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Final Concept

CANAL DOCK:
FINAL CONCEPT DESIGN REPORT

Construction Of A Boathouse Facility At Long Wharf (Reuse Parcel H)
State Project No. 92-570

Prepared for **New Haven City Plan Department**

NEW HAVEN CITY PLAN DEPARTMENT
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March 29, 2010

Thomas A Harley, P.E.
Chief Engineer
Bureau of Engineering & Construction
State of Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, CT 06131-7546

Dear Mr. Harley:

This report is the product of several months of intense planning and design work after a decade of effort by the city to mitigate the loss of the historic Adee Boathouse and bring a new signature destination for public access to New Haven's waterfront. It presents the conceptual design for a new pier and boathouse at the site of the historic Canal Dock that will be a recreational and cultural resource for the city and a critical part of the revitalization of Long Wharf and the reconnection of this waterfront area to the city's core. The project builds on and ties together many other city efforts in the area including improvements to Long Wharf Pier, the completion of the Farmington Canal Greenway, redevelopment of the Long Wharf Area, and the reconstruction of I-95 and the Q bridge.

The design presented here draws from the history of the site and harbor as well as the historic Adee Boathouse, which it will replace. The design also incorporates intense research of the site's context, similar facilities in other cities, understanding of the physical constraints and ecological resources of the site, and the input of community stakeholders who will use the completed facility. This report presents the process by which this has been achieved, as well as the design that has emerged from it; a design that reflects both the needs and aspirations for this site.

While there is still much work to be done, this report marks a critical step in making the new boathouse at Canal Dock a reality. It represents the cumulative effort and commitment from city, state, and federal government agencies as well as from many local community groups, organizations, and individual stakeholders. There are too many agencies, groups, and individuals to thank here, but I hope that the remainder of this report highlights the consistent and committed effort of so many that has brought this project to where it is today.

In the coming months the conceptual design presented here will be developed into final design plans, and in the near future the boathouse at Canal Dock will become a reality. For those familiar with this project, this report provides a review of process thus far; for those new to the project, it provides a thorough introduction to an exciting project that will bring not just a new destination, but new energy to the Long Wharf waterfront. We encourage your continued feedback and hope for your continued support as this project moves forward.

Sincerely,

Karyn M. Gilvarg, AIA
Executive Director

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Langan Engineering & Environmental Services

Gregg Wies & Gardner Architects

Wallace Roberts & Todd, LLC

Rumney Associates - *wayfinding*

Dean Sakamoto Architects, LLC

Beacon Design International

Dave Vogel - *rowing consultant*

Spiegel Zamecnik & Shah

Architectural Engineers, Inc

VJ Associates - *cost estimating*

Acknowledgements

Connecticut Department Of Transportation

Federal Highway Administration

US Army Corps of Engineers

State Historic Preservation Office

Connecticut Department of Environmental Protection, Office of Long Island Sound

The Port Authority of New Haven

New Haven Harbormaster

Vespoli USA, Inc

New Haven Preservation Trust

for a complete list of stakeholders, see Appendix I: Program Analysis

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1 Project Background

The project to build a community boathouse and public waterfront access-area on New Haven Harbor grew out of the I-95 Quinnipiac River Crossing Corridor (Q Bridge) transportation project. The Boathouse at Canal Dock is the result of years of study, discussion, negotiation and commitment by city, state and federal governments. When completed, the project will be a signature destination on New Haven Harbor, providing boating and viewing access to the water, as well as cultural, historic and environmental education about New Haven.

In 1989, the Connecticut Department of Transportation (ConnDOT) began to study ways to improve the Quinnipiac River Crossing of Interstate 95. The bridge was aging, not designed to modern earthquake standards, and used well beyond its design capacity. The river crossing corridor included the bridge approaches from Exit 54 (Branford) on the East, Exit 45 on the West (West Haven), and the Interstate-95, Interstate-91 and state Route 34 interchange.

In 1992, the first Draft Environmental Impact Statement was released by Connecticut Department of Transportation. A public hearing held at the Fair Haven middle school was attended by well over 400 people. Comments, largely negative, varied across all areas of concern including increased traffic, lack of attention to other modes of transportation, air pollution, loss of businesses and taxable real estate, impact on historic structures and neighborhoods, and further separation of the city from its historic waterfront.

Faced with this opposition, the ConnDOT formed an outreach committee, named the Intermodal Concept Development Committee (ICDC), which included over 25 groups, advocacy organizations, and units of government. The committee was tasked with suggesting alternative concepts for the corridor. Among the concerns and suggestions were ideas about how to save and reuse in place, or move, the historic Adee Boathouse (1911), which sat in the shadow of the Q Bridge for decades.

The city was also interested in having the Long Wharf stretch of I-95 rebuilt below grade, and "platformed over" to reduce the separation of the city from the waterfront. ConnDOT and the city agreed that any alternative chosen for the Q Bridge rebuild would not foreclose this possibility. A separate study called the Harbor Access Study was undertaken by ConnDOT to look at options for "sinking" I-95 from Canal Dock Road to the Howard Avenue bridge. The Harbor Access Study concluded that I-95 at Long Wharf could be sunk below grade, but at a cost of $500 million, and with ongoing operating and maintenance costs significantly higher than at-grade options. The city and the state agreed this project was not achievable

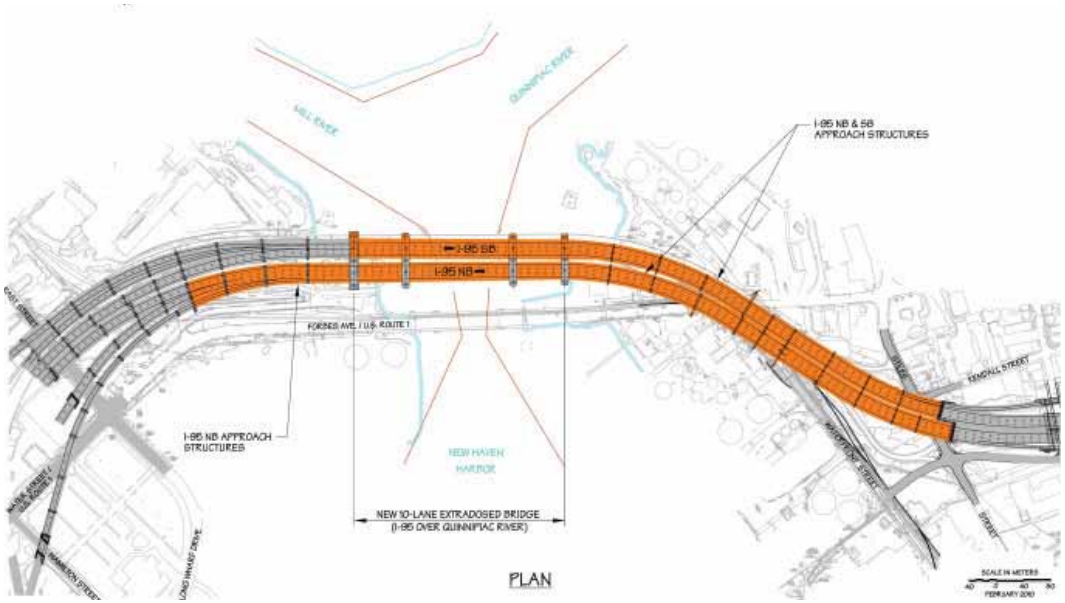
and began looking at other ways to mitigate the impact of the highway on the waterfront park and public access areas. A report outlining alternatives by the Parson Transportation group was issued in August of 1998.

The city of New Haven had conducted a concurrent study of the Adee Boathouse, its history and its setting on Forbes Avenue and the waterfront across the harbor (Canal Dock), which was closer to the city center and was publicly owned land. In 1998, Centerbrook Architects and Planners completed its study for the city and proposed moving the boathouse across the harbor, reinstalling it on new filled land north of Long Wharf Pier, and connecting to it Long Wharf Park. The plan proposed creating a focal point for waterfront activities directly opposite Canal Dock Road's intersection with Long Wharf Drive and just north of Long Wharf Pier. For boats, Long Wharf Pier is accessed by a 25-foot-deep branch off the 35-foot-deep main navigation channel for New Haven Harbor. The schooners Amistad and Quinnipiack dock at the pier, and other visiting tall ships can, as well. The Adee Boathouse would be relocated just north of the pier and used for smaller rowing, sailing and other boats on its lower level, and education and community functions on the upper story.

The work of the ICDC and ConnDOT and their consultant, Parsons Brinkerhoff, culminated in a Supplemental Draft Environmental Impact Statement outlining five build alternatives for the Q bridge, which was released for comment in August 1998. The city made ConnDOT aware of its concerns about the impact to historic and waterfront resources and the Centerbrook Architects' boathouse study. In October 1998, ConnDOT agreed to study the feasibility of moving the Adee Boathouse and the Fitch Foundry, which were both slated to be demolished in the five alternatives for the bridge. ConnDOT and the Advisory Council on Historic Preservation signed an Memorandum of Understanding (March 4, 1999) regarding these two buildings (and a third at 63 Bridge Street) that acknowledged the Centerbrook study's recommendation to move the boathouse.

In August of 1999, a Record of Decision (ROD) was issued for the I-95 Q corridor project that delineated the preferred highway alternative and noted that certain mitigation actions were still open, including mitigation related to the Long Wharf stretch of I-95.

Parsons Brinkerhoff's study for ConnDOT on the feasibility of moving the Adee Boathouse and the Fitch Foundry concluded that the boathouse could be moved at a cost of $31 million, but



This page from left:
Pearl Harbor Memorial (Q) Bridge, Contract B. Connecticut Department of Transportation.

The former Adee Boathouse. Andrew Cusack Online.

that the move logistics would delay the corridor program and increase overall costs by $22 million. Given these constraints, it was decided that relocating the Adee Boathouse was not an acceptable mitigation solution. Additionally, it was determined that no landfilling could occur at the proposed receiving site for the boathouse, thus any structure on the site would have to be built on a platform. The city applied for permits for a platform structure to support the boathouse and received approval from the U.S. Army Corps of Engineers (ACOE) in 2002 and the Connecticut Department of Environmental Protection (DEP) in 2003.

Construction on the highway part of the I-95 project began in June 2002 (construction of the State State rail station had begun in 1999). In May and June 2002, the city and the ConnDOT reached agreement on a compromise solution that limited the cost of the boathouse mitigation to $30 million for a "replica" structure. After soft and administrative costs are removed from the $30 million, available funds are assumed to be $24 million. Also available to the project is a $2 million enhancement for public access in the Long Wharf Drive area. These funds are part of a Harbor Access proposal relating to, and consistent with, the I-95 Harbor Crossing Project as allocated under TEA 21. Of the $2 million, it is assumed that $1.5 million will be available for the Canal Dock construction. Combining these two sources of project funding results in a total project construction budget of $25.5 million. An additional $4 million was set aside for Long Wharf Park for shoreline stabilization and enhancement to the public access there.

The location of the Boathouse at Canal Dock ties together a number of other recreational and educational facilities and

This page from left:
The old (existing) Q Bridge. The existing Q Bridge while the Tomilson Bridge was under construction with the Adee Boathouse in the foreground. Connecticut Department of Transportation.

Rendering of the new Q Bridge. Rendering of the proposed Q Bridge that is now under construction. Connecticut Department of Transportation.

resources. Adjacent Long Wharf Pier can accommodate larger boats and ships and is the home port pier for the educational schooners Amistad and Quinnipiack. In addition, the Farmington Canal Greenway will begin at Canal Dock and link the waterfront to central New Haven and towns to the north. When completed, the Greenway will stretch from New Haven Harbor to North Hampton, Mass. Long Wharf Veterans Memorial Park, a half mile of public park, joined at its southern end to the New Haven Land Trust preserve, lies directly south of Canal Dock and Long Wharf.

The Connecticut Freedom Trail recently gave the city a marker to be placed in the Long Wharf vicinity marking the location as a stop on the trail. The trail was created by the General Assembly in 1995 to recognize the importance of numerous sites in the state that are associated with the heritage and movement to freedom of its African American citizens. Canal Dock lies at the point of New Haven Harbor that is closest to its central downtown area and the historic New Haven Green. Interpreting the natural and cultural history of the harbor will be an important component in the realization of the Boathouse at Canal Dock.

2 Project Process & Goals

Design Process

The Canal Dock project planning phase sought to produce a final conceptual design based on an informed analysis of the project site and context, and the program and stakeholder needs. The intent was to create not just a new boathouse but a "signature" destination guided by three principles: economic development, cultural enrichment and sustainable development. The design process followed a series of steps that are summarized in this report.

- **Establishment of goals:** The design process was guided by goals established early in the process and refined through the design process based on the results of research, analysis, and stakeholder input.

- **Determination of Permitting and Regulatory Constraints:** A fixed budget of state and federal highway funding, and Connecticut Department of Environmental Protection and Army Corps of Engineers permit requirements set defined limits for the project. These requirements were incorporated into the design process.

- **Historic Context Research:** The Canal Dock site and Long Wharf area have a rich history that will influence and be expressed in the final design of the site. Research on various aspects of the history of the site, the harbor, and recreational boating in the region was undertaken in order to guide this process.

- **Existing Conditions Analysis:** An intense analysis of the site and its urban context was undertaken to understand the opportunities and issues presented by the site and how it would connect to the city as a whole.

- **Program Analysis:** The site will serve primarily as a boathouse for rowers and other recreational boaters and secondarily as a location to serve groups offering educational programs relating to New Haven Harbor. These users will have specific needs and requirements for the site, which were investigated during this phase.

- **Establishment of Design Approach:** The design team reviewed the existing conditions analysis, historical research, and program verification, and used the understanding gained to develop objectives for each of the project goals and to outline a series of design assumptions that would guide the development of conceptual design alternatives.

- **Development of three concept alternatives:** Rather than developing one concept design, the team developed three initial conceptual alternatives in order to explore a full range of design possibilities for the site. These alternatives were evaluated based on the design objectives and client and stakeholder input.

- **Development of Final Design:** The final design is the culmination of the planning phase design process, incorporating elements from several of the earlier alternatives in a preferred design.

Project Goals

1. Mitigate the loss of the historic and cultural resources.
2. Increase waterfront access.
3. Provide a recreational and competitive boating facility for the city and the region.
4. Provide quality waterfront public space compatible with boating activities.
5. Create a signature waterfront destination for the city of New Haven.
6. Educate visitors on the cultural, natural, and maritime history of New Haven Harbor as well as the historic Adee Boathouse.
7. Provide a flexible and adaptive design that allows for variations in use and potential future growth.
8. Create opportunities to connect the site to surrounding road, trail, greenway, transit, and waterway networks.
9. Create a site that is universally accessible.
10. Create a boathouse and site that aspires to cultural, environmental, and economic sustainability.

3 Permitting & Regulatory Constraints

The permitting and regulatory approval process for this project started in the late 1990s. The process has resulted in a permitted project on the harbor creating an opportunity for the city of New Haven. The process has also resulted in constraints on the project that have guided the conceptual and planning design phase. eThe three regulatory bodies having jurisdiction over this project are the Connecticut Department of Environmental Protection Office of Long Island Sound Programs (OLISP), the United States Army Corps of Engineers (USACE) and the city of New Haven.

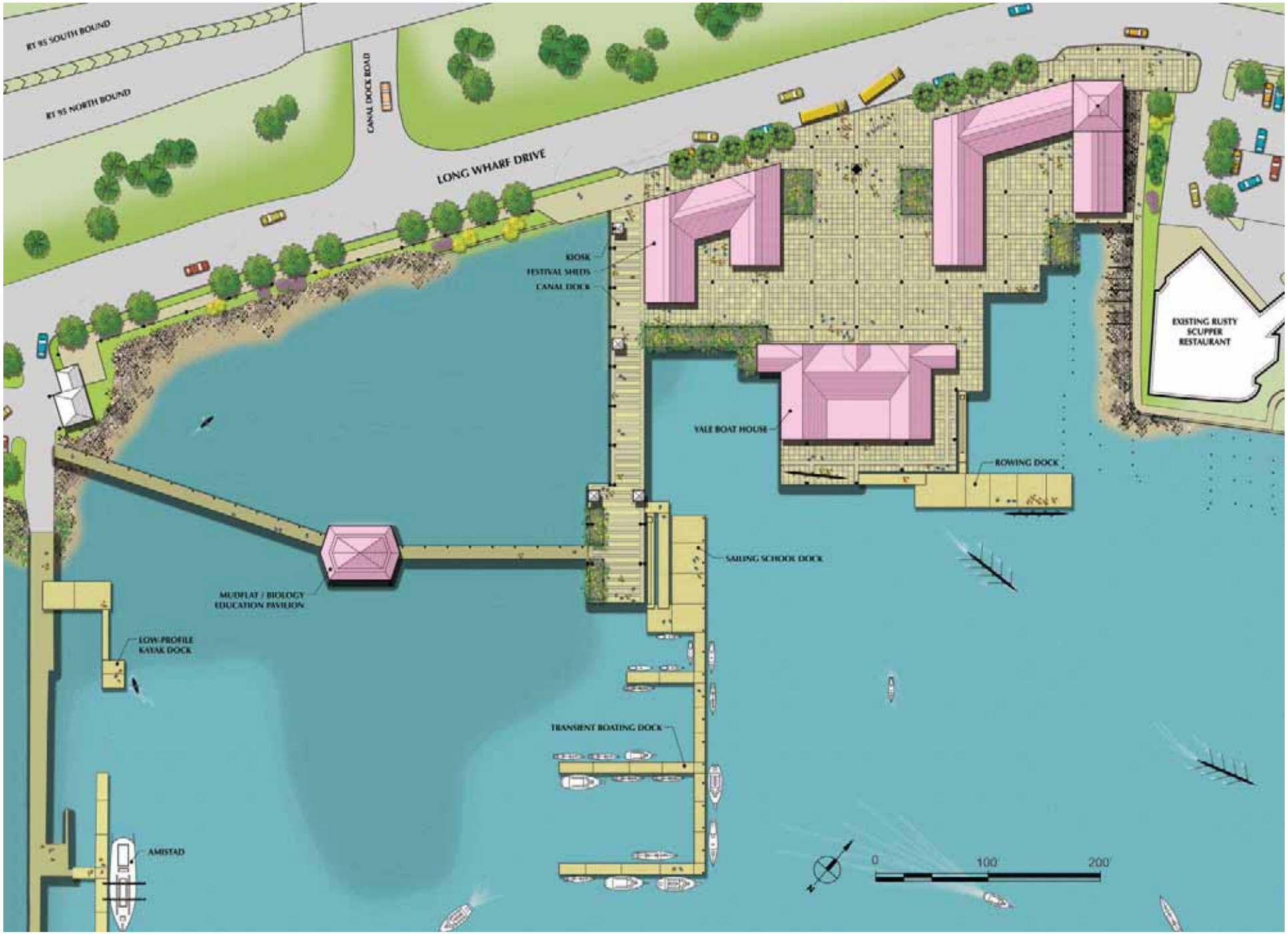
OLISP is charged with protecting the natural resources associated with Long Island Sound and has jurisdiction over all work taking place below the high tide line, elevation 5.6 feet (NVGD 1929). Initial plans for the project and preapplication discussions with the OLISP included a combination of dredging parts of New Haven Harbor and using the dredged materials to create land adjacent to the existing shoreline. Those discussions eliminated dredging and filling, and shifted the footprint of the project north (to avoid the existing mudflats) and landward, reducing the overall footprint. The elimination of dredging and filling resulted in the current project approach of a pile-supported platform.

The preservation and protection of the water quality of New Haven Harbor is a design objective. The pile construction for this project will be completed using vibrating and hammering techniques in lieu of auguring to reduce disturbance of the harbor floor.

Another focus of OLISP is to enhance the public's use of Connecticut's water and to ensure that development within the coastal boundaries include water-dependent uses. Many initial project elements were refined or eliminated to ensure consistency with these requirements. These requirements proved to be an instrumental guideline for the programming and design of the facility.

The approved permit drawings (shown on the following page), allowed for 2.98 acres of shading in New Haven Harbor. This overall shading and project components have been the basis for the development of the preferred concept plan.

The project is also constrained to the south by a 15-foot federal anchorage line maintained by the USACE. This anchorage line prohibits any project elements within its limits. This limitation has defined the location and orientation of the floating docks.


RT 95 SOUTH BOUND
RT 95 NORTH BOUND
CANAL DOCK ROAD
LONG WHARF DRIVE
KIOSK
FESTIVAL SHEDS
CANAL DOCK
EXISTING RUSTY SCUPPER RESTAURANT
YALE BOAT HOUSE
ROWING DOCK
SAILING SCHOOL DOCK
MUDFLAT / BIOLOGY EDUCATION PAVILION
LOW-PROFILE KAYAK DOCK
TRANSIENT BOATING DOCK
AMISTAD
0
100'
200'

As a result of the project's location within the floodplain, the project will require a Flood Management Permit from the Connecticut Department of Environmental Protection and compliance with the Flood Damage Prevention Ordinance of the city of New Haven. These requirements will restrict the type of construction, materials being used, and the use of the proposed facility.

The project is also located with the limits of the Coastal Area Boundary. This will require the project to be consistent with the state's Coastal Zone Management Act. A Coastal Area Management Report and a Coastal Site Plan application will need to be filed with the city of New Haven's Planning Commission and Zoning Board of Appeals and reviewed by the OLISP.

The project is located in Planned Development District (PDD) 53. The requirements of the PDD will need to be incorporated into the project or a modification to the requirement pursued with the city of New Haven's Planning Commission and Zoning Board of Appeals.

Previous page:
Permitted Plan.
This site plan was permitted by OLISP in 2001.

4 Historic Context

The history of the site and its context was examined according to five themes: natural and early history, maritime history, recreational history and history of rowing, history of the Adee Boathouse, and the history of harbor development in both maps and images. The critical timelines of each of these thematic histories are presented in this section. See Appendix D, "Canal Dock Interpretive Design Research and Inventory Report" for the original report containing full bibliographic citations.

This page, from left:
1638. Quinnipiac Harbor.
Society of Colonial Wars Online.

Natural and Early History

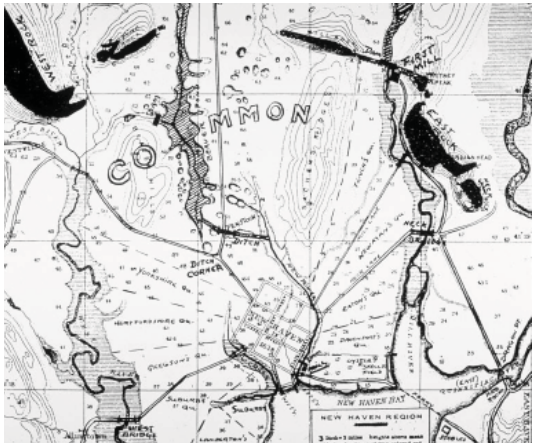
The formation of the New Haven Colony and New Haven Harbor.

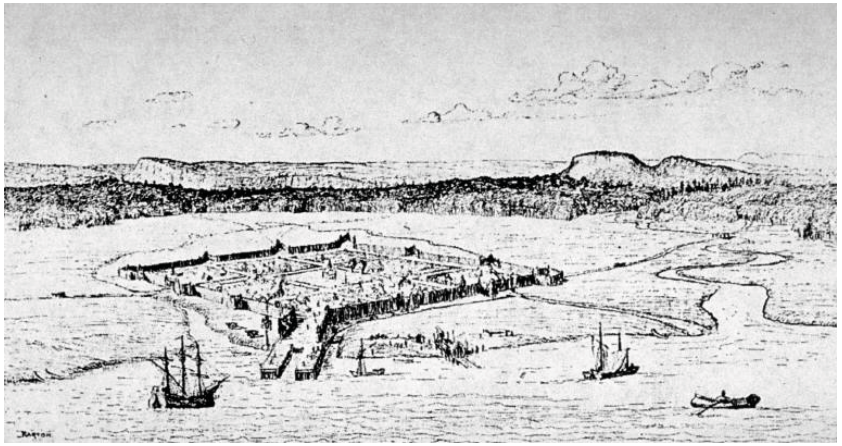
- April 24, 1638. Five hundred English men and women sailed into Long Island Sound under the direction of Puritan Reverend John Davenport, and the London merchant, Theophilus Eaton, in search of a more purified theocratic society and a more adventurous mercantile economy[1] The area, known as Quinnipiac(k), was home to the Quinnipiac(k) or Eansketambawg people who were part of the Algonquin Nation of Mettabesic. The Qunnipiac(k) had also settled the region because of the natural advantages of the harbor, specifically for hunting, fishing, and farming maize along the coast. The Qunnipiac(k) were under attack from the neighboring Pequots and eager to sell their land in return for protection by the newly arrived settlers.[2]

  The Quinnipiac(k), like the settlers, were dependent upon a good harbor for their quality of life. A protected harbor and the confluence of three rivers and two creeks was the ideal location for a prosperous town.[3]

- Summer of 1638. A site for the town was chosen at the head of the harbor, just west of the Mill River, and at the mouth between West and East Creeks. Streets were laid out in the form of a large half-mile square that was subdivided into nine smaller squares with the central square set aside as common land and a tenth set diagonally to meet the harbor.[4]

1 Floyd M. Shumway and Richard Hegel, "New Haven's Two Creeks," 1990, New New Haven Museum and Historical Society, New Haven, 15.
2 Iron Thunderhorse,"The Quinnipiac of New England," in *Whispering Wind, Vol. 32, No. 5, 2002.*
3 Amy L. Trout and Julie Ponessa Salathe, "A Brief Introduction to the Maritime History of New Haven," Journal, 1990, New New Haven Museum and Historical Society, 3.
4 Elizabeth Mills Brown, *New Have: A Guide to Architecture and Urban Design (New Haven, Yale University Press, 1976), 12.*





- 1638–1640. The town "stood by the harbor [and was] placed as close to the water as firm ground would allow and wedged into angles of the two creeks, thus maximizing water frontage".[5] Vessels could be floated up the Eastern Creek as far as Chapel Street to a point a bit west of York Street.[6] Docks were soon built. Ships could move easily through the harbor and up the three rivers (West, Mill, and Quinnipiac) that flowed into it.

This page, from left:
1641. Brockett Map with Land Division.
Yale University Library, Historical New Haven Collection.

1650. Map of New Haven Region.
Yale University Library, Historical New Haven Collection.

Before 1700. Sketch of New Haven with Palisade.
Yale University Library, Historical New Haven Collection.

5 Brown 1976, 12.
6 Shumway and Hegel, 15.

Maritime History

The use of New Haven Harbor over the past 400 years.

This page, from left:
1786.
New Haven viewed from the South East.
Yale University Library, Historical New Haven Collection

Late-1800s.
Cargo arriving by sea and being loaded directly onto railroad freight cars at Canal Dock.
NHCHS.

- 1700s. The colony established overseas trade with Long Island, New Amsterdam, Delaware, Virginia, Barbados, Rhode Island, Massachusetts Bay, and Newfoundland. New Haven exported provisions, cattle, and horses while importing manufactured goods, hardware, canvas, rum, sugar, cotton, salt, tobacco, and wine.[7] By the end of the century, New Haven was posed to break out of the "confines of regional and West Indies trade and into the circle of world commerce."[8] Steady trade occurred with Ireland, England, France, Spain, the Canary Islands, and China. Unfortunately, the embargo of 1807 and the War of 1812 brought an end to this trade. Only trade with the West Indies fully resumed later, but New York edged out New Haven as the port of national prominence.[9]

- 1800s. Industry replaced agriculture and trade as the predominant activity in and around New Haven Harbor.

- Transportation in New Haven in the early years was limited to boats traveling by water and restricted use of horses and carriages. Transportation was revolutionized by the emergence of steamboats, canals, and railroads. Canals, and later railroads, allowed imported and exported goods to travel from the harbor to points inland and back again.

- In 1839, African Mendi Warriors were captured in Africa by Spanish slave traders. While off the coast of Cuba aboard a Spanish schooner named the Amistad, they overtook the boat and were found by a United States patrol

7 Rollin Osterweiss, *Three Centuries of New Haven 1638-1938 (New Haven, Yale University Press, 1953), 46.*
8 Smith, 65.
9 Smith, 65-67.

boat. Because New Haven had a U.S. District Court, the Mendi and their leader, Cinque, were imprisoned and tried in the city. The Amistad landed at Long Wharf on its voyage to New Haven for the trial. At the end of a three-year trial that received national attention, the court ruled that the Mendi had been kidnapped into slavery in violation of Spanish law. The return of the Mendi to their homeland was remembered as a triumph of the anti-slavery movement in America.

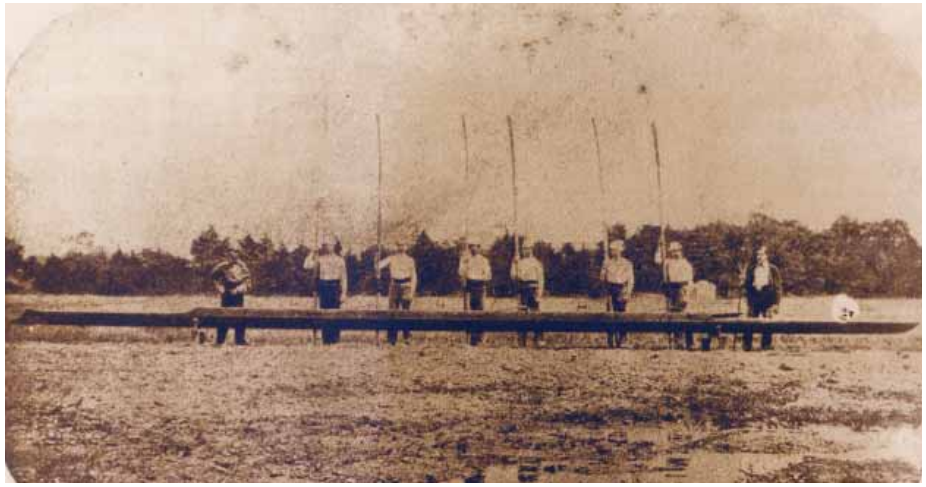
- The climax of New Haven Harbor's time as a shipbuilding center was reached between 1880 and 1890. Industrialization and new large-scale shipping brought the industry to New Haven Harbor, and railroads allowed supplies and products to be brought to and from the new shipyards.

- 1900s. Several water-based activities became more prevalent: recreation, oyster cultivation, and petroleum storage. (See more on recreation below). New Haven Harbor had always been an ideal habitat for oysters. It offered a perfect combination of conditions: sheltered, shallow, warm salt water with an influx of fresh water. After improvements were made to the harbor, large-scale oyster cultivation became common.[10] By the-1990s, petroleum accounted for 90 percent of the imports into New Haven Harbor.

This page, from left:
1898.
Steamship "Richard Peck" of the New Haven Line. Yale University Library, Historical New Haven Collection

1978.
Brighton, Robert K. Photograph of the Suction Dredge, Quinnipiac, Cleaning Ground and Catching Oyster Shells. Mystic Seaport Image Archive.

10 Virginia M. Galpin, "New Haven's Oyster Industry: 1638-1987," 1989, New Haven Museum and Historical Society, New Haven, 7-69.



Recreational History and the History Of Rowing

The development of New Haven Harbor as a recreation and rowing center.

This page, from left:
1859. First known photograph of Yale Navy.
Yale Athletics Archive.

1885. Yale Crew Team.
Yale Athletics Archive.

- The first "modern" rowing races began in competitions among professional watermen on the Thames River in London. Following the start of amateur racing between collegiate groups at the end of the 18th century in Europe, Yale University brought collegiate rowing to America, when on May 24, 1843, it started the first college boat club in the United States.11

- 1852. Yale races Harvard in the first intercollegiate athletic event in U.S. The race is held on Lake Winnipesaukee in Center Harbor, N.H. on August 3.[12]

- 1853. Yale boat club is organized formally as the Yale Navy.[13]

- 1860s. Yale's crew team built a simple barn-like boathouse at the mouth of the Quinnipiac River used by students including George Augustus Adee, class of 1867.

- 1878. Yale-Harvard Regatta moves to its current home on the Thames River in New London, Conn.[14]

- By 1900, recreation became the most important use of the harbor.[15] Steamboat excursions to New York became common and the construction of waterside hotels began.[16]

11 Weil Online.
12 Skiddy, 1965.

13 Connecticut State Historical Commission Online.
14 Weil Online.
15 Julie Ponessa Salathe, "Maritime History of New Haven: A Classroom Guide," 1990, New Haven Colony Historical Society, 6.
16 Diana Balmori, "Industry and Water in New Haven," in *Carriages & Clocks,*

Fort Nathan Hale, a historic site, began use as a park[17] and Lighthouse Point became a popular place for swimming, sunbathing, boating, and relaxation.[18]

- 1924. Heavyweight varsity eight-oar team wins a gold medal on the Seine course at the Paris Olympics with Benjamin Spock aboard.

- 1956. Yale wins the eight-oar race on Lake Wendouree at Ballarat during the Melbourne Olympics.[19]

- 1972. Women's crew begins at Yale.

- 1996. Yale's Helen Cooper organizes the first exhibition devoted to Thomas Eakin's rowing images at the National Gallery, Yale, and the Cleveland Art Museum.[20]

This page, from left:
c.1900. Boats in Canal Basin. Chapelle, Howard. The Migration of an American Boat Type.

c.1900. "Harvard-Yale Regatta illustration, Street & Smith". Yale Athletics Archive.

1925. Yale University Olympic Crew Team at practice, Thames River, Connecticut. Yale Athletics Archive.

Corsets & Locks, Preston Maynard and Marjorie B. Noyes, ed. (New Haven, New Haven Preservation Trust, 2004), 99-106.
17 Trout and Salathe, 9.
18 Trout and Salathe, 9.
19 Weil Online.

20 Weil Online.

History Of The Adee Boathouse

The development and recreation of Yale's Adee Boathouse.

This page, from left:
c. 1900. Yale Boathouse on Chapel Street and Mill River.
Yale University Library, Historical New Haven Collection

c.1900. Rowing Team.
New Haven, at Old Yale Boathouse.
Mystic Seaport Image Archive

- 1909. Following the death of George Adee in 1908, part of his fortune was given to Yale to build a new boathouse to replace the old wood boathouse that was in disrepair.

- May 1, 1909. Designed by Peabody & Stearns of Boston, Yale's Adee Boathouse was constructed on the Mill River in the Tudor Revival style. The design called for boat facilities on the first floor and locker facilities and a banquet hall on the upper floor. Yale planned to spend $85,000.

- 1911. The new $100,000 structure opened. It rested on 500 piles and had space for 50 rowing shells.

- 1916. Conditions of New Haven Harbor continued to deteriorate as larger and larger ships began to dock. Yale decided to relocate its rowing program to the Housatonic River and to float the Adee Boathouse upriver on barges to its new site. Yale changed its mind and decided to build a new boathouse in Derby, instead.

- 1923. The Robert Cooke Boat House, designed by James Gamble Rogers, opened in Derby, Conn..

- 1942-1945. The Adee Boathouse was occupied by the U.S. Coast Guard.

- 1958. Q Bridge opened, carrying I-95 over the Quinnipiac River as part of the Connecticut Turnpike, a toll road stretching from Greenwich to Killingly, Conn. The bridge passes within yards of the Adee Boathouse.

- 1950s. The Adee Boathouse was sold by Yale and later remodeled for commercial use after the construction of I-95 and the Q Bridge.

- 1989. Connecticut Department of Transportation (ConnDOT) and the Federal Highway Administration (FHWA) initiated a study to improve I-95 between Branford and West Haven, including the replacement of the Q Bridge.

- March 1999. A Final Environmental Impact Statement (EIS) Proposal was adopted for bridge replacement. As part of the I-95 New Haven Harbor Crossing Corridor Improvement Program, ConnDOT and FHWA required the removal of the Adee Boathouse. As mitigation for the harmful effects to this important historic structure, relocating the boathouse was considered.

- 2000. After relocating the Adee Boathouse was found to be too difficult and expensive, a new boathouse was planned at Canal Dock to replicate the Adee.

- 2003. Gregg & Wies Architects wrote the New Haven Boathouse Feasibility Study detailing the condition and salvageability of the Adee Boathouse's historically significant elements.

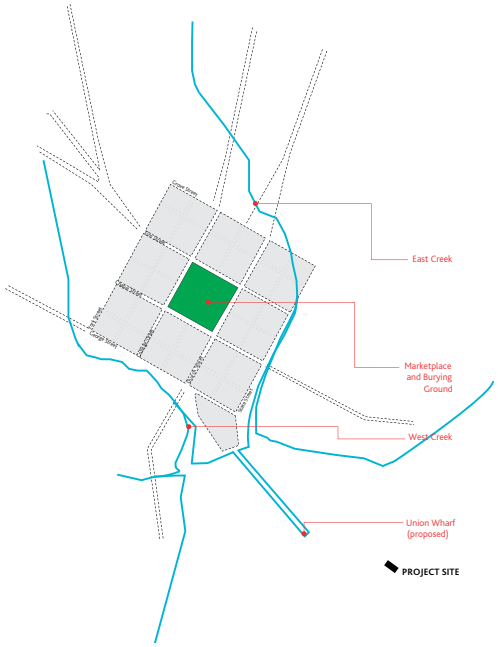
- 2004. Cooper Robertson & Partners with subconsultants Jan Hird Pokorny, Main Streets Design, and Gregg Weis & Gardner Architects wrote the Draft Salvage Study for Adee Boathouse.

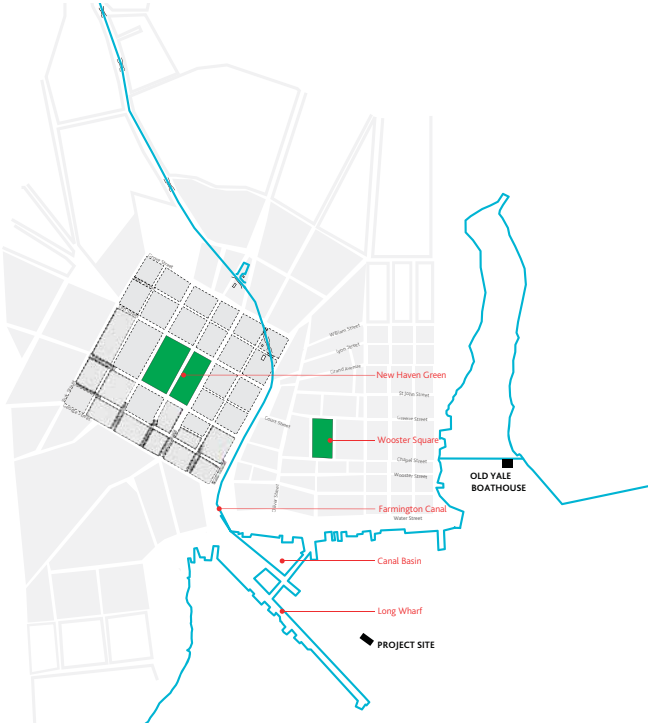
- 2009. The Adee Boathouse is dismantled to make way for a new $490M 10-lane bridge, built to replace the Q Bridge. Significant architectural elements were salvaged from the building before demolition including stone, terra cotta, wood trusses, wood work, windows, doors, and staircases. The budget for the new replica boathouse is set at $30 million.

This page, from left:
1920s. In front of Adee Boathouse.
Yale Athletics Archive.

1940s. Crew Team and boats in front of Adee Boathouse.
Andrew Cusack Online.

After 1958. Front of Adee Boathouse with "Q" Bridge at rear.
Andrew Cusack Online.





History of Harbor Development

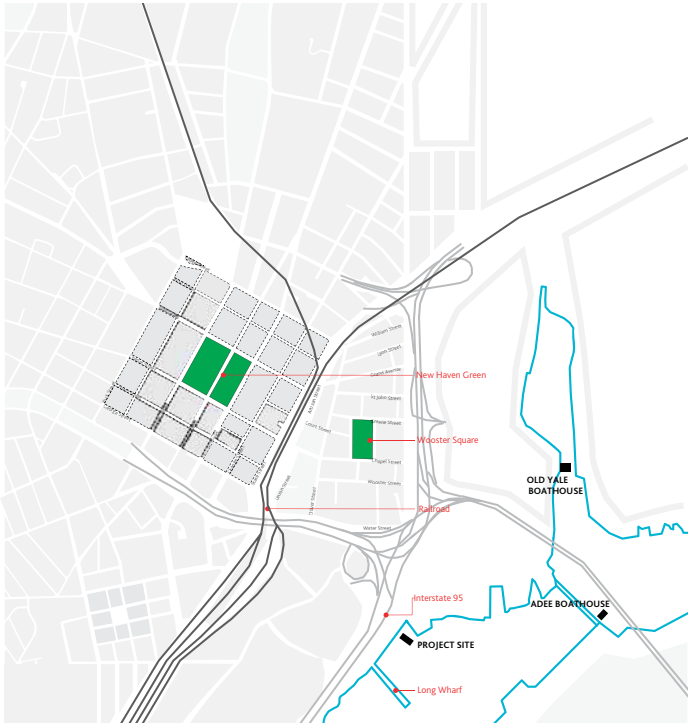
Part I: in maps.

This page, from left:
Map 1638

Map 1850

- Map of 1638: Soon after New Haven's nine square town plan was established in 1638, a wharf in New Haven Harbor was planned. In 1663, construction of this wharf began. By 1682, the wharf had expanded in response to increasing colonial trade. The Union Wharf Company was established in the mid-18th Century and took control of the wharf.

- Map of 1850: The Union Wharf Company renamed the wharf "Long Wharf" and continued to expand it. By 1812, William Lanson, a prominent African-American contractor, worked to extend the wharf 3,480 feet into the harbor. By 1825, the Farmington Canal was built to enable the passage of cargo from New Haven to Farmington, and later Northampton, Mass. By 1850, a canal basin was constructed at the point where the Farmington Canal met Long Wharf.



- Map of 1877: By 1848, railroads were built throughout New Haven and the Farmington Canal was rendered obsolete, becoming a railroad. Parts of New Haven Harbor were filled to accommodate the construction of the New Haven Rail Yard. In 1868, The New Haven and Northampton Railroad Company built Canal Dock, 1,500 feet long and 80 feet wide, to extend the its rail line from the New Haven Rail Yard out into harbor. The presence of the dock allowed cargo to be transferred directly between ships and rail cars.

- Map of 1968: New Haven Harbor was filled to accommodate the construction of I-95 and I-91. The construction of the Q Bridge over New Haven Harbor led Yale to sell the Adee Boathouse to a private interest. In 2007, the Adee Boathouse was deconstructed to make way for the new Q Bridge. Many of its components were salvaged and inventoried.

This page, from left:
Map 1877

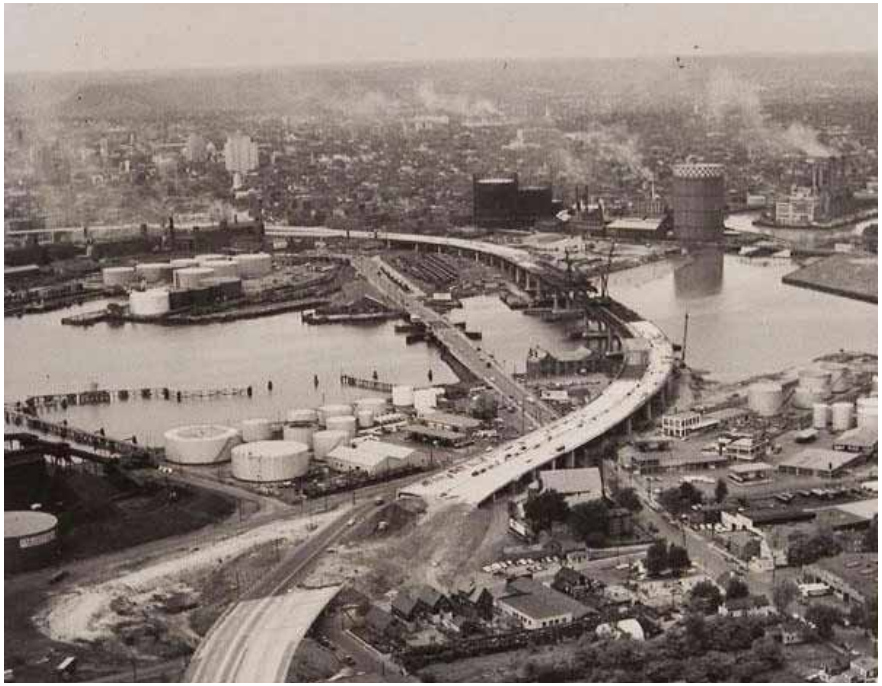
Map 1968

History of Harbor Development
Part II: in images

This page, from left:
1946. Arial photograph of New Haven and waterfront.
Yale University Library, Historical New Haven Collection.

1956. Arial photograph of New Haven waterfront.
Connecticut History Online.

- 1946. New Haven and waterfront.
- 1956. New Haven waterfront.

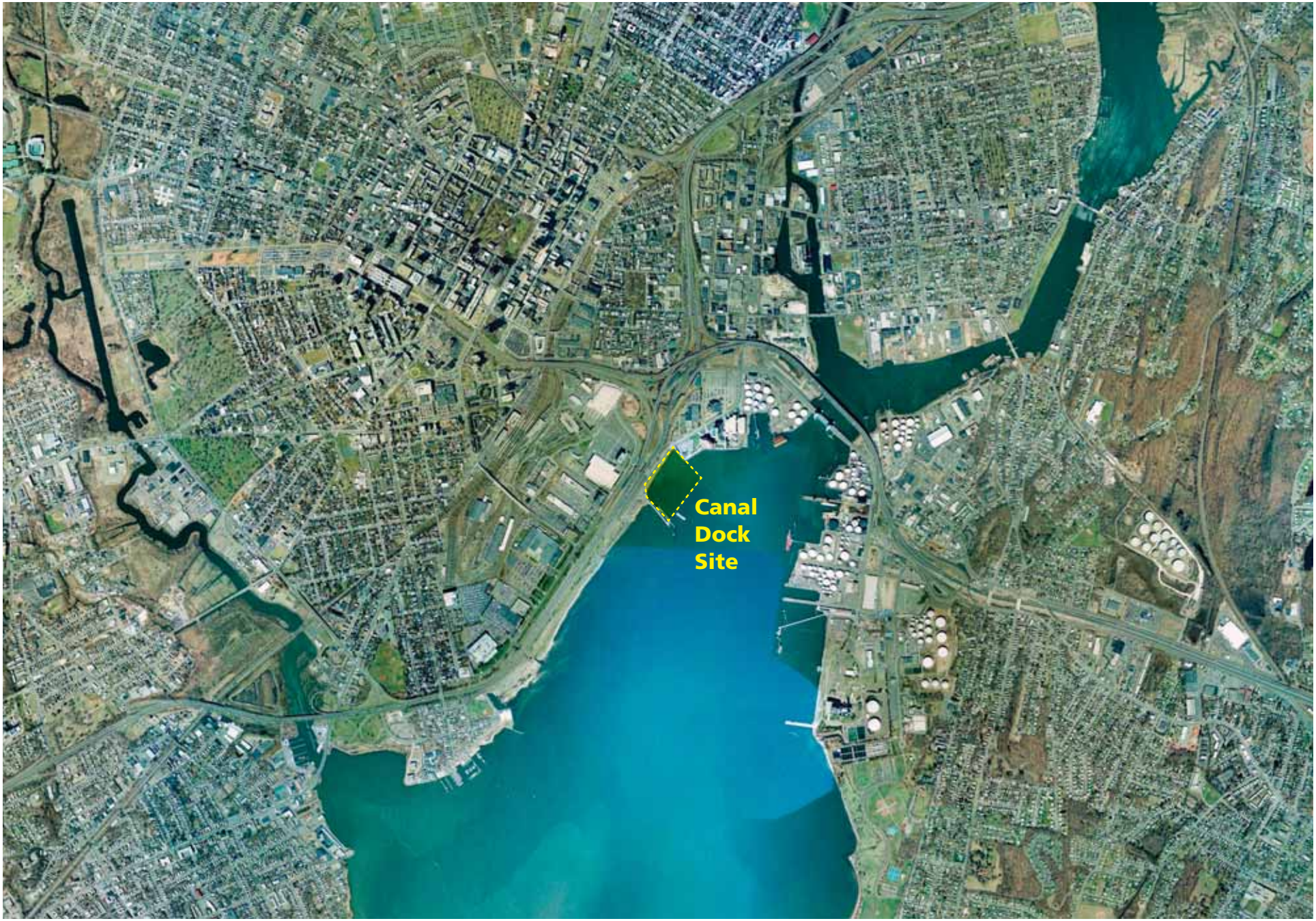


- 1958. Construction of the Q Bridge with Adee Boathouse at center.

- After 1968. Interstates 95 and 91 along New Haven waterfront.

This page, from left:
1**958. Construction of the "Q" Bridge with Adee Boathouse at center.**
NHCHS.

After 1968. Interstates 95 and 91 along New Haven waterfront.
NHCHS.


Canal
Dock
Site

5 Existing Conditions Analysis

An in-depth documentation and analysis of existing conditions at and surrounding the canal dock site were undertaken as a part of the planning process. This research ranged from the site-specific to urban-scale and focused on the following thematic areas: harbor use and boating activity; land use and adjacencies; views and viewsheds; circulation and access; ecology and environmental quality; climate; tides, storms and flooding; physical conditions at the site; and utilities. The complete documentation and analysis is contained in Appendix E: Existing Conditions Analysis Report. The following section summarizes the opportunities and issues identified in the existing conditions analysis.

Previous page:
The Canal Dock Site.
Aerial indicating the location of the Canal Dock site on New Havan Harbor.

Harbor Use and Boating Activity

Opportunities

The site's location offers recreational and scenic potential for boaters. The site is conveniently located between the Quinnipiac River to the north and the Long Wharf Park waterfront, both of which provide potential routes for rowing, paddling and sailing. The Long Wharf Park shoreline is also close enough to be explored by canoe and kayak from the Canal Dock site. Scenic sailing opportunities along Long Wharf Park and points south are also easily accessible from the Canal Dock site.

There are strong potential tie-ins with existing activities. Existing community boating programs offer opportunities for programmatic tie-ins.

The site amenities can complement those offered at Long Wharf Pier. The proximity of the site to Long Wharf Pier provides an opportunity to build upon the facilities and activities there. Existing facilities include electricity hookups, sanitary pump-outs, and deep-water mooring stations for visiting ships. The historic and environmental education activities of the Amistad and Quinnipiac schooners offer potential programmatic connections.

The site provides an opportunity to observe working harbor activity. The site offers excellent views of the port district and commercial channel, providing visitors with the ability to observe harbor activity that is an important part of New Haven's historic development and current economy.

Issues

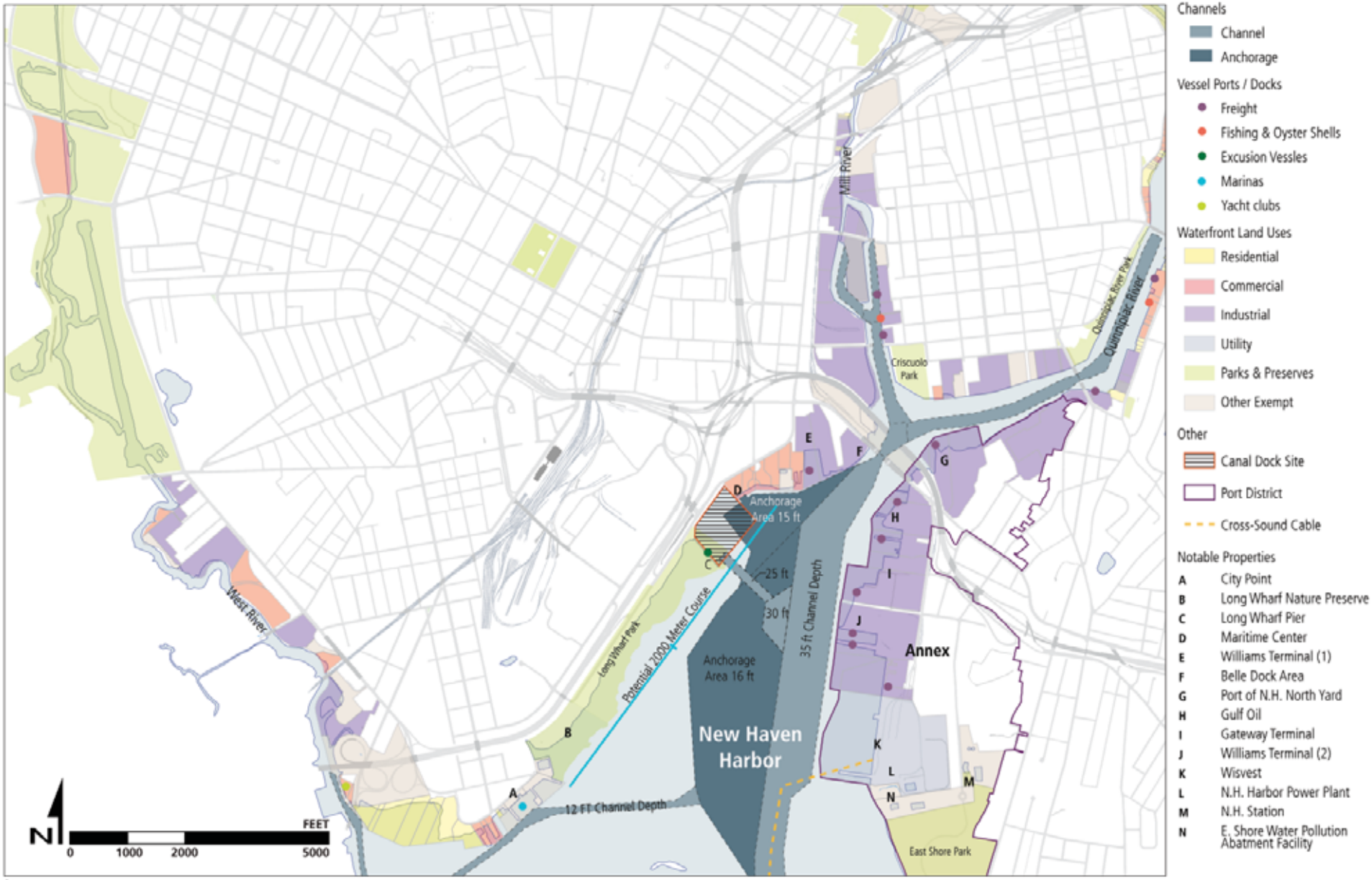
Next page:
Harbor Use & Boating Activity

The transient docks proposed at Leon's Restaurant could interfere with nonmotorized boating activity at Canal Dock. The design team feels the proximity of the proposed transient docks along the northern site boundary for Leon's Restaurant could potentially have an adverse impact on the operations of the proposed rowing and sailing associated with Canal Dock. It will likely restrict the in-water maneuvering space for rowers surrounding the Canal Dock site and encourage motor boats to travel close to the rowing launch site. The team recommends that the proposed transient docks at Leon's Restaurant be reconfigured to reduce this potential conflict. It will also be necessary to remove a number of the existing wood piles within the city parcel.

Potential conflict between nonmotorized recreational vehicles and commercial vessel activity is a concern. There is some concern regarding potential conflicts between the nonmotorized recreational boating the proposed facility will serve and the commercial and industrial shipping activity and recreational motor boating in the harbor. While this is a concern, discussions with the city's harbormaster and current recreational users of the harbor indicate that commercial and industrial traffic does not prohibit nonmotorized recreational boating and there is sufficient space to accommodate all forms of boating in the harbor. Because large vessels travel at reduced speeds in the inner harbor, the issue of vessel wake should be manageable. Still, vessel wakes will need to be considered in the design of the marina perimeter. The short-period waves created from vessel wakes could easily be managed with a floating attenuator structure such as deep-draft floating concrete docks. Additionally, speed limits or no-wake rules could also be established for specific areas or times or times of day to limit conflict between commercial–industrial traffic and recreational boaters.

Providing adequate management and training at the proposed boathouse to teach recreational boaters and rowers to safely navigate the harbor and shipping channels will be important. With such awareness, recreational boating and public boating programs, including Schooner Inc and the Sound School at City Point, currently flourish alongside the commercial and industrial activity. While minimizing potential conflicts between recreational and commercial–industrial boating should be considered in the design of the Canal Dock facility, it is believed that these harbor uses can coexist and thrive.

Harbor and Waterfront Activity



data source:
Data for base map and land use provided by the city of New Haven. Data on channels and anchorages from Connecticut DEP GIS Data. Data on ports based on the National Transportation Atlas database, USDOT.

Land Use


Sports Haven
(Off Track Betting)
AT&T Service
Facility
Williams
Terminal
(Magellan)
Union Station
Pirelli Bldg.
(vacant)
Ikea
Long Wharf
Maritime Center
Leon's Restaraunt
La Quinta Inn (Hotel)
Sargent Drive Enterprises
Bank of America
Mobil Station
Brazi's Rest. & L.W. Theater (to be relocated)
Long Wharf Medical Center
Assa Abloy
Long Wharf Park
South Central Regional Water Authority
Gateway Community College
Long Wharf Nature Preserve
New Haven Register
Sound School
Schooner Inc.
Port
District
N
0
500
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2000
FEET
Residential
Commercial
Industrial
Utility
Parks
Other Exempt
data source:
Data on land use and base map and
parks provided by the city of New
Haven.

Land Use and Adjacencies

Opportunities

The proximity to surrounding recreational and natural areas can be leveraged to enhance its recreational and educational program. The proposed recreational and educational program for Canal Dock can capitalize on the site's proximity to Long Wharf Pier and Long Wharf Park and Nature Preserve, and its location at the juncture of two greenways. Opportunities to develop the site as an important landmark on both of the greenways should be explored to enhance the educational, interpretive and recreational experience for visitors.

New development may bring more activity and potential site users to the area. The Long Wharf master plan and proposed developments are aimed at making the Long Wharf area a more mixed-use district and improving connections to the waterfront, which will increase the vibrancy and number of complementary land uses in the area. Already, the Long Wharf Maritime Center, which houses 1,700 – 2,000 employees when fully occupied, has brought many additional people to the area. The Canal Dock project also has the potential to catalyze this type of development in the area.

Improvements to I-95 will likely enhance access to the site. While I-95 will remain as a barrier, there are a number of associated improvements or potential opportunities for roadway improvements that will improve the quality or connectivity between the inland and waterfront sides of the highway. Improvements to Canal Dock Road and the I-95 overpass will enhance the visibility of this connection and improve bicycle and pedestrian passage, including the Farmington Canal Greenway, which connects to Long Wharf Pier via the Canal Dock Road underpass. Other opportunities exist in determining the location of I-95 entrance and exit ramps onto Canal Dock Road, restriping and roadway alterations on Long Wharf Drive, and other improvements that may or may not be included in the I-95 proposal. The design team and client should keep abreast of the I-95 project as it develops and identify opportunities for coordination of improvements that will enhance the Canal Dock project.

Issues

I-95 presents a barrier to surrounding areas. The site may be able to draw some users from these surrounding developments but the barrier created by I-95 will limit the degree to which activity from this area reaches the site.

Lack of an adjacent residential community will limit 24-hour activity. While the presence of Leon's Restaurant, which is usually open until 11:30 p.m., in addition to the Long Wharf Maritime Center, which operates during normal business hours, will generate some casual visitors and extend the length of daytime activity near the site, the lack of a residential population in the immediate vicinity of the site will limit 24-hour activity.

Previous page:
Current Land Use in the Long Wharf Area.

Next page:
New Development in the Long Wharf Area.

Development Status

The noise and visual impacts of I-95 and industrial land uses will remain for the near future. The noise, visual impacts, and disruption of traffic created by the I-95 reconstruction will be ongoing until the project is complete — scheduled for 2016. This will need to be considered in the construction and early years of operation of the Canal Dock project. Even after reconstruction is completed, I-95 and its traffic will be a strong visual and audible presence at the site. For the near future, industrial land uses, including the tank farm at Magellan Terminals, will remain. Location of the boathouse and site elements should consider the impact of noise on their use and their potential to buffer other areas of the site from noise coming from I-95.

Surrounding commercial land uses are not particularly complementary to recreational boating. With the exception of a few restaurants, most of the surrounding land uses are large office, big-box retail, or light industrial and are accompanied by large parking lots that enable them to be easily accessible by car. The result is that the surrounding area does not provide an inviting pedestrian or biking experience and is not likely share many users with the Canal Dock site. The issues of access and pedestrian and bicycle needs are addressed in the following section.

Views and Viewsheds

Opportunities

The site provides expansive views of New Haven Harbor. Panoramic views of the harbor are available from the site and could be enhanced by providing elevated viewing locations for visitors.

The site will be highly visible from the water, Long Wharf Pier, Long Wharf Drive, and the adjacent shore of the Harbor. The design should take advantage of the visual presence of the site from all these viewpoints.

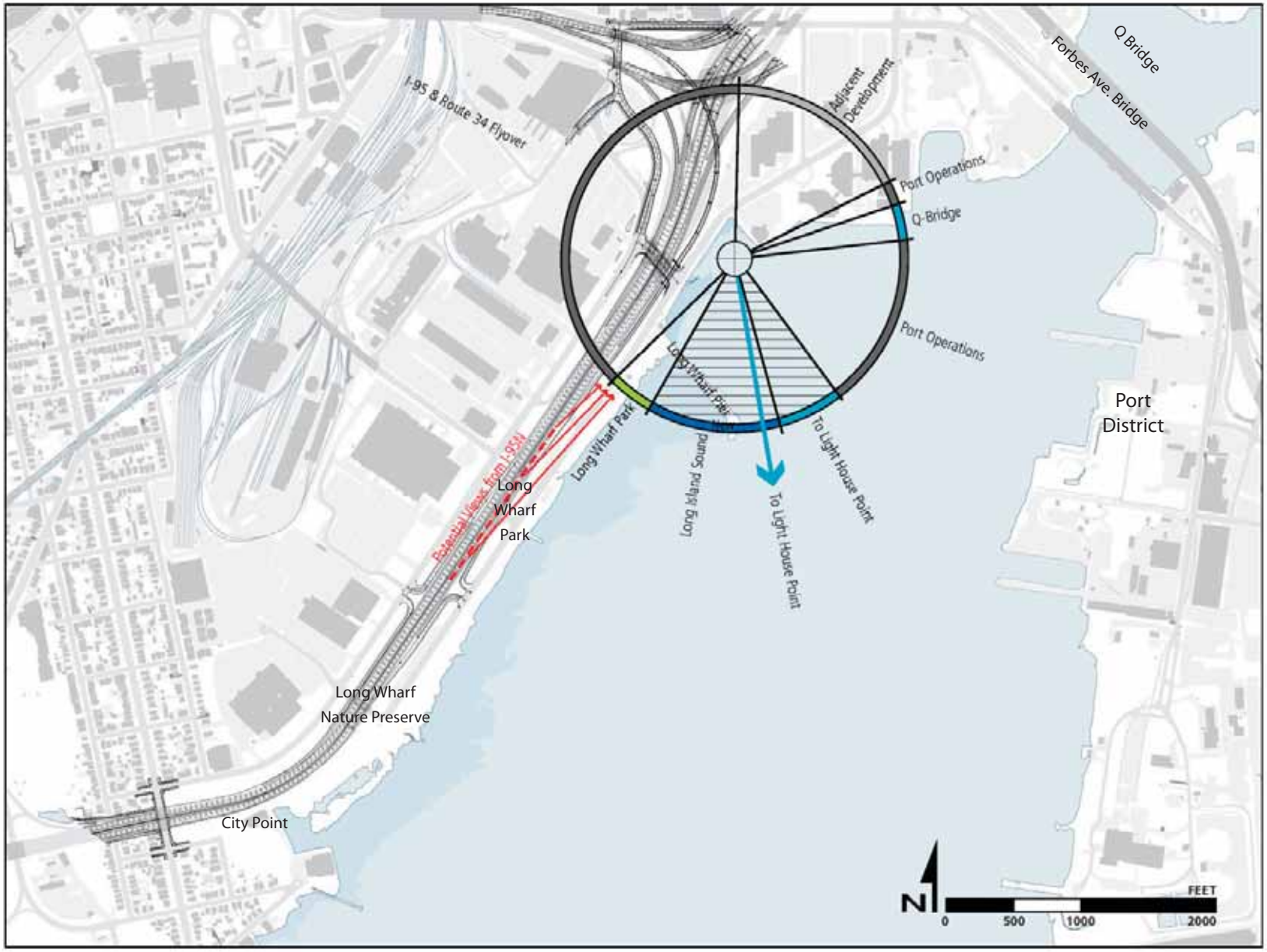
Issues

The elevated I-95 obstructs views of and toward downtown. While views of the harbor are excellent, views toward the west are blocked by the elevated structure of I-95, which dominates the foreground. This also means that there will be limited views of the building from the west.

Following pages in order:
Viewsheds from the Canal Dock Site.
The important viewsheds from the Canal Dock Site.

Views from the Canal Dock Site.
Photographs of the existing views to the North, East, South, and West from the location of the future platform.

Viewsheds


I-95 & Route 34 Flyover
Adjacent Development
Q Bridge
Forbes Ave. Bridge
Port Operations
Q-Bridge
Port Operations
Long Wharf Park
Long Wharf Pier
Potential Views from I-95/34
Long Wharf Park
Long Wharf Pier
To Light House Point
To Light House Point
Port District
Long Wharf Nature Preserve
City Point
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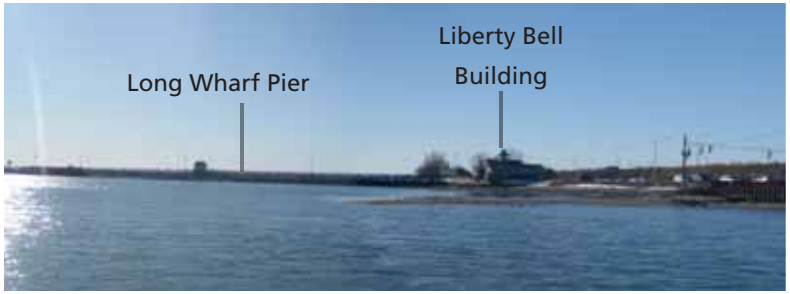
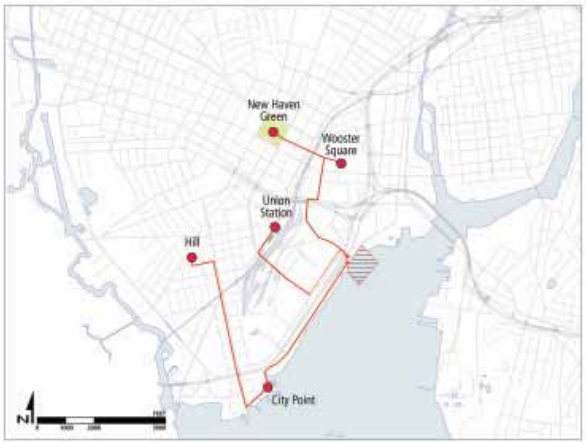
View North

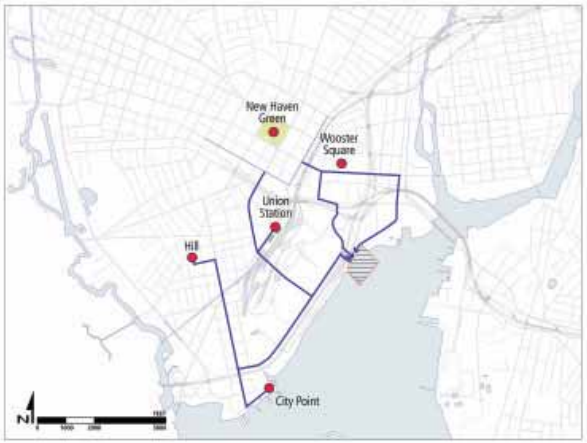
View East

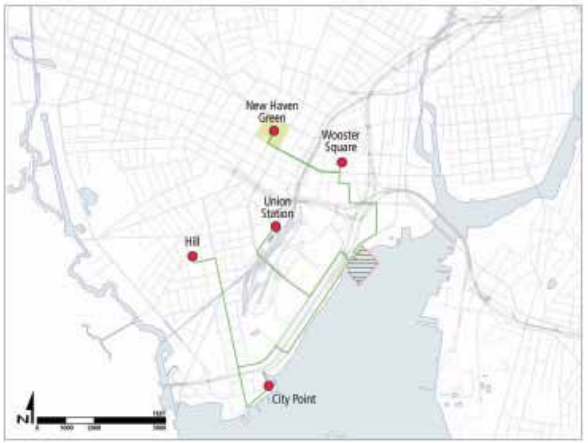


View South

View West







This page, from left:
Vehicular Access.
Vehicular routes between Canal Dock and common destinations.

Bicycle **Access.**
Bicycle routes between Canal Dock and common destinations.

Pedestrian Access.
Pedestrian routes between Canal Dock and common destinations.

Next page, from left:
Existing Access at Canal Dock .
Current road configurations and greenway routes at Canal Dock.

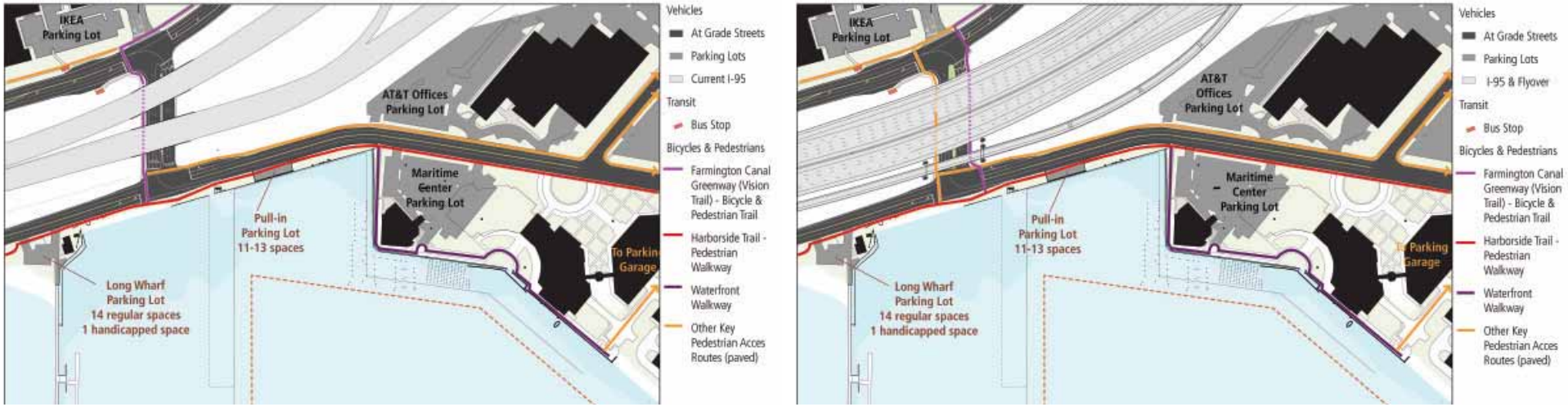
Anticipated Access at Canal Dock .
Anticipated road configurations and greenway routes at Canal Dock after the completion of I-95 improvements.

Circulation and Access

Opportunities

Proximity to the I-95, I-91 and state Route 34 interchange, offers the site excellent regional access by private vehicle. The site is also adjacent to the Route 1 shoreline travelway. The site is less than one mile by city street from the New Haven's Union Station and can be reached from the train station by private vehicle, taxi, bus, bicycle, or a healthy walk. Additionally, the site's proximity to Canal Dock Road is a benefit for access, as locations to traverse I-95 are limited.

The large numbers of parking spaces in surrounding commercial lots offer opportunities for shared parking. While opportunities for constructing new parking for the site are limited (see issues below), there is the potential for shared parking opportunities with a number of the surrounding lots and garages. Surrounding commercial lots were examined based on number of spaces and hours of operation to determine the potential amount and timing of shared parking that might be available. The results of this analysis are shown in the charts on the following pages. Because of the sheer size of some of the surrounding lots, such as IKEA, and the early hours of some recreational rowing, clear opportunities exist for shared parking at IKEA, Long Wharf Maritime Center, and Leon's Restaurant, as well as at Sports Haven, depending on how the latter site is redeveloped. This shared parking use is particularly true for early morning use of the proposed Canal Dock boathouse. Additionally, there is currently surplus parking in



Following pages in order:
New Haven Vehicular System. The New Haven road system by functional classification.

Parking
Existing Parking and parking opportunities surrounding the Canal Dock Site

New Haven Transit System. New Haven's system of bus routes and connections to train stations.

New Haven's Greenway System and Bicycle Network. Greenway routes and existing bicycle infrastructure in New Haven.

the Long Wharf Maritime Center's garage even during business hours. Based on this analysis, shared parking should be considered as an option at Canal Dock, and discussions with lot owners and operators based on this preliminary analysis are suggested as a part of the design process.

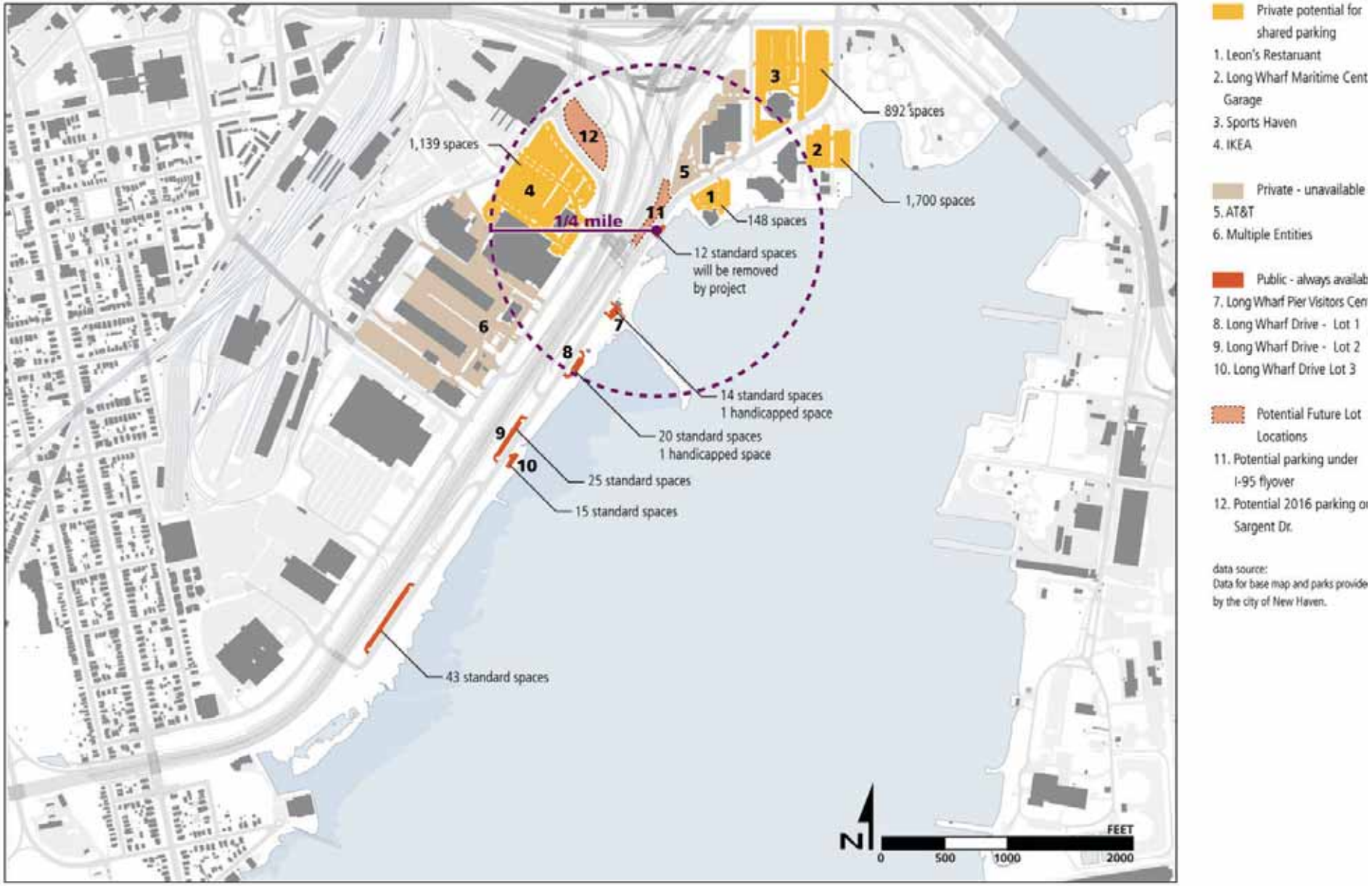
There is the possibility that additional space for parking across Long Wharf Drive from the site, under the I-95 flyover now under construction, could be realized. As the I-95 corridor project is completed, surplus right-of-way could be used by the city or boathouse for use for parking.

Stops could be added to existing bus routes to serve the site. While buses do not currently stop at Canal Dock, the Sargent Drive Commuter Connection passes directly by the site, and additional stops could be made without modifying their travel routes.

Project can plug into city programs and plans for improved bicycle infrastructure and complete streets. While current bicycle facilities may be limited, the city's bike plan and recently introduced Complete Street Manual, encourage the accommodation of cyclists in roadway improvement projects. The Complete Street Manual is aimed at making all of New Haven's streets more accommodating to alternative modes of

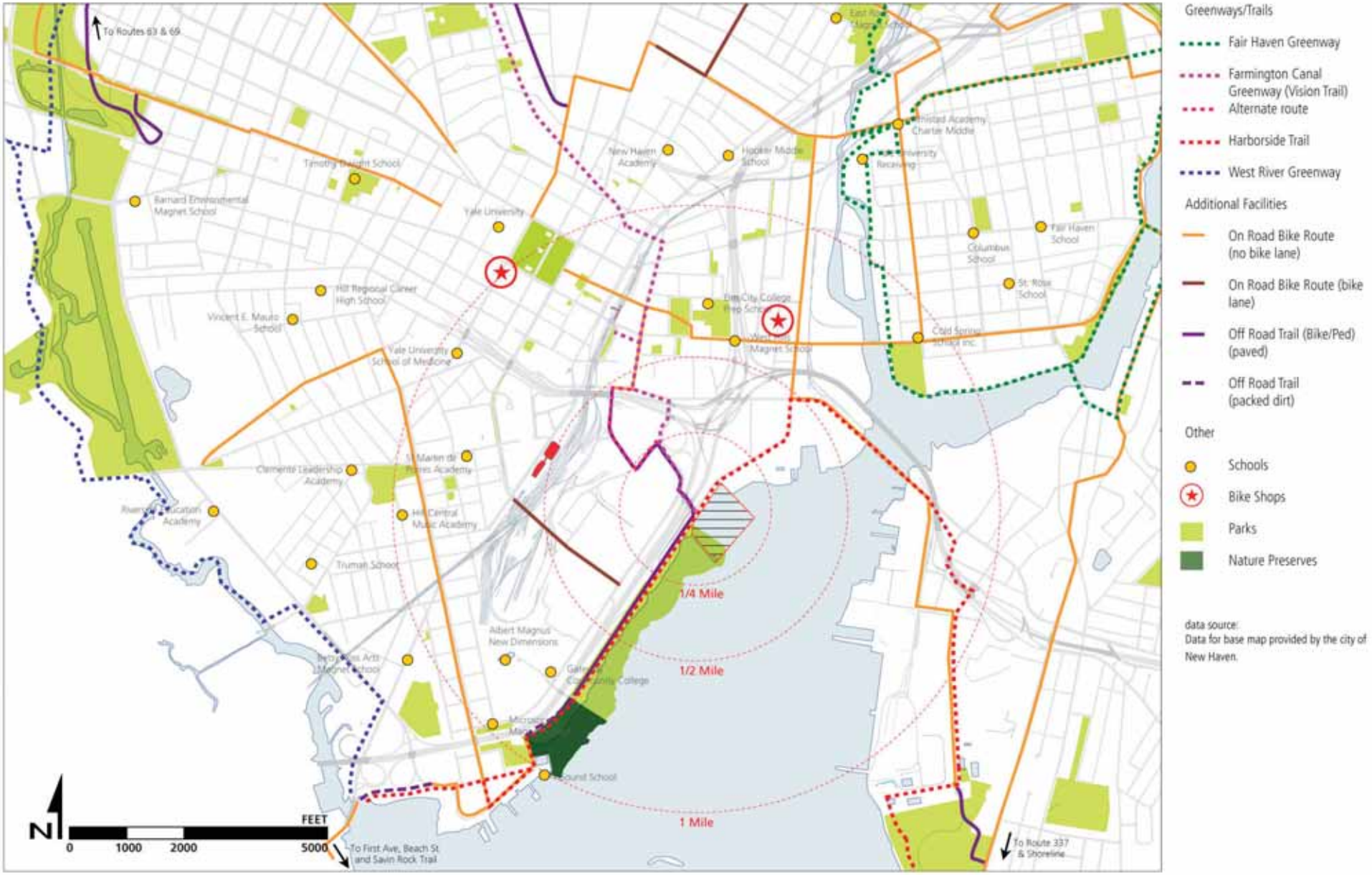
Vehicular System

Parking


1,139 spaces
892 spaces
1,700 spaces
148 spaces
1/4 mile
12 standard spaces
will be removed
by project
14 standard spaces
1 handicapped space
20 standard spaces
1 handicapped space
25 standard spaces
15 standard spaces
43 standard spaces
N
0
500
1000
2000
FEET
Private potential for shared parking
1. Leon's Restaruant
2. Long Wharf Maritime Cent
Garage
3. Sports Haven
4. IKEA
Private - unavailable
5. AT&T
6. Multiple Entities
Public - always availab
7. Long Wharf Pier Visitors Cen
8. Long Wharf Drive - Lot 1
9. Long Wharf Drive - Lot 2
10. Long Wharf Drive Lot 3
Potential Future Lot Locations
11. Potential parking under I-95 flyover
12. Potential 2016 parking o
Sargent Dr.
data source:
Data for base map and parks provide
by the city of New Haven.

Transit System

Greenways, Bike Routes, and Open Space System



travel. The project has the opportunity to work with the city's evolving programs for complete streets and bicycling in the city, to provide exemplary facilities and environment for bicyclists and pedestrians. The need to make at least some modifications to Long Wharf Drive presents opportunities for traffic calming, streetscape enhancements, and the addition of bicycle facilities. In addition, the city is actively promoting cycling in New Haven through its "Bike New Haven" program. With these measures, it is anticipated that bicycle and pedestrian connections in the area and throughout the city will improve with time.

The Canal Dock site is located to easily tie into the city and regional greenway systems. The Canal Dock site is at the juncture of two of the city's greenway systems: The Harborside Trail and the Farmington Canal Greenway (which will share its route with the Vision Trail as it approaches the harbor). While neither the Harborside Trail nor the Farmington Canal Greenway is fully developed, plans are in place to develop both into corridors that will provide routes for safe and convenient non-motorized travel through the city. Design for the Farmington Canal Greenway is currently nearing completion. The location at the confluence of these two greenway routes not only offers enhanced possibilities for future pedestrian and bicycle access, but also presents an opportunity to incorporate interpretive programs relating to each of the greenways and the historic context of the site.

Issues

I-95 presents a barrier between Canal Dock and downtown, with limited east-west access points. Access to the site from downtown New Haven and other neighborhoods in the city is somewhat restricted because of the very road that provides it with such good regional access. The elevated I-95 creates a barrier that restricts access to Long Wharf Park from the rest of the city to a few locations. The limited points of access for traversing I-95 present an even greater physical and perceptual barrier for pedestrians and cyclists than to motorists.

I-95 presents a perceptual barrier between the site and transit stops on Sargent Drive. While transit stops are not far from the site, lanes of traffic have to be crossed to reach the site. Additionally, I-95 presents a perceptual barrier between the closest existing stops and the site. When the Canal Dock project and boathouse are completed, direct bus access to the site should be considered.

Site access will be heavily influenced by traffic volumes and patterns at the Canal Dock Road – Long Wharf Drive Intersection. This is helpful for access to the site, as locations to traverse I-95 are limited. However, proximity to the Canal Dock Road – Long Wharf Drive intersection will have to be taken into account in designing access to the site.

Long Wharf Drive is used as an access route for trucks to the port. To avoid the Q Bridge crossing, freight trucks frequently exit I-95 at Long Wharf Drive and take Long Wharf Drive to the Route 1 / Tomlinson Bridge to access the Port

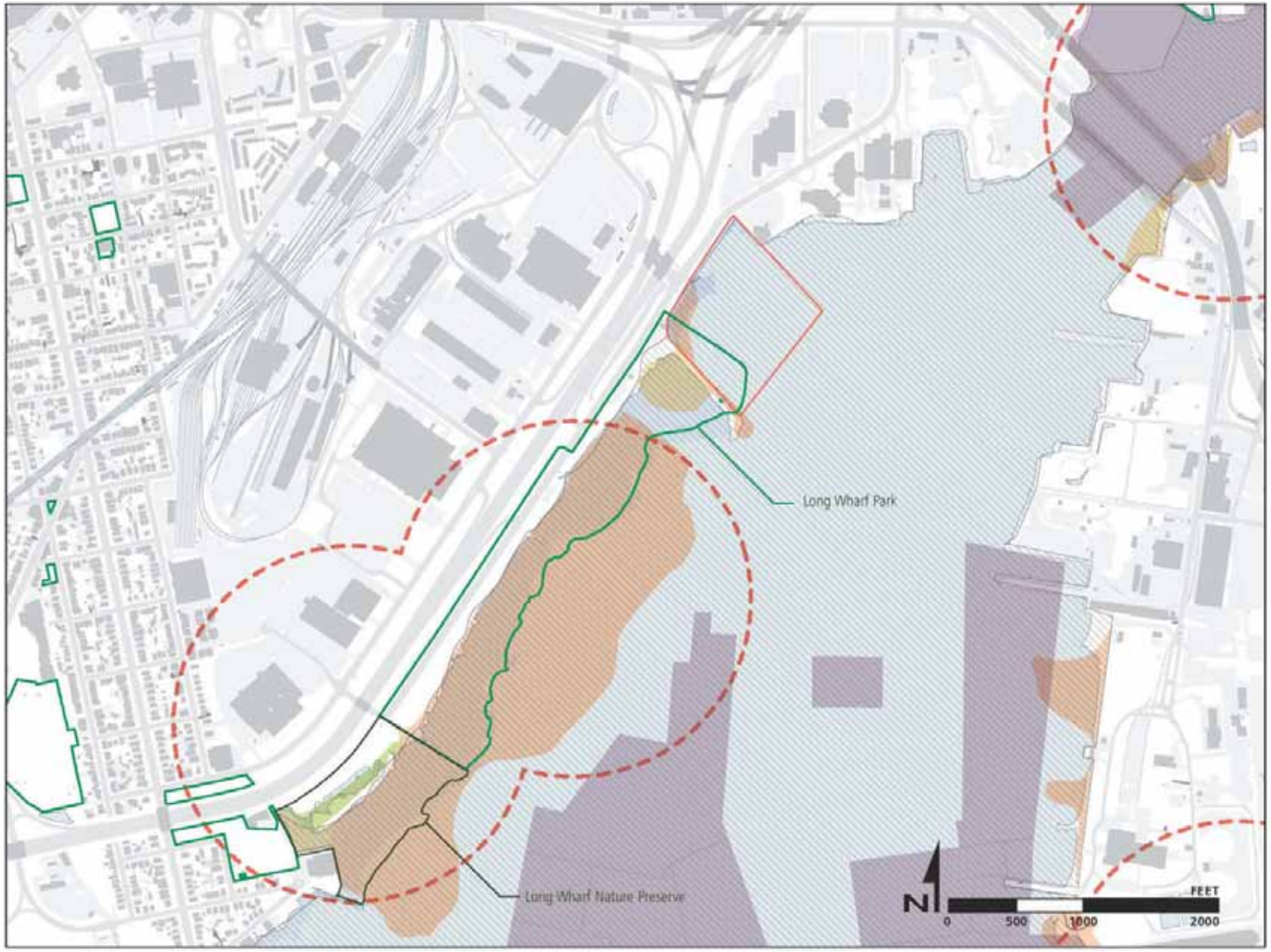
District on the east side of the harbor. This is a concern because truck traffic is less compatible with the pedestrian and bicycle traffic that the Long Wharf project will likely generate. While truck traffic may decline in the future as the I-95 and Q Bridge improvements may encourage more trucks to use the Q Bridge crossing, some level of truck traffic will continue on Long Wharf Drive.

There is limited land on site above the high-water line for access and parking. One of the most serious restrictions to providing vehicular access at the Canal Dock site is the available space between Long Wharf Drive and the existing bulkhead, which is limited to only 30 feet in width. Additionally, the presence of existing utility lines may limit grading in this area (see Section 8: Physical Conditions at Site, subsection on Utilities). Still, any design scenario will need to accommodate some form of drop-off lane to serve boaters and other users within this space. Consideration should be given to reducing lane widths or reducing the number of travel lanes on Long Wharf Drive to provide greater space for access to the site. Such reductions could have the added benefit of providing traffic calming and additional space for bicyclists and pedestrians at the site.

Parking will not be permitted on the constructed platform itself. Permitting constraints do not allow for parking on the platform. Given limited space, it is almost certain that parking will not be able to be provided directly adjacent to the site, and other locations will have to be identified. Possible locations for constructing parking have been identified on Long Wharf and Sargent drives and should be investigated as part of the design process (see parking map on the preceding page). Additionally, opportunities for shared parking in surrounding commercial lots should be investigated (discussed above).

Current bicycle and pedestrian facilities in the vicinity are limited. There are no bike lanes or bike paths currently approaching the site, and pedestrian access is limited to 5-foot-wide sidewalks directly adjacent to the roadway.

Harbor Habitats



Exposed tidal flats

Sheltered tidal flats

Salt & brackish water marshes

Town managed shellfish beds*

Migratory Waterfowl Flyway

Natural Diversity Data-base Area

Nature Preserves

Parks

Natural Diversity Database Areas depict the approximate locations of state and federal listed species and significant natural communities.

* Currently, in the waters surrounding the site the harvesting of shellfish is prohibited for any purpose except depletion or aquaculture operations licensed by the Connecticut Department of Agriculture, Bureau of Aquaculture.

data source:
Data on tidal flats, marshes, shellfish beds, and Natural Diversity Database Areass obtained from the Connecticut Department of Environmental Protection. (http://www.ct.gov/dep/cwp/view.asp?a=2698&q=322898&depNav_GID=1707). Data for base map and parks provided by the city of New Haven. Data for base map and contours provided by the city of New Haven.

Ecology and Habitats

Opportunities:

The proximity to the natural resources of Vietnam Veterans Memorial Park and Long Wharf Nature Preserve makes the site a good location for environmental education about the habitats of the harbor and its shoreline. Understanding and preservation of the harbor's coastal habitats is a priority in the city, which has stated that "preserving these remaining marshes and seeking to rehabilitate those that are currently compromised would yield environmental and recreational benefits," (City of New Haven, Comprehensive Plan of Development). These habitats provide a valuable ecological, educational, and scientific resource which will enhance the waterfront experience at Canal Dock and Vietnam Veterans Memorial Park. The project presents an opportunity to offer views and interpretive features that explain the natural history and current function of the site's surrounding ecosystem. There are a number of existing educational and outreach organizations including Schooner and the University of New Haven that could use the space at the Canal Dock site for their programs.

The site provides excellent birding opportunities. Located on the route of a migratory flyway, the site will be populated with a variety of waterfowl species at different times of the year.

Water quality of the harbor is expected to continue to improve in the future because of environmental protection and improvement efforts in the city and the region. The city and the Greater New Haven Water Pollution Control Authority (GNHWPCA) — the regional sewer authority — are undertaking efforts to reduce combined sewage overflows (CSO), which are the major contributor to biological pollutants in the harbor. The GNHWPCA is responsible for New Haven's Long-Term Control Plan (LTCP) to deal with CSOs.

Issues

Mud flats in the southern portion of the site limit the extent of construction. The mudflats will have to be considered and protected during and after construction at the site. As permitted by the Connecticut Department of Environmental Protection's Office of Long Island Sound Programs (OLISP), continuous platform coverage should not extend south of the historic location of Canal Dock.

The mud flats on site are not deemed particularly exemplary by environmental education groups in the area. While environmental education groups, such as the Sound School, lead activities and studies in surrounding mudflats and salt marshes, there is little interest in using the on-site mudflats for educational programs. Thus, there is little opportunity or

Previous page:
Habitats and Water's Edge Conditions in New Haven Harbor.

This page from left:
CSO #25

Stormwater outfall.

need for environmental educational facilities to tie into any on-site habitats.

The sites proximity to CSO #25 and a storm drain outlet present possible visual and water-quality impairment at the site. The impact of these two outflows after a rain event will need to be considered in the layout of platform and docks on the site. Dock locations should minimize potential interaction with outflows from these areas. Additionally, the layout of the platform and building should minimize the visibility of these two locations from the site.

Proximity to I-95 will have negative noise impacts on the site. Traffic noise from I-95 could be a detriment to enjoyment of the recreational and natural character of the site and should be considered in siting site elements particularly impacted by noise. Additionally, opportunity for the building or other large site elements to provide a sound barrier between I-95 and locations on the site should be considered.

Climate

Opportunities

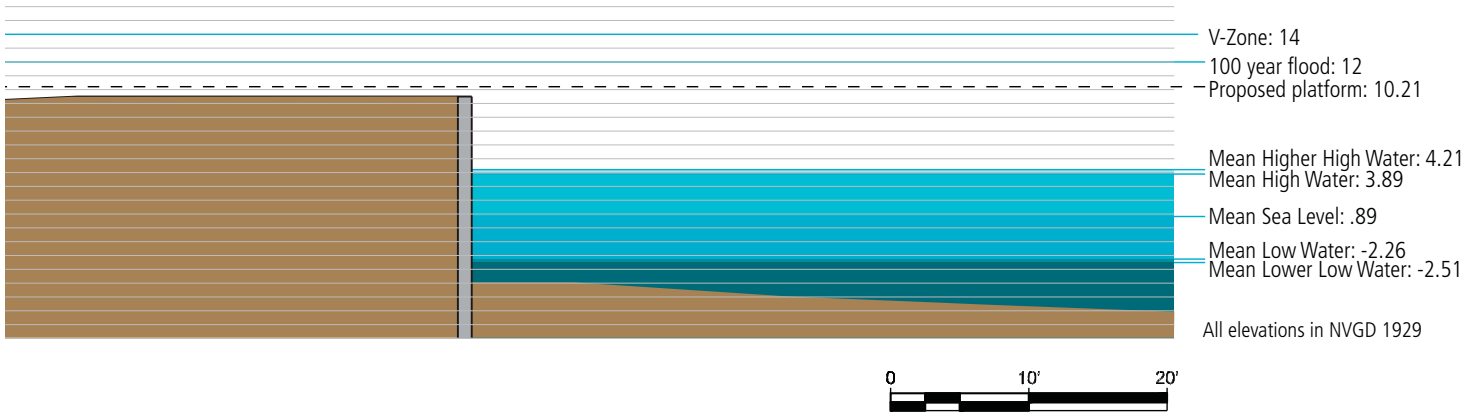
The sites location allows it to use both passive and active solar energy. The site's unimpeded southern exposure can be taken advantage of in the orientation of the building and elements on the platform. The building should be oriented to take advantage of passive solar energy and could consider the use of solar panels as an alternative energy source. The site design should provide for opportunities to take advantage of the sun, but also elements that will provide shade.

The facility can provide a longer rowing season than at other nearby boathouses. The season for collegiate and master rowers in the harbor could be longer than on rivers and other freshwater bodies in the region because the harbor's brackish water rarely freezes. Collegiate rowing clubs have expressed interest in using the facility as early as February 1.

There may be opportunities for wind energy generation. Given wind speeds in the area, wind energy may be a potential part-time alternative energy source. Results from the city's wind turbine pilot project at the base of Long Wharf Pier will provide better information on the potential of wind power for the site.

Issues

Year-round boating is unlikely at the site. The site is seasonal and cold winter conditions will restrict boating in the winter months. This is similar other boating facilities in the region.



This page:
Critical Elevations.
Section notes the critical land and tidal elevations at the Canal Dock. Site in NAVD 1929.

Tides, Storms and Flooding

Issues:

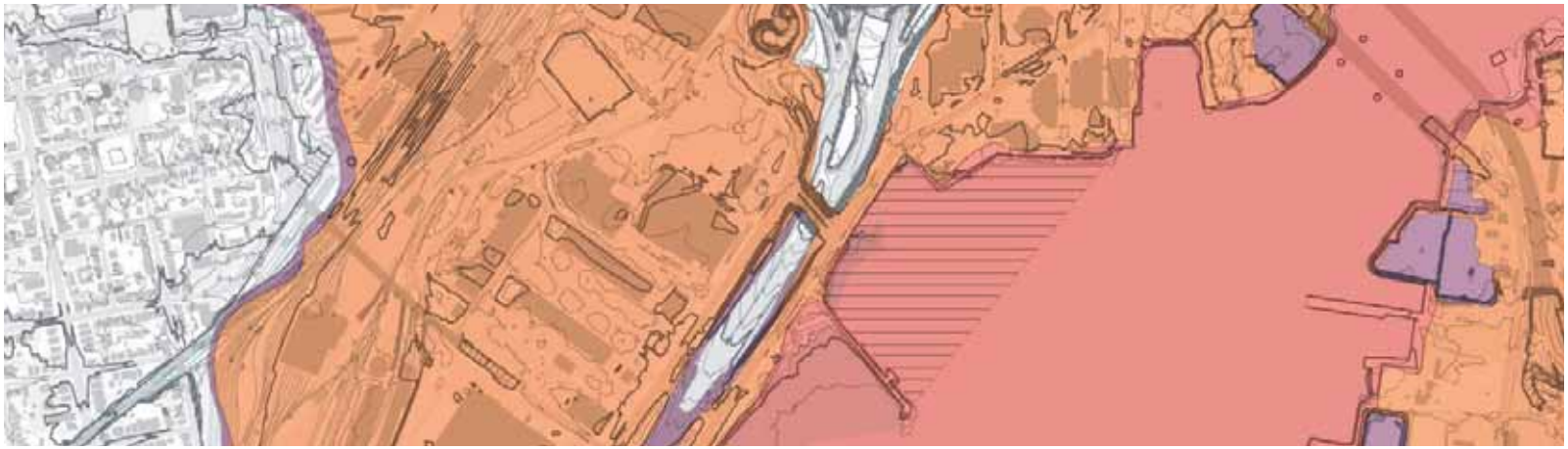
The nearly 6-foot difference between mean high and low tides means that ramp slopes to floating docks will vary greatly. Floating docks will be necessary for getting boats into the water for any boating activity proposed at the site. These docks will be attached to the fixed platform by ramps. Because of the large degree of tidal flux, the elevation of the floating docks will vary from 6 to nearly 13 feet relative to the fixed platform elevation, yielding different ramp slopes throughout the course of a tidal cycle. This will present a challenge for access from the platform to the water. The design will need to provide sufficient ramp length and locate docks accordingly to provide access to the water that meets accessibility standards.

The site is subject to "choppy" water conditions. There is a perception by some that the harbor has excessive "chop," which might limit its potential as a rowing facility. According the wave action study, the site may experience wind chop (waves) of one foot or less on a typical day. Such waves will likely occur at the following rates:

Wave height	Annually	Summer
1-foot waves	19%	12%
Less than 9-inch waves	49%	55%

Additional wave action resulting from vessel wakes will tend to be on the order or 2 feet or less with relatively short wave periods (4 seconds or less).

To further investigate this issue in relation to rowing, wind speed data for 2008 collected from the nearest NOAA weather station were examined. USRowing has published standards regarding rowing safety that establish a wind speed of 12 knots



This page:
Flood hazard Zones
Detail from the FEMA flood map at Canal Dock.

as having an adverse effect on safety. According to the data collected for 2008 during the typical rowing hours, unsafe wind speeds occurred at the following rates:

Time	Sustained winds (avg. wind speed over a 6 min. period)	Wind gusts (peak 5 second wind speed in a 6 min. period)
6 to 9 a.m.	14.6%	25.3%
3 to 5 p.m.	24.2%	39.1%

This study indicates that wave chop will be a concern at the site and should be addressed in the design; however, rowing will be feasible at the site the majority of the time.

The site's location in the 100-year flood zone, V-zone, and potential storm inundation area will require additional engineering and create certain restrictions on use. The design and engineering of both the platform deck and boat-house at the site will have to account for its location in the 100-year flood zone and V-zone. Both will need to be designed and programmed to meet federal and local regulations for building in a flood zone.

Sea level rise will likely impact the site in the long-term. Because of its location directly on the harbor, the site will be subject to the effects of sea level rise. Rising sea levels should be taken into account in the setting of elevations for various programs on the site.

Physical Conditions at the Site

Issues

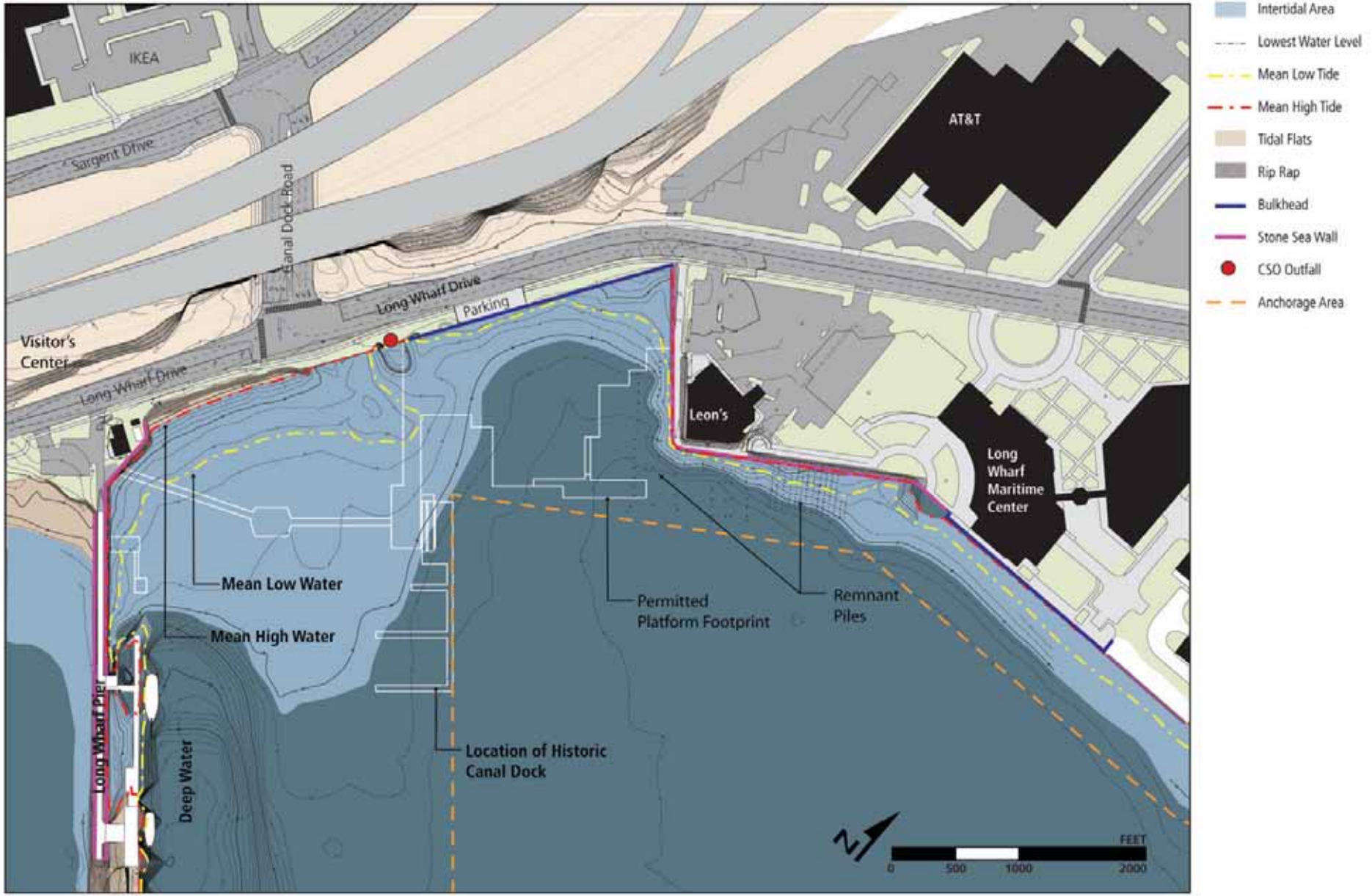
Next page:
Canal Dock Site Conditions. The water's edge at Canal Dock is a combination of rip rap and bulkheaded edge, punctuated by one combined sewer overflow outfall and one outlet from the stormdrain system. This map also shows the tidal elevtions and permitted platform at the site.

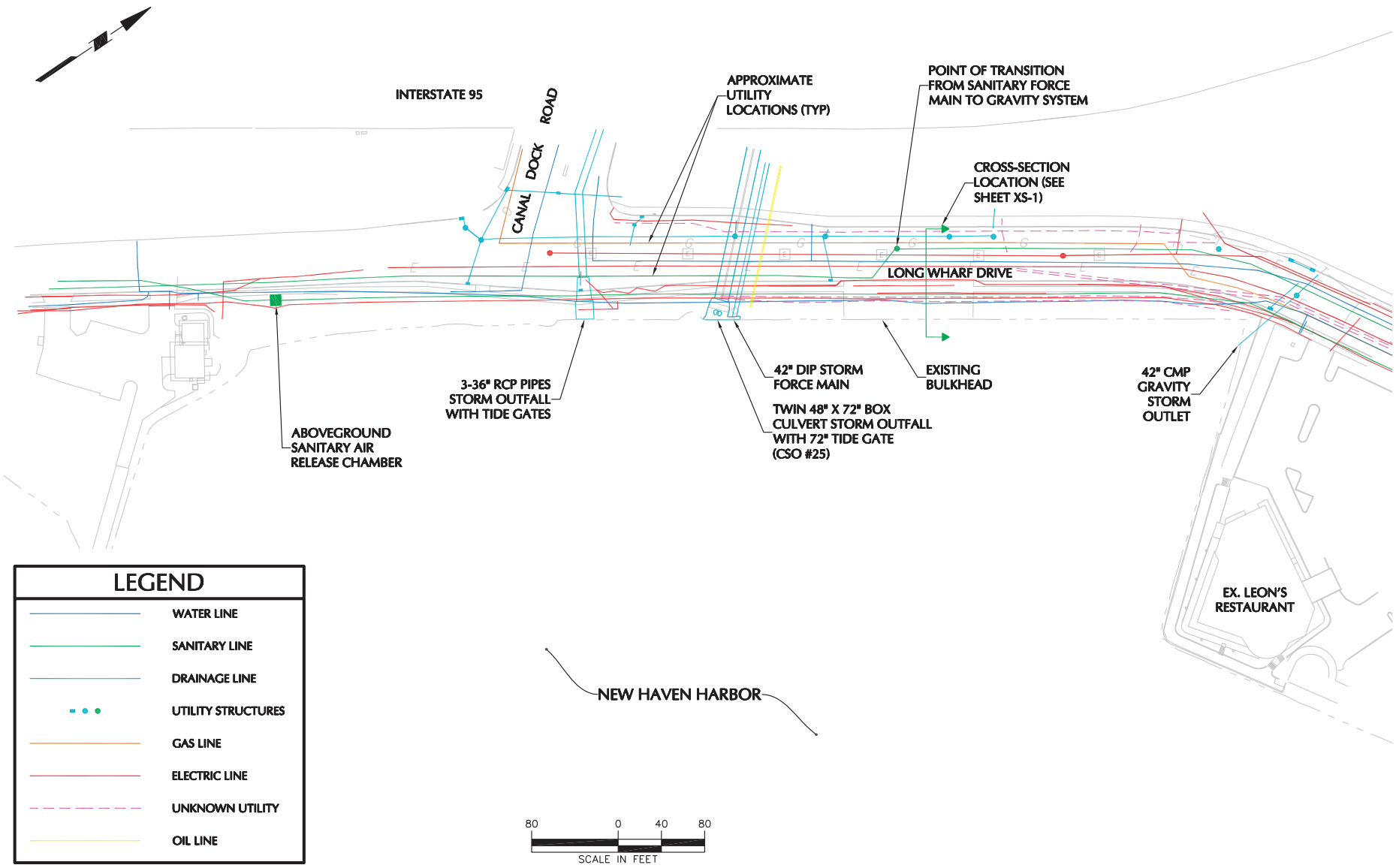
Piles will need to be selected that have enough capacity for the site. Based on our recent discussions with ConnDOT regarding the on-going construction activity for the Q Bridge project, we understand that the biggest issues with respect to foundations has been that the driven piles in the area have not been achieving the capacity that was envisioned during design. The pile type chosen for the adjacent project consists primarily of 16-inch precast, prestressed concrete piles driven to depths ranging from approximately 80 to 115 feet below the existing site grades. Piles for that project have been achieving allowable capacities on the order of 120 to 160 tons per pile. We anticipate that piles of this capacity will be suitable for this project.

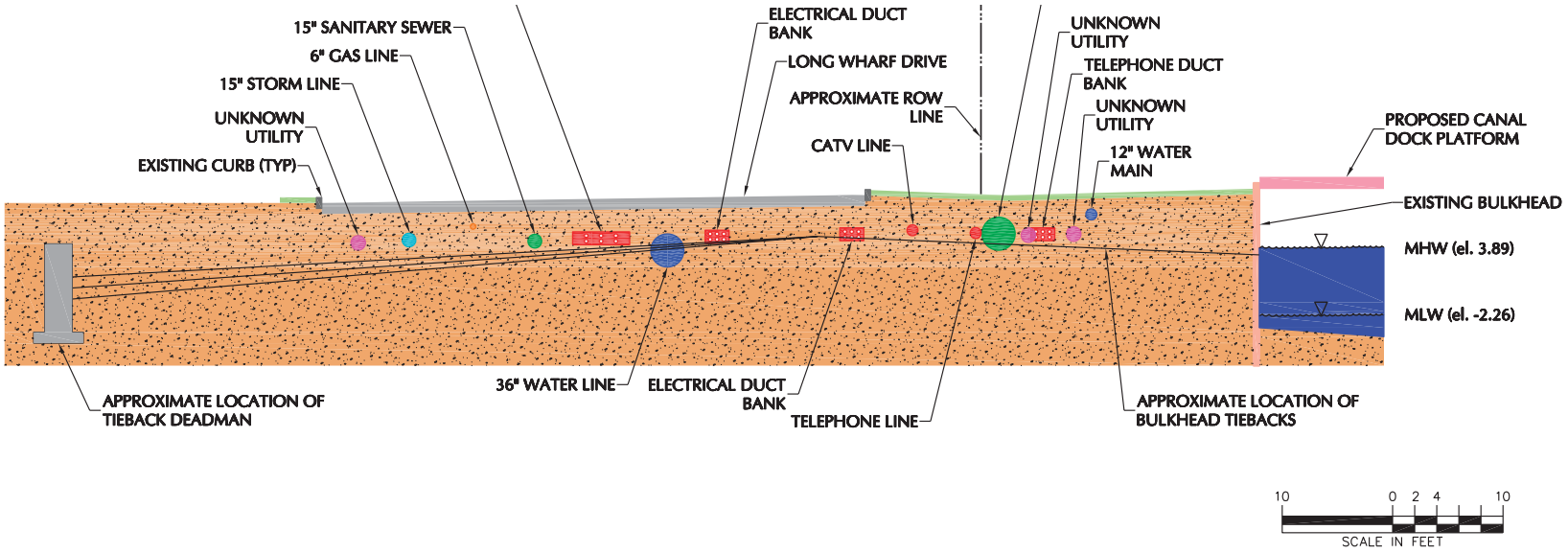
Condition of fill may make upland site grading activities difficult. The site is underlain by a relatively thick layer of organic silt. This material is extremely compressible and will settle when subjected to new loads. Specific consideration should be given to not raising grades in the upland portion of the site for this reason. Because utilities exist within and adjacent to the Long Wharf Drive, any fill placed to raise grades in these areas could damage the existing pipes or lead to settlement that alters the pitch of gravity-fed utilities. Additionally, consideration will need to be given to the transition area between the rigid pile-supported platform and the at-grade surface finishes behind the bulkhead because of the potential for differential settlement.

Interaction with existing sheet pile bulkhead. The existing sheet-pile bulkhead along the shoreline of the Canal Dock site is laterally restrained by a series of tiebacks. It is likely, however, that the bulkhead was not designed to withstand additional loading that would result from raising the grades behind the bulkhead. Again, specific consideration should be given to the impact on the bulkhead of any fill placement that is contemplated along the bulkhead area. The design will either need to provide access to the bulkead under the platform for maintenance, or will need to upgrade the bulkhead prior to construction in order to minimize the need for future maintenance.

Site Conditions




INTERSTATE 95
CANAL DOCK ROAD
APPROXIMATE UTILITY LOCATIONS (TYP)
POINT OF TRANSITION FROM SANITARY FORCE MAIN TO GRAVITY SYSTEM
CROSS-SECTION LOCATION (SEE SHEET XS-1)
LONG WHARF DRIVE
ABOVEGROUND SANITARY AIR RELEASE CHAMBER
3-36" RCP PIPES STORM OUTFALL WITH TIDE GATES
42" DIP STORM FORCE MAIN
TWIN 48" X 72" BOX CULVERT STORM OUTFALL WITH 72" TIDE GATE (CSO #25)
EXISTING BULKHEAD
42" CMP GRAVITY STORM OUTLET
EX. LEON'S RESTAURANT
NEW HAVEN HARBOR
LEGEND
WATER LINE
SANITARY LINE
DRAINAGE LINE
UTILITY STRUCTURES
GAS LINE
ELECTRIC LINE
UNKNOWN UTILITY
OIL LINE
80 0 40 80
SCALE IN FEET



Utilities

Opportunities

All necessary utilities for the project are located along Long Wharf Drive. Utilities are available adjacent to the site. It is not anticipated that any upgrades to the existing utilities will be required. Based on initial discussions with the respective utility companies, all utilities have capacity to serve the project. Utility work is currently taking place in Long Wharf Drive and those project improvements will have an impact on the final utility design for the project.

Issues

Many of the utilities have very limited cover and are in close proximity to each other, posing somewhat of a challenge for accessing them and for regrading along Long Wharf Drive. The locations of the utilities relative to each other, the bulkhead, and bulkhead tiebacks will need to be considered in designing connections to the site. In addition, existing utility locations and depth will need to be considered in designing grading, planting, and paving on the landward portion of the site.

Previous page:
Existing Utilities Plan
Existing site plan showing the current location of utilities at Canal Dock.

This page:
Existing Utilities Section
Cross section perpedicular to the bulkhead showing the current utility locations and depths at Canal Dock.

6 Program Analysis

As part of the planning phase, the team conducted a program analysis that included both research and outreach to determine what program and space requirements would best suit the future of this project while meeting the permitting and funding demands. The program analysis also determined potential revenue opportunities that would allow this facility to manage and operate over time.

Review of Programming Documents

The starting point for the program analysis involved looking back at two documents created prior to the planning phase. These documents were (1) *New Haven Boathouse Feasibility Study* prepared by Gregg Wies and Gardner (GWG) from March 2003, and (2) *Report of Investigation for New Haven Waterfront Recreation Area and Marina* prepared by Waterfront Design Associates (WDA) from April 2000. These documents assisted the team in understanding past program opportunities and demands.

The purpose of the GWG report was to "examine the issues involved with the salvage and reuse of the significant architectural elements in a new structure and to begin the conceptual planning for the new boathouse facility."[1] As part of creating this report, GWG and New Haven City Plan conducted a series of workshops with representatives and interested parties from organizations involved in maritime education and recreation programs to solicit ideas, visions, and program and space requirements for the proposed facility. This community input phase invited established non-profit organizations, such as Amistad America and Schooner Inc, who currently have a presence and programs on the New Haven Harbor, to ongoing rowing and boating programs that have similar organizational goals.

The GWG report concluded that tremendous interest for a boathouse on New Haven Harbor existed from local rowing groups, schools, colleges and organizations. This interest clearly indicated that the boathouse and site will be in great demand as a rowing and sailing center, educational venue, meeting place, setting for festivals and outdoor events and destination for visitors.

The WDA report sought to determine the market demand for a marina in New Haven Harbor and the suitability for siting a marina at this location. The conclusion from this report is as follows:

1 New Haven Boathouse Feasibility Study. Gregg & Wies Architects LLP for New Haven City Plan. March, 2003.

> This preliminary investigation revealed the positive feasibility of creating a marina at the Long Wharf site if certain engineered protection features are provided. The marina should be able to attract a desirable clientele, develop a reasonable revenue stream, provide a needed access to the public along the New Haven waterfront, and provide boater services consistent with a commercial harbor and major metropolitan area. The location is proximate to downtown New Haven and enjoys easy access from Long Island Sound. From a technical and marina industry perspective, the proposed Long Wharf Marina meets acceptable marina development criteria and the project is worthy of consideration.

The WDA reports serves as a basis for determining the viability for transient boat slips at the Canal Dock site.

Stakeholder Outreach

A series of stakeholder meetings was scheduled early in the planning phase. The stakeholders were split into separate groups based on a particular theme as a way to focus the presentations and subsequent conversation. The categories are as follows:

- Potential Users
- Arts and Culture
- Education
- Recreation

The stakeholder groups represent potential users and operators of the planned boathouse. The purpose of the outreach was to solicit ideas and visions for the facility as well as understand and begin to organize program and space requirements for both the building and site. In addition, it gave the planning team the opportunity to tell stakeholders about the work done to date and the process and schedule moving forward.

Following page:
Stakeholder Diagram.
Key project stakeholders by potential programmatic use of the facility.

At these initial stakeholder meetings, a number of opportunities and issues arose. The following are some critical points:

Potential Users

- New Haven Department of Parks, Recreation, and Trees (DPRT) has interest in the facility for its kayak program
- Area schools, colleges, and universities may use the site for rowing and sailing.
- Other area rowing and boating organizations have expressed interest in using the facility.
- University of New Haven's marine science expressed interest in a harbor-front facility for indoor classrooms, office and wet labs. UNH has a partnership with Schooner Inc, which this facility could be used to reinforce.
- Amistad America would like a presence at this facility. In addition to using the boathouse for classes and programs while the Amistad is docked at Long Wharf Pier, its vision is that the Canal Dock boathouse could be a destination for bringing in outside people through a simulcast system that could be placed in one of the rooms.
- The New Haven Museum may use the site for exhibits.
- The Farmington Canal Greenway will have one terminus at the site.
- The Connecticut Freedom Trail will include the site.

Space Requirements and Flexibility

- There is benefit in having interior spaces that can be broken up into smaller venues. Subdividing rooms can accomplish this goal.
- There is a lack of large meeting spaces at the harbor front.
- Flexibility will be critical on the platform for boating events.
- Easy access should be provided to multiple areas for boating events. It will be necessary to have separate access to control space, along with ability to isolate and secure areas.

Interpretive Design

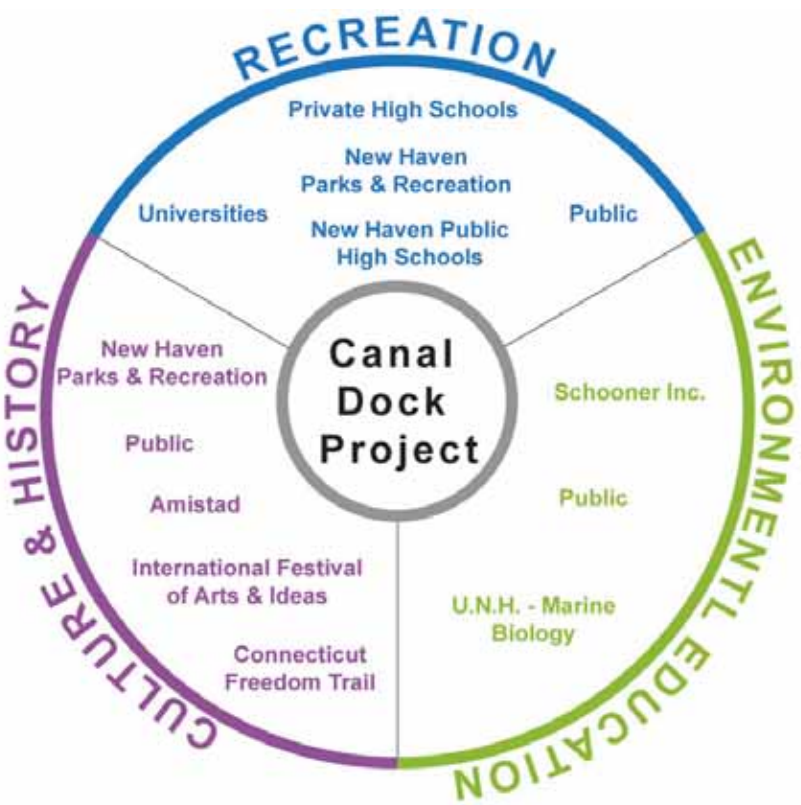
- The Connecticut Freedom Trail and Farmington Canal Trail should be tied into the site and project.
- New trends for interpretive features are toward quick, multi-dimensional, and flexible experiences. The desire is not to be locked into any one use or element.
- Suggested histories to consider telling include natural history of the city and region, maritime history, collegiate rowing, historic trade between New Haven and the Caribbean, New Haven oyster industry, and New Haven Sharpie (skiff).
- Interpretation on the platform should be available even when the building is in use or closed.

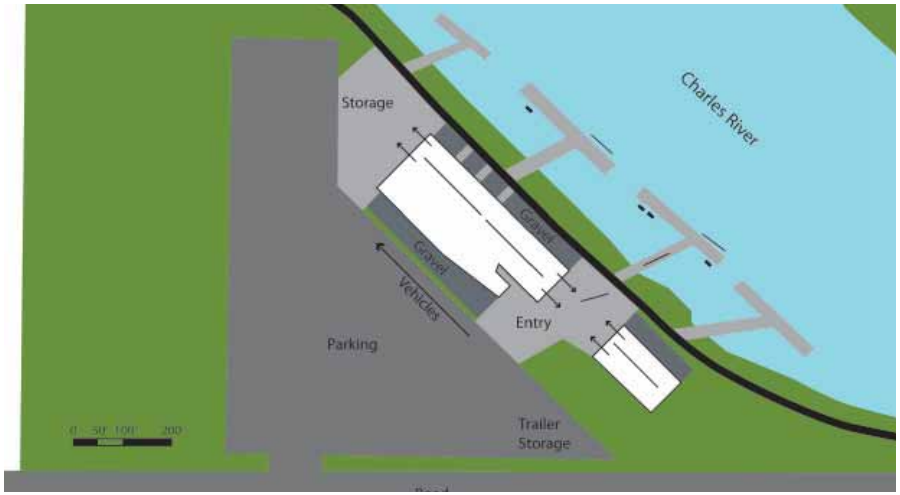
Boating

- Provide as much open area on first floor to allow for boat and equipment storage.
- Organized boating programs are critical.
- Establish an outreach program to get children from the inner city involved.
- Establish a fee structure for boat storage and programs.
- Confront challenges the harbor site presents for crew racing.
- Ensure the design considers mixing vessel types (rowing shells, sail boats, kayaks). Develop a sliding-seat community rowing program in New Haven.
- Do not include a construction and repair shop in the facility.
- Add mooring space for fixed-seat boats.

In addition to the stakeholder meetings, additional conversations were held with local schools (universities, private and public schools) to determine whether any interest in this facility existed for present or future rowing programs.

For a complete list of stakeholders involved and minutes from the stakeholder meetings, refer to Appendix I: Program Analysis.





Boathouse Site Visits and Research

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Site Plan Diagram, Gilder Boathouse. Derby, CT / Housatonic River. Yale University.

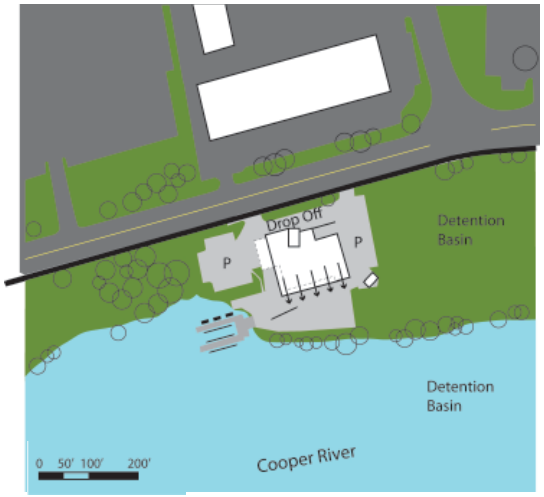
Site Plan Diagram, Harry Parker Boathouse Brighton, MA / Charles River. Community Rowing Inc.

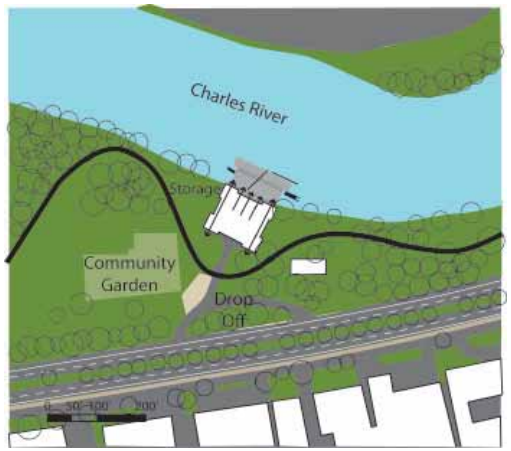
In addition to conducting stakeholder outreach, team members visited a number of boathouses to see how these facilities are physically designed and laid out, and to understand how they are programmed, managed and operated. The boathouses included the following:

- Yale University's Gilder Boathouse – Derby, Conn.
- St. Joseph's College's Robert J. Gillin Jr. Boathouse – Philadelphia, Pa.
- Camden County Boathouse at Cooper River – Pennsauken, N.J.
- Finn Casperson Rowing Center (Princeton National Rowing Center) – Windsor, N.J.
- Harry Parker Boathouse (Community Rowing Inc) – Allston, Mass.
- Tufts University Boathouse – Medford, Mass.
- Northeastern University's Henderson Boathouse – Boston, Mass.
- Greater Hartford Jaycees Community Boathouse – Hartford, Conn.
- Yale Corinthian Yacht Club – Branford, Conn.
- David Grant Boathouse and School of Sailing– Newport Beach, Calif.
- Hudson River Rowing Association Boathouse – Poughkeepsie, N.Y.

In addition to visiting the boathouses listed above, additional research took place in a phone conference with the Texas Rowing Center in Austin, Texas, and through extensive online research of facilities throughout the world.

These site visits were invaluable to the team because the visits offered a broad spectrum of conditions and boathouse





types. Differences included public versus private boathouses, modern versus traditional architectural styles, diversely programmed and marketed versus single user university facilities, and freshwater versus maritime sites.

The following are some key observations relevant to the physical layout and design of the boathouse:

- Storage
  - Allotted storage space is never sufficient
  - Boat/Oar Racks
    - Most facilities store oars vertically between water and boat storage areas.
    - Racks range from just a couple of shells high up to seven shells high.
    - Access to higher shells is by lifts.
    - Shell racks should be carpeted to protect the boats.
    - Oars should be stored vertically
  - Provide shelving and tool racks for equipment.
  - Keep sailing and rowing storage areas separate from shell storage.

- Staging Areas and Operations
  - Shallow water is preferable for shell launching in case a boat flips
  - Freeboard of rowing docks should be less than 6 inches.
  - Ramps are the best means of access from storage to launching areas.
  - A door overhang (entrance and exit to shell storage area) should be approximately 9-feet high (helps to keep people from hitting it with oars and boats)
  - Some means of washing down the boats with fresh water is necessary, whether it is a built-in system or just a hose bib.
  - Avoid obstacles around boats. Often you have to spin boats either on the dock or when getting them off the trailer. A typical rowing eight is around 60-feet long,

This page from left:
Site Plan Diagram, Camden County Boathouse.
Pennsauken, NJ / Cooper River..

Site Plan Diagram, Henderson Boathouse
Allston, MA / Charles River.
Northeastern University.

This page from left:
Stretching on the boathouse apron.
Camden County Boathouse, Pennsauken, NJ / Cooper River..

Carrying shells to the water.
Gilder Boathouse, Derby, CT / Housatonic River. Yale University.

so swing space is significant.
  - More room to operate outweighs fitting more things in one space.
  - Keep sailing and rowing activities as separate as possible. Shells are difficult to maneuver and are extremely delicate.
  - Provide open areas for loading and off-loading trailers

- Training
  - Allow for rowers to erg with a view
  - The boating apron is often used for training and gathering (for ergs, weights, etc)
  - Provide changing rooms with heat and shower facilities.
  - Provide an elevated area for spectators.
  - Provide coaches' offices.
  - Provide indoor and outdoor meeting areas.

The following are some key observations learned with regard to the program, operations and management of these facilities:

- Potential revenue sources related to rowing are universities, private high schools, public high schools, rowing clubs and individuals (masters' class). Other revenue sources could be rental of flex space for events or off-season fees for fitness classes.

- Interior flex spaces offer significant commercial or rental income potential.

- The best lessons to be learned regarding programs are from other public and community boathouses. The following are two good examples to show the range of offerings possible at a community boathouse.

- Community Rowing Inc. (Harry Parker Boathouse) in Allston, Mass. The most ambitious community boating program the team visited was Community Rowing Inc. (Harry Parker Boathouse) in Allston, Mass. It supports community rowing for Boston area junior and adult rowing. It also houses Boston College collegiate rowing.
    - Personnel include 12 full-time staff plus four full-time and 50 part-time coaches. Staff positions include, two administrative, two development, four to five program, three outreach & and adaptive rowing and one full full-time maintenance (on payroll).
    - The program offers the full spectrum of beginner to advanced competitive rowing.
    - An outreach program includes learn-to to-swim and academic tutoring. It also offers summer camp programs and corporate outings.
    - Annual operating budget: $1,800,000. Revenues grew 35 percent in the first 12 months and programs grew 40 percent.
    - CRI advertises its programs and facilities – billboards, publications, etc.
    - Online scheduling of CRI's 150-boat fleet and rowing programs.
    - Accommodates 800 junior rowers at a time.
    - Fee examples: $875 for annual storage of a single scull; $195 for winter fitness class membership; $25,000 for a full-day team building event for a group of 150 people including rowing instruction and activity on the site.
- Greater Hartford Jaycees Community Boathouse in Hartford, Conn., is a less extreme version of a community boathouse than Community Rowing, Inc. and offers a good comparison. The facility supports community rowing for

This page from left:
Training equipment.
Harry Parker Boathouse, Brighton, MA / Charles River. Community Rowing Inc.

Boat storage.
Harry Parker Boathouse, Brighton, MA / Charles River. Community Rowing Inc.

This page from left:
Boat & equipment storage.
Gilder Boathouse, Derby, CT / Housatonic River. Yale University.

Dragon boats.
Robert Gillen Jr. Boathouse, Philadelphia, PA / Schuykill River. Saint Joseph's University.

Hartford area junior and adult rowing.

- Personnel include two full-time rowing staff, one full-time catering manager, and many seasonal coaches and summer program counselors.
- The program offers the full spectrum of beginner to advanced competitive rowing.
- Outreach program does not include learn-to-swim.
- The facility accommodates 86 junior rowers at a time.
- The rowing program is free for Hartford high school students and a small fee for non-resident high school students.
- Fee example: for annual storage of a single scull: $450.

For more photographs, diagrams and information for each of the boathouses, refer to Appendix I: Program Analysis.

Program Recommendations

First, this project will be a boathouse dedicated to recreational boating, with the first floor primarily dedicated to the storage of sliding-seat rowing shells. These valuable and fragile rowing shells require protection from the outdoor environment, along with security from theft and vandalism. The facility will also accommodate kayaks, canoes, sailboats and fixed-seat rowing vessels. A series of floating finger docks will also provide the opportunity for transient motor and sail boats to tie up and dock at the site. In addition to the competitive and recreational boating uses, other water-dependent uses such as environmental, cultural and maritime education related to New Haven Harbor will be present.

Universities, high schools (private and public), clubs (youth and masters) and individuals are seen as the potential boaters at the site. Another potential user will be New Haven Department of Parks, Recreation and Trees, which has expressed interest in the facility for its kayak and canoe programs. Another critical component of the facility is that it will offer adaptive boating programs for those in the community with physical disabilities.

The potential revenue sources are boat storage, club membership, boat rental, transient dockage, instructional programs, fitness programs, and space rental. Other potential revenue sources include regattas and festivals, vendors, adaptive boating certification and lectures.

Assumed operations-related expenses will include labor, maintenance, utilities, insurance and administration. The necessary staff structure will need to be determined, but from observing how other successful boathouses operate, the boathouse manager position is a critical role that must be filled with an energetic, creative and skilled individual.

Determining exactly who will occupy this building is still unanswered at the conclusion of the planning phase. Based on the program analysis and knowledge to date, however, the planning team is confident that the building and site solution will result in a well-used public facility that will not only offer both recreational and competitive boating but also educational opportunities. A key feature of the design is that it will be adaptable to future needs in terms of its physical layout and programming opportunities.

Program analysis suggests that the following uses be accommodated in the new boathouse: boat bays, boating support space, offices, classrooms, flex space for fitness equipment and occasional events, and support spaces (lockers, bathroom, etc.). Program needs on the platform and docks include a rowing dock, kayak and sailing dock, transient boat slips, boathouse apron, the ability to drive vehicles onto the platform for deliveries and emergencies, drop off area along Long Wharf Drive, and a shaded gathering space for boaters and classes.

Parking Analysis – Determining Demand:

Based on the projected program of the facility, the planning team needed to gain an understanding of what the future on and off-site parking demands might be. This requires not only an understanding of who the potential users will be, but also the daily and seasonal patterns of these users.

The potential uses for the site that could generate moderate or significant parking demand are as follows:

- Rowing
- Sailing
- Kayaking/Canoeing
- Education
- Events and programs

In general, the rowing season runs from approximately early March to mid-November. The regatta season runs from the third week of March until the second week of August. Yale University's rowing program expressed interest in using the facility as early as February 1 because the Housatonic River, where Gilder Boathouse is located, is typically frozen around that time of year. Sliding-seat rowing will usually take place in the early morning when water is calm (before 9 a.m.), or late afternoon (between 3 and 8 p.m.). The parking and drop-off demands related to rowing will likely be the following:

- Cars for staff throughout the day
- Cars for short-term parking during either early morning or afternoon
- Cars for pick-up and drop-off usually in the afternoon
- Boat trailer loading and unloading
- Buses for drop-off and possibly pick-up in the afternoon

The season for the city's kayak and canoe program is May 15 through Oct. 15. This program may potentially generate 20 personal cars a day plus the buses bringing kids for the morning and evening programs. There may occassionally be buses coming from New Haven and other cities that need an area to park.

Sailors are more mid-day or early afternoon users who want to take advantage of the windier time of day. The users will likely arrive via car and need short-term parking during those times of day.

UNH and Schooner's potential marine science program would require additional parking. Parking would primarily be for the staff; students involved in the educational programs will likely be dropped off. There could be between 2 to 6 staff, with likely no more than two staff present at any one time. The staff would likely use the facility seven days a week (8 hrs. on weekdays and 10hrs. on weekend and in the summer). The

structured educational programs during the week would likely consist of a three-part program for approximately 75 children (three groups of 25, each in one of three separate activities). This would be three to four-hour-long programs for public and private schools. Participants would arrive by bus. On weekends, public programs for families would be offered. Families would likely arrive by car and require short-term parking. It is envisioned that an environmental education center would be open to the public.

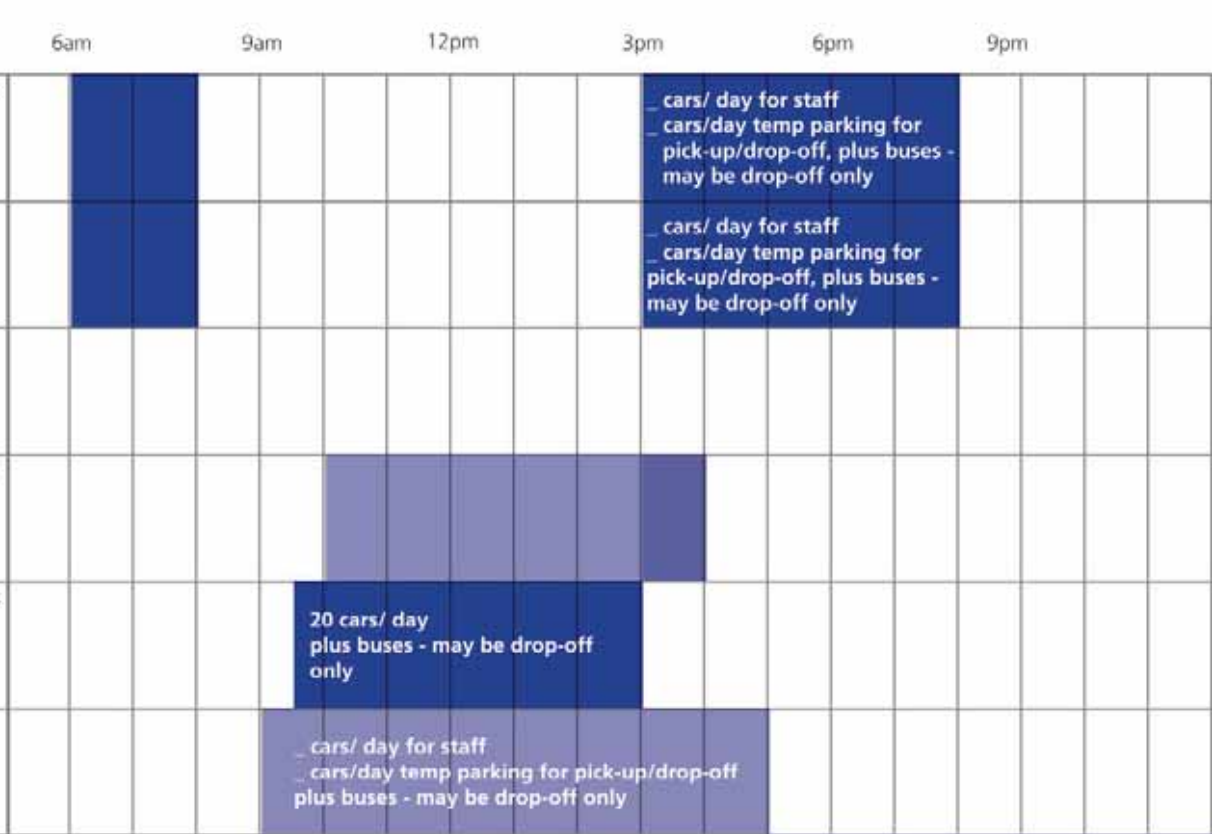
During the off-season, the fitness area may be used as a membership fitness facility that offers classes and use of equipment. These users will likely require short-term parking on weekdays during the morning and after work. Mid-day use is also feasible. Weekend parking hours will be all day.

Refer to the figures on the following pages for a graphic depiction of parking demand for both a typical weekday and weekend.

Potential parking locations for future on- and off-site parking are discussed in Section 7: Preliminary Concept Alternatives.

WEEKDAY

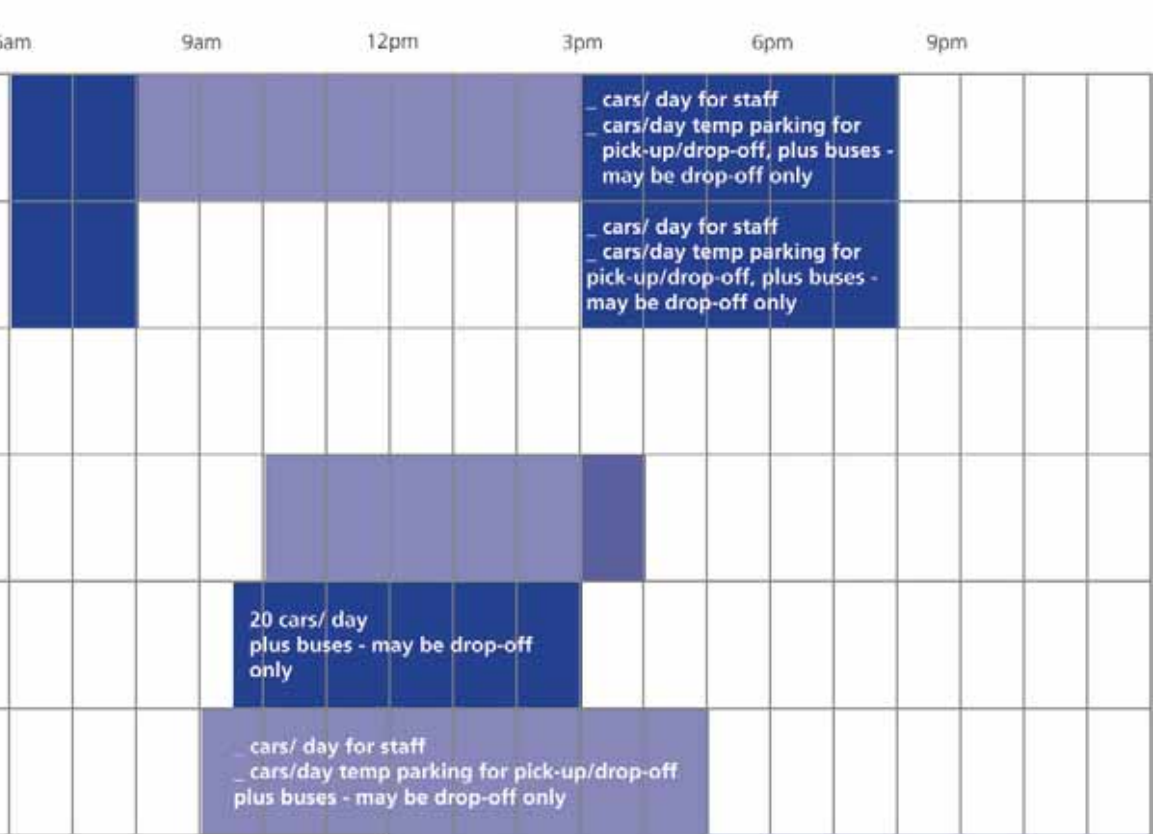
USER	SEASON	USER TYPES & PROGRAMS	VEHICLE TYPES
Rowing - general	summer	sound school, other private schools, public schools, universities, clubs, individuals	cars, buses, boat trailers, bikes,
Sound School (rowing)	summer		
Schooner Summer program (rowing)	summer		
Sailing	summer	new haven sailing school? private individuals / transiet boaters	cars, buses, boat trailers, bikes,
Kayaking	May 15 - October 15	city program personal kayaks	cars, buses, bikes
UNH/ Schooner			



PARKING DEMAND

WEEKEND

USER	SEASON	USER TYPES & PROGRAMS	VEHICLE TYPES
Rowing - general	summer	sound school, other private schools, public schools, universities, clubs, individuals	cars, buses, boat trailers, bikes,
Sound School (rowing)	summer		
Schooner Summer program (rowing)	summer		
Sailing	summer	new haven sailing school? private individuals / transiet boaters	cars, buses, boat trailers, bikes,
Kayaking	May 15 - October 15	city program personal kayaks	cars, buses, bikes
UNH/ Schooner			



PARKING DEMAND

7 Design Approach

Based on the analysis of existing conditions, the program of uses and activities to be accommodated, and the project's funding and regulatory requirements, design objectives and assumptions were developed to guide the conceptual design process.

Design Objectives

The project goals were further clarified into objectives on which design alternatives could be evaluated.

GOALS	OBJECTIVES
Mitigate the loss of the historic and cultural resources.	Incorporate features and elements from the historic Adee Boathouse.
	Provide information to visitors on the history of the Adee Boathouse and Fitch Foundry.
Increase **waterfront access.**	Increase the length of active waterfront edge at the Canal Dock site.
	Create a site design and program that draws people to the water.
Provide a recreational and competitive **boating facility** for the city and the region.	Include ample space and flexibility for boat storage and support facilities
	Provide appropriate space for maneuvering boats and training activities on the platform.
	Provide docks and other facilities to support multiple boat types.
Provide quality waterfront **public space** that is compatible with the boating activities.	Create quality public space on platform that can be used by the general public in addition to boaters.
	Create a design that allows for occasional water-related indoor and outdoor events.
	Provide a space that is safe for visitors.
	Provide access to views of the harbor and boating activities.

GOALS	OBJECTIVES
Create a signature **waterfront destination** for the City of New Haven.	Design a building and site that have a strong presence on the waterfront.
	Create a facility that provides a unique mix of boating, cultural, and educational resources for the city.
	Establish the site as a landmark on the Vision Trail / Farmington Canal Line Greenway, Harborside Trail, East Coast Greenway, and Connecticut Freedom Trail.
Educate visitors on the cultural, natural, and maritime history of New Haven Harbor as well as the historic Adee Boathouse.	Convey the cultural, natural, and maritime history of New Haven Harbor through interpretive program.
	Integrate space for environmental education related to the harbor.
Provide a **flexible and adaptive** design that allows for variations in use and potential future growth.	Design a platform that can be expanded to the full permitted area in the future.
	Maximize the efficiency of the boat storage space.
	Design boat storage space that allows for a mix of boat types and sizes.
	Design a boathouse that can accommodate future expansion of boat storage.
Connect the site to surrounding road, trail, greenway, transit, and waterway networks.	Design clear and legible entry points to the site and boathouse.
	Provide safe and convenient pedestrian and bicycle access to site.
	Provide convenient vehicular access to site, including buses, vans, and boat trailers.
	Provide adequate parking for facility program.
	Integrate strategies from the city's Complete Streets Design Manual.
Create a site that is **universally accessible.**	Design site to meet all requirements of the Americans with Disabilities Act.
	Design a facility that accommodates adaptive boating programs.
Create a boathouse and site that aspires to cultural, environmental, and economic **sustainability.**	Integrate design strategies to maximize the environmental sustainability.
	Employ green technologies and practices.
	Create a facility that generates revenue to support its operations.

Design Assumptions For Concept Development

Critical assumptions based on the physical, regulatory, and financial constraints were articulated and incorporated into each design alternative.

- The designs were aimed at meeting the available budget for construction from the funds for mitigation provided by the Federal Highway Administration (FHWA) through ConnDOT. This results in a phased approach to the original permitted project wherein the first phase (which includes a platform of reduced size and the boathouse) is to be funded by the FHWA. A second phase would consist of the remainder of the permitted platform and related water-dependent uses, and is to be developed in the future pending additional funding.

- The designs are based on an approach to mitigation that will harmoniously combine historic design features from the Adee Boathouse with contemporary construction to meet the spirit and intent of all of the parties and the 4(f) process as well as §106 of the National Historic Preservation Act. This approach will maximize the reuse and interpretation of actual salvaged material from the historic Adee Boathouse, and use interpretive design to tell the story of the Adee Boathouse and its setting on the platform and in the building.

- The boathouse and platform are designed to support opportunities for recreational activities including sliding-seat and fixed-seat rowing and paddling, small-boat sailing, marine-related educational activities and other water-dependent uses. The platform will incorporate an area identified as Canal Dock Pier (sited in the area of the historic Canal Dock) and will be constructed over the tidal flats along New Haven Harbor's western shoreline.

- The designs are based on a boathouse program of approximately 30,000 gross square feet on two or three levels on a pile-supported platform. The boathouse will mainly contain boat storage space on the first level, with vertical circulation, lobby, receptionist and information area, public restrooms, mechanical spaces, and, potentially, a marine-science educational wet lab. At the second and potentially third levels will be boating program support spaces such as locker rooms, bathrooms, administrative offices, classrooms, multi-use spaces, display areas, and a warming kitchen.

- The area of the first phase platform (and floating docks) in each alternative has been reduced from the permitted area of 129,595 square feet (2.98 acres) by 40% or more to less than 80,000 square feet (approximately 1.8 acres) in order to meet the budget for construction. However, in each concept, the platform and floating docks have been reconfigured compared to the permitted plan but in no case are the platform or floating docks located within the intertidal area to

the south of the proposed Canal Dock or within the 15-foot anchorage area to the north and east of the site.

- The previously permitted plan includes a kayak dock attached to Long Wharf Pier and a walkway and educational pavilion located between Canal Dock and Long Wharf. Pier Based on discussions with potential users, these functions have either been incorporated within the Canal Dock project or eliminated in each of the alternatives.

- Each of the alternatives is based on a proposed platform elevation of approximately 10.0 feet (NGVD 1929). This elevation would allow platform structural members (excluding the piles) to be located above mean higher high water and approximates the elevation of the upland adjacent to the site.

- Each of the alternative boathouses assumes breakaway construction for the first floor, which is located below the 100-year flood hazard elevation and the V-Zone.

- The concept alternatives should vary in terms of platform configuration, boathouse orientation, and boathouse design, including interior layout to explore a full range of design options.

Project Approach to Mitigation Relating to the Historic Adee Boathouse

In a Memorandum of Agreement between the city of New Haven and the Connecticut Department of Transportation, ConnDOT agreed to fund, as mitigation for the demolition of the historic Adee Boathouse because of the the I-95 improvement project, a replacement of the boathouse at the Canal Dock site. A critical part of the concept planning phase of the project was the determination of the approach to the mitigation for the removal of this cultural and historic resource.

In a letter of March 22, 2007, to Mr. Bradley Keazer of the Federal Highway Administration, Mr. Thomas A. Harley of the Connecticut Department of Transportation described the Canal Dock project in New Haven. Referring to previous correspondence, the letter states that:

> "…the project will replicate, to the degree practicable, the original historic building and its setting. The Replica Boathouse building will resemble the size, shape, appearance, and style of the original Boathouse to the degree practicable within the limitations imposed by modern codes and materials. Due to some proposed changes in its use, the site, construction standards, and building environmental code requirements, it may not prove feasible to attempt a literal and exact replica of the original Boathouse."

Prior to the planning and design phases of the project, detailed investigations and studies of the site and the salvaged elements of the original Adee Boathouse were undertaken to determine the feasibility of building a "replica boathouse." As a result of these studies, it was concluded that an "exact replica" was not feasible. Given this, the design team was asked to develop an approach to the creation of an "interpretive replica." The following conclusions were made:

- The site is not on land (as was the original), but on a newly constructed platform. Filling the harbor to create a site is not permitted, and therefore, a platform over the water is the only way to create a site for the boathouse. This affects the relationship of the boathouse to the level of the water and how boats are moved from the boathouse to the water. This will result in a new boathouse that will be approximately 3 feet above the first-floor elevation (and mean low water) of the original Adee Boathouse. An apron on the platform in front of the boat bays will also be required to maneuver the boats, as well as an area adjacent to the boathouse to temporarily accommodate shells, rowers and support functions.

- Breakaway construction will be needed because the first floor in the new boathouse will be not only within the 100-year flood hazard area but also in the V-zone. The materials and method of construction of the first floor of the new boathouse will necessarily be different from the original Adee Boathouse, which had a stone masonry base with brick masonry above. Location in the V-zone requires breakaway construction for the first floor of the new building.

This page:
Adee Boathouse Elements
Architectural details from the old Adee Boathouse

- Contemporary boathouse design, in order to accommodate modern rowing shells and operations, will result in somewhat different dimensions for the boat storage bays and the height of the first floor of the building.

- The original project budget was established approximately ten years ago and construction of the new platform is not scheduled to begin until April 2011, with construction of the boathouse to follow. The updated cost estimates of the plan for the platform and boathouse that was permitted in 2003 clearly indicate that the neither the original plan nor a building that is stylistically similar and built of the same materials can be constructed for the available construction budget according to the current schedule. Therefore, reductions in the scope of the project are needed to meet the available funds.

- Despite the factors that make the construction of an exact replica infeasible, it is possible to meet the intent and the spirit of §106 of the National Historic Preservation Act and §4(f) of the U.S. Department of Transportation Act in the Canal Dock project. A letter of May 31, 2002, to Mr. Keazer from John W. Shannahan, then director and Connecticut State Historic Preservation Officer (SHPO), strongly supported and encouraged "the preservation, conservation, and adaptive use" of the Yale (Adee) Boathouse, and spoke directly to this solution. It states:

  "Although the Yale Boathouse would not be preserved in toto, we nonetheless believe that the citizens of Connecticut would significantly benefit from a creative approach that harmonizes new construction with the historic design features of the Yale Boathouse."

- The statement quoted above is consistent with the American Association of State Highway and Transportation Officials' (AASHTO) Center for Environmental Excellence, which describes flexibility in the Section 106 Process that includes "creative mitigation" resulting from the consultative process, particularly in regard to "resolving adverse

This page:
Adee Boathouse Elements
Architectural details from the old Adee Boathouse

effects." In their view, "Creative mitigation can result in better project and historic preservation outcomes, and has greater public benefit than standard procedures." This is the approach reflected in the concept plans developed for the Canal Dock Project. The approach relies on the following essential components:

- The dimensions of the footprint of the new boathouse will be similar to the original.

- The uses of the new boathouse will be similar to those of the original. Boat storage, principally for sliding-seat rowing, will be the predominant first-floor use. The second floor will accommodate lockers, offices, classrooms, and similar spaces needed to support boathouse operations. Uses will be water-dependent, as required by permits.

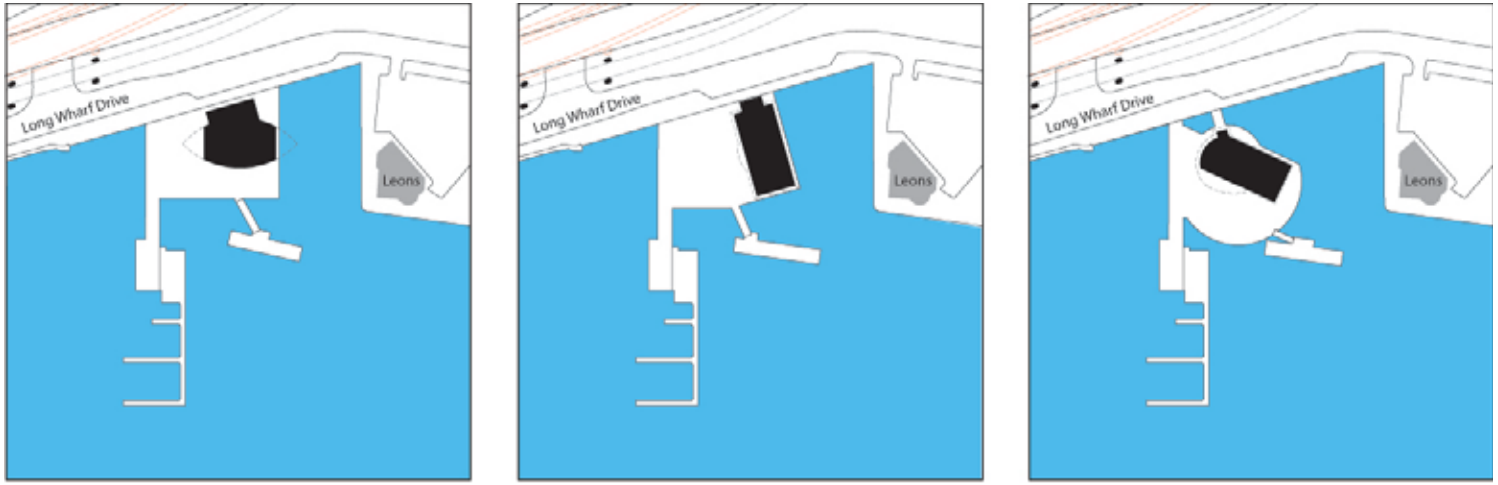
- The new boathouse will incorporate "meaningful, original Boathouse materials and architectural elements" potentially including the main entry portal (either accurately reconstructed or the original elements, protected from the exterior environment); the monumental interior stairs; the second floor Common Room (which will be reconstructed); and the reuse of other salvage elements where possible, such as timbers, terra-cotta decorative elements, etc.

- There will be interpretive displays, both inside the new boathouse, and on the site, that will tell the story of the Adee Boathouse, and its setting in New Haven Harbor.

This approach will result in a new building that will harmoniously combine contemporary construction with historic design features from the Adee Boathouse, and meet the spirit and intent of all of the parties and the 4(f) process as well as §106 National Historic Preservation Act.

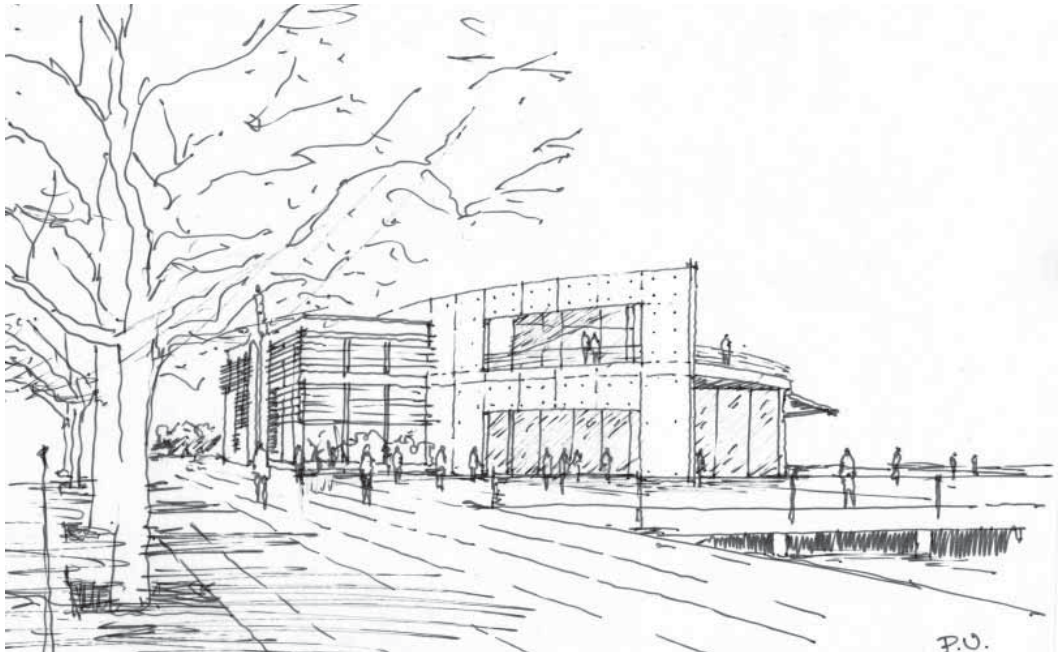
8 Preliminary Concept Alternatives

Numerous alternatives for the platform and the building were developed, discussed, and refined. Each included a pile-supported concrete plantform and concrete floating docks. The alternatives explored issues of platform configuration, orientation of the boathouse to the water, and the interior arrangement of key programmatic elements. Also considered were the relationship of the platform and building to Long Wharf Drive and the linear park, vehicular and pedestrian access and parking, location of boating systems and water access elements such as docks and ramps, and the location of space for recreational and educational activities. The final three concepts that were developed are described below.



A B C

This page, from left:
Plan Digrams of Concept Schemes A, B, & C.



Concept A

This page:
View of Concept A from Long Wharf Drive.

Next page:
Site Plan, Concept A

Following pages:
Sections, Elevations, & Views of Concept A, as labled.

Concept A places the front of the boathouse parallel to Long Wharf Drive and rotates the boat storage bays to be orthogonal to Canal Dock, the platform and the water. The front part of the building is three stories and the rear part is two stories using a quasi split-level relationship. The front first and second levels take advantage of the high floor-to-floor height of the boat bays by positioning a mezzanine between the first and second floors. A wet lab is located on the first level at the southwest corner and relates to the adjacent platform area. The split second level has boating-related spaces – locker rooms, offices, storage, etc. – and the third level is made up of classrooms, additional bathrooms, a large divisible event space, warming kitchen, mechanical rooms, and outdoor terrace. The terrace is located to take advantage of the long view to Lighthouse Point at the mouth of the harbor, and south and east to the industrial activities across the water. Placement of the building in relationship to the platform creates an L-shaped outdoor space providing separable areas for boat movements from Long Wharf Drive to the boat bays and an apron for moving boats into and out of the boathouse. A notion of using a replicated entrance façade from the Adee Boathouse has been incorporated into the exterior elevation fronting Long Wharf Drive.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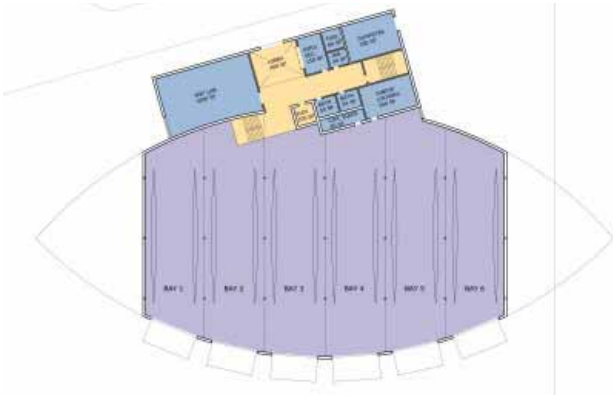
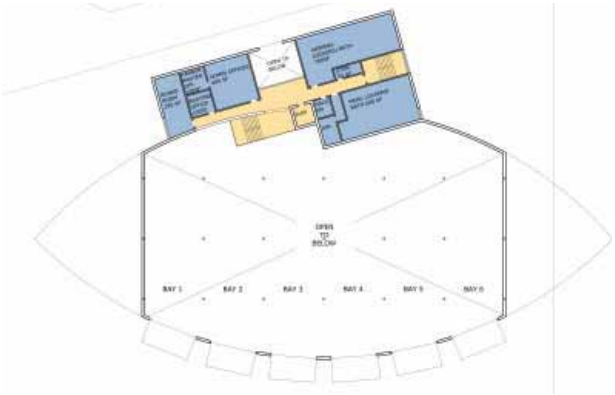
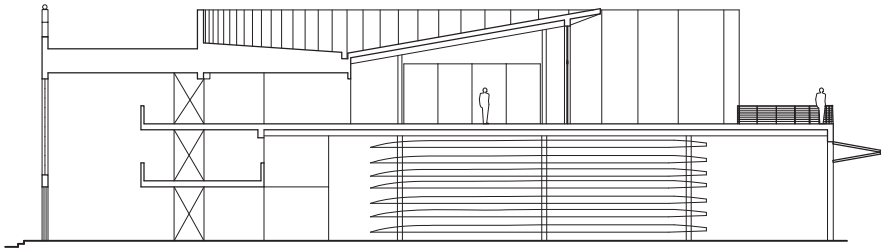


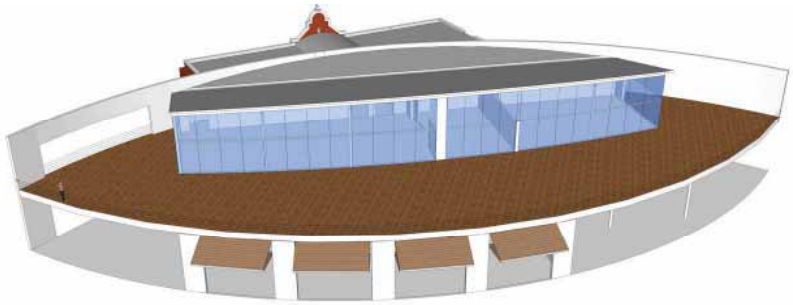
First Floor



Second Floor

Third Floor





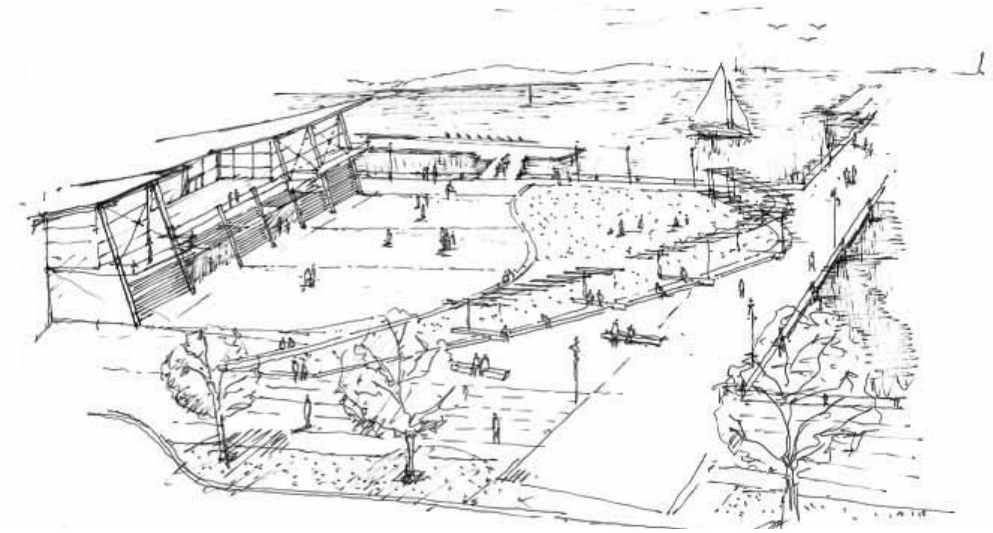
View of terrace

North

South

East

West



Concept B

This page:
Birds-eye view of Concept B from the west.

Next page:
Site Plan, Concept B

Following pages:
Sections, Elevations, & Views of Concept B, as labled.

Concept B places the boathouse at right angles to Long Wharf Drive and slides the building to the edge of the platform (north-east) combining the boating-related spaces together into one large outdoor plaza. The boathouse can be two or three stories (two stories shown) and has its main spaces oriented toward the view down the harbor to Lighthouse Point. This alternative most closely replicates the footprint of the Adee Boathouse and could be rendered in a variety of styles. Like Concept A, the first floor is comprised of mostly boat storage bays, vertical circulation elements, a marine biology wet lab, restrooms, and a reception lobby. The second and third levels include locker rooms, boating offices, classrooms, multi-purpose event room, kitchen and additional support and mechanical spaces.

An outdoor terrace is located to take advantage of the southern views and orientation. In addition to evoking the Adee Boathouse through massing and space arrangements, the entry tower from the Adee Boathouse is replicated and would contain the salvaged ceremonial stair from Adee. This façade element is the dominant feature of the northwest elevation, which faces Long Wharf Drive.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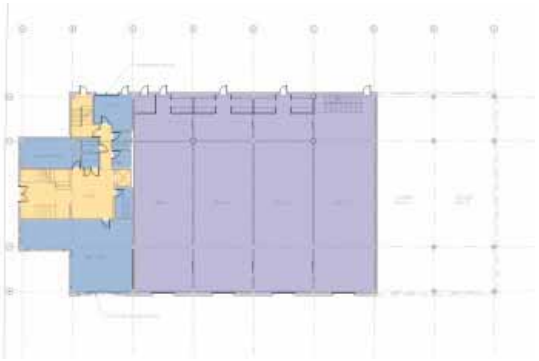
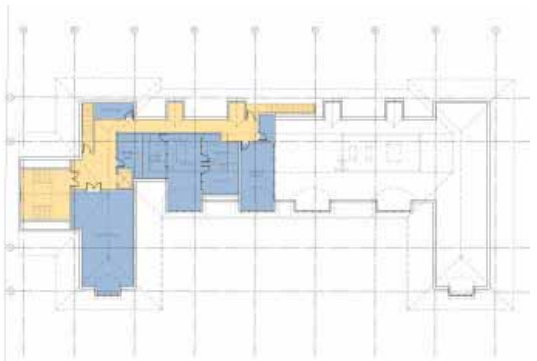
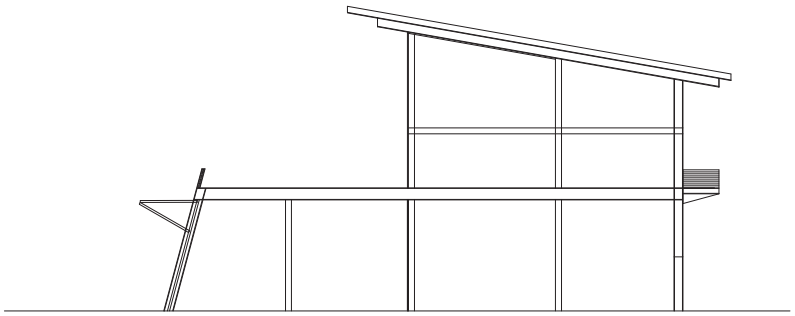


First Floor

Second Floor



Third Floor



Section

View of historic facade

North

South

East

West

Concept C

This page:
Birds-eye view of Concept C from the west.

Next page:
Site Plan, Concept C

Following pages:
Sections, Elevations, & Views of Concept C, as labled.

Concept C explores the placement of the boathouse farther out into the water, away from Long Wharf Drive and configures the platform to support the movement of boats and provides limited connection to the shore (and bulkhead). This evokes the original setting of the Adee Boathouse, which was connected to the street only via a pedestrian bridge, making the building an "island."

The building is located at an angle to take advantage of the down-harbor views to Lighthouse Point and passive solar orientation to the south. The curved building and platform shape explores a relationship to the water that brings the public to the water's edge and differentiates the platform and building arrangement from the grid of the upland side at Long Wharf Drive. For the most part, this is a two-story configuration similar to Concepts A and B, but there is also a rooftop terrace affording panoramic views of the harbor and surrounding city. This design also uses a replicated Adee entry façade as a freestanding upland portal and gateway to the building. Additionally, the salvaged Adee ceremonial stair would serve as the primary interior stair, and the Adee Common Room would be replicated within the second floor and be used as event space. The façade fronting Long Wharf Drive continues southward as a freestanding wall to provide a barrier to highway noise, demarcate the platform, and serve as a portal to Canal Dock Pier.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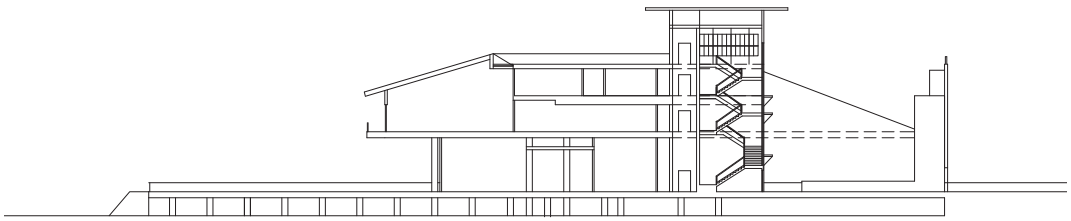
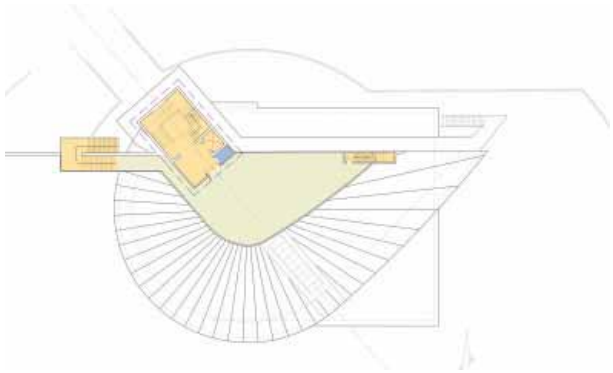
First Floor

Second Floor

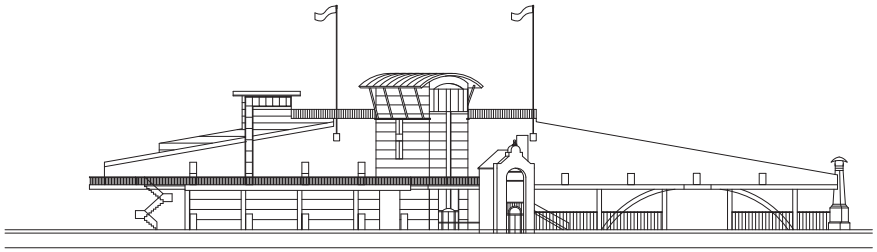
Third Floor



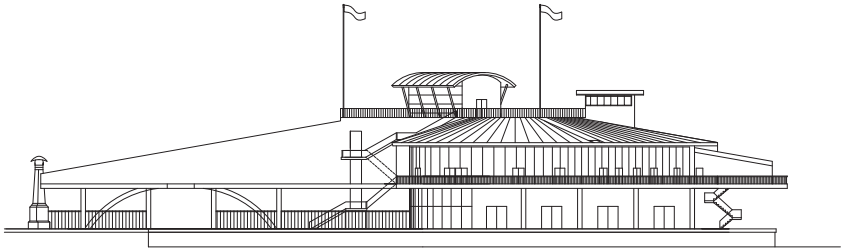
Section



Roof



North

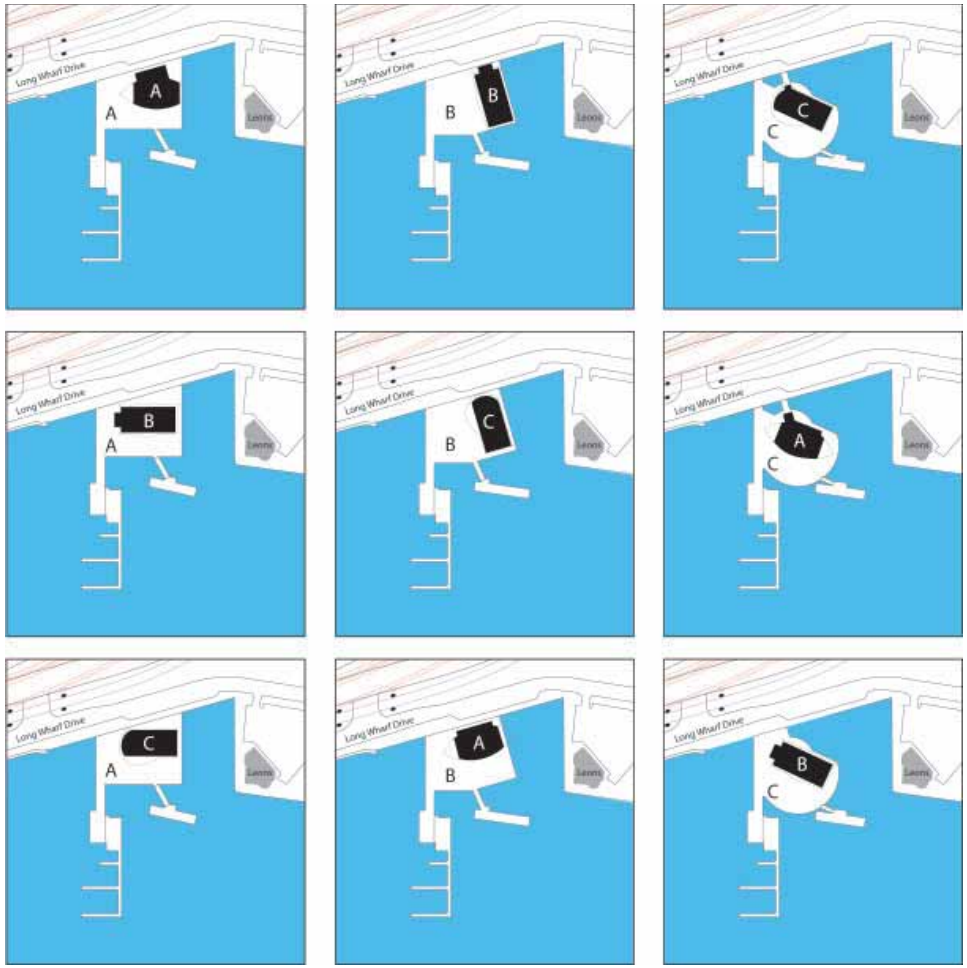


South

Interchangeability of Platforms and Buildings

Although these schemes (A, B and C) explore the design of boathouse footprints and platform configurations, the conceptual design effort recognizes that the building and platform orientations are somewhat interchangeable. Building footprints and platform relationships were fixed to provide cost estimate comparisons and to compare the three alternative sites and three alternative buildings.

This page:
Alternative Combinations of Building & Platform Design Concepts.
These diagrams illustrate how the three building and platform concepts might be interchanged to generate other design options.



Interpretive Design Concepts

Each scheme is envisioned as including interpretive displays as a part of the overall design. The interpretive display will complement the use of Adee Boathouse architectural elements and is part of a comprehensive approach to evoking the former boathouse and telling the story of the historic harbor and this waterfront location. Four potential approaches to interpretive design were developed as part of this phase. Diagrams illustrating each of these approaches are shown on the following pages.

1. **Harbor Map and Platform Concept:** This approach turns the surface of the boathouse platform into a map depicting the historic evolution in the coastline of New Haven Harbor since 1638. Paving and inscribed inlays in the ground surface tell the story of the site and other related topics such as maritime history and the history of rowing in the harbor using images and text.

2. **Thematic Timeline Concept:** In this approach, a comprehensive timeline covering the history of New Haven Harbor since 1638 is incorporated into handrail-height display panels at the water-side perimeter of the boathouse platform. The timeline may incorporate illumination and sensor-activated sound.

3. **Museum and Site Exhibition Concept:** In this approach, the history of New Haven Harbor and its surrounding area is presented to the visitor thematically through a museum-like installation of illuminated freestanding exterior panels mounted on the boathouse platform. Information relates to the cardinal direction one is facing relative to the boathouse platform. Digital media can be incorporated into displays inside the boathouse's public spaces.

4. **Combined Concept:** This approach integrates elements of each of the other approaches into one interpretive program presenting the the harbor development history, maritime and natural history, recreational history, and the historic Adee Boathouse.

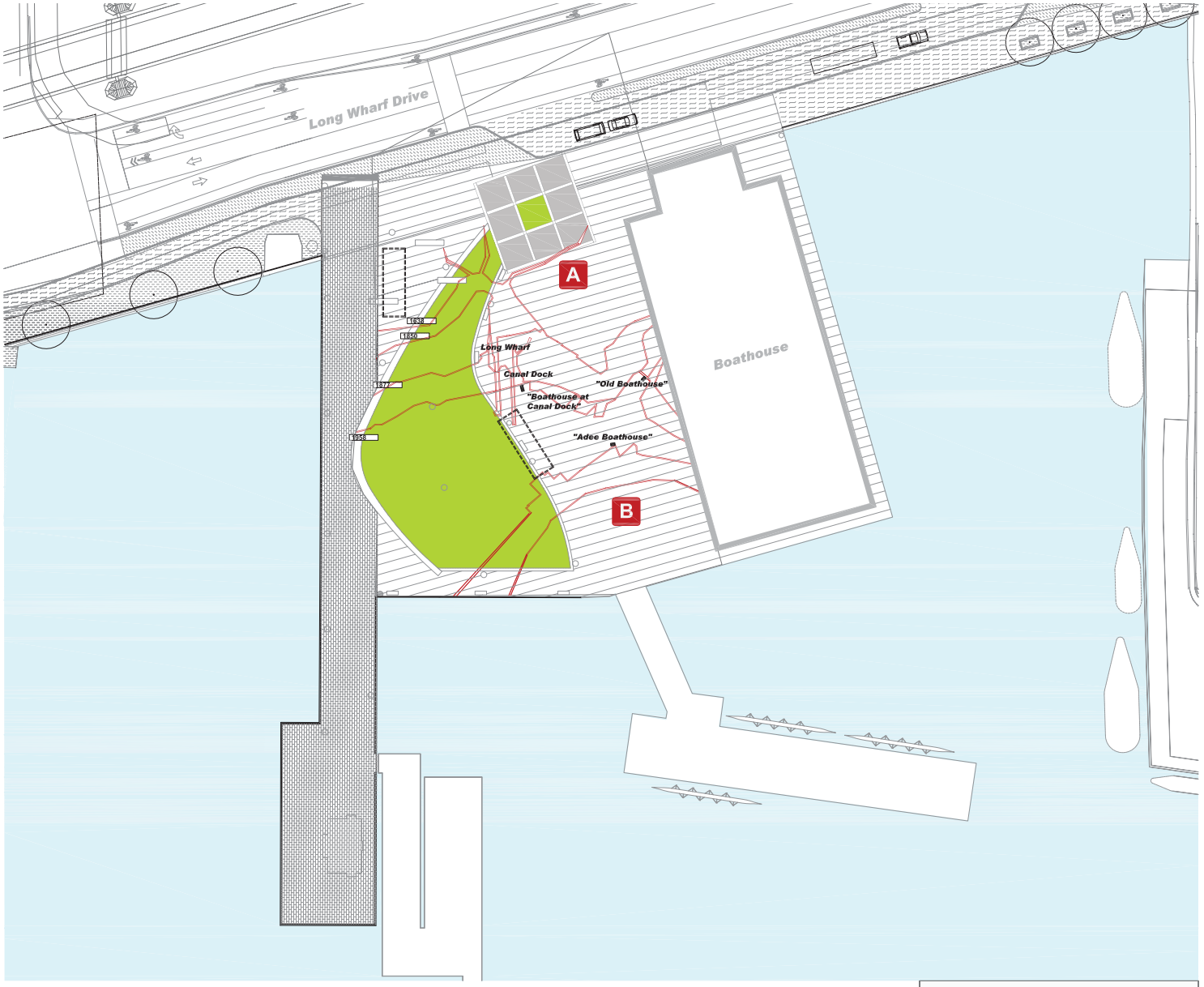
This page:

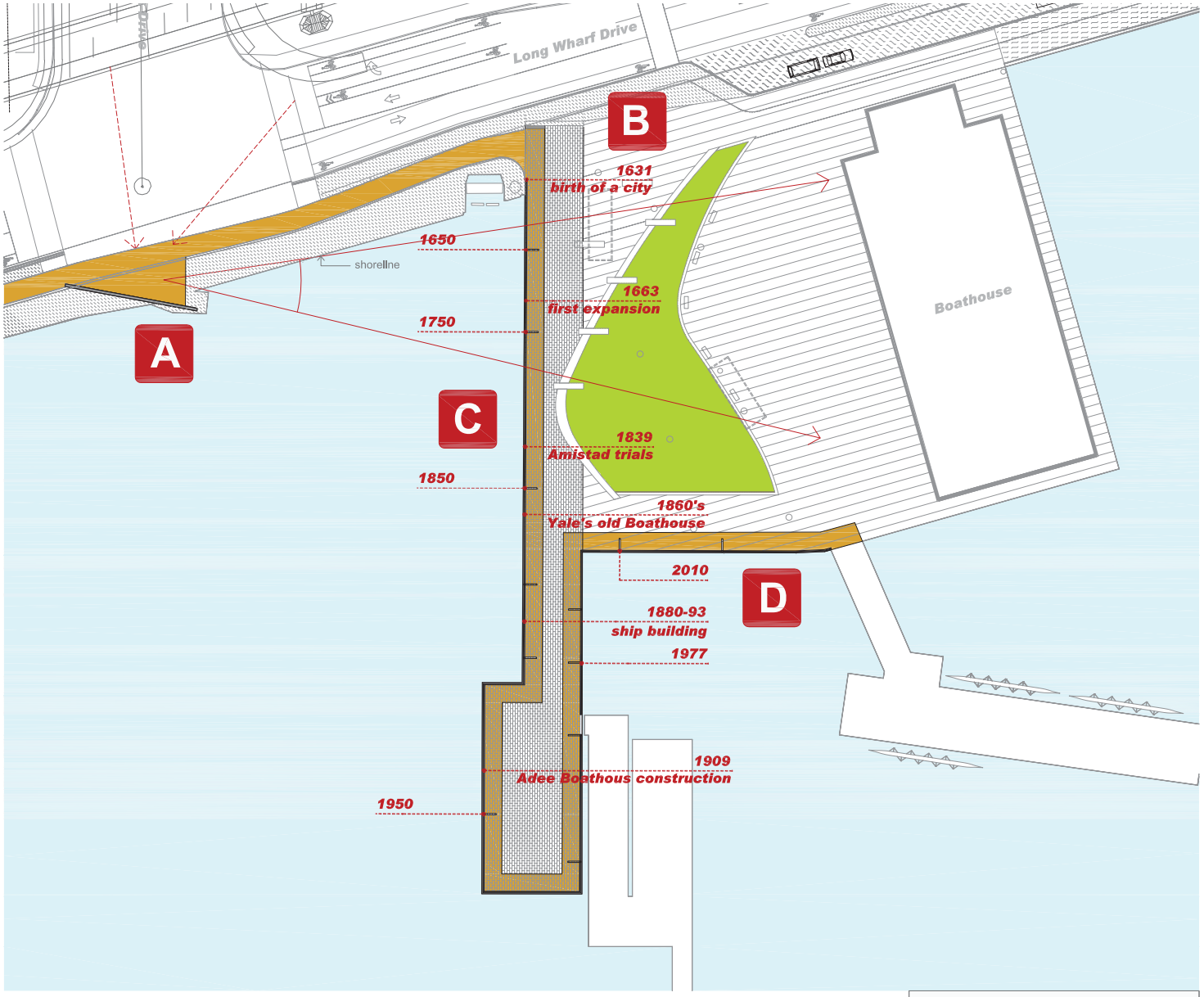
Harbor Map /
Platform Concept

Platform Elements:

A. NEW HAVEN MAP: The Northern end of the boathouse platform is inlaid with a 1" = 5'-0" scale map depicting the New Haven Green and nine square grid. The grid lines are inlaid bronze, the green is a planted lawn and the surrounding eight squares are salvaged stone with digitally fabricated inscriptions.

B. COASTLINE MAP: The remainder of the boathouse platform is inlaid with a 1" = 5'-0"scale map depicting the changes in the coastline of the New Haven Harbor since 1638 along with supplemental text and images. Stone paving and non-ferrous metal inlays with digitally fabricated inscriptions tell the story of the site and related topics, such as maritime history and the history of rowing in the harbor. Information is organized geographically based on the location of specific places and events.





This page:

Thematic Timeline Concept

Platform Elements:

A. ANNOUNCEMENT: A concrete wall with illuminated signage and lookout platform announce the boathouse complex at the end of Canal Dock Drive.

B. ENTRANCE: A vertical metal panel with text and images marks the entrance to the boathouse platform and beginning of the interpretive exhibit.

C. TIMELINE: An illustrated timeline tells the history of the New Haven Harbor from 1638 to present covering the topics.

a. Harbor Development
b. Maritime History
c. Natural History
d. Recreational History
e. History of Yale Boathouses

Modular polycarbonate panels and frames made of reclaimed wood from the Adee boathouse are incorporated into the perimeter railing of the boathouse platform. Vertical salvaged wood posts from the Adee boathouse mark significant dates along the timeline and house audio components used to supplement the exhibit.

D. FUTURE: the completion of the interpretive exhibit is, intentionally, left open ended to allow for adding to the timeline in the future.

This page:

Museuam / Site Exhibition Concept

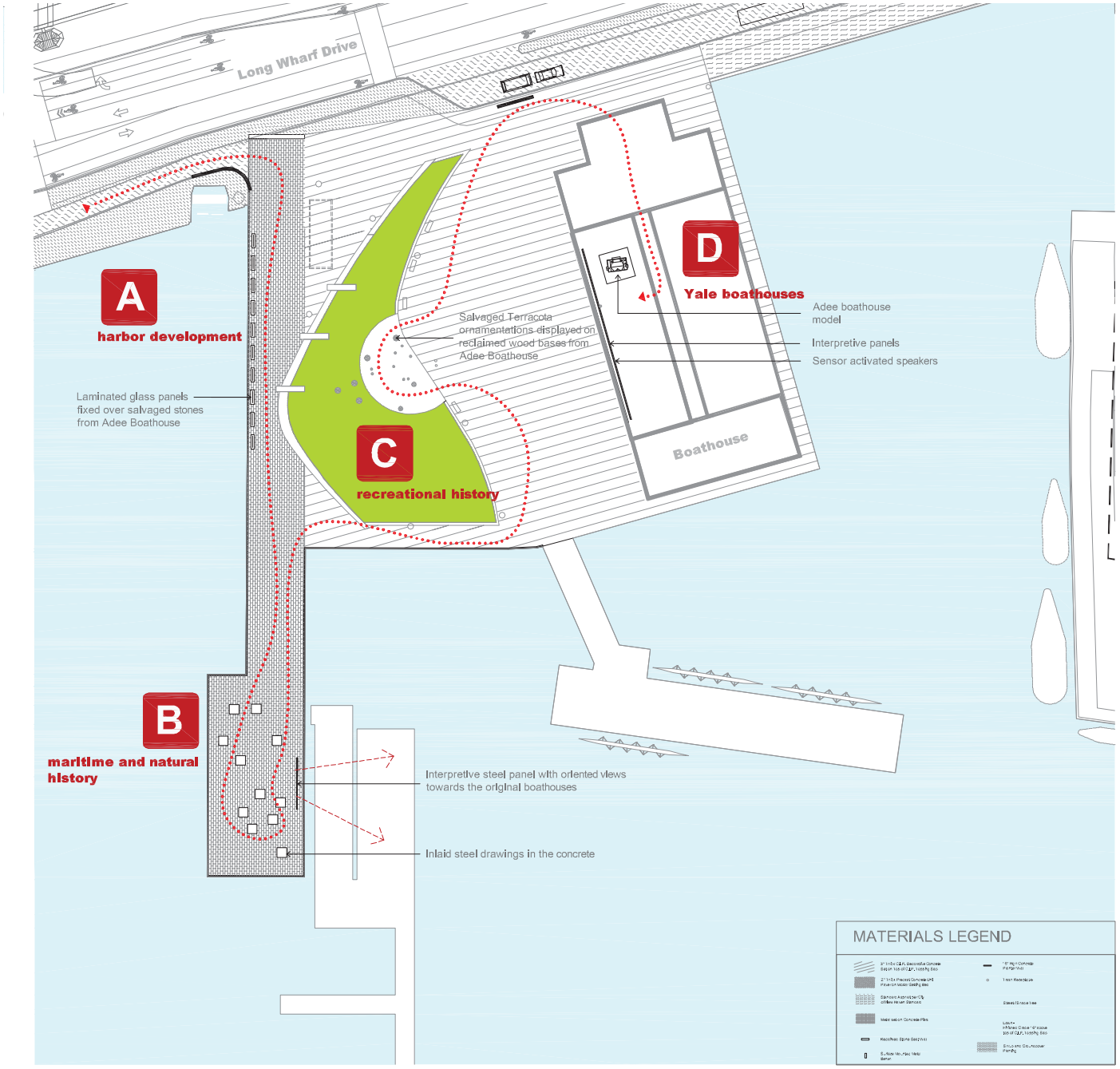
Platform Elements:

A. HARBOR DEVELOPMENT: Illuminated glass panels with reclaimed stone bases, from the Adee boathouse, will display maps of the development of the New Haven Harbor along the perimeter of the dock.

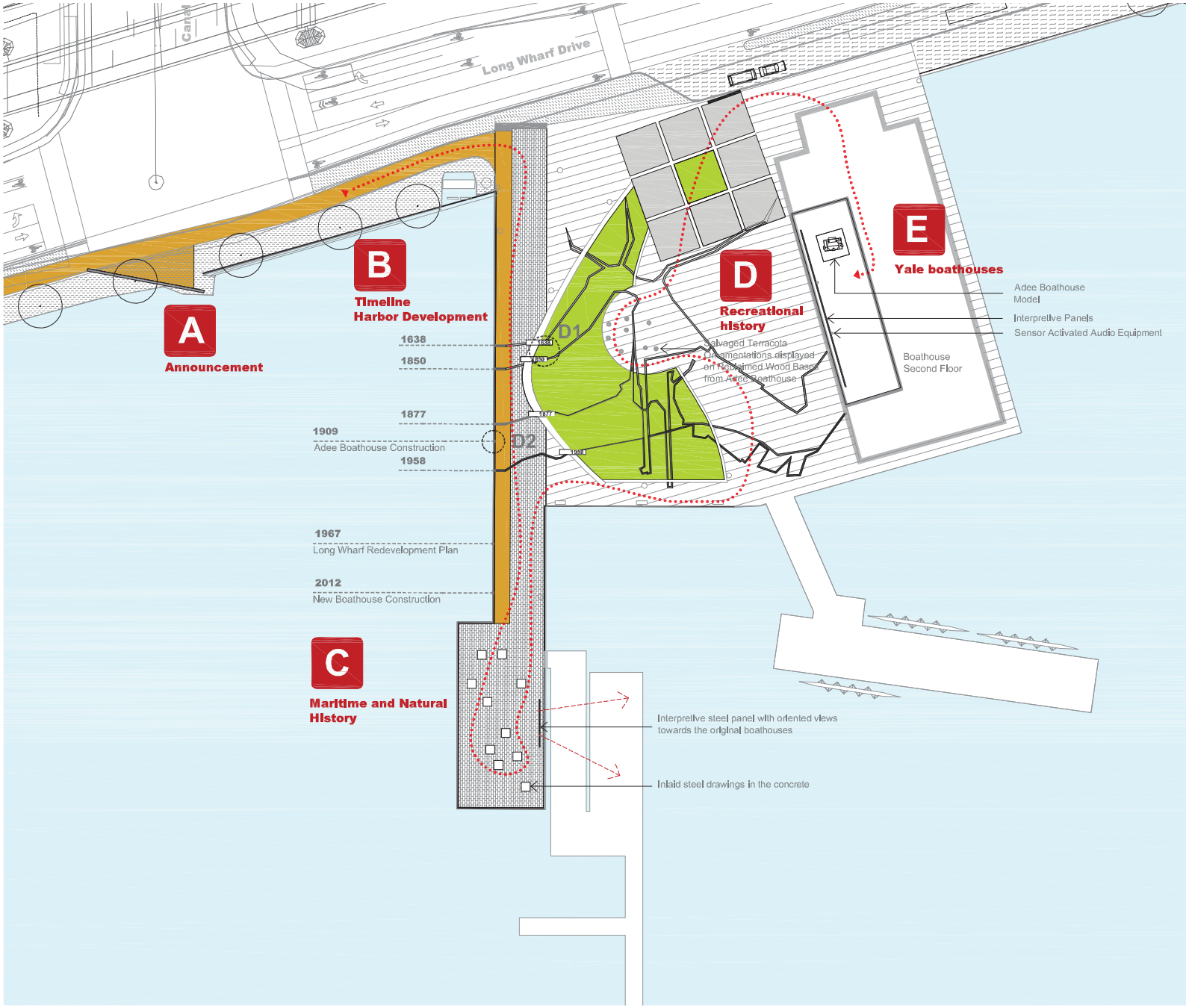
B. MARITIME AND NATURAL HISTORY: A series of concrete panels with inlaid steel maps, text and images set into the boathouse platform along with an interpretive weathered steel display tell the maritime and natural history of the New Haven Harbor.

C. RECREATIONAL HISTORY: Salvaged ornamentation from the Adee boathouse (including terra cotta bulldog heads) are displayed on bases, fabricated from reclaimed wood, in a position and orientation to the viewer as they were on the original boathouse.

D. HISTORY OF YALE BOATHOUSES: On the second floor balcony of the boathouse a series of small walls, constructed of salvaged material from the Adee boathouse, are inscribed to tell the history of Yale boathouses. Salvaged stone and terra cotta pieces are included in the display and a bronze model of the Adee boathouse is placed in the adjoining hallway.



INTERPRETIVE SITE PLAN



This page:

Combined Concept

Platform Elements:

ANNOUNCEMENT: A wall with illuminated signage and lookout platform announce the boathouse complex at the end of Canal Dock Drive.

B. TIMELINE : HARBOR DEVELOPMENT: An illustrated timeline tells the history of the New Haven Harbor from 1638 to present.

C. MARITIME AND NATURAL HISTORY: A series of panels with inlaid maps, text and images set into the boathouse platform along with an interpretive display tell the maritime and natural history of the New Haven Harbor.

D. NEW HAVEN MAP AND RECREATIONAL HISTORY: The boathouse platform is inlaid with a scale map depicting the New Haven Green, Nine Square Grid and the Harbor Coastline as it has changed since 1636. Paving and inlays with inscriptions tell the story of the site and related topics, such as maritime history and the history of rowing in the harbor. Additional items include salvaged ornamentation displayed on bases.

E. HISTORY OF YALE BOATHOUSES: On the second floor balcony of the boathouse a series of small walls are inscribed to tell the history of Yale boathouses. Salvaged artifacts are included in the display and a bronze model of the Adee boathouse is placed in the adjoining hallway.

Accommodating Parking

As identified in the program verification stage, site users will need access to parking and to the vehicular drop-off area, for staff and boaters, as well as visiting buses and possibly trailers. Accommodation of parking for the facility was identified as a potential challenge during the site-analysis process because there will be no opportunities for permanent parking on the site itself. Options considered for providing parking for the site included:

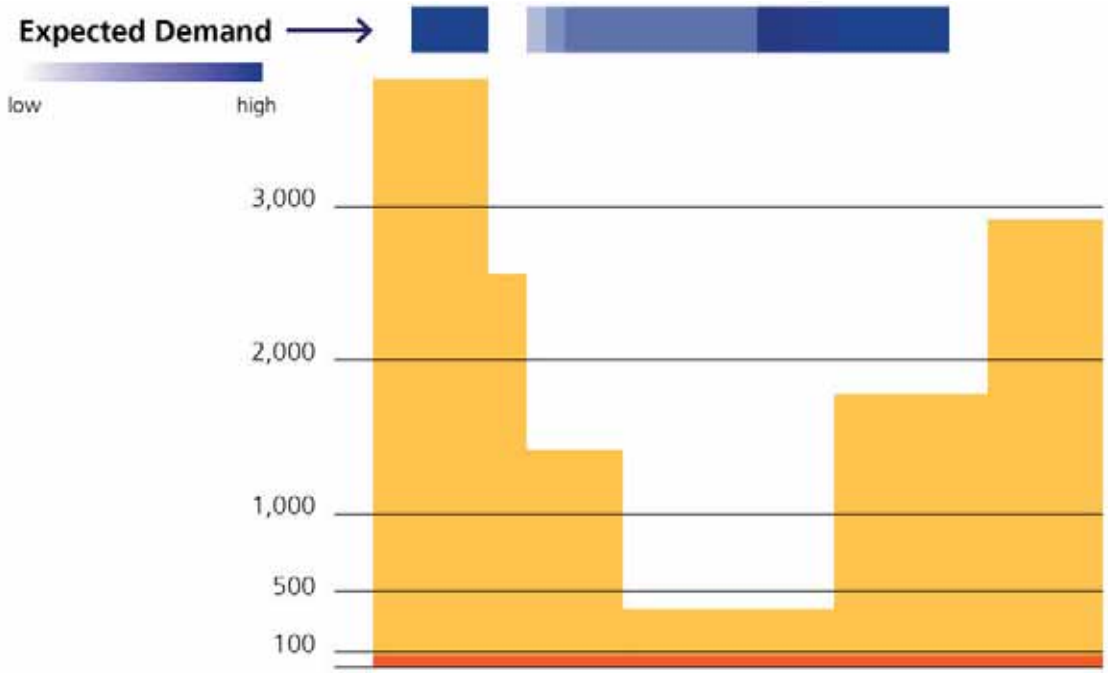
1. **Use of nearby public lots:** Public lots within a half mile of the site were identified. Thirty-six public parking spaces are within a quarter mile and seventy-six within a half mile of the site that could serve users all hours of the day.

2. **Opportunity for shared parking in surrounding lots:** Based on the hours of operation of the businesses they served, private and commercial lots within a quarter mile of the site were evaluated for their potential to offer shared parking to Canal Dock. The results of this analysis are shown in the charts on the following page.

3. **Construction of parking:** The area across Long Wharf Drive from the site, underneath the I-95 overpass, was identified as the closest area for provision of parking to serve the boathouse. Preliminary layouts for parking at this location both before and after completion of I-95 were prepared as part of the concept planning phase. During I-95 construction, the site could provide parking for 31 cars and one trailer, and after completion of the flyover could provide parking for 57 cars and two trailers. Possible layouts for these lots are shown on the following pages.

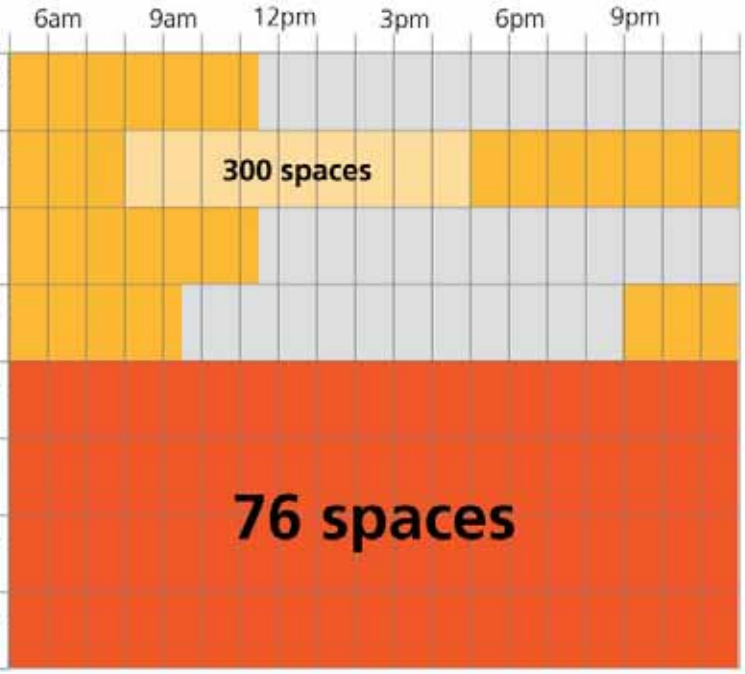
Parking Availability

Weekday



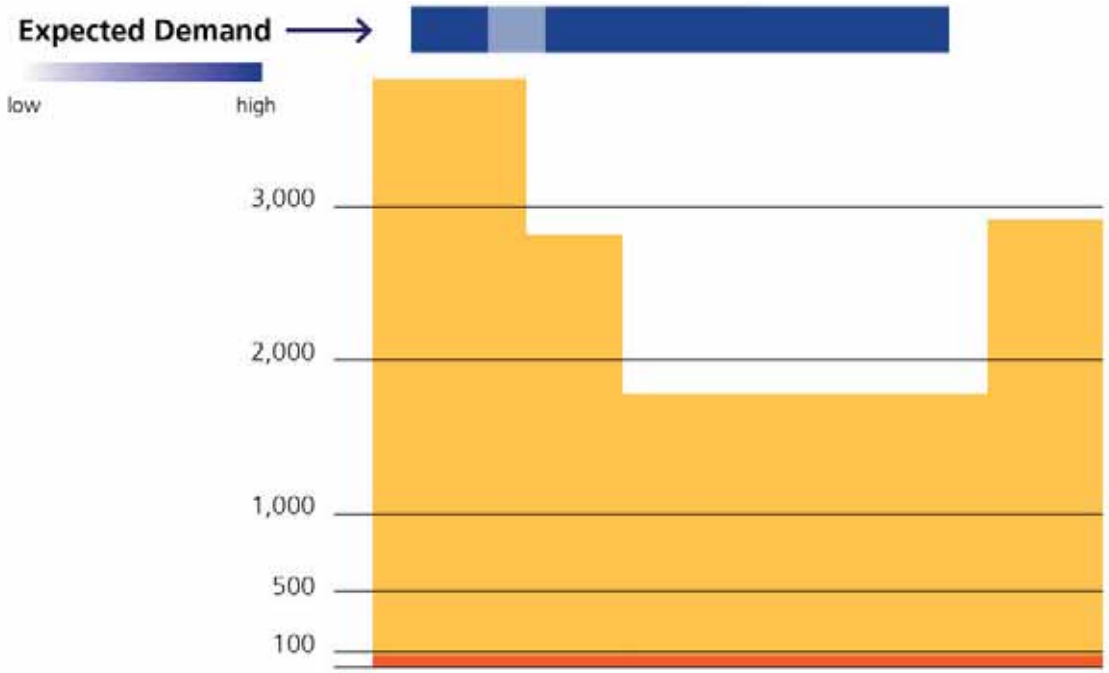
- Private - potential for shared parking
- Public - always available
- Private - unavailable
- Potential Future Lot Locations

	Total Spaces
1. Leon's Restaraunt	148
2. Long Wharf Maritime Center	1,700
3. Sports Haven	892
4. Ikea	1,139
7. Long Wharf Pier Visitor's Center	15
8. Long Wharf Drive, Lot 1	21
9. Long Wharf Drive, Lot 2	25
10. Long Wharf Drive, Lot 3	15



Parking Availability

Saturday



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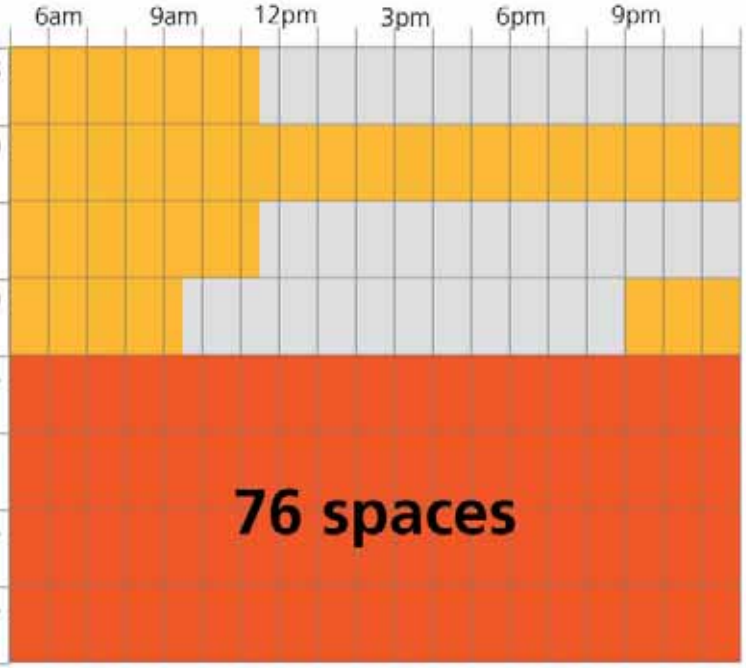
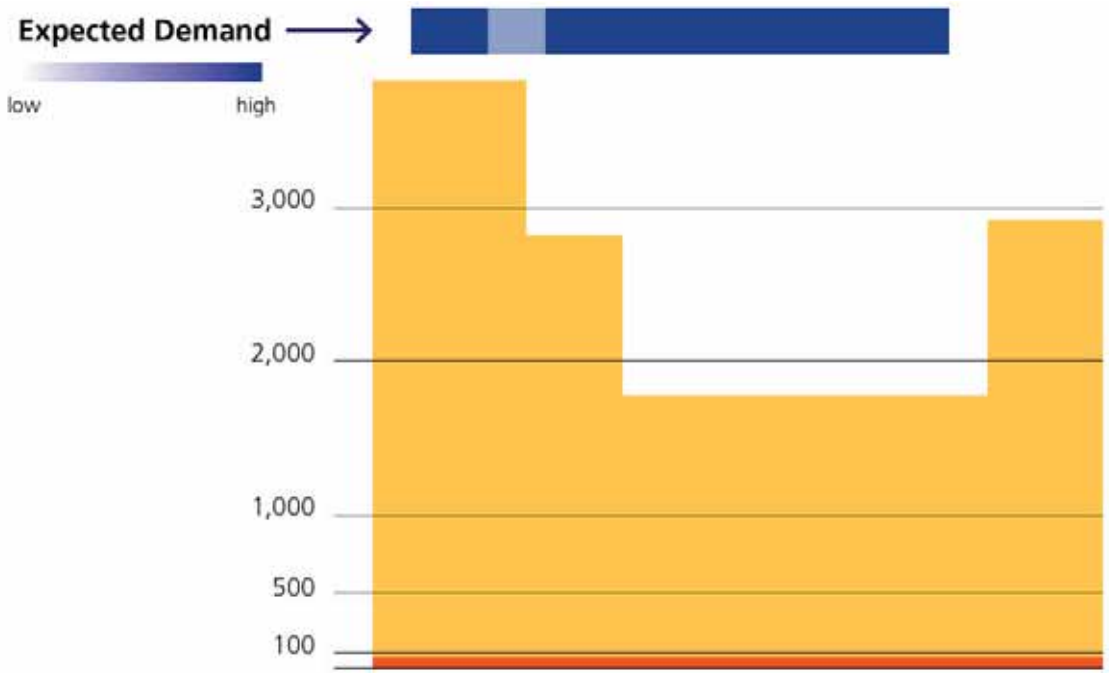


Parking Availability

Sunday



- **Private - potential for shared parking**
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- Potential Future Lot Locations

	Total Spaces
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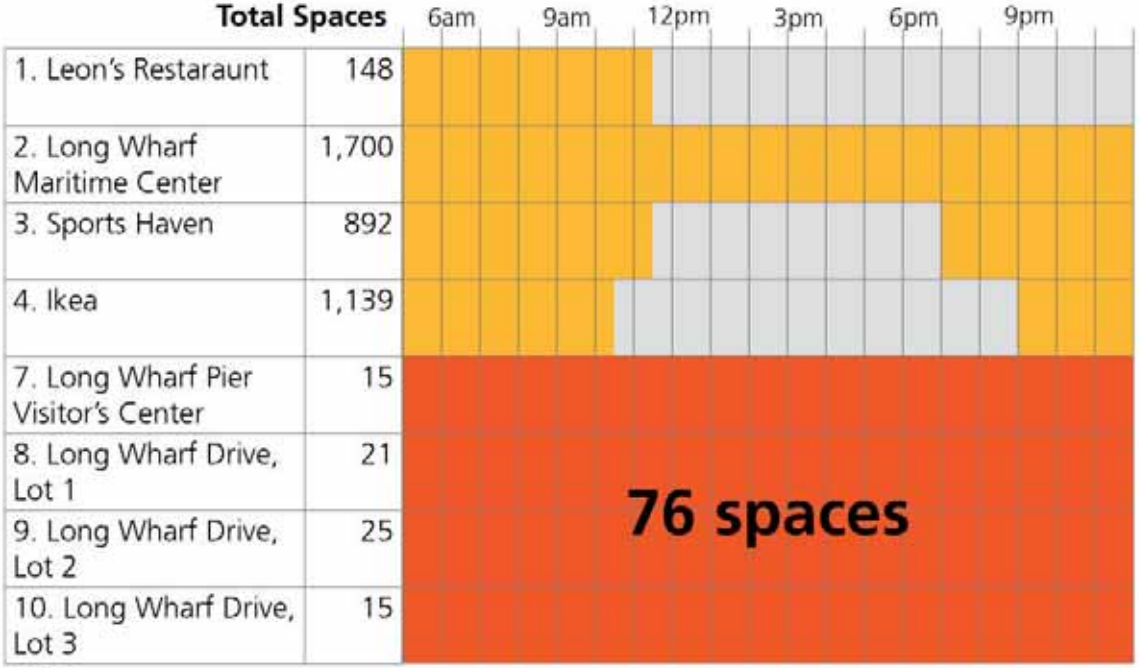


This page:
Parking: interim solution
This lot, with 31 spaces for cars, trucks, or vans, and 1 space to accomodate a trailer or bus, could be constructed in the current space available between Long Wharf Drive and I-95, prior to the completion of the I-95 improvements..

This page:
Parking: long-term solution
On the completion of the I-95 improvements, scheduled for 2016, a larger lot would be able to be accomodated due to the realignment of the highway. This lot contains 57 spaces for cars, trucks, or vans, and 2 spaces to accomodate a trailer or bus.

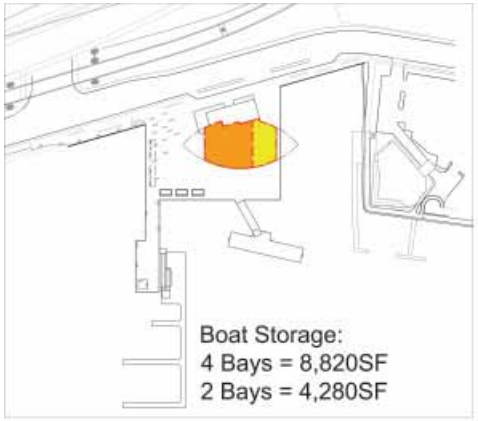
Concept Cost Estimates

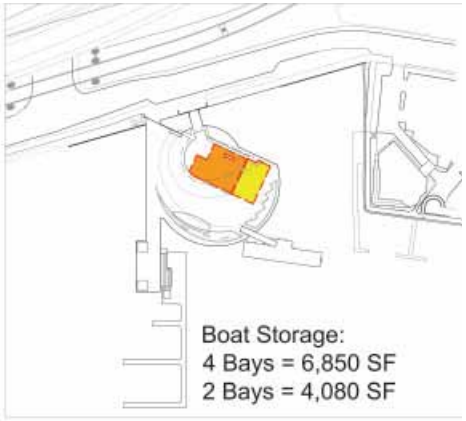
Order-of-magnitude cost estimates were prepared for each of the three alternative concepts for comparative purposes and to determine whether the concepts were within the construction budget parameters. Estimates were broken down in detail into four categories: building, platform, site improvements, and floating docks. Costs for each of the three concepts exceeded the available construction budget and led to further adjustments to the project including elimination of the separate kayak dock attached to Long Wharf, elimination of the walkway and separate education pavilion over the mudflats, and a further reduction to the fixed platform. It was also determined that the conceptual designs for the boathouse exceeded the budgeted 30,000 gross square feet, and that the designs needed to be reduced. These costs were taken into consideration in the design of the recommended concept.

Evaluation of Concepts

As a part of ensuring that the three proposed alternatives addressed the design objectives established at the outset of the conceptual design phase, diagrammatic comparisons of the alternatives were made according to many of the objectives. The diagrams on the following pages illustrate how each of the conceptual designs incorporate or address the boathouse components, the platform and docks, and the treatment of access and modifications to Long Wharf Drive. This comparative analysis established a measurable comparison of the alternatives and was useful in weighing the alternatives in the subsequent evaluation process.

The three alternatives, including the comparisons, were presented to the city and stakeholders at a meeting at City Hall on January 14, 2010. After this presentation, a process of evaluating the conceptual alternatives, identifying and prioritizing design criteria, and modifying the design was undertaken to reach a final concept design. Responses to the designs by the city and stakeholders were taken into account in evaluating the positive and negative aspects of each concept, as was knowledge in information gained by the design team during the design process. It was concluded that no single alternative concept offered the best approach to the site, but rather a synthesis of the designs, supplemented by suggestions and alterations offered by stakeholders and additional technical information, would be needed.



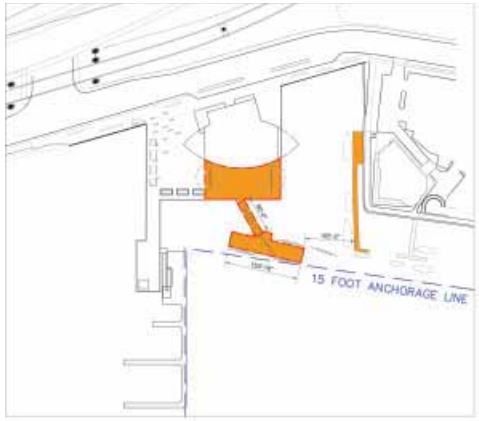


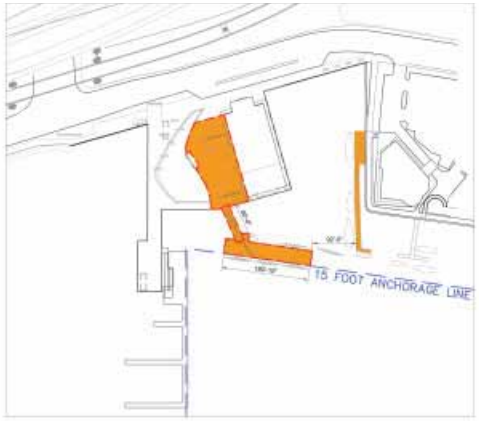
This page:
Comparison Diagrams of Boathouse Elements
These diagrams compare the area of boat storage, flex space, and exterior balconies offered in each scheme.

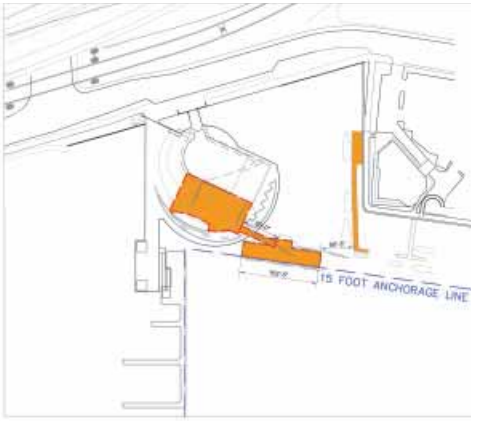
This page:

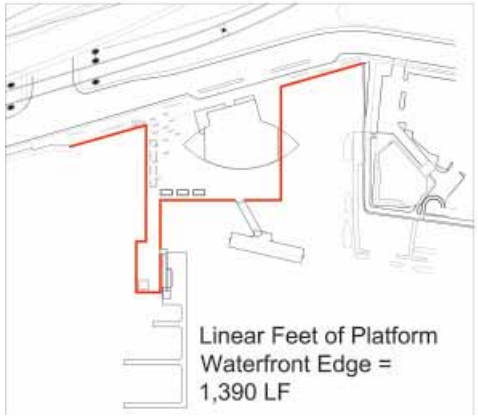
Comparison Diagrams of Platform Areas

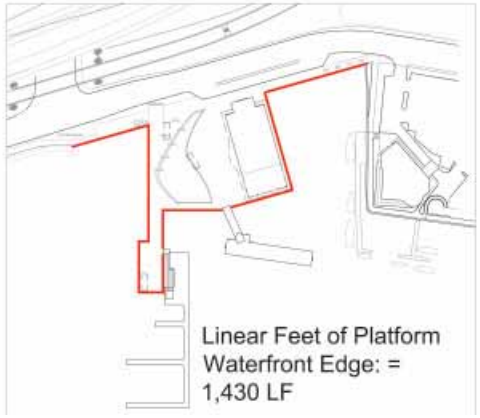
These diagrams compare critical areas offered by each scheme These include: the area of boahouse apron and floating dock, critical for manuvering boats to the water; the area of contiguous open space on te platform, that could be used by boaters or for an event; and the linear feet of waterfront made available by the platform, indicating the scheme's magnitude of increased waerfront access.

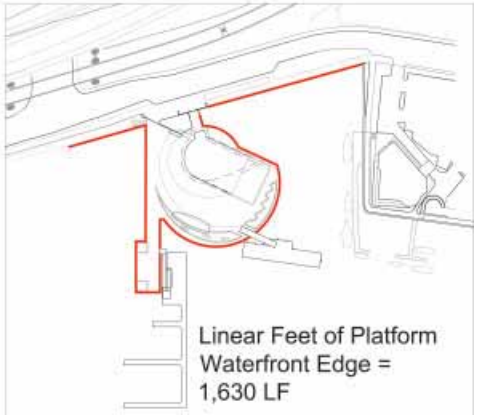












This page:

Comparison Diagrams of Acess

These diagrams compare how each of the schemes deal with access on long wharf drive. The top illustrate the bicycle and pedestrian facilities offered in each (green representing bike lanes and purple pedestrian or shared use paths). The bottom illustrate the proposed configuration of traffic on Long Wharf Drive.

Final Design Criteria

In evaluating the three alternative concepts, it became clear that a preferred or recommended concept should incorporate the best aspects of each of the concept alternatives. An overriding criterion for the design of the Canal Dock faciltity is that it will be durable, long lasting, and low maintenance. The specific characteristics deemed most critical are summarized below and became the basis for the development of the recommended concept.

4. **Design a Boathouse that Optimizes the Storage of Shells.** Many versions for the configuration of the boat bays were explored during the preliminary design process. Feedback on the options was gathered from rowers, boathouse operators, and rowing professionals. The conclusion from this research and discussion was that to maximize storage and provide the most efficient use of space, the preferred boat storage option would include:

   - 24-foot-wide bays,
   - longer bays, preferably deep enough to accommodate two eight-person shells end to end, and
   - seven tiers of storage.

   None of the three alternative concepts was based on a configuration that incorporated longer boat storage bays. Deeper bays increase storage flexibility, result in the more efficient use of interior space, and reduce the amount of platform needed for the exterior apron of the boathouse.

5. **Design the Boathouse with a Strong Presence on the Waterfront, as a Gateway and Terminus to Long Wharf Park.** While it is true that there is very little architectural or urban context adjacent to the Canal Dock site, the boathouse will be a free-standing structure that terminates the north end of Long Wharf Park and will be seen from the park and Long Wharf Drive. The site also exists at the intersection of two city greenway systems.

6. **The historic Adee Boathouse, as well as the three alternative concepts under consideration, have a rectangular footprint with a dominant axis.** In comparing the alternative concepts, the orientation of the long axes of the buildings in Concepts A and C, which are perpendicular and at an angle, respectively, to I-95, and Long Wharf Drive and Park, clearly meet this criterion better than does Concept B, where the boathouse's long axis is parallel to Long Wharf Drive.

7. **Orient the Boathouse to Take Advantage of Views Down the Harbor.** This reinforces the previous criterion because a building with its long axis roughly perpendicular to I-95 also is oriented toward the best views down the harbor.

8. **Orient the Boathouse to Optimize Energy Efficiency.** This criterion reinforces the two criteria above, since a building with its long axis roughly perpendicular to I-95 also is oriented toward the south.

9. **Minimize the Connection from Upland to Platform, while Providing Boat-Trailer Access**. Minimizing the connection of the platform to the upland has two advantages. First, it makes access to Canal Dock and the platform easier to control, and second, it minimizes the cost of the connection to the steel sheet piling. At the same time, there needs to be sufficient access to allow a boat

trailer to drive onto the platform to load and unload shells and other boats adjacent to the boathouse apron, which provides access to the floating dock for rowing. Concept C provided a minimum connection to the upland, but inadequate space for turning a boat trailer. Concepts A and C provide access, but had a longer connection over the bulkhead.

10. **Configure the Platform and Boathouse to Allow Dual Use as Public Space.** With the reduced platform size (compared to the permitted plan of 2002), and the elimination of the festival sheds, it was considered important to find a configuration for the smaller platform that not only worked to support the boathouse and its activities, but also could, on occasion, be used for public events, such as viewing the July 4 fireworks. At the same time, based on research at other boathouses, the boathouse apron can also be used, upon occasion, for special public events, so the relationship between the apron and the public space is important to optimize its potential use. In this regard, Concepts A and B worked well. Concept A, because of the L-shaped configuration of the boat drop-off area and the boathouse apron, more clearly defines the two areas, and was considered the best solution.

11. **Optimize Design of the Floating Dock Configurations.** This means dimensioning and locating the access ramps and floating docks fto allow the maximum number of boats to be launched simultaneously, to provide protection against wave action from the harbor, and to provide adequate maneuvering space on the ramp, dock, and in the water. It also means providing adequate maneuvering space for boats as they leave the dock, and minimizing the potential for conflicts with adjacent maritime uses. This applies to both the rowing and transient docks. Each of the alternative concepts works well in this regard.

12. **Minimize Conflicts with the Permitted Platform Area.** Because of budget considerations, the total platform area proposed in each alternative concept is less than the area previously permitted. Nevertheless, to the extent possible, any recommended concept must minimize areas of platform that are located outside the previously approved permit area, and not exceed (including any proposed future platform phase) the total permitted platform area, and the area permitted within the intertidal zone. The recommended plan may not encroach into the 15-foot anchorage line.

13. **Design a Boathouse that meets the criteria for an "Interpretive Replica."** The approach to this criterion is outlined in the Design Approach section, but in summary, it will involve:
    - the incorporation of "meaningful, original boathouse materials and architectural elements" in the boathouse and site,
    - interpretive displays, both inside the new boathouse, and on the site, that will tell the story of the Adee Boathouse and its setting in New Haven Harbor,
    - designing a boathouse with footprint dimensions similar to that of the original Adee Boathouse,
    - maintaining the primary use of the building as a boathouse.

    Each of the alternative concepts works well in this regard.

9 Final Concept

Boathouse

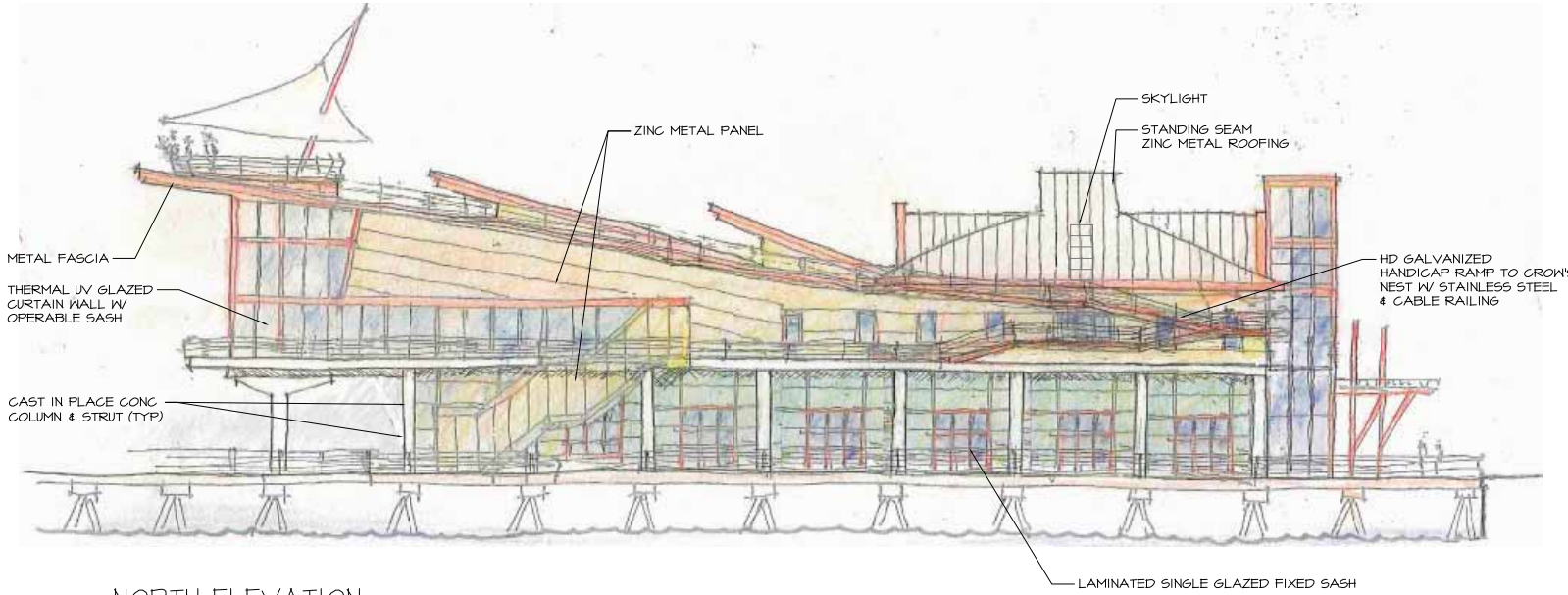
The Canal Dock Boathouse is envisioned to be a key waterfront destination for the city of New Haven and a state-of-the-art facility for sliding- and fixed-seat rowing, canoeing, kayaking and small-boat sailing. Additionally, it will house other water-dependent uses and programs including marine education and maritime history and provide support for outdoor activities such as festivals and music performances taking place on the fixed platform. A variety of flexible spaces will accommodate classroom and conference activities and special events.

The architecture of the boathouse comprises a modern structure of our time but pays homage to the historic Adee Boathouse, which was lost as a result of the current Harbor Crossing I-95 Corridor Improvement Project. That structure was carefully dismantled under a project conducted by the Connecticut Department of Transportation, allowing much of the historically significant building materials and components to be salvaged, cataloged and stored in anticipation of the construction of Canal Dock. Accordingly, the boathouse will incorporate major elements that will be reconstructed using these original materials and artifacts. The two major elements proposed for incorporation into the boathouse at Canal Dock include the entire Adee entry portal and its ceremonial stair, and the Adee common room (further described here). The following subsections address the specific components of the boathouse in further detail.

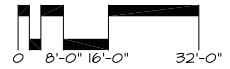
First-Floor General Use

- Visitors to the boathouse will enter via a three-story glass atrium that will contain interpretive displays and provide a protected enclosure for the Adee entry portal and ceremonial stair. Brick masonry, decorative terra-cotta, wood windows and a carved cartouche above the door will all be restored and reassembled from the salvage materials that were carefully dismantled, cataloged and kept in protective storage as part of the demolition of the historic Adee Boathouse to recreate the complete entry wing.
- A lobby, circulation space, restroom, a junior locker room and building support spaces will be the only other functional areas on the first floor other than the boat storage bays.

SOUTH ELEVATION



NORTH ELEVATION



This page:
Boathouse First Floor Plan

First-Floor Boat Storage Bays

Use and Dimensions

- The boat bays are expected to be used as boat storage areas with proportions and infrastructural layout suited for the storage of eight-man rowing shells but will accommodate a mix of eights, fours, doubles and singles. Sliding-seat rowing shells are expected to dominate the stored fleet and there will be rack storage for this purpose. The double length bays (#3 & #4) can store two eights end to end or three fours. Other stored craft could include fixed seat rowing gigs, dragon boats, canoes, kayaks, small sail craft and coaches' launches.

- The boat storage bays consist of four bays total but are equivalent to six standard bays and have a ceiling height of 17 feet (minimum 15-foot 6-inch clearance from floor to ceiling hung utilities).
  - Bay # 1 81 feet long x 23.5 feet wide
  - Bay # 2 81 feet long x 25.0 feet wide
  - Bay # 3 144 feet long x 25.0 feet wide
  - Bay # 4 144 feet long x 23.5 feet wide

Boat Bay Equipment

- Adjustable boat racks with fixed and telescoping arms,

- Two special storage boxes for coxswains' electronic gear ("cox boxes") with multiple locking drawings and integral battery charger connections will be located in a separate locked closet,

- Three pairs of rolling warehouse lifts,

- One rolling warehouse stair,

- Fuel lock-up with fire proof construction and fire Code required features, accessible from exterior only (for gasoline powered coaching launches),

- Tide clock and weather station (visible from the exterior), and

- Wall-mount fire extinguishers.

Boat Racks

- The boat storage racks will need to be flexible to allow for a variety of scenarios during the initial five to ten years as rowing, paddling and sailing activity grows and evolves. It is difficult to anticipate the makeup of the stored fleet over time, but initially there will likely be a mix of paddle, rowing and sail craft. Start-up sliding-seat rowing programs typically favor fours over eights; and eights typically become dominant as programs mature over the years in successful college and high school programs. On the other hand, eights are also more stable, so sometimes these are preferred for introductory rowing. A likely early development in the rowing community here will be masters rowing, which typically includes lots of singles and doubles.

- Seven tiers of storage for four- and eight-person rowing shells can be accommodated in the 15.5-foot clear height: six levels of rack storage plus floor-level storage of boats on dollies. Rowing shell outriggers are about 70 inches wide. Minimum 23.5-foot-wide bays allow for ease of maneuvering and flexible use of floor space. Boats are frequently worked on for minor adjustments and repairs at floor level in the aisles and it is important to allow ample width for safe passage of other personnel and craft while this work is happening.

- Single and double sculls can be stored with less height from tier to tier and thus the racks for these will be set up differently. Also, these boats can be stored in an overlapping fashion, unlike the fours and eights, which need to be end to end.

- Boat racks will be specialized structures attached at floor and ceiling and consisting of telescoping arms for the second, third and fourth tiers to facilitate access. Upper tiers are fixed-arm suited for access via the paired mechanical rolling lifts. Racks will have a high-performance coating suited for the marine environment with durable bearings. The arms will be height-adjustable to accommodate a variety of craft. Some of the racks will likely be repositioned in the future and will accordingly be demountable.

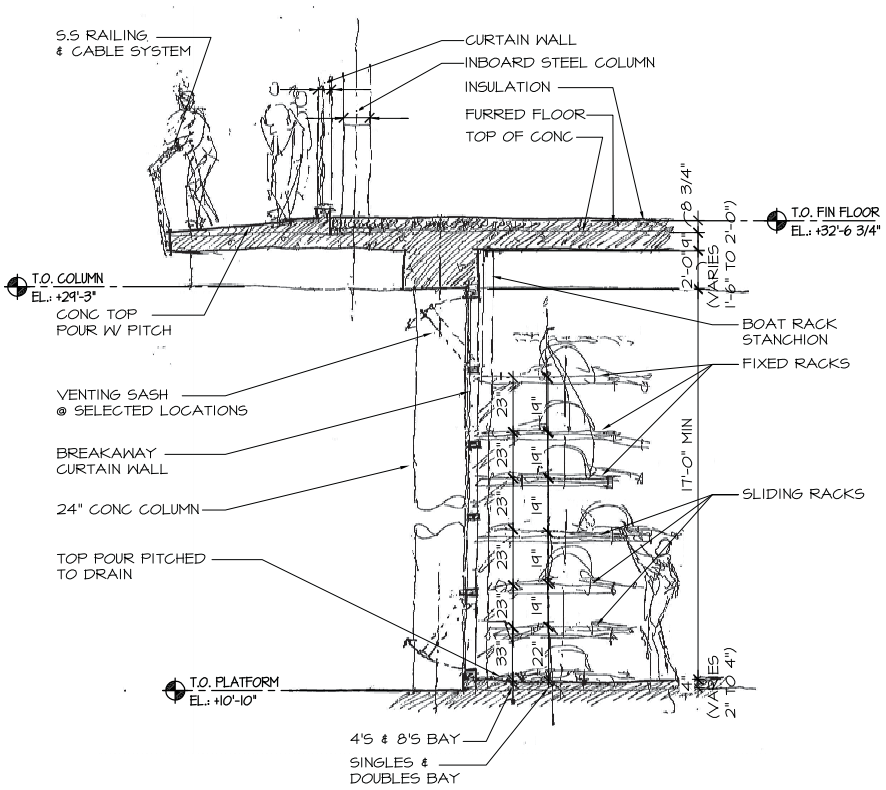
- Coordination of structural column layout with boat rack requirements optimizes storage capacity. Typical boathouse storage is six tiers of storage and more recent boathouses provide seven. This layout is simply a matter of efficient use of enclosed space, as the cost per boat stored goes down as the number of tiers rises. The limiting factor is the capability of safely and expeditiously moving boats in and out of the higher racks. Paired rolling mechanical lifts are used to access boats from the fifth, sixth, and seventh tiers, and the physical and safety limitations of these lifts are suited to serve a maximum of seven tiers for the fours and eights.

Security

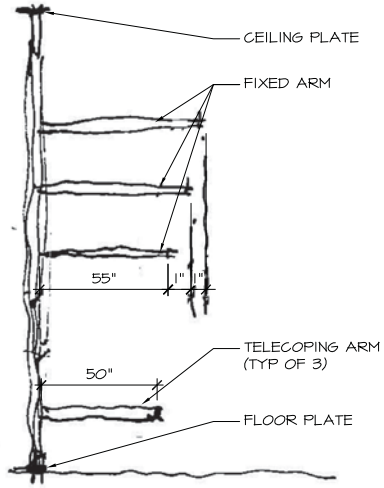
- Active entry points from the interior and exterior will have key card or combination electronic programmable locks.

- Although future segregation and locking of some of the bays is possible in this layout, the Canal Dock boathouse is designed initially to open all bays to each other and to provide lockable caged areas for small equipment and supplies (eight cages at floor level plus eight cages at mezzanine level, 9 feet above the boat bay floor) each providing approximately 1,000 cubic feet of storage. These cages will be chain link enclosures that can be reconfigured to create larger or smaller pens as particular programs require.

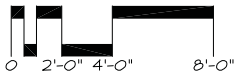
- Lockable storage pens with chain link mesh partitions approximately 6-feet deep x 12-feet wide x 8-feet high; six pens at floor level plus another six at mezzanine level accessed by rolling ladders for storage of boating gear, specialized clothing, small boat parts, secure winter storage of outboard engines for launches, etc. Pens allow a practical solution for an “open” boathouse (no partitioning of boat bays) by providing security for the gear, which is typically a security issue for fully open boathouses. If required, certain



SECTION @ 1ST FLOOR



TYP BOAT RACK



bays could be partitioned in a variety of configurations to allow programs to have exclusive access to their own area. A recurring problem noted in most boathouses is the storage of small gear and miscellaneous items related to the fleet and rowing activities: spare boat parts, specialized clothing, drying racks, outboard motors for launches, etc. Modern boat design allows for ever more parts to be easily switched for fine tuning and optimal adjustment. Many of these items present security problems, particularly in open boathouses where individual bays are not physically locked off from on to the other. Even where the bays are segregated, the boat bay doors are often left open and unattended for extended periods, which sometimes results in small items being "borrowed" or "disappearing," and thus the provision of lockable pens. Rolling warehouse-type ladders will provide access to the mezzanine-level pens.

Miscellaneous Features

- Some of the pen areas could be outfitted for minor boat equipment repair with workbenches and equipment, but there will not be a dedicated repair bay because of the readily available boat repair facilities in the region. The bays will not be heated but will be both passively vented with automatically controlled louver vents as well as power ventilation to moderate temperature extremes and facilitate drying of boats and gear.

- Occasionally the boat bays are used for team exercise or instruction and thus require electrical power, telecommunications, data and public address systems.

- Boat maintenance work other than minor repairs will be required to be performed off-site. Hose bibs will be located in the bays for floor maintenance.

- Oar storage requires minimum 13-foot height for wall-mounted racks allowing access to all individual oars and allowing easy maintenance of floor areas.

- Floors will be sealed concrete with a light broom finish for slip resistance and they will be pitched to center drains.

- The boat bay areas will be separated from other first floor areas and the second floor by two-hour fire-rated construction.

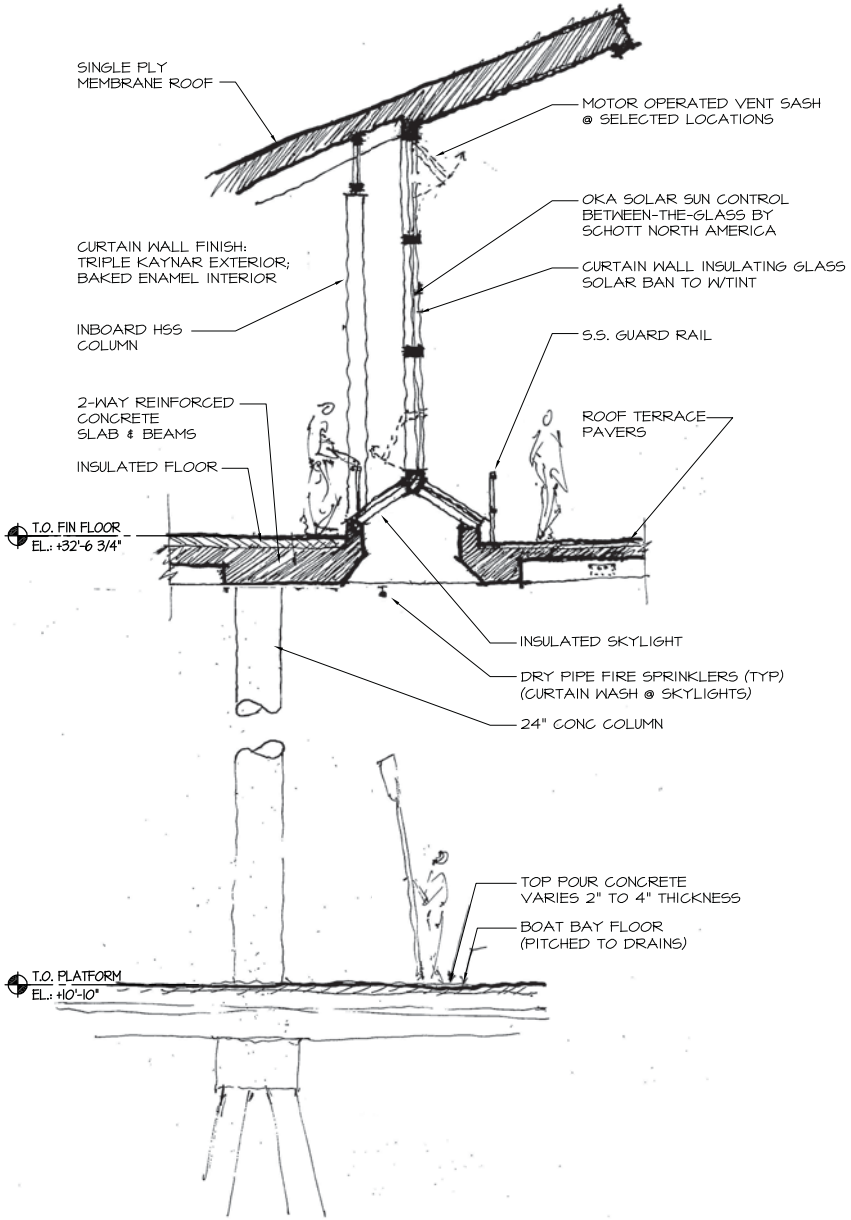
- The ceilings will be exposed structural cast-in-place concrete, painted white for good light reflectance.

Off-Season Storage

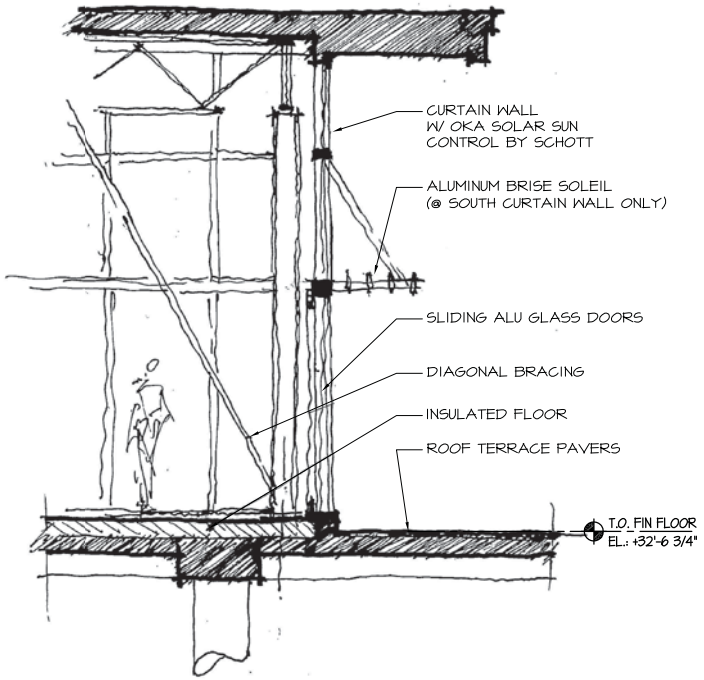
- During the boating season, the only boats stored in the bays other than sliding-seat shells will likely be kayaks and canoes on trailers. For convenience, these trailered boats might be relegated to bay #1 or #2, and that bay would also contain miscellaneous specialized gear for kayaking and sailing.

- In the off season, bays may be used for miscellaneous storage of items such as outdoor furniture and equipment related to the platforms, gangways and floating docks.

- Winter storage of heavy craft will be on dollies at floor level.



SECTION @ BOAT BAY



SECTION @ 2ND FLOOR

This page:
Boathouse Second Floor & Mezzanine Plans

Mezzanine and Second-Floor Levels

- Mechanical and electrical rooms are at mezzanine level.

- Ceremonial stair salvaged from Adee will connect the first floor to the second floor but will require an additional half flight to serve the higher floor-to-floor dimension at Canal Dock.

- Office space for boathouse manager and administration, events coordinator, rowing and sailing staff, and harbor master, and miscellaneous storage.

- Locker rooms and showers for men and women. Locker rooms can be locked off for times when only restroom access is needed. These locker rooms can accomodate both school and community rowing clubs.

- Recreation of the Adee Common Room with cathedral ceiling, salvaged trusses, salvaged fireplace, and re-creation of exterior west and south facades of the Adee Common Room including original terra-cotta with new brick masonry. These masonry façades will be within a glass atrium space.

- Classroom and flex spaces totaling approximately 4,000 square feet, in addition to Adee Common Room, will include a 1,000-square-foot fitness room. These areas will have the best water views and open onto the second-floor roof terrace. Operable partitions will provide spaces of a variety of sizes. There may be an area set aside for Schooner and UNH (not partitioned) for a small suite of offices and conference room and two classroom and flex areas.

- Small vending area and warming kitchen, 400 square feet equipped to support classroom and flex spaces.

Structural System

Durability of structural materials in a chloride environment is important to the success of this project. The boathouse will be connected to the fixed platform via cast in place steel reinforced concrete columns. The structural floor of the mezzanine and second floor will also be cast in place reinforced concrete consisting of two way beams and an integral slab. The concrete will be specially formulated for corrosion resistance and reinforcing will be epoxy coated.

First floor walls will be break-away construction with corrosion resistant hardware. The second floor framing and roof framing will be steel with steel or masonry lateral bracing and a steel roof deck. Roof framing will be either solid rolled sections or a combination of solid and open web joists and beams.

Heating Ventilation And Air-Conditioning

At the first floor, the entry and circulation areas will be fully conditioned but boat storage areas will be ventilated only. The second floor will be fully conditioned and the assembly/meeting rooms will be zoned/controlled to reduce loads during unoccupied times. A fully automated building management system shall be provided to monitor, control, and alarm each HVAC system serving the building and the building lighting controls can be integrated into the building management system.

The building will generate its own chilled water and heating hot water for use with the HVAC equipment, utilizing terminal equipment with chilled water and hot water coils. Hot water will be generated via a high efficiency natural gas-fired modular boiler system, and chilled water will be generated via two exterior electric water cooled chillers (in lieu of a cooling tower, an air cooled condenser could be provided).

Plumbing

Domestic water systems shall include cold water, hot water, hot water recirculation and water heating equipment as well as sanitary waste and vent piping. Exposed domestic water and sanitary piping under the platform will be subject to freezing temperatures and will require heat tracing. Domestic water heaters shall be commercial grade, storage type, gas-fired with integral operating controls.

A sewage lift station will be provided to pump wastewater from the building to the bulkhead on Long Wharf Drive where it will transition to a gravity system. Storm water runoff from the roof and platform will run directly into the harbor. Natural gas from the street shall serve the boathouse heating systems.

Fire Protection

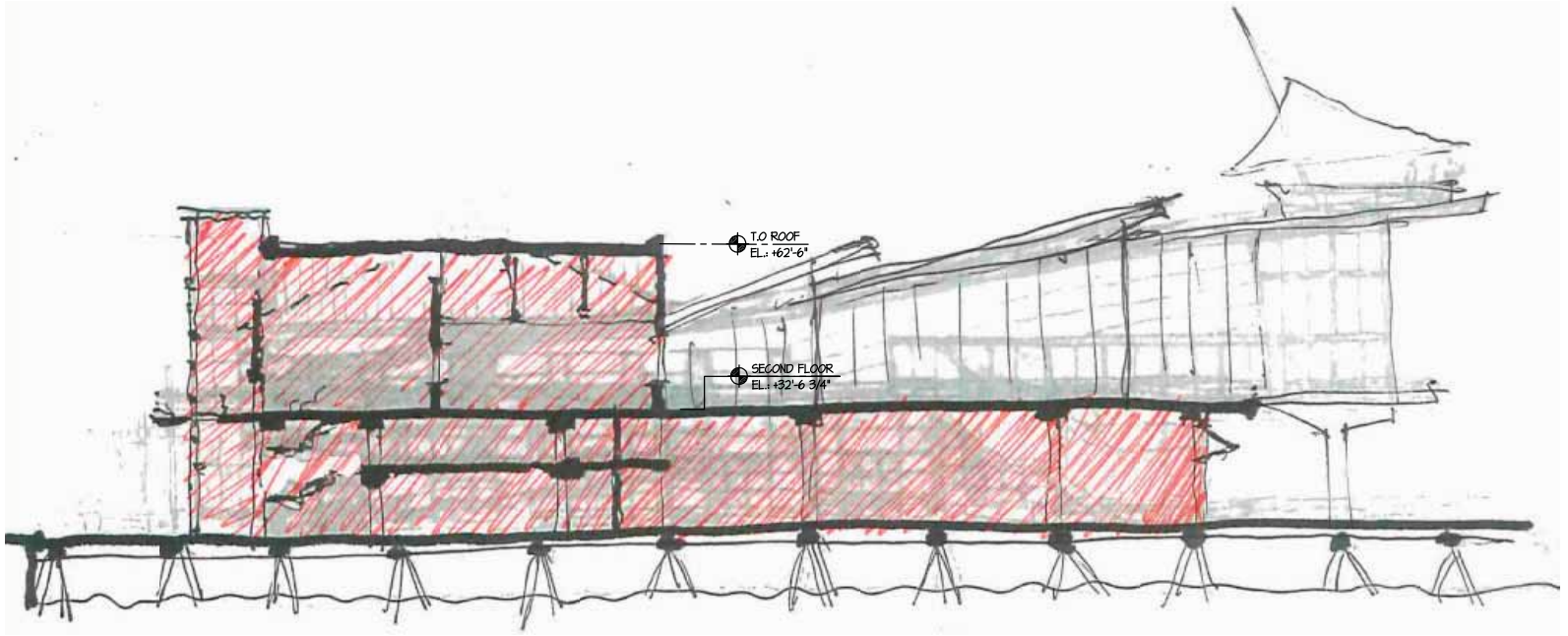
The building is to be protected throughout with a wet-pipe type sprinkler system, with the exception of the boat bays. Due to the non-high-rise status of the building a fire pump is not anticipated to be necessary. This will be confirmed by fire hydrant flow tests to determine available street pressure. A dry-pipe sprinkler system will be provided for the boat storage areas on the first floor.

Electrical

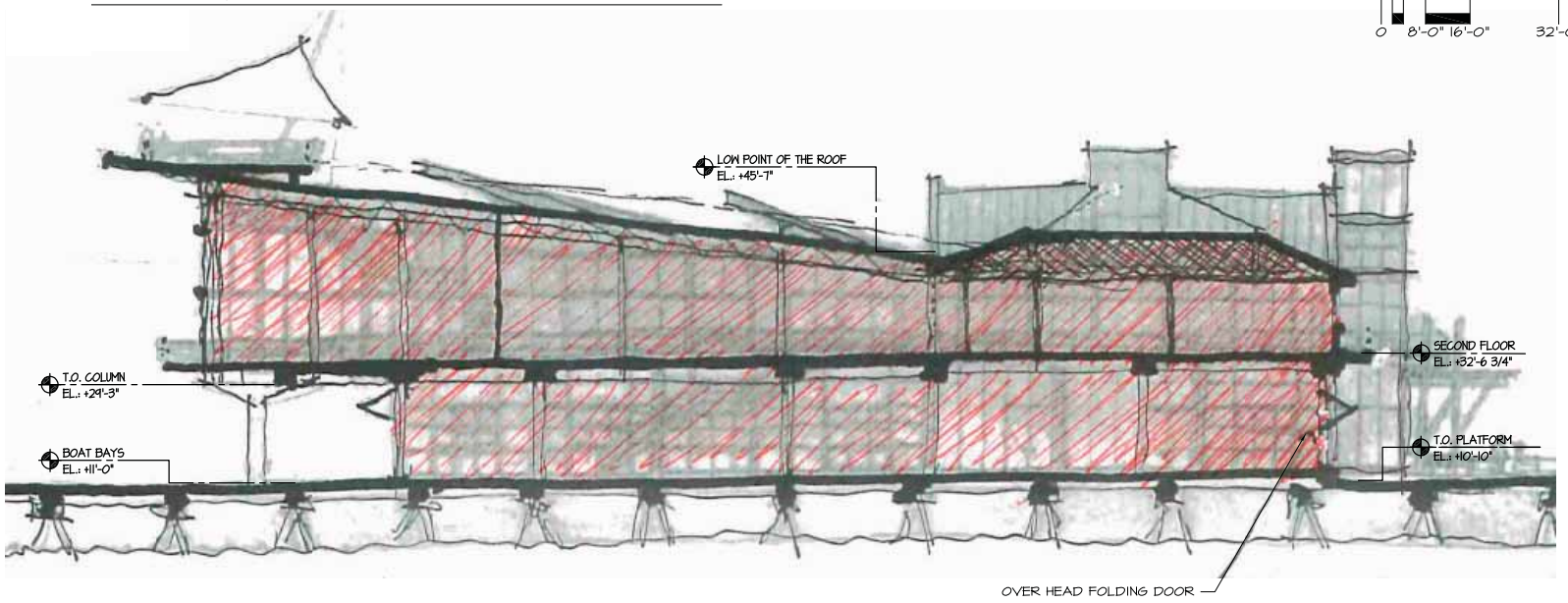
The new electrical service will be extended from Long Wharf Drive to a pad-mounted transformer on or adjacent to the platform and the secondary service will be 1000 Amps at 208V. If a flood condition reaches the benchmark of the Electrical Datum (per NEC), the main circuit breaker all power to the building and platform will be disconnected via a shunt trip. A standby generator system is not planned at this time.

Interior lighting fixtures will be high performance fluorescent energy-saving lamps and electronic ballasts with dimming systems, automatic controls, and occupancy sensors. Exterior and site lighting will be photocell or time switch controlled through the lighting control systems.

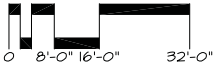
This page:
Boathouse Sections



SECTION LOOKING NORTH



SECTION LOOKING SOUTH



Communication And Security

An addressable supervised fire alarm and detection system will serve the building along with a security system consisting of intrusion detection, card access control and CCTV surveillance system. Telecommunications include a telephone system provided by Verizon and CATV systems provided by Comcast. A public address system will be provided to serve the boathouse as well as platform and dock areas.

Exterior Envelope

- All first-floor walls except stair and elevator enclosures will be breakaway construction because of the strucure's location in the flood zone.

- Exterior Boat Bay Doors: Clear opening of 10-feet wide by 11-feet high, electrically operated, upward folding (does not encumber interior). Doors will be at both ends of the double-length bays to facilitate loading and unloading at the street, although boats may also be walked or rolled from the east-facing doors over the platform, as well.

- Exterior Boat Bay Walls: Include clear glass to allow views into the boat bays for passersby and provide natural lighting. The glass will be laminated for strength, and the bonding interlayer will provide UV protection without requiring tinting. The deeper areas of the boat bays will have some skylighting. Walls and doors will have breakaway detailing to comply with FEMA laws and building codes. Standard swinging doors will provide emergency egress and convenient access as required.

- Windows and Exterior Doors: Large glazed areas will have curtain-wall construction with aluminum framing. All first-floor atrium and second-floor areas will have thermal glazing with UV-reducing glass. Second-floor glazing will have fixed "between the glass" sun-control shades for east, south and west exposures.

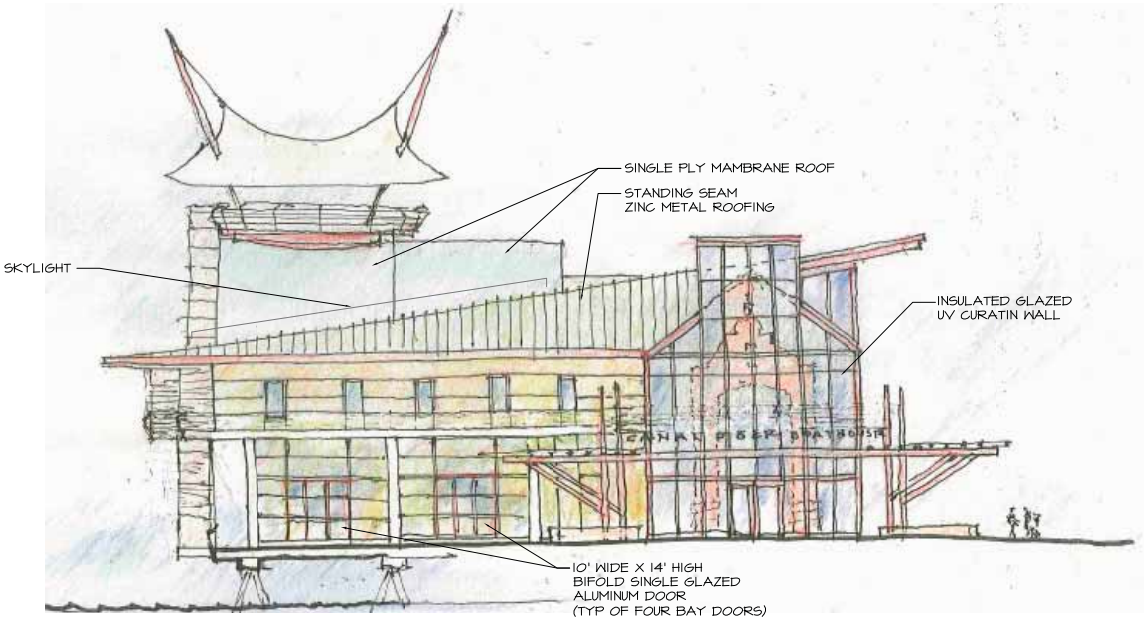
- The first and second floors: fixed brise soleil (solar shading) at southern exposures.

- Exterior cladding: zinc metal panels.

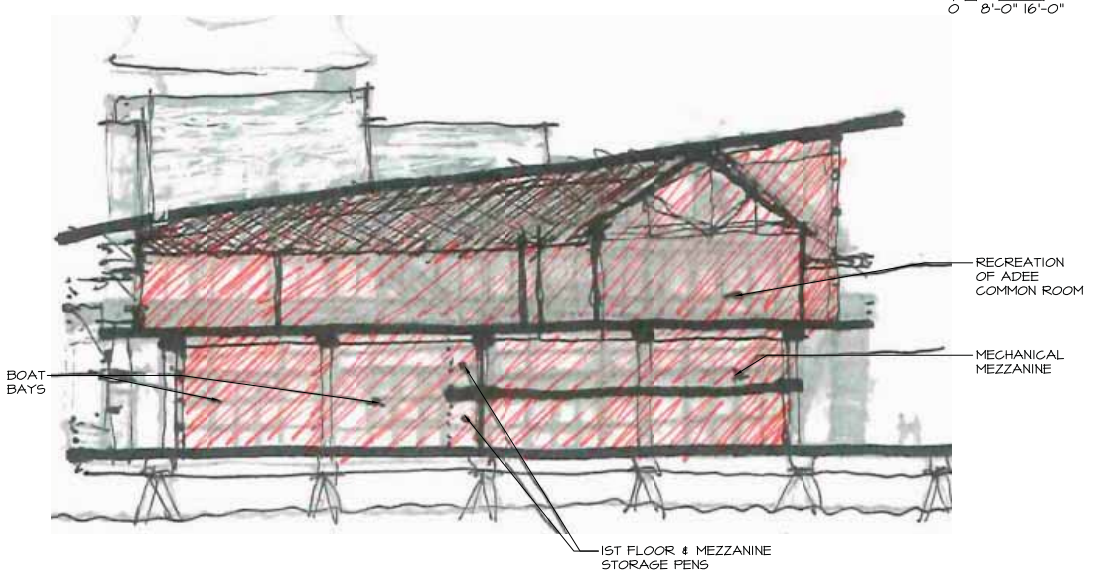
- Exterior stairs and ramps: synthetic gratings, heavy-duty hot-dipped galvanized steel framing and supports.

- Exterior railings and guards: stainless steel railings and cable system.

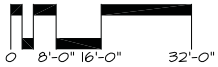
This page:
Boathouse Sections & Elevations



WEST ELEVATION



SECTION LOOKING EAST



Miscellaneous

- Elevator: Serving first-, mezzanine- and second-floor levels: requires pit with bottom at three feet below the platform.

- Second-floor roof terrace with paver deck finish and tie-downs for tenting.

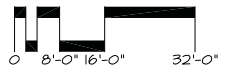
- Crow's nest at highest roof area with roof pavers, stainless steel and cable railing system and tensile fabric structure canopy.

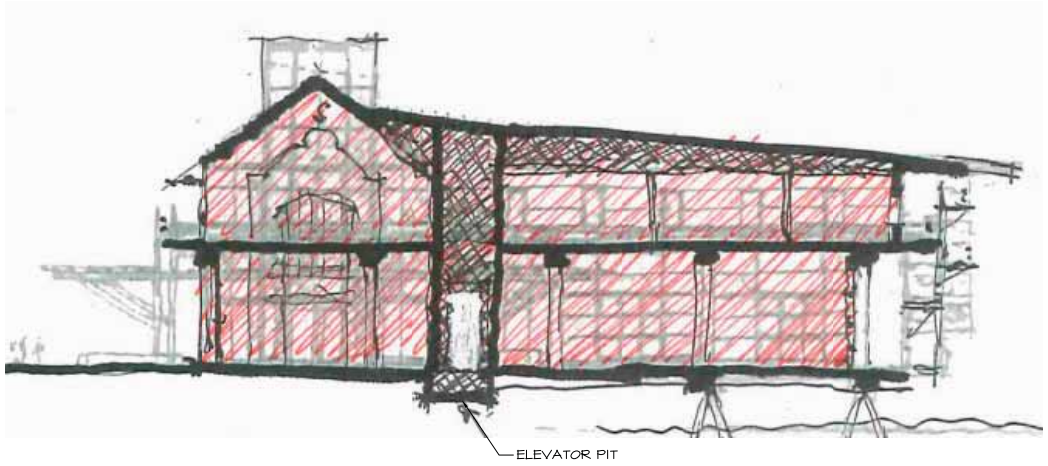
Special Equipment

- Commercial warming kitchen equipment
- Water wash kitchen hood, 10 feet long
- Commercial dishwasher
- Electronic grease trap
- Commercial freezer four-feet wide
- Two commercial refrigerators four-feet wide
- Full-height commercial warming oven three-feet inches wide
- Commercial microwave oven
- Eight-foot wide commercial gas oven/range
- Three 8-foot-long stainless steel work tops with open shelving below
- Stainless hand sink
- Stainless pot sink
- Operable Partitions: Four manually operable sliding partitions average size 10 feet high x 26 feet long, STC 48, vinyl covered.

This page:
Boathouse Sections & Elevations

EAST ELEVATION





SECTION LOOKING WEST

Incorporation of Architectural Salvage from the Adee Boathouse

Next page:
Incorporation of salvaged items from the Adee Boathouse
This layout illustrates materials that will be reused from the historic Adee boathouse, the location of these materials in the new boathouse, and how they will be incoporated into the design.

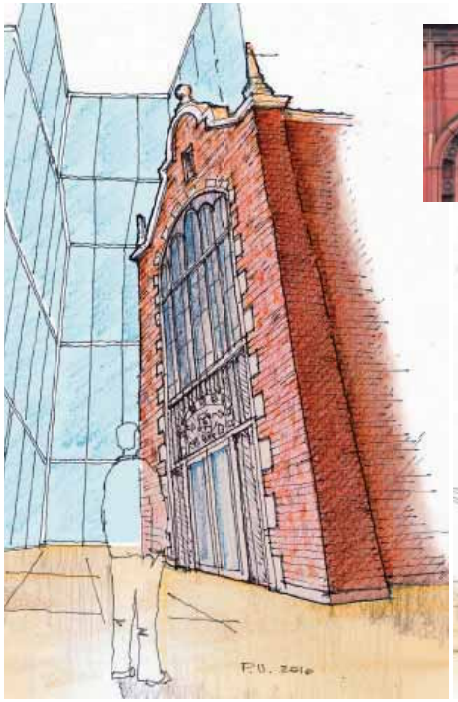
- Entry Portal: Reconstruct the three exterior walls of the two-story Adee portal using salvaged brick masonry, terra-cotta, foundation stone, carved wood transom, slate roofing, wood window sash and single-thickness glass. Also, foundation consisting of salvaged rusticated arkosite stone from the Adee.

- Common Room Exterior: Reconstruct two exterior walls of the Adee Common Room using salvaged terracotta, salvaged wood windows and new brick masonry (salvaged brick to be used at Adee portal only).

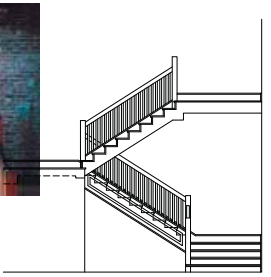
- Common Room Interior: Reconstruct the Adee Common Room Interior using salvaged wood and steel trusses, salvaged wood and terra-cotta fireplaces (reconstruct one in the new Adee Common Room and another in a location to be determined). Install salvaged wood mantle and overmantle at Adee Common Room.

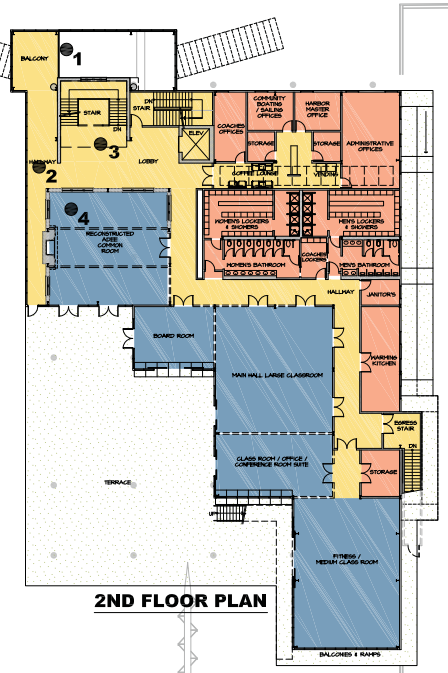
- Ceremonial Wood Stair and Balustrade: Install the salvaged ceremonial wood stair and balustrade in the reconstructed entry portal.

1. RE-CREATED ENTRANCE PORTAL W/SALVAGED ELEMENTS



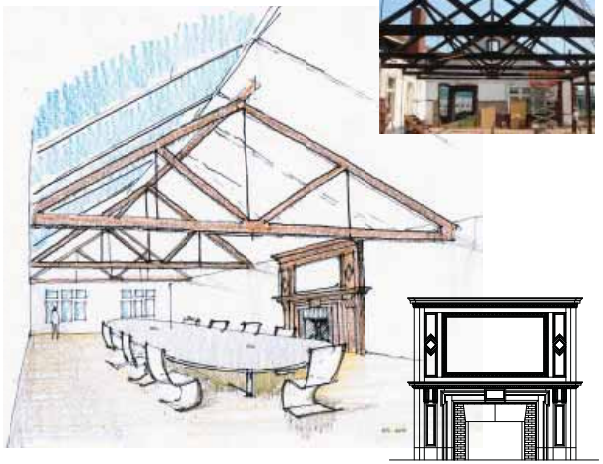
3. RE-USED SALVAGED ADEE STAIR



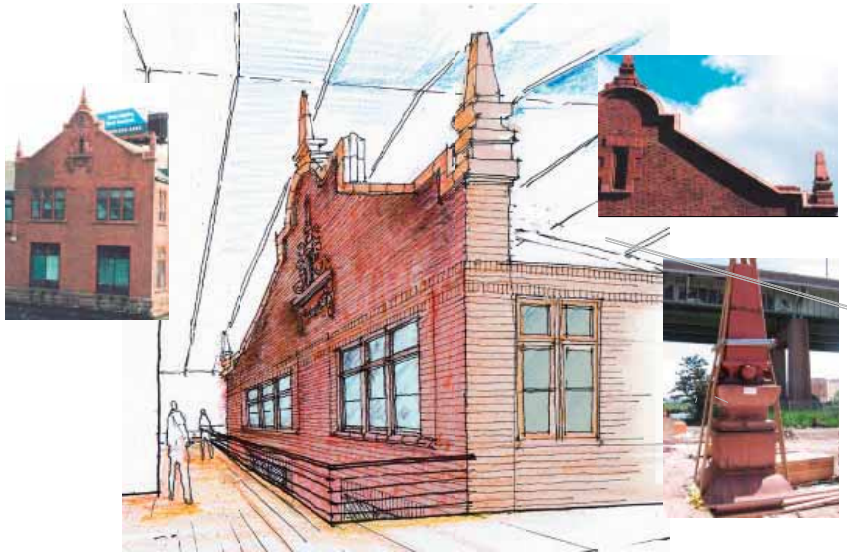


2ND FLOOR PLAN

4. RE-CREATED ADEE COMMON ROOM INTERIOR W/SALVAGED ITEMS



2. RE-CREATED ADEE COMMON ROOM W/SALVAGED ITEMS



4. SOME OF THE EXTERIOR FACADE DETAILS TO BE RE-USED

Site and Platform

Next page:
Site Plan
in addition to the platform, the site design includes a path/promenade along Long Wharf Drive as well as floating docks for rawing, kayaking, and transient boating facilities.

The site is comprised of two distinct areas: the platform and associated floating docks in the zone over the water, and the land-side area adjacent to Long Wharf Drive.

Platform Design

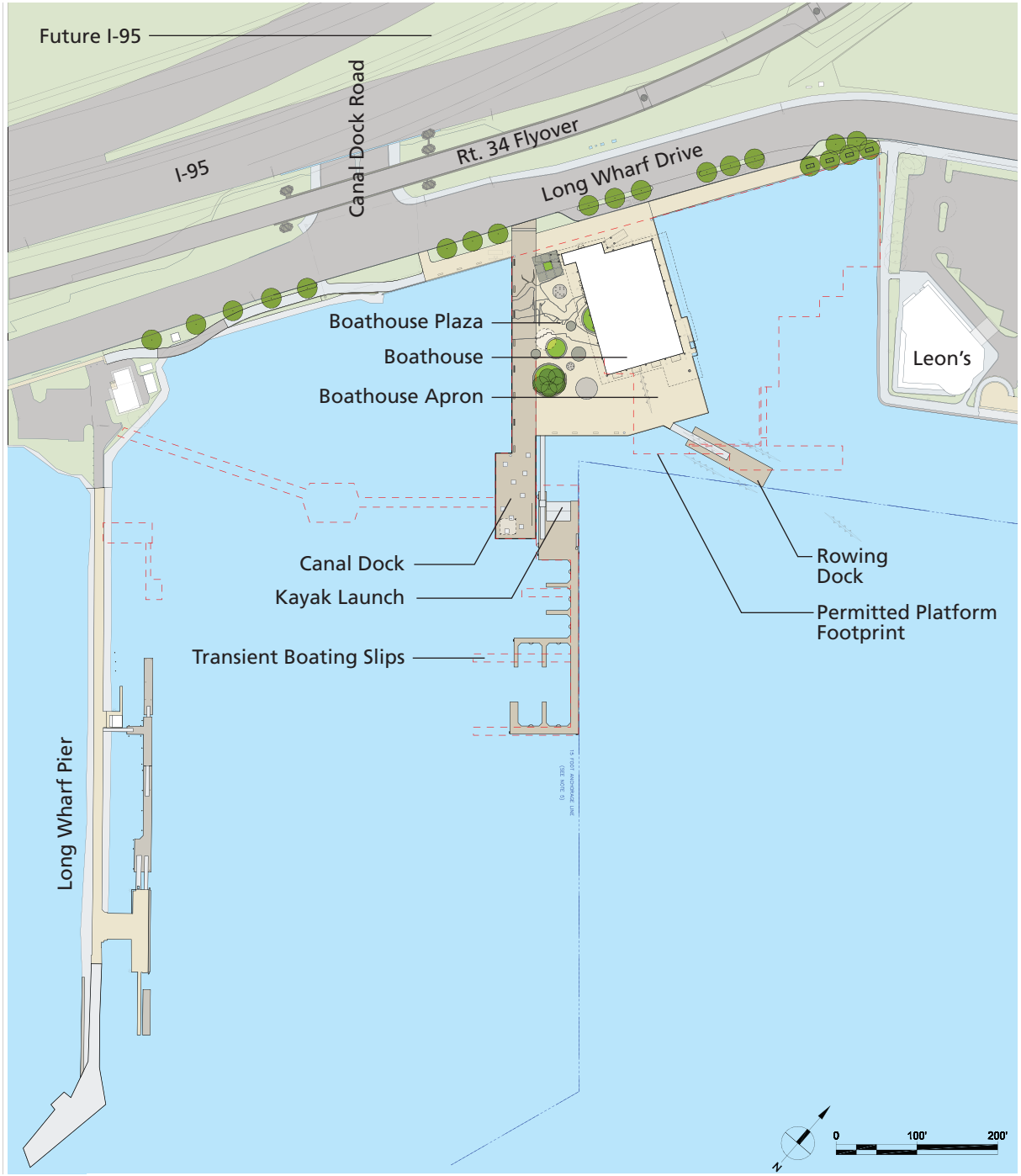
The location of the platform and docks was determined by the historic location of Canal Dock pier. The new pier is located within the footprint of the historic pier, with the southern edge fixed by the location of the combined sewer outfall structure according to requirements of the permit from the Connecticut Department of Environmental Protection Office of Long Island Sound Program (OLISP). With Canal Dock pier as the control, the size and shape of the remainder of the platform and building orientation were resolved during the alternatives analysis according to the design goals and objectives.

While the Canal Dock pier component has its historic orientation parallel to Long Wharf Pier, the remainder of the platform is perpendicular to Long Wharf Drive. The final conceptual design places the building perpendicular to Long Wharf Drive with its street face very near to where the platform meets the land. This location and orientation allows the boathouse to have a strong presence on Long Wharf Drive. This orientation also enables a platform layout that expands in width from its west edge where it meets the land to its east edge where the shells are launched, reducing the length of connection between upland and platform while still providing a long waterfront edge.

This platform design is extremely efficient relative to the variety of functions to be served, including the entrances to the boathouse. The main visitor entrance to the boathouse is located along Long Wharf Drive to the west, with other entrances from the platform on the south and east sides where the main accesses to the boat bays are located. Immediately east of the boat bays is the boathouse apron (70 feet deep), which will be used to maneuver the range of boats and shells (up to 60 feet long) between the boathouse and the ramp to the floating launch dock.

To the south of the boathouse, between building and Canal Dock pier, is an area identified as the “Boathouse Plaza.” This plaza is intended to support boating-related activities such as crew warm-up and stretching, and lay-down and set-up areas for group kayaking events, and for a variety of water-related functions described below. While it is intended that shells being delivered to the site will usually be unloaded in the drop-off area on Long Wharf Drive and carried onto the platform or into the boat-bays, the plaza has been designed to accommodate a 60-foot shell trailer and truck that can enter the plaza where Canal Dock pier meets Long Wharf Drive. This vehicular access has been maintained to allow the occasional use by boat trailers and to enable full fire- and emergency-vehicle access to the site.

The platform has also been designed to accommodate a number of waterfront functions. Chief among these is an important education component for groups of school children learning about the natural harbor environment. An outdoor trellis


Future I-95
I-95
Canal Dock Road
Rt. 34 Flyover
Long Wharf Drive
Boathouse Plaza
Boathouse
Boathouse Apron
Leon's
Canal Dock
Kayak Launch
Transient Boating Slips
Rowing Dock
Permitted Platform Footprint
Long Wharf Pier
0
100'
200'

Next page:
Platform Site Plan WIth Trailer Turning Path.
The platform design incorporates the occaaional need to accomodate a truck with boat trailer or emergency vehicle to be able to enter and turn-around on the platform.

at the end of Canal Dock pier will provide shade for teachers and students as they observe and learn about the harbor. Additionally, these students will make use of the related educational and workshop spaces within the boathouse, as well as walking tours to the mudflat areas south of Long Wharf Pier, using the boathouse as the base of operations.

Other functions anticipated for the platform and pier include provision of gathering space for watching crew races in the harbor. The space is also designed to be flexible for events that could include festivals and concerts, outdoor educational exhibits such as wind and solar energy installations, and outdoor classes for boating operations and maintenance. Safety features such as life rings will be provided at appropriate locations on the platform.

The exterior space will also include several interpretive design components, which are addressed in further detail in the following section.

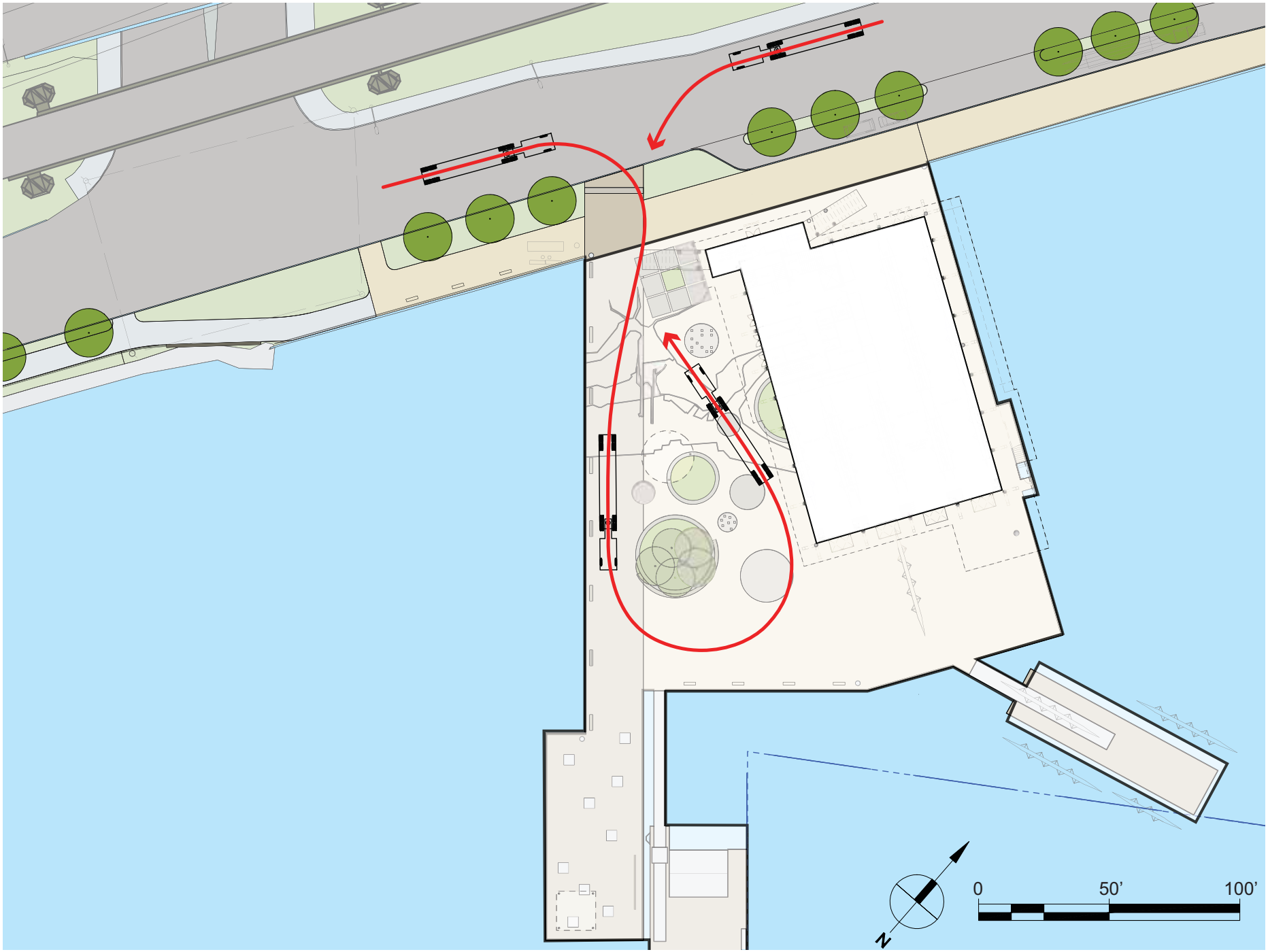
Platform paving will be limited to special finishes and patterns in the cast-in-place concrete surface, with 3-inch by 9-inch precast concrete unit pavers providing distinction and identity to Canal Dock pier.

Site furnishings and materials will need to stand up to the rigorous environmental conditions of the waterfront. Materials such as stainless steel, aluminum and powder-coated paint will be employed on railings, benches, trash containers, lights, flagpole and trellises. Salvaged elements from the Adee Boathouse and Fitch Foundry wil be incorporated into the site furnishings. The design, colors, and finishes of these components will be coordinated with the architectural vocabulary of the boathouse. A modern, nautical theme will be the approach, emphasizing salvaged elements from the Adee Boathouse Boathouse and Fitch Foundry in special treatments including trellises and benches.

In general, the platform site will be designed to be safe and inviting for use by school children, fishermen, bird-watchers, and all other patrons choosing this outdoor space as their recreational and educational destination. The nature of the design must be inspiring and rewarding to those users. Shade from summer sun will be provided by trellises and several trees in special, if limited, planted areas contained by walls and seating. Views from the second floor of the boathouse will be considered in the placement of the vertical elements on the platform.

Platform Structural Components

The proposed platform is anticipated to be constructed of precast planks spanning between pile bents. The platform will be supported by 16-inch precast prestressed concrete piles approximately 100 feet long. The elevation of the proposed platform has been determined based on the following design assumptions: platform structure will be four feet thick from the top of the cast-in-place composite slab to the bottom side of the pile caps, and there will be two feet of freeboard between the bottom side of the pile cap and the mean higher high water elevation of 4.21 feet (NGVD 1929). A concrete pile cap is anticipated to cap the existing sheet pile bulkhead and to facilitate the transition between the platform and the bulkhead.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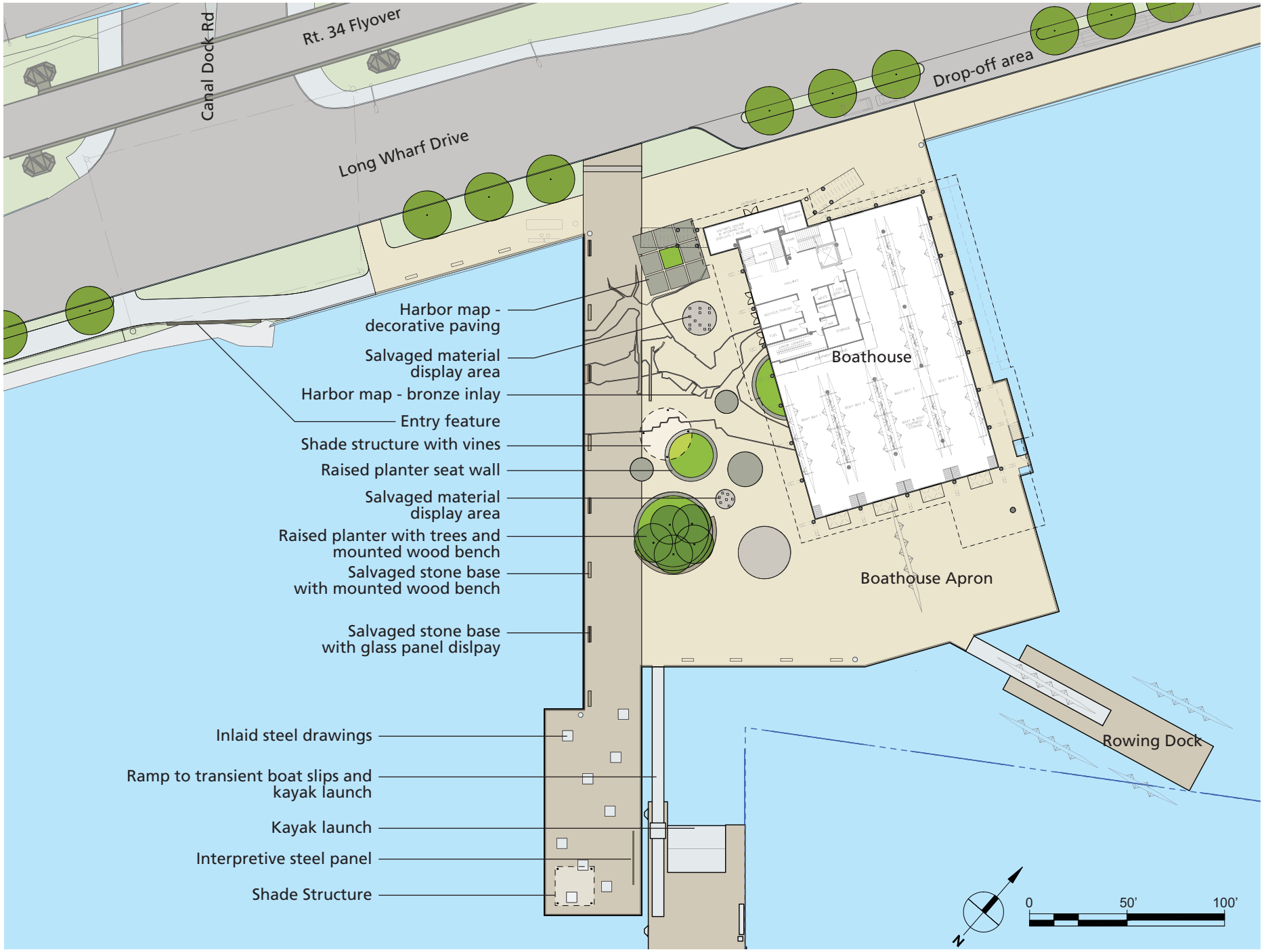
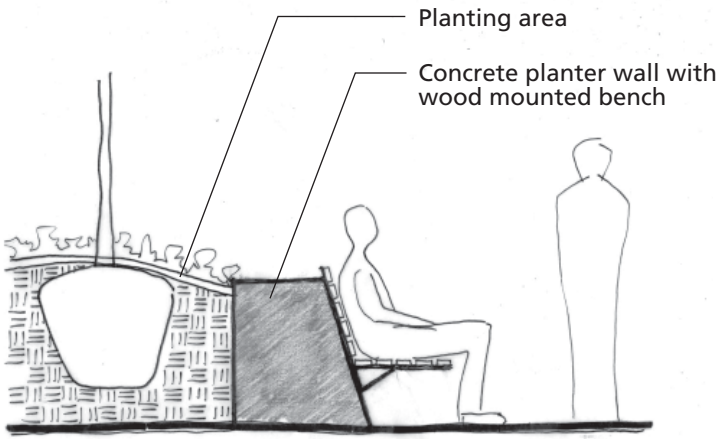
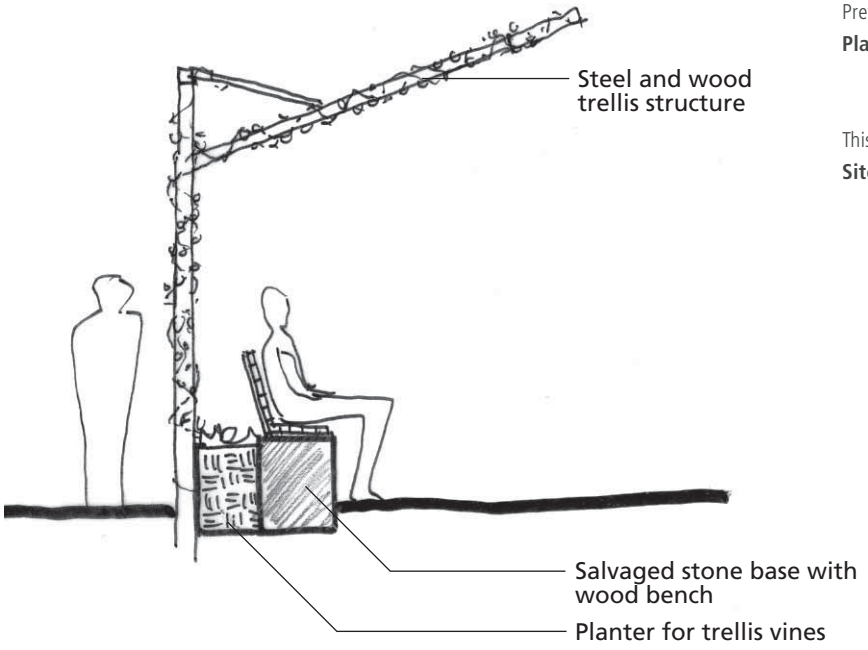
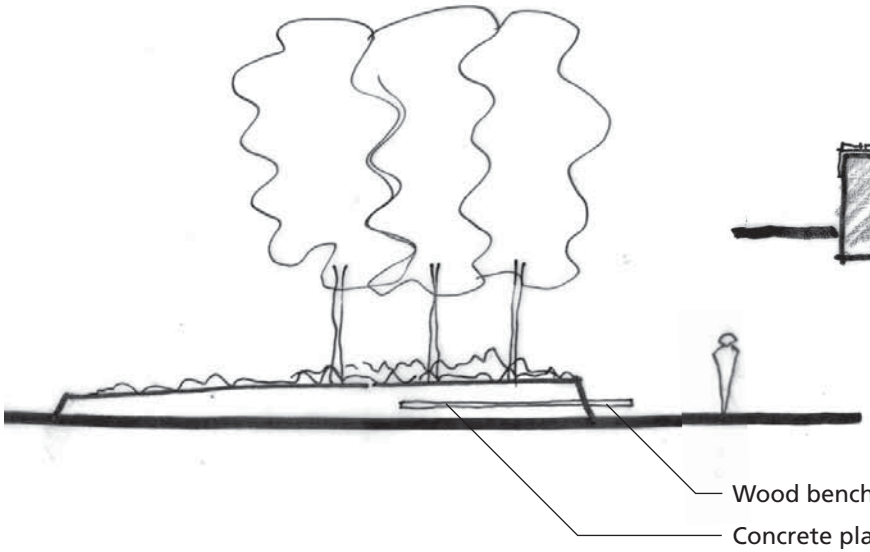

Canal Dock Rd
Rt. 34 Flyover
Long Wharf Drive
Drop-off area
Harbor map - decorative paving
Salvaged material display area
Harbor map - bronze inlay
Entry feature
Shade structure with vines
Raised planter seat wall
Salvaged material display area
Raised planter with trees and mounted wood bench
Salvaged stone base with mounted wood bench
Salvaged stone base with glass panel dislpay
Inlaid steel drawings
Ramp to transient boat slips and kayak launch
Kayak launch
Interpretive steel panel
Shade Structure
Boathouse
Boathouse Apron
Rowing Dock
N
0
50'
100'

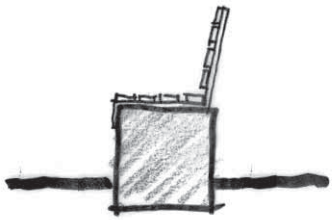


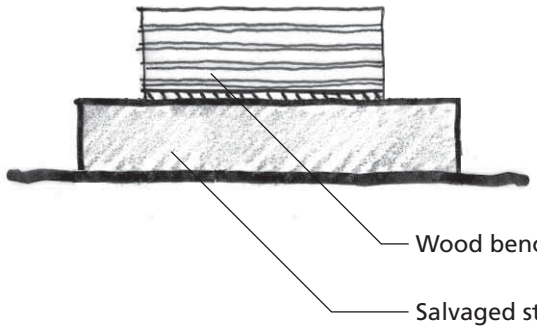


Previous page:
Platform Site Plan.

This page:
Site Elements.







Floating Docks

The floating docks include the transient boating slips and a kayak launch, and the rowing dock, designed for the launching of shells. All floating docks are segmented concrete docks and have been designed for wave heights of 3.5 feet in keeping with marine industry standards for recreational floating docks.

The transient boating slips use a conventional wood waler and concrete-encased polystyrene floating dock system and can support the mooring of both sail and motorized boats. This is similar to the system used at Long Wharf Pier. The Exterior of these docks can support boats over 30 feet in length. The transient boating slips layout affords perimeter protection for moored boats against incident wave conditions and boat wakes that would otherwise result in undesirable surface water conditions for boaters. Integral to the transient docks is the kayak launch area. The kayak launch is a sloped and partially submerged aluminum ramp nested between adjacent concrete-encased floating dock modules. The partially submerged ramp and additional launch cradles supports universal access and the potential use of the launch by adaptive paddling programs.

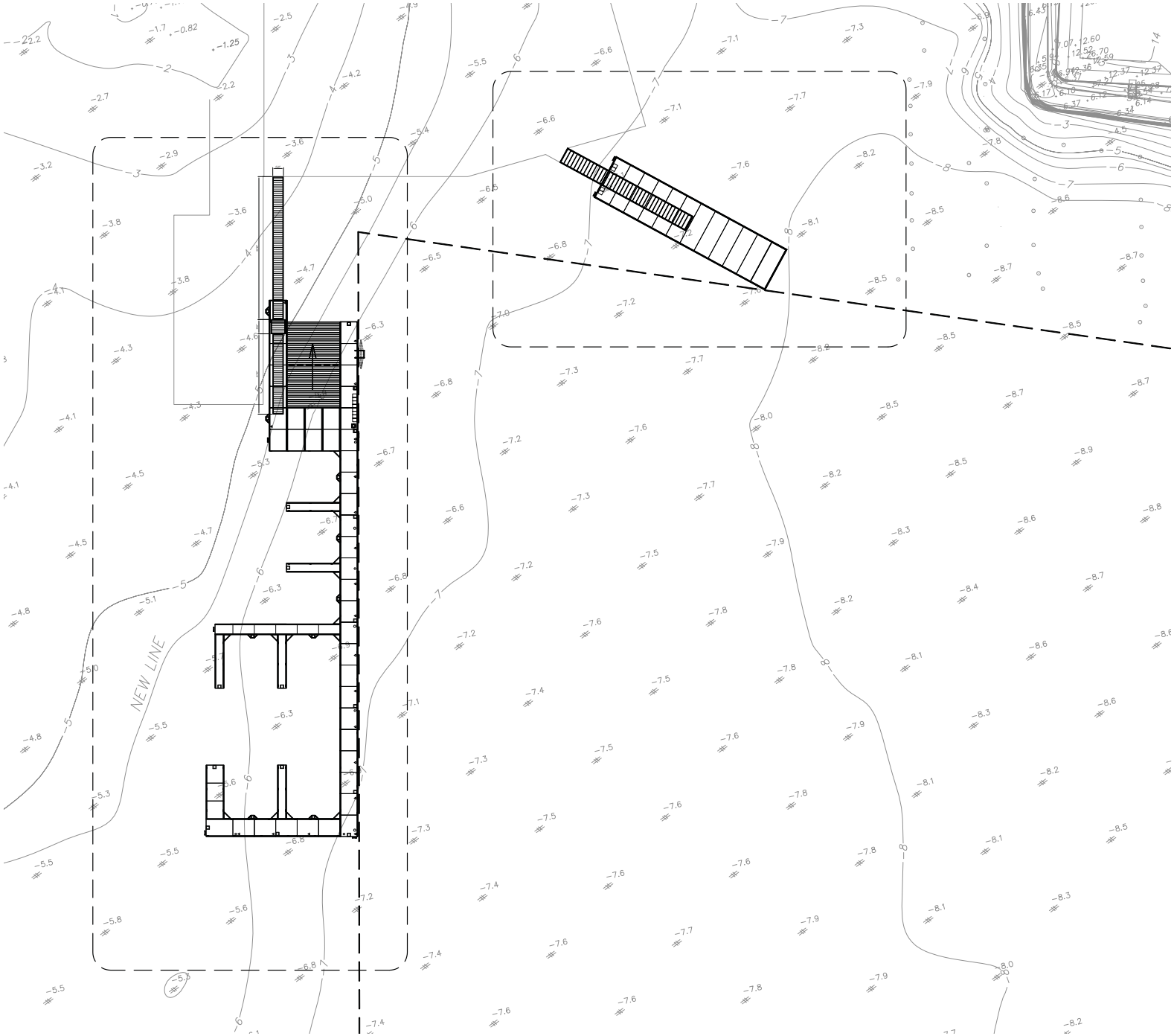
The transient boating slips will have dry pipe fire protection, life saving equipment in the form of a life ring holder and life ring, lighting fixtures, convenience potable water and convenience electrical outlets, and signage.The transient boating slips locations are limited to the north by the 15-foot anchorage line and to the south by the mud flats and shallow water depths. The existing permits restrict extending the transient docks further east into the channel. We recommend modifying these permits to shift the docks into deeper water to improve access and allow a wider variety of boats to utilize the slips.

The transient docks are connected to the platform at its southeast corner where the -Boating Plaza meets Canal Dock pier. This access ramp will facilitate the hand transport of kayaks along the pier and down the ramp from vehicles parked off the platform or from a trailer pulled onto the platform. The ramp is accessible in accordance with the Americans with Disabilities Act (ADA) and also serves all of the transient boaters who will use the floating docks extending eastward from the end of the pier.

The rowing dock is constructed of concrete-encased polystyrene floating dock system with a match-cast sysem for anchoring, enabling it to be free of piles. It is connected to the boating apron area of the platform by an ADA-compliant 80-foot-long aluminum gangway.

Utilities

The proposed utility design will require extensive coordination with each utility provider. It is anticipated that bracing and protection of existing utilities will be required to provide service laterals for the project. Detailed discussion with each utility provider will be required to address concerns they will have regarding limited cover, lack of separation between utilities, and the excavation underneath their existing utilities. Design considerations such as concrete encasement, heat tracing and relocation of existing utilities may be required. It is



This page:
Current Recommended Design for Kayak & Transiet Dock Facility
Adjustments to the Kayak and Transient Dock Designs were made based on water depth, wave, and budget considerations.

anticipated that the major utility run under the platform will be in a concrete chase with the appropriate access manholes for maintenance.

Power, lighting and water for the transient docks will be provided via a total of three utility pedestals at the head of each finger dock for boat hookups with integral photoelectric controls for dusk-to-dawn operation. Fire protection will be per National Fire Protection Association (NFPA) requirements and includes a Class I dry standpipe fire suppression system at the marina docks and a Fire Department connection on the concrete platform adjacent to the marina gangway as well as an exterior pull station and audio/visual alarm.

Power for special events will be provided at three platform locations along with empty conduit for potential Audio Visual cabling. Power and communication connections will be provided to a weather station located on the platform.

Hose bibs will be provided at the appropriate locations on the platform to accomodate rinsing of boats and the occasional watering of plantings.

Site Improvements on Long Wharf Drive

Long Wharf Drive is a vitally important linear space along New Haven Harbor, and should be considered one of the most important public spaces in the city of New Haven. To the south of Long Wharf Pier exists the public waterfront park and an exquisite natural habitat to all manner of migratory birds and marine life, including one of the most important horseshoe crab refuges in the world.

Improvements along Long Wharf Drive illustrated in the current site plan include:

- a drop-off zone directly in front of the boathouse accomodating both personal vehicles and boat trailers ,
- street trees (albeit limited by utilities in some locations),
- a widened pathway with zones for seating and low-scale ornamental plantings and a protective railing along the harbor edge from the Liberty Bell Building to the walkway at Leon's, and
- an entry feature that could be a low sign or flush paving element at the intersection with Canal Dock Road, reinforcing the open viewshed, on the south side of Canal Dock Road.

With the revisions being made to the on-off ramps to I-95, and the recognition of the value of the park, there exists a great opportunity to make major improvements to the quality of Long Wharf Drive, the park, and the marine environment. Although that work is beyond the scope of this project, the design of Long Wharf Drive from Long Wharf Pier to the northern edge of this project will be an important first step in that endeavor.

With the changes taking place from the I-95 work in the immediate environs of this project, there are several benefits, and a major challenge that future efforts could capitlize on and address. These additional design opportunities are described below, and illustrated in teh plan on the following page.

Next page:
Long Wharf Drive Potential Improvements
This plan illustrates additional potential Improvements along Long Wharf Drive that are outside the scope of the immediate project, but would enhance the Canal Dock project. These improvements include the addition of bike lanes, the the construction of parking, and the addition of street trees on the northwest side of Long Wharf Drive.


0
100'
200'

The challenge is the scale and height of the new flyover being constructed on the east side of I-95. This flyover is much more visually dominating than the highway to the Long Wharf Drive space. To help reduce this visual presence, a strong row of tall street trees are recommended along the north side of Long Wharf Drive.

One benefit of the I-95 work is the reconstruction of the I-95 bridge over Canal Dock Road, resulting in a much more inviting and open space under the highway, providing for excellent design connections to the Farmington Canal Greenway and East Coast Greenway Bikeway, as well as framing an excellent introductory vista to the harbor and Canal Dock Boathouse. The benefits of these improvements could be maximized by enhancing the connection of the Farmington Canal Greenway, to the site including wider sidewalks and bicycle paths on Canal Dock Road and improved crosswalks and crossing signals at Long Wharf Drive and Sargent Road.

The second benefit is that the reconstruction of I-95 will move the highway farther west than it currently exists. This will result in gained land under the new flyover that can be developed into approximately 60 parking spaces directly across Long Wharf Drive from the boathouse. (see parking proposals presented in the conceptual design alternatives section).

Additional design opportunities along Long Wharf Drive include the provision of bike lanes, off-peak parallel parking, and special provision and protection for school children walking from the boathouse to the environmental area south of Long Wharf Pier.

Interpretive Design

The interpretive design component of the Canal Dock Project will consider elements of all four alternatives developed in the concept alternative phase. The interpretive design will consist of five major elements that will be integrated with the landscape and architectural design of the new platform and boathouse. The content of these components will illustrate and articulate the five interpretive research topics: Natural and Early History, Maritime History, Recreation History, Harbor Development, and History of the Adee Boathouse. Listed below is a brief summary and physical description of each element:

1. **Entry Feature:** This feature will announce both the Canal Dock complex and serve as the introductory signage for the comprehensive interpretive design experience that physically encompasses the southwestern side of the platform and inside the boathouse interior.

2. **Harbor Map Display:** Over the past four centuries, New Haven's waterfront has been subject to dramatic physical changes that reflects its evolution from an agrarian economy preindustrial seaport, to a heavy industry and railway harbor front, to a modern commercial and automobile-dominated infrastructural site. As a result of these three major historic shifts, the actual waterfront location and landform has been significantly altered. This harbor map will describe these changes and mark historically significant features at this vicinity with dates and limited descriptive text. This information, which extends to the New Haven Green, will be inlayed and inscribed into the south-

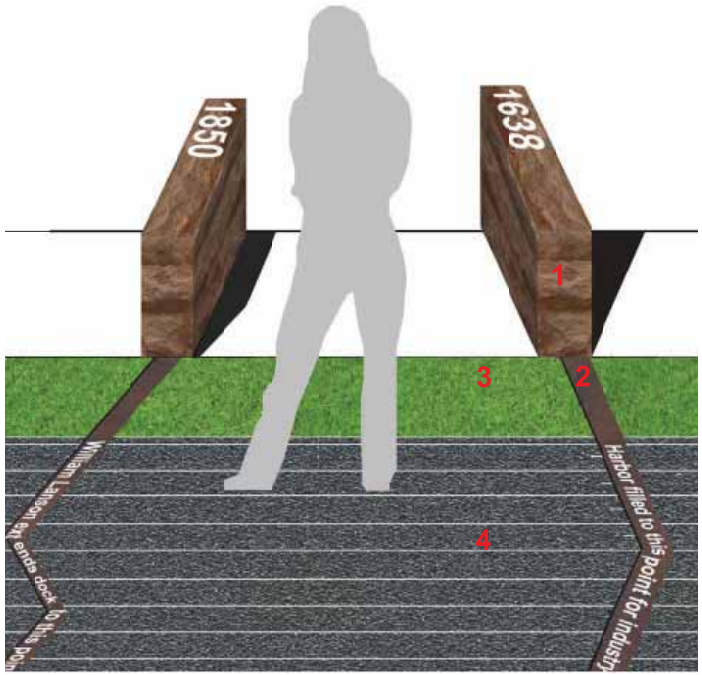
western side of the platform's exterior concrete paved floor with a combination of pigmented concrete, non-ferrous metal inlays, and water-jet cut inscriptions. Total area of this map is approximately 5,000 square feet. This display will illustrate the harbor development.

3. **Timeline Display:** This historical timeline will tell the story of New Haven's four-century-long history in relation to its waterfront, people, events, and places along it. It will be physically integrated with the perimeter guard rail along the southwest to part of the east end of the platform. The timeline will be constructed of modular, thin stainless steel cases, with a combination of non-ferrous metal and tempered glass panels internally illuminated with LED lighting. Metal panels may have cast or fabricated raised profiles for tactile reading. The length of the timeline is approximately 600 linear feet. The timeline display will incorporate the Natural and Early History, Maritime History, and Recreation History.

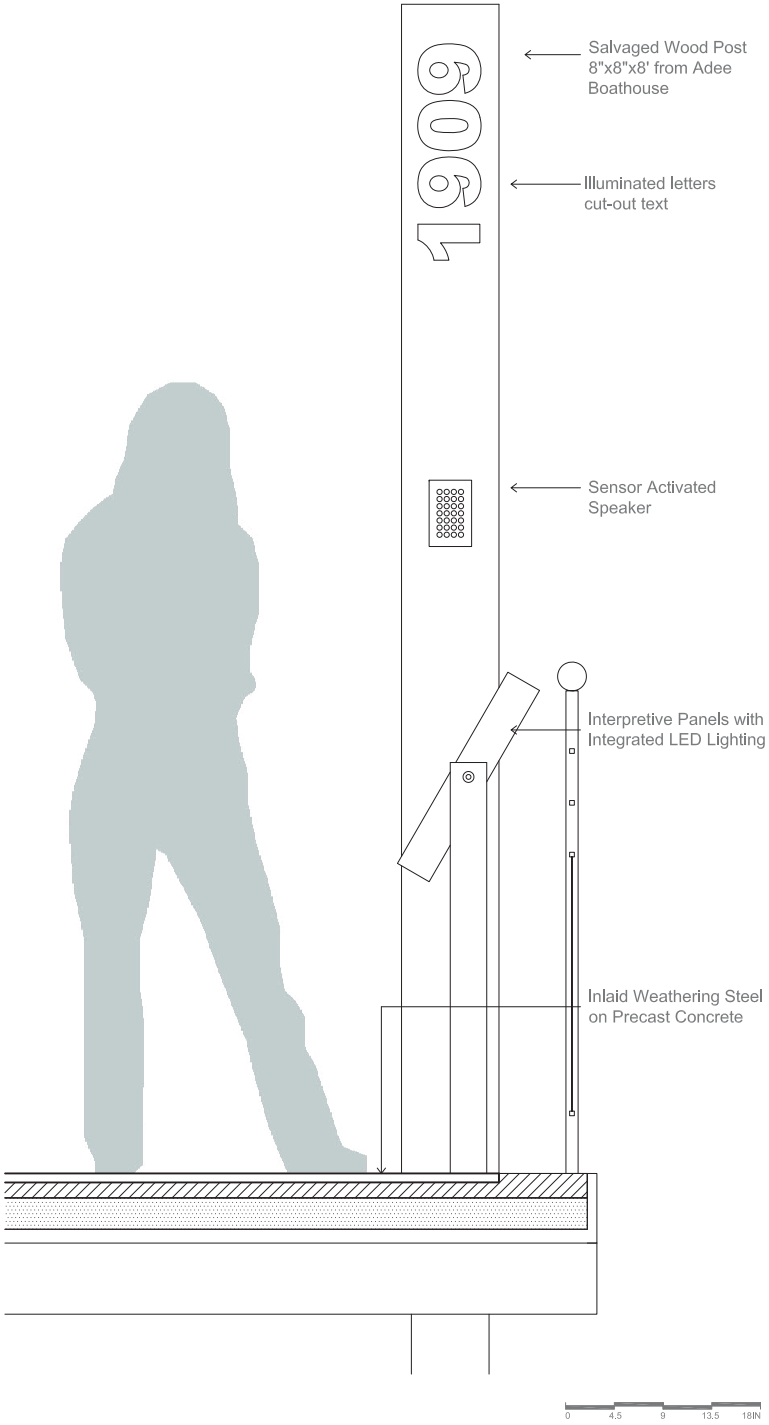
4. **Thematic Display:** This vertical panel and ground-mounted display will communicate the basic content structure of the interpretive design approach to this site and project. Eight vertical panels and eight inlayed plaques will be fabricated out of structural tempered glass panels supported by a stone or concrete base with a combination of images and text inscribed and printed directly onto it. LED bottom-edge illumination (from the base below it) will provide nighttime legibility of these panels. The glass size is approximately 4-feet wide x 7-feet high x 1-inch thick. Inlayed plaques will be made of cast or fabricated nonferrous metal with images and text inscribed. The thematic display will showcase all five research topics: Natural and Early History, Maritime History, Recreation History, Harbor Development, and History of the Adee Boathouse.

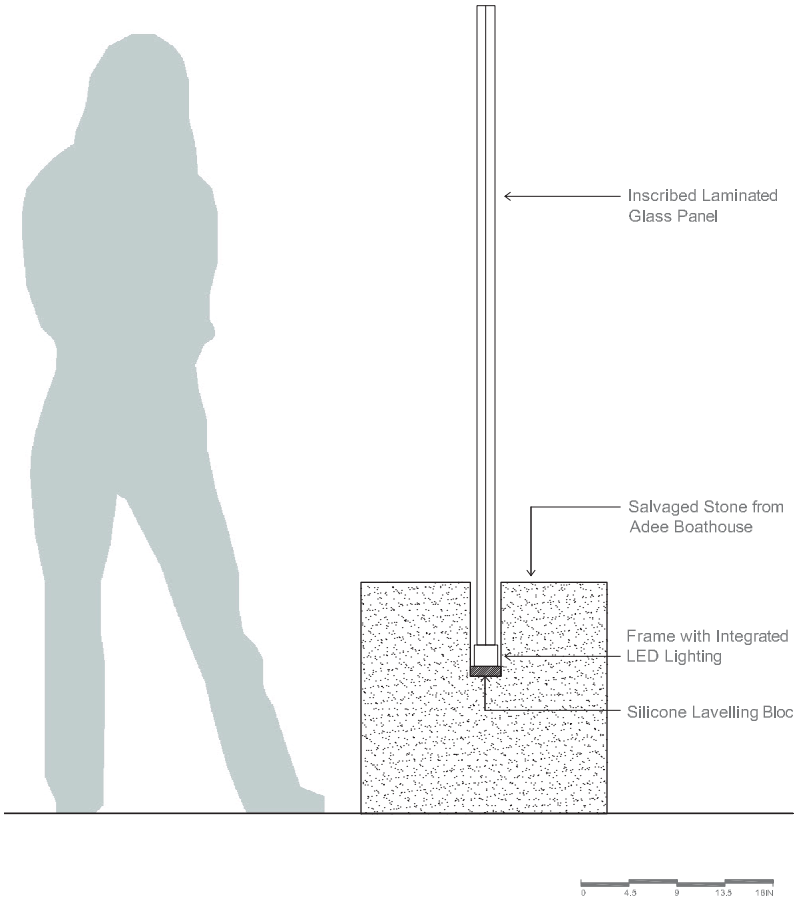
5. **Adee Boathouse Salvage Parts Display :** This display will take advantage of the preservation of the salvageable building remnants of the dismantled Adee Boathouse and the thorough survey information provided. Interpretive materials in the form of photo and caption panels will be placed adjacent to the installation of these parts by Gregg Wies and Gardner Architects (GWG) inside the new boathouse. The salvaged and reinstalled parts include, but are not limited to, the partial façade and entry portal, grand wood stairway, common room, and two fireplace masonry boxes and decorative wood mantels. In addition, a display of other selected salvaged building parts, which include the terra-cotta ornament fragments, plans and text will be placed in the 1,000-square-foot lobby at the first floor of the boathouse. This display will include the history of the Adee Boathouse. Further details on how and where these elements will be incorporated can be found in the description of the boathouse found earlier in this section.

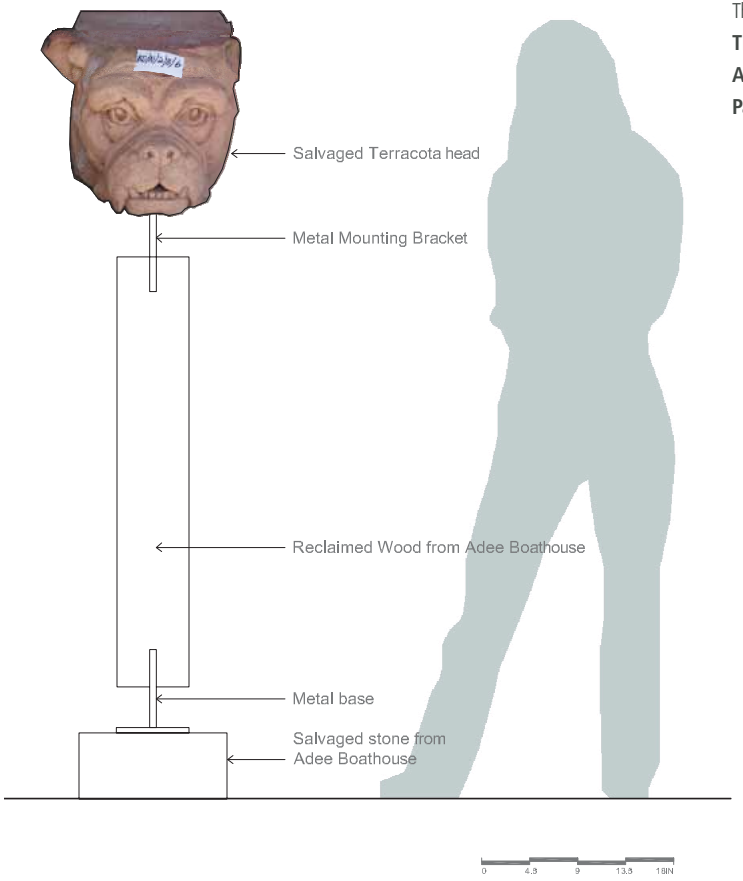
This Page from Left:
Harbor Map Display Detail
Timeline Display Detail



1. Salvaged stone from Adee Boathouse with inscribed dates
2. Six ince bronze inlay
3. Platform lawn: turf grass
4. Platform: cast in place concrete planking







This Page from Left:
Thematic Display Detail
Adee Boathouse Salvaged Parts Display Detail

Sustainability

With the development of the Canal Dock facility, the city of New Haven has the opportunity to employ a broad range of sustainable and environmentally sensitive approaches to the design and construction of the platform and boathouse including sustainable site development, water savings, energy efficiency, materials selection, stewardship of resources and sensitivity to their impacts and improved indoor air quality. Nationally, the best-known program for systematically assuring a green, high performance building is by following the LEED Green Building Rating System, which is a verifiable third-party certification program. Similarly, in Connecticut, state-owned buildings and state-funded schools use the "Connecticut Building Standard Guidelines for High Performance Buildings." These guidelines establish a range of mandatory and voluntary requirements and benchmarks for all aspects of the design and construction of buildings equivalent to LEED Silver certification and commissioned by a third-party consultant. Each of these approaches has the goal of assuring the creation of buildings along with their respective sites that will consume less energy, conserve natural resources, are more comfortable for their users, and are ultimately easier and less costly to operate.

At this time, the Connecticut State Building Code does not require compliance with LEED or other state-recognized metrics for green high-performance buildings. As established by the State Legislature mandate, PA 09-192 amendments to C.G.S. 29-256a(b), new construction must meet the requirements of the 2009 International Energy Conservation Code IECC (as being amended by Connecticut) and the referenced ASHRAE 90.1 2007 (as may be amended by Connecticut) to meet the energy conservation requirements of the proposed Connecticut Building Code. The IECC addresses benchmarks to meet or exceed optimum cost-effective building construction standards for thermal envelope and mechanical systems, including, but not limited to, indoor air quality and water conservation, and the lighting and electrical systems of the building.

In addition to meeting the requirements of the IECC – 2009, the consultant team along with the city can look to employ a number of voluntary green demonstration projects, which will take advantage of existing technologies and local programs that conserve energy. These include:

- Purchase of energy friendly and recycled products for the construction and operation of the building;
- Wind turbines to generate electrical power for the building or platform;
- Geothermal heat pump for the HVAC system of the boathouse;
- The use of other small scale energy generation technologies such as domestic cogeneration plants (CHP), fuel cells, and photo voltaic panels;
- Use of new metering and charging technologies such as smart metering;
- Use of energy from community funded and supported generation projects;

- Employment of green tariff structures, new Energy Service Companies and combined utility service companies, and potential for small-scale domestic (or commercial) tradable quota systems.

By location and intention, the Canal Dock project will be a highly visible destination greatly used by boating enthusiasts and the public. It has the opportunity to serve as a an first-rate example of a facility that naturally integrates high-performance green technologies and materials with a broad range of active and passive recreational activities, all contributing to a happy and healthy life for its users.

Universal Access

All components of the design will be fully accessible and based on universal design principles, not only within the building and site but also including the gangways and floating docks, which will meet or exceed ADA requirements. For rowers, the ramp access to the floating rowing dock will be a minimum of 80 feet long as required by the ADA. For access to the transient boating and kayak facilities, ramps will exceed the ADA requirements for marina facilities by meeting land-based ADA requirements of have slopes of 1:12 or less. Additionally, the kayaks and canoe launch have been designed to accommodate all users through the inclusion of a partially submerged launching ramp and launch cradles. These elements will enable the facility to be used by adaptive rowing and paddling programs.

Cost Estimate

A conceptual construction cost estimate was prepared based on the conceptual plans, sections, details, and written narratives that outline the design intent and specific elements. The cost estimate and the support information it is based on is located in Appendix J and K, respectively. The assumptions and qualifications are listed providing the parameters of the cost estimate. The cost estimate is summarized in five categories:

1. Building
2. Platform
3. Site Improvements
4. Floating Docks
5. Interpretive Displays

Elements within each of these categories are divided into divisions and itemized. The intent of the design and the estimate is to indicate that all the proposed project elements are eligible under the FHWA and ConnDOT funding requirements.

The estimate for the first four categories of the final concept indicates a construction cost of approximately $25,500,000. Several alternates are being evaluated for the interpretive display approach, which is a critical component in addressing mitigation of the historical and cultural impact. The City and design team will refine the scope of the specific elements from these alternatives that best fit the mitigation, educational and budgetary goals of the project.

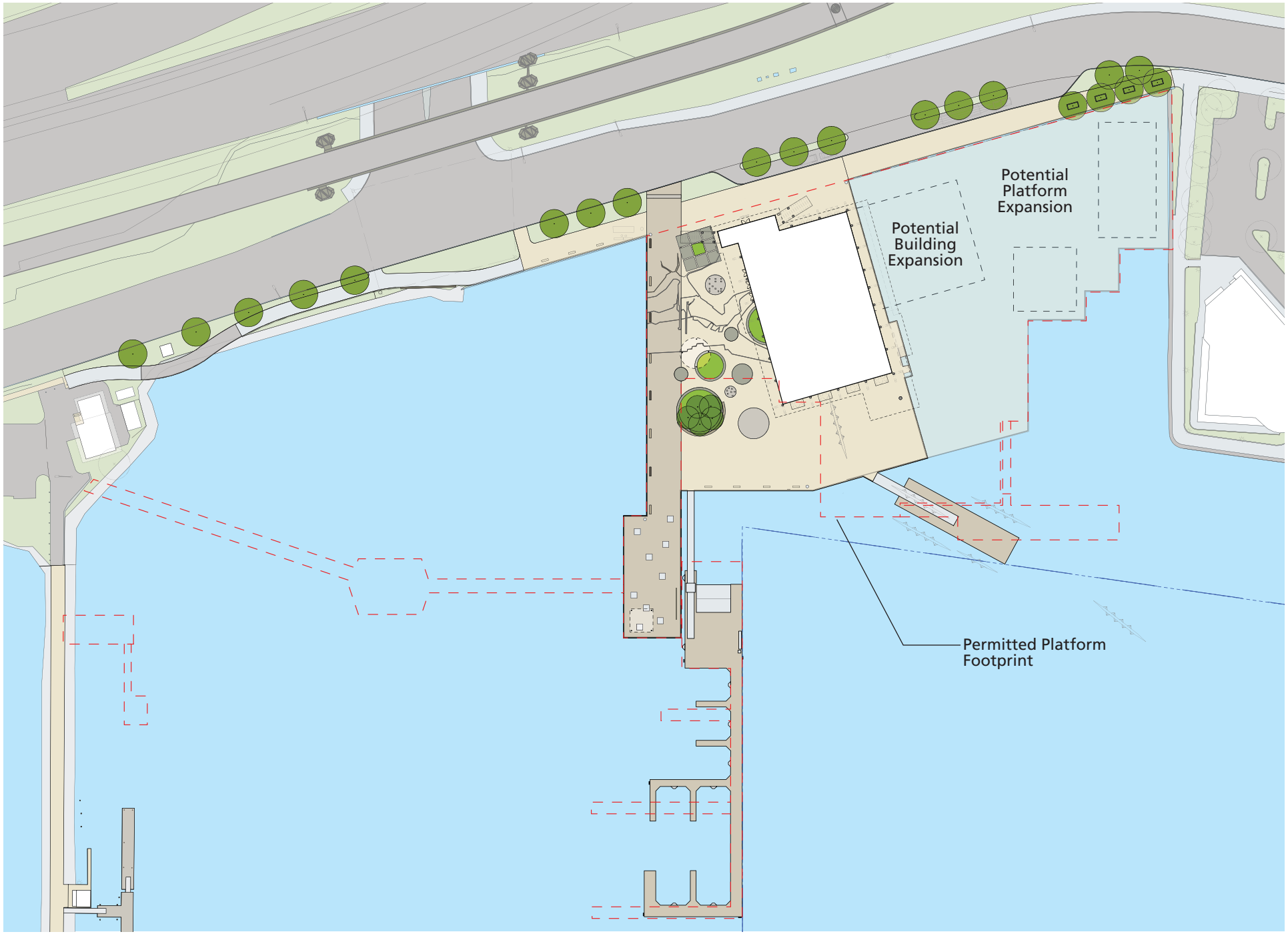
Following Page:
Future Expansion.
Site plan indicating areas for future platform and building expansion

The construction cost will be refined during the schematic design phase to bring the project on budget with the available project funding.

Potential for Future Expansion

The preferred concept has been developed with the consideration for future expansion from both a regulatory and constructability perspective. The design team has met with and reviewed the preferred concept with the U.S. Army Corps of Engineers (USACE) and the Connecticut Department of Environmental Protection Office of Long Island Sound Program (OLISP). As agreed to by the regulatory agencies, the city will be able to preserve the right for the project to shade up to 2.98 acres of intertidal and subtidal areas as part of the USACE Permit modification and Certification of Permission (COP) processes that are required for the project. This will allow the city, when additional funding becomes available, to build the additional platform as shown in the drawing on the following page. Permit extensions would be required to maintain the rights of the USACE and OLISP permits. All requirements and conditions of the original permit would remain in effect and ongoing coordination with the regulators would be required.

The possibility for future expansion is critical because the site may need to accommodate growth in demand for both boating and educational activities at the site. Future development of the site could include expansion of the boat bays via the addition of platform and boat bays to the north aligned parallel to those in the current design, as well as second-floor space above them. Alternatively, a separate structure or structures could be added at the north with an expanded platform. These future structures might be open pavilion classroom space, a performance stage area with or without a roof or a variety of building types housing water dependent uses.


Potential
Platform
Expansion
Potential
Building
Expansion
Permitted Platform
Footprint