20'	0	250.00	-
Extra 2" pvc line, per ft.	78	11.00	858.00
3-way Jandy valve, each	4	85.00	340.00
2-therapy jets (40' plumb & valve)	0	375.00	-
Extra therapy jets, per head	0	90.00	-
Extra therapy plumbing, per ft.	0	14.00	-
Anti siphon valve	2	575.00	**1,150.00**
Electrical	**QTY**	**Price**	**Total**
30 amp sub-panel	1	1,800.00	1,800.00
Add 110 volt GFI outlet	2	275.00	550.00
J-Box not @ equip.	2	175.00	350.00
Pool light module (w/ dim)	0	525.00	-
Run 1/2"" line for ($75 min.)	0	21.00	-
Misc	0	-	-
Intellitouch 5 remote system	0	4,500.00	-
Intellitouch 9 remote system	0	5,650.00	-
" Hard wire (4 cond), per ft.	0	21.00	-
Additional pool / spa light (250 watt)	0	475.00	-
Add for SAM light	0	650.00	-
Fiber-optics #1: 1- 4-color, manual (Obtain quote)	0	-	-
Fiber-optics #2: 2- 8-color, manual (Obtain quote)	0	-	-
Fiber-optics #3: 2- 8-color, remote (Obtain quote)	0	-	-
Add for additional fiber run, per ft.	200	8.27	1,654.00
Gas / Propane	**QTY**	**Price**	**Total**
Natural gas hookup, valve	1	420.00	420.00
Run 3/4" gas line for BBQ ($75 min.)	0	24.00	-
Propane pkg (2-100 lb. tanks) (Obtain quote)	0	-	-
Propane pkg (1-250 gal.) inground (Obtain quote)	0	-	-
Structure	**QTY**	**Price**	**Total**
6" Raised Bond Beam, per lin. ft.	0	275.00	-
12" Raised Bond Beam, per lin. ft.	0	450.00	-
18" Raised Bond Beam, per lin. ft.	0	625.00	-
Misc	0	-	-
Steel surcharge, per ft. of perimeter	160	24.00	3,840.00
Extra step or bench, per lin ft.	0	375.00	-
Extended play bench, ramp, shelf	0	650.00	-
Wheelchair ramp (w/ skid tiles)	1	800.00	800.00
Hand rails, each	2	650.00	1,300.00

Masonry	QTY	Price	Total
3' Equipment wall, per lin. ft. ($320 min.)	0	320.00	-
Tile	**QTY**	**Price**	**Total**
Tile raised beam or spa, per sq.ft. (6")	0	26.00	-
Set tile insets or handholds, each	0	28.00	-
Tile removal, per sq.ft.	160	7.50	1,200.00
Decking	**QTY**	**Price**	**Total**
Concrete truck over 75' to pool	1	750.00	750.00
Grey concrete deck, per s/f	3000	15.50	46,500.00
Colored concrete deck per s/f	0	16.25	-
Colored stamped concrete per s/f	0	22.00	-
Steps per l/f	0	225.00	-
Deckodrain	4	42.00	168.00
Deck "o" seal (mastic)	0	24.00	-
Alarms / Door Latches	**QTY**	**Price**	**Total**
Install door alarms, per door	1	95.00	95.00
Install access latch side yard door	0	55.00	-
Install self closing gate latch	0	40.00	-
Interior Finish		**Price**	**Total**
3 M ColorQuartz (wht) / 3M color (1.89) (Obtain quote)	0	-	-
PebbleTec pool per sq.ft. of IA (Obtain quote)	0	-	-
Grey pigment per s/f (Obtain quote)	0	-	-
Cleaning Equipment	**QTY**	**Price**	**Total**
Hayward navigator	4	725.00	2,900.00
Pool start-up kit (pole, brush, test kit)	1	500.00	500.00
Caretaker Infloor (12 heads) to 400 sft. (Obtain quote)	0	-	-
" 1.5 hp pump & 4.9 filter upsize	4	2,200.00	8,800.00
Leaf trapper system (15' from equip) (Obtain quote)	0	-	-
Extra heads (1 / 50 sq.ft. of pool)	42	45.00	1,890.00
Bench, step, spa heads (1 per 7 ft.) (Obtain quote)	0	-	-
Actuator run over 15', per ft. (Obtain quote)	0	-	-
Equipment	**QTY**	**Price**	**Total**
1.5 hp Purex Triton pump	0	1,250.00	-
2.0 hp Purex Triton pump	3	1,600.00	4,800.00
Pinnacle waterfall pump, hookups	0	450.00	-
Add 400 kbtu gas heater (hi-efficiency)	1	4,000.00	4,000.00
8' slide, w/ jig, and waterline, valve	0	4,200.00	-
Ozonator System (42,000 gal cap.)	2	1,175.00	2,350.00
Intellichlor Salt System	0	1,675.00	-
Solar cover, cut by buyer, per sq.ft.	0	6.00	-
Water Features (Schedule "A")	**QTY**	**Price**	**Total**
24" Sheer descent w/ 30' line,valve	0	650.00	-
36" Sheer descent "	0	900.00	-
48" Sheer descent "	0	1,200.00	-
Waterfall line (40' line & valve only)	0	150.00	-
Pool Cover	1	2,500.00	2,500.00
Ladder	2	350.00	700.00
Built in Wheel Chair Lift	1	4,200.00	4,200.00
-	0	200.00	-
Rock waterfall @170 (4x5x3) 20sf	0	4,125.00	-
Rock waterfall @165 (5x5x3) 25sf	0	4,675.00	-
Rock waterfall @160 (6x6x4) 36sf	0	5,400.00	-
Rock waterfall @155 (7x6x4) 42sf	0	6,510.00	-
Rock waterfall @150(10x6x5) 60sf	0	9,000.00	-
Grotto 5' ht. w/ overhead bench seat	0	6,500.00	-
Grotto 6' ht w/ overhead bench seat	0	7,200.00	-
Grotto 8'ht w/ overhead bench seat	0	8,000.00	-
Rock slide 6' length	0	4,275.00	-
Rock slide 8' length	0	4,875.00	-
Add concrete pad w/ steel, line, valve	0	650.00	-
Misc	**QTY**	**Price**	**Total**
New Pump Building (Square Foot)	500	200.00	100,000.00

Sub Totals:	1,607,119.00
Const. Management:	482,135.70
Net Total:	2,089,254.70
Sales Tax:	-
Total Price(2024 dollars):	2,089,254.70

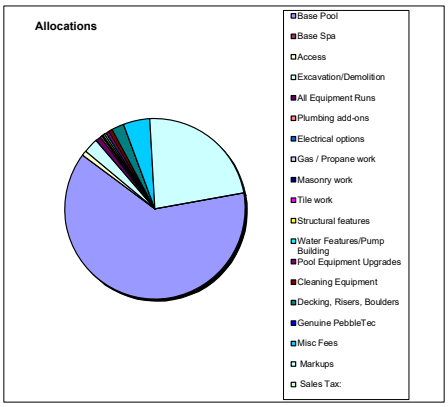
Notes

Base Pool & Spa price includes:

450 (Pool Per + Tot area)
25 Ft Skimmer, electrical and gas runs
Standard Equip (250 heater, 1 hp pump, filter)
Plaster (White)
270 SF pool decking (90 Per x 3' Wd)

Pool Construction Cost Summary:

Expense Category:	%	Subtotal:
Base Pool	63%	1,314,304.00
Base Spa	0%	-
Access	1%	18,650.00
Excavation/Demolition	3%	54,900.00
All Equipment Runs	1%	20,175.00
Plumbing add-ons	0%	7,023.00
Electrical options	0%	4,354.00
Gas / Propane work	0%	420.00
Masonry work	0%	-
Tile work	0%	1,200.00
Structural features	0%	5,940.00
Water Features/Pump Building	0%	7,400.00
Pool Equipment Upgrades	1%	11,150.00
Cleaning Equipment	1%	14,090.00
Decking, Risers, Boulders	2%	47,418.00
Genuine PebbleTec	0%	-
Misc Fees	5%	100,000.00
Markups	23%	482,135.70
Sales Tax:	0%	-
Total (2024 Dollars):	100%	2,089,254.70



APPENDIX 2: OHA OAR CHAPTER 333- DIV 60 PUBLIC SWIMMING POOLS

APPENDIX 3: US DEPT. OF COMMERCE UNDERGROUND CORROSION STUDY

APPENDIX 4: A 30-YEAR REVIEW OF COPPER PITTING CORROSION AND PINHOLE LEAKS