Appendix D

Belle Isle Boathouse Renovations
Detroit, Michigan
Cost Model Estimates
November 29, 2019
**** Updated September 27, 2022 (Red Italic)***

APPENDIX "D"

Description		Total Cost	Cost/SF
Building Enclosure Summary	Area	44,095 GSF	
B10 Superstructure		*$1,856,616*	*$42.10*
B20 Exterior Closure		$2,806,215	$63.64
B30 Roofing		$734,970	$16.67
D20 Plumbing		$336,500.00	$7.63
D40 Fire Protection		$31,000	$0.70
D50 Electrical		$45,989.00	$1.04
Sub-Total Trades Building Enclosure		*$5,811,290*	*$131.79*
Design Contingency	10%	*$581,129*	*$13.18*
Escalation ***10%* per year to midpoint 7/1/2025			
67 months @ ***10%* =	*70.3%*	*$4,493,871.00*	*$101.91*
Sub-Total Contingencies		*$5,075,000*	*$115.09*
Sub-Total Building + Contingencies		*$10,886,290.00*	*$246.88*
General Conditions 24 Months	3%	*$326,589*	*$7.41*
GC Personnel	*1.77%*	*$198,468*	*$4.50*
GC Fee	4%	*$456,454*	*$10.35*
Bond	1%	*$118,678*	*$2.69*
Total Construction Cost Building Enclosure		*$11,986,479*	*$271.83*
Owner Project Costs	35%	*$4,195,268*	*$95.14*
Total Project Costs		*$16,181,747*	*$366.97*
Total Project Cost Percentage Increase	***65%***		

Note:
**Red, Italic information has been updated from the original information indicated in the November 29, 2019 Smithgroup Report. (See Appendix "E")*

***Adjusted yearly escalation average of 10% is based of off the U.S. Bureau of Labor Statistics of Wages which saw a 6% increase, and the latest Producer Price Index (PPI) report that stated a 33% increase in materials since March 2022.*

Belle Isle Boathouse
Renovations/Restorations
Detroit, Michigan
Cost Model Estimates
November 29, 2019
**** Updated September 27, 2022 (Red Italic)***

APPENDIX "D"

Description		Unit	Unit Cost	Total Cost	Cost/SF
Building Enclosure				44,095 GSF	
Superstructure					
B1010 Floor/Terrace Construction					
New third floor terrace at west side	1,366	SQFT	$150.00	$204,900	$4.65
Shore existing roof structure at west side where existing wall is removed/replaced	68	LNFT	$5,000.00	$340,000	$7.71
Remove/replace *damaged terrace concrete floors throughout*	*1*	*LPSM*	*$645,160.00*	*$645,160*	*$14.63*
Remove/replace struture for terrace 217, *also repair exterior stairs*	564	SQFT	*$419.00*	*$236,316*	*$5.36*
Repair north & south exterior stairs	*1*	*LPSM*	*$177,500.00*	*$177,500*	*$4.03*
Sub-Total Floor Construction				*$1,603,876*	*$36.37*
B1020 Roof Construction					
New green house roof over terrace 217	564	SQFT	$200.00	$112,800	$2.56
Remove/replace wood decking at 10% of the area of low slope roofs 4311 sf x 10% =	341	SQFT	$25.00	$8,525	$0.19
Remove/replace wood decking at 20% of the area of high slope roofs 7638 sf x 20% =	1,537	SQFT	$25.00	$38,415	$0.87
Temporary roof protection	1	LPSM	$25,000.00	$25,000	$0.57
Damaged roof framing repairs	*1*	*LPSM*	*$68,000.00*	*$68,000*	*$1.54*
Sub-Total Roof Construction				*$252,740*	*$5.73*
Sub-Total B10 Superstructure				*$1,856,616*	*$42.10*

Note:
**Red, Italic information has been updated from the original information indicated in the November 29, 2019 Smithgroup Report. (See Appendix "E")*

Appendix E

Belle Isle Boathouse
Building and Site Assessment

E Picnic Way, Belle Isle, Detroit, MI 48207

SMITHGROUP

500 Griswold, Suite 1700, Detroit, MI. 48226

SG 11774.000

December 2019

Contents

1.0 INTRODUCTION

The Belle Isle Boathouse opened August 6, 1902 as the home of the Detroit Boat Club. It is prominently located on Belle Isle Park, the country's largest city island park. It occupies a prime location near the entry to the park adjacent the MacArthur Bridge and is clearly visible from the city. The view from the boathouse offers a spectacular panorama of the City of Detroit.

The boathouse sits on a man-made island that is supported by cedar wood pilings driven to bedrock. It is connected to the main island by two bridges over a small canal. Marina structures currently exists on the north and east sides while the west side of the site has docks for launching rowing skulls.

The original boathouse was constructed on pilings, surrounded entirely by water, and was destroyed by fire in 1890. A second boathouse was constructed in 1893. It also was destroyed by fire in 1901. The present building was constructed in 1902 with a subsequent addition in 1922. It was designed as a replica of a Gaztelii (Basque for a large, elegant country house). The 1902 building included a main lobby area, ballroom, boat storage and related spaces. The addition added a commercial kitchen, large dining room and meeting rooms. Landfill was added to expand the grounds, which included an Olympic-sized pool and children's wading pool. Dock expansions were added up through the 1970s.

The boathouse is one of the country's earliest reinforced concrete buildings. Its exterior materials are white stucco and red terracotta roofing tiles. The interior incorporates a maritime theme through intricately carved seahorse balustrades and other woodwork detail.

While the Boat House is not listed on the National Register of Historic Places it does exist within a District that is listed.

The Belle Isle Boat house is owned by the City of Detroit Recreation Department. The Detroit Boat Club occupied the building until 1995. The Friends of Detroit Rowing (FODR), a descendant of the original Detroit Boat Club, continues to occupy the building under a lease agreement with the Michigan Department of Natural Resources. Detroit city's fiscal problems over the last few decades necessitated cutbacks at the park, which resulted in much of the park to fall into disrepair. In 2013, the State of Michigan signed a 30-year lease to care for the park. Michigan's Department of Natural Resources now operates the park and has committed to make significant expenditures to restore it to its former beauty, aided by the Belle Isle Conservancy, a non-profit, volunteer organization dedicated to promoting the preservation and restoration of the island as a beautiful and unique urban resource.

The FODR sponsors the Detroit Boat Club Crew (DBCC), a nationally ranked crew and one of the oldest (est. 1839) rowing programs in North America. FODR is a 501(c)(3) non-profit, with a mission dedicated to the education and promotion of rowing in the Detroit metropolitan community.

FODR hosts competitive and recreational programs to men and women of all ages. The Detroit Boat Club Crew Juniors compete as a united crew, drawing participants from multiple schools in the Detroit metropolitan area. The men and women's master's program successfully compete regionally, nationally and internationally. Other programming includes Learn to Row / Learn to Race Youth Summer Clinics, Adult Learn to Row, Indoor Rowing (all ages and ability), Recreational Rowing, and a Detroit Youth Rowing Program (administered in partnership with the Detroit Recreation Department).

In August of 2019, the Friends of Detroit Rowing contracted SmithGroup / HR&A to prepare a physical assessment of the Belle Isle Boathouse building and site and to develop a Master Plan to address the sustainability of the facility and Detroit Rowing.

The objective of this assessment is to determine the physical condition of the interior, exterior, structure and systems of the building as well as the condition of the surrounding land and marina, identify reasonable order of magnitude cost estimates for remediation and develop an idealized implementation schedule for the project scope. This vital information will be used later in the Master Planning process.

1.1 EXECUTIVE SUMMARY

Assessment Study Process

SmithGroup through multiple site visits over a three - month period, personal observation, interviews with key personnel, still photography and drone video documentation recorded and assessed existing conditions of the Belle Isle Boathouse and site. The objective was to develop detailed knowledge of the facility in order to recommend appropriate remediation procedures, determine order of magnitude costs and define an idealized schedule of implementation of the recommended scope.

It is important to note that prior to initiating the study, the Boathouse experienced significant flooding from the Detroit River. While this was an unfortunate occurrence it helped to underscore some of the unique challenges the FODR and Boathouse are confronting.

As a framework for recommendations, it was determined that the study should assume, at a minimum, a 30-year future life span for the facilities. All recommendations incorporate this approach.

Site Assessment Summary

SmithGroup conducted a site analysis of the Boathouse property, adjacent land and parking lot on Belle Isle utilizing a historical data, topographic survey and on-site visual inspection. The existing site conditions were examined for sea wall integrity and height, marina layout and docking system integrity, pedestrian, vehicular and marine circulation, parking, site lighting, security, building access, vegetation and material integrity.

The most notable observations were the condition of the sea walls and structure of the swimming pools. The sea wall is failing in numerous areas and is need of significant repair or replacement. It is also too low with reference to the FEMA flood plain designations. Resolution of this deficiency is of high priority and a key step in protecting the future of the boathouse. The swimming pools have failed beyond repair and require removal to eliminate the current life safety hazards. Given the structural design of the pool and their proximity to the boathouse removal is a prerequisite to renovation/remediation of the boathouse.

Building Assessment Summary

The existing building conditions were surveyed utilizing on-site visual inspection, historical data and interviews with personnel familiar with building and operations. The building's roof and exterior walls were reviewed for structural integrity, water infiltration and finish material integrity using a drone capable of video photography. Interior walls, ceilings and floors were observed for structural integrity,

water damage and finish appearance and integrity. Building mechanical and electrical systems were evaluated for their working condition and expected life span. The building was also reviewed for deficiencies and/or non-compliance to current building and barrier free codes.

SmithGroup recommended as key importance to the preservation of the building is the remediation of the failing exterior envelope (roof, walls, windows and doors). If left unattended the building structure and key interior spaces will be compromised beyond repair. The major building systems are all beyond their useful life span and require complete replacement.

The remediation will be comprehensive, time consuming and expensive given that every attempt should be made to have an historically appropriate finished project.

Order of Magnitude Estimate of Probable Costs Summary

SmithGroup's findings and recommendations were documented and provided to our cost estimating consultant for use in determining an Order of Magnitude Cost estimate. The cost consultant visited the site to observe the current conditions. SmithGroup provided area take-off information from existing drawings provided by FODR.

Cost assumptions were coordinated with the recommended phasing implementation and a 5% per year escalation factor applied where applicable.

Basic assumptions assumed that the project would involve a construction manager; it would be built in five phases running continuously end to end with the only overlap being the design phases; each phase estimate total includes a reservation for Owner's Costs at 35% of construction cost.

The total order of magnitude estimate for the recommended remediation was $43,900,000. Costs related to temporary facilities for FODR are not included in this estimate.

Idealized Implementation Schedule Summary

After careful consideration of the total scope of the remediation required a phased approach to implementation has been recommended. The key benefits of this approach are that It addresses the most critical components first, allows for phased fundraising and for continued investigation and development of future programming and revenue generating uses.

1. Site Stabilization and Remediation ($12,053,300)
2. Exterior Envelope Remediation & Restoration ($10,535,300)
3. Interior Building Systems Upgrade (MEP/FP/ELEC) ($13,276,100)
4. Interior Restoration/Rehabilitation/Renovation ($6,853,600)
5. Final Site and Landscape Improvements ($1,182,000)

An unfortunate aspect of this project is that it is clear that occupying the building during construction is not advisable and a such will require that FODR provide temporary facilities for the duration of the remediation.

2.0 SITE ASSESSMENT

Overall, the condition of the boathouse property on the island is **POOR** due largely to infrastructure failures and deferred maintenance. The boathouse property on the Belle Isle mainland (access, parking lots) is in **FAIR** condition.

SmithGroup (SG) observed the general condition of the following components:

2.1.1 Component
Shoreline

System Description
The majority of shoreline on the site is stabilized with a sheet pile wall system. There was no visible evidence of a tie-back system although one is reportedly present. Loss of soil material from behind the wall was noted in numerous locations. This loss of material has led to the development of sinkholes and areas of pavement subsidence. The height of the wall is currently too low as it relates to the 100-year flood level. To preserve the future of the boathouse, it is imperative that the deficiencies of the river wall be resolved.

Additional areas of shoreline contain masonry remnants and rubble that helps to stabilize and prevent erosion, though not aesthetically pleasing or consistent with design of the site. Lastly, the smallest amount of shoreline towards the east and west ends of the property is naturalized condition with no technical reinforcement in place.

The sheet pile walls are in **FAIR** condition. The areas immediately behind the sheet pile wall are in **POOR** condition. The additional shoreline is in **FAIR** condition.

Findings
- Typical condition behind sheet pile wall **[Photo #1, #2, #3].**
- Non-structured shoreline, rubble present **[Photo #4, #5].**

2.1.2 Component
Pools and Pool Decking

System Description
The swimming pools have failed beyond repair and require removal to eliminate the current life safety hazards. Given the structural design of the pool and their proximity to the boathouse removal is a prerequisite to renovation/remediation of the boathouse. Additionally, the pools are currently serving as a makeshift pumping system for the building and an alternative method for pumping will be required.

The pools and surrounding decking are in **POOR** condition overall.

Findings
- Representative condition of pool decking **[Photo #6, #7].**
- View of pool condition **[Photo #8].**
- Close up of pool wall deterioration **[Photo #9].**
- Spalling, tile breakage in smaller pool **[Photo #10].**

2.1.3 Component
Bridges

System Description
The cast concrete and wood components of the bridges are failing, and safety issues are evident. The bridges are being further compromised during high water event.

The main entry bridge is in **POOR** condition overall. The secondary access bridge is in **FAIR** condition.

Findings
- Main bridge, makeshift access during high water **[Photo #11].**
- Main Bridge structure compromised by water levels **[Photo #12].**
- Secondary access bridge **[Photo #13].**

2.1.4 Component
Docks

System Description
The existing docks are a mixture of floating and pile-supported fixed docks. Several of the outer dock piles appear to have been affected by ice-jacking. Timber decking is in poor condition on several sections of the main piers and on finger piers. It appears deck replacement and other upgrades are currently underway on the fixed docks. Floating docks appear to be in a serviceable condition. Ramps to floating piers need attention.

The 'T' shaped dock on the north side is unsafe for use, and presently inaccessible. The floating docks closest to the shore on the east side provides habitat for wildlife but is not safe or useable for people.

The docks range from **FAIR to POOR** condition overall.

Findings
- Dock system on east side, some decking recently replaced **[Photo #14].**
- Representative condition of docks on north side of island. These docks are not safe for use **[Photo #15].**
- West side docks are a combination of formats. Newer metal portions may be salvageable **[Photo #16].**

2.1.5 Component
Ancillary Site Structures

System Description
There are several structures on site ranging in condition. Depending on programming needs, some have potential to be renovated while for others, removal is the only cost-effective option. It is assumed that none of the structures listed in this section have historic importance.

The structures are in **POOR to FAIR** condition overall.

Findings
- Lifeguard Structure and Stand have surface rust and deterioration. Removal of both is recommended, though the main structure could be repurposed depending on future programming needs **[Photos #17].**
- Band Shelter Structure. Overall the structure is in fair shape and appears to have been maintained. However, its removal is necessary to facilitate stabilization of island. It is

recommended that the shelter be saved for potential reuse, pending programming **[Photo #18].**

- Storage Building on west end of property is in poor condition, likely further impacted by standing water present this season **[Photo #19].**
- Entry / Gate House is in fair condition. Removal is recommended to facilitate island stabilization.
- Concrete and Tile Raised Planters are found in several locations on site – near pools and entry being most visible. All are showing wear with cracked and falling tilework, deteriorating concrete. Overall, they are in poor condition. Removal is recommended **[Photo #20].**
- Concrete block wall near the SE corner of the main structure is in fair condition. Removal is recommended to facilitate island stabilization

2.1.6 Component

Pedestrian and Vehicular Hardscape

System Description

Sidewalks and pedestrian pavements in all areas are in **POOR** condition. Spalling, cracking, and heaving are observed in many areas. Pavement along sheet pile wall is in particularly bad shape due to issues discussed in item 2.1.1, above. The vehicular pavement is in **FAIR to GOOD** condition. The asphalt parking lot was recently resurfaced and is in good shape.

Findings

- Concrete spalling, cracking and damage is evident throughout the site **[Photo #21].**
- Heaving concrete walk at connection to north docks **[Photo #22].**

2.1.7 Component

Site Utility Infrastructure

System Description

Several utility castings require adjustment and surrounding pavement requires repair. An in-depth analysis of existing site utility infrastructure was not undertaken as a part of this site assessment. A utility line video assessment is recommended to evaluate the condition of existing sewer.

Findings

- Structure in need of adjustment, adjacent repairs **[Photo #23].**

2.1.8 Component

Landscape

System Description

The ornamental landscape on the site has suffered from deferred maintenance and environmental impacts (i.e. flooding). Lawn areas are in poor shape due to standing water. Dead and dying trees and shrubs are present and should be removed for safety reasons. It is not recommended that any landscape planting be re-installed until all site and structure stability issues have been resolved.

The landscape is in **FAIR** condition overall.

Findings

- Representative landscape **[Photo #24].**

2.1.9 Conclusion

It is critical that life safety issues be addressed on the site. Additionally, in order to stabilize the site for a 30-year time frame, repair, replacement and modification is required for most site elements. The most notable observations were the condition of the sheet pile river walls and the structure of the swimming pools and surrounding decking. Consideration for site resiliency should be considered for any/all proposed site solutions. Recommendations for site stabilization are represented in **Section 2.2.**

2.1 SITE ASSESSMENT PHOTOS

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

Photo 13

Photo 14

Photo 15

Photo 16

Photo 17

Photo 18

Photo 19

Photo 20

Photo 21

Photo 22

Photo 23

Photo 24

2.2 SITE RECOMMENDATIONS DIAGRAMS

Diagram 1

SITE STABILIZATION PLAN

RECOMMENDATIONS

1. Shoreline stabilization
2. Modify landform to protect building elevation raised 3'
3. Pool / decking
4. Island becomes peninsula with closure of canal
5. Docks are replaced, refurbished, or salvaged and replaced as needed.
6. Pedestrian circulation to accommodate public and private uses
7. Open and flexible landscape
8. Parking and access layout remains as-is.

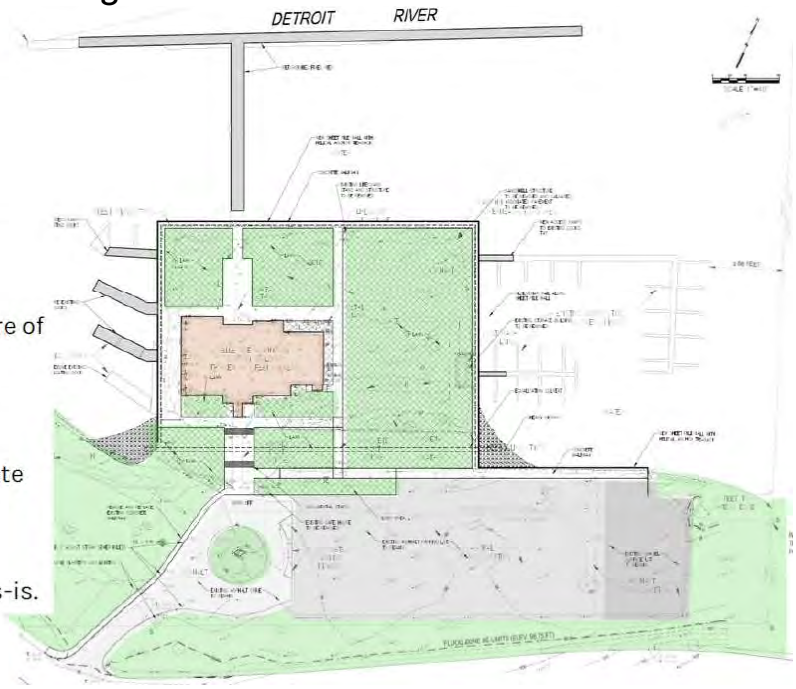


Diagram 2

SITE STABILIZATION PLAN

GRADING CONCEPT

+ Elevate perimeter around building above 100-year flood level

Provide ADA access to site via sloped sidewalks at less than 5%

Area to the west requires small retaining wall to preserve access to lower level storage. Area needs further study based on program considerations

Slope site away from wall and away from drainage. Provide storm drainage system (catch basins, not shown) where needed

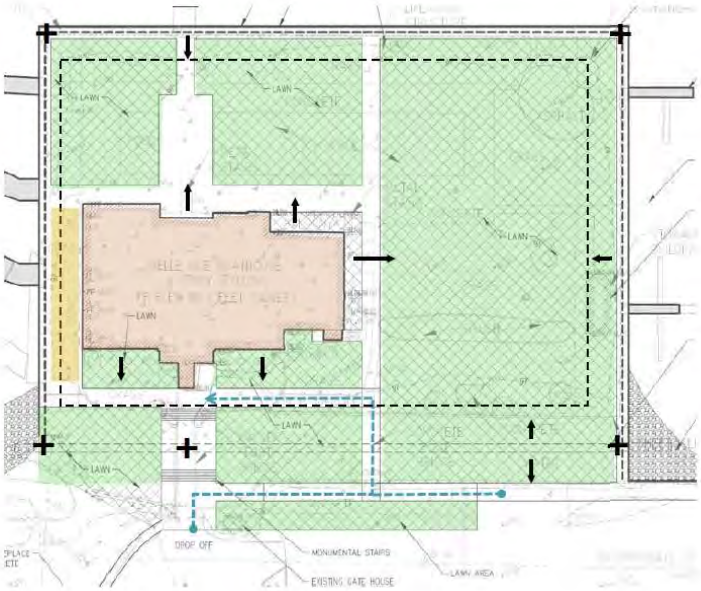


Diagram 3

PROPOSED RIVER EDGE PLAN

- Leave existing sheet pile in place
- Install a **new sheet pile** wall outside of it and secure the system with **helical anchors**
- Raise existing grade around perimeter +/- 3'
- Slope grade away from boathouse
- Fill in the canal and provide equalization culvert – the island becomes a peninsula

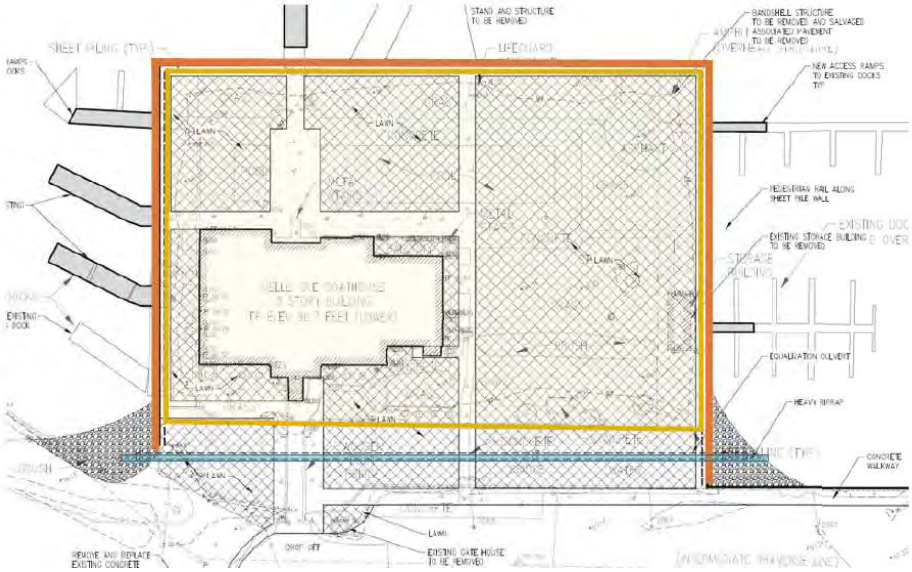
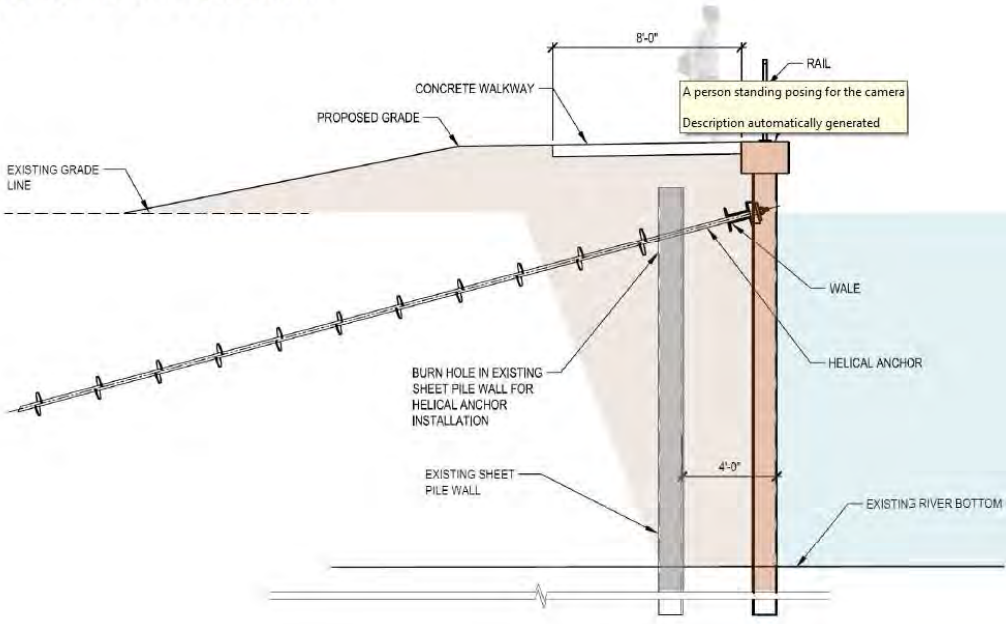


Diagram 4

PROPOSED RIVER EDGE SECTION

WITH WALKWAY AND RAILING

- Leave existing sheet pile in place
- Install a new **sheet pile wall** outside of it and secure the system with **helical anchors**



3.0 ARCHITECTURAL ENCLOSURE ASSESSMENT

The Boat House [Photo 1-2], constructed in 1902, is a stucco finished brick mass masonry building over a concrete and steel frame. The building is constructed on a concrete supported slab with grade beams supported on wood piles driven into the riverbed, **[Photo 3-4].** The Boat House had a significant addition to the east side of the structure. This addition may have occurred in 1922, but actual documentation of this has not yet been verified. The original Boat House sat in the water with a single bridge access. Subsequent improvements constructed an island around the Boat House featuring swimming pools, a pavilion and a series of docks. A second bridge was also added.

The structure is the seventh (some sources indicate sixth) boat house constructed by the Detroit Boat Club Crew. The Detroit Boat Club Crew was founded in 1839 and several of the previous seven structures were destroyed by fire (including this building's predecessor), which is said to be the impetus of the current structure's concrete and steel frame. The structure was designed by Detroit architect Alpheus Chittenden. The structures Venetian Style features Spanish clay tile roofs with Stucco walls and wood divided lite windows. There are several arcaded terraces that offer shading to the interior spaces and dramatic vistas of the Detroit River.

While the Boat House is not listed on the National Register of Historic Places it does exist within a District that is listed. Belle Isle has been a public park for the City of Detroit since 1884. Acclaimed urban park designer Fredrick Law Olmsted provided designs for the park during the 1880's that were partially realized. The island has a number of significant structures from prominent architects of the time. In 1974 Belle Isle was listed on the National Park Services Register of Historic Places (#74000999). The listing defines the resource as a District, qualifying as historic under the criteria for Event (the significant activities that occurred during its history), Architecture and Engineering. The periods of significance are listed as 1900-1924, 1875-1899 and 1850-1874, with 1860 being listed as a significant year.

It is worth noting that the Boat House was not included in the exhaustive list of structures in the application for listing on the historic record. This should not be seen as its exclusion, as the application states, "The real historic value of the park is not so much in the speculative value of the isolated value of the buildings, structures, or assorted objects, but in its collective entirety." As the Boat House was constructed during one of the listed periods of significance, the building's historic value needs to be taken into consideration.

The Secretary of the Interior has four Standards for the Treatment of Historic Properties and they are as follows: preservation, rehabilitation, restoration and reconstruction. Of these strategies, reconstruction does not apply. Preservation is focused on repair and maintaining historic fabric. Rehabilitation is focused on maintaining historic appearance while potentially implementing modern improvements. Restoration would involve removal of non-historic elements to return the structure to its appearance during the period of significance. For the purpose of this assessment Rehabilitation will be the approach proposed. This will need to be vetted through the State Historic Preservation Officer. The rationale for pursing Rehabilitation in lieu of Preservation will be articulated throughout this assessment.

Overall, the condition of the exterior enclosure of the boat house is **POOR**. Its poor condition is largely due to uncontrolled water infiltration which has resulted in widespread deterioration of the stucco finish, underlying mass masonry walls, roof, windows and doors. The building, as constructed lacks fundamental water management features such as flashing. Examples of the severity of deterioration are that one section of the building was dismantled recently, and currently a terrace is not being used due to apparent structural deficiency.