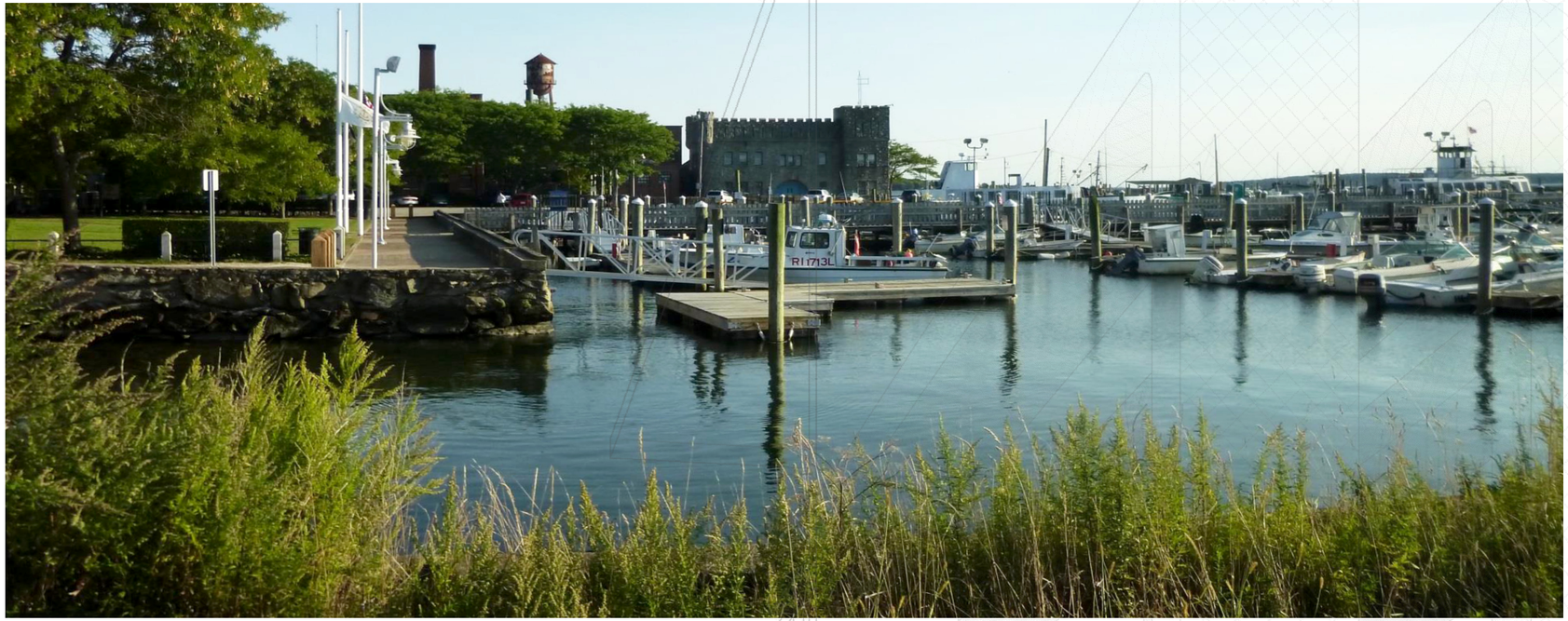
cpc
Community Partnerships Center
at Roger Williams University

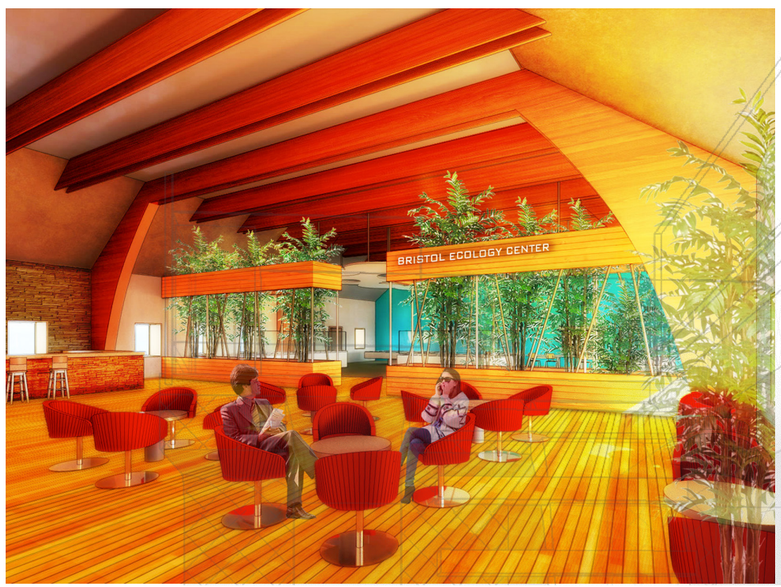


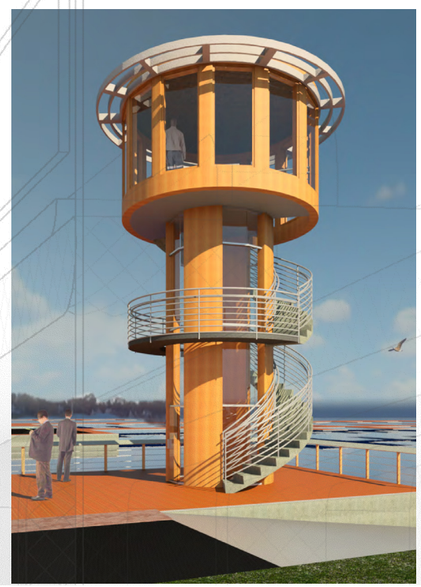
Urban Design of Bristol Waterfront, Lower Thames Street

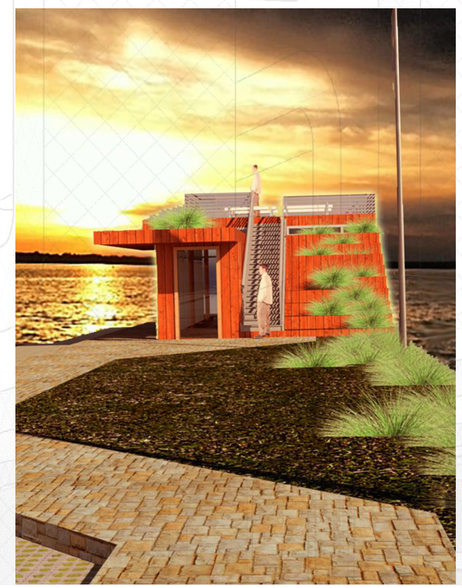
Community Partner:
Town of Bristol

Academic Partner:
The School of Architecture, Art and Historic Preservation

Fall 2013







The Roger Williams University Community Partnerships Center

The Roger Williams University (RWU) Community Partnerships Center (CPC) provides project-based assistance to non-profit organizations, government agencies and low- and moderate-income communities in Rhode Island and Southeastern Massachusetts. Our mission is to undertake and complete projects that will benefit the local community while providing RWU students with experience in real-world projects that deepen their academic experiences.

CPC projects draw upon the skills and experience of students and faculty from RWU programs in areas such as:

- American Studies
- Architecture and Urban Design
- Business
- Community Development
- Education
- Engineering and Construction Management
- Environmental Science and Sustainability
- Finance
- Graphic Design
- Historic Preservation
- History
- Justice Studies
- Law
- Marketing and Communications
- Political Science
- Psychology
- Public Administration
- Public Relations
- Sustainable Studies
- Visual Arts and Digital Media
- Writing Studies

Community partnerships broaden and deepen the academic experiences of RWU students by allowing them to work on real-world projects, through curriculum-based and service-learning opportunities collaborating with non-profit and community leaders as they seek to achieve their missions. The services provided by the CPC would normally not be available to these organizations due to their cost and/or diverse needs.

CPC Project Disclaimer: The reader shall understand the following in regards to this project report:

1. The Project is being undertaken in the public interest.

2. The deliverables generated hereunder are intended to provide conceptual information only to assist design and planning and such are not intended, nor should they be used, for construction or other project implementation. Furthermore, professional and/or other services may be needed to ultimately implement the desired goals of the public in ownership of the project served.

3. The parties understand, agree and acknowledge that the deliverables being provided hereunder are being performed by students who are not licensed and/or otherwise certified as professionals. Neither RWU nor the CPC makes any warranties or guarantees expressed or implied, regarding the deliverables provided pursuant to this Agreement and the quality thereof, and Sponsor should not rely on the assistance as constituting professional advice. RWU, the CPC, the faculty mentor, and the students involved are not covered by professional liability insurance.

4. Neither RWU, the CPC, the faculty mentor, nor the students involved assume responsibility or liability for the deliverables provided hereunder or for any subsequent use by sponsor or other party and Sponsor agrees to indemnify and hold harmless RWU, the Center, the Faculty Mentor, and the Center's student against any and all claims arising out of Sponsor's utilization, sale, or transfer of deliverables provided under this Agreement.

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Perspective of ferry landing dock at night by Jack Hamm.

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December 2013

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ARCH 415 - Advanced Design Studio: Urban | Professor Ulker Copur

Special Thanks to: Town of Bristol Director of Community Development, Diane Williamson | Town of Bristol Principal Planner, Ed Tanner | Professor Hank Kniskern of Roger Williams University | Professor John McQuilken of Roger Williams University | CPC Graduate Assistants Lauren Bombara and Matthew Eckel

Introduction

During the fall of 2012, students from the Roger Williams University (RWU) Gabelli School of Business, along with students from the School of Architecture, Art and Historic Preservation, worked with the Town of Bristol to review program and space allocation, prepare preliminary schematic design plans and a preliminary construction cost estimate for the rehabilitation and renovation of the Bristol Naval Reserve Armory into a Bristol Harbor Maritime Center for boaters. During the spring of 2013, students began working on a business plan and feasibility study for the transient boating facility, which would include year-round use for the building and the addition of new docks.

The preliminary work conducted by RWU students served as the basis for the town to apply for a Boating Infrastructure Grant from the U.S. Fish and Wildlife Service and to apply for additional project support from the Community Partnerships Center for assistance in visioning the public space options for the area around the downtown armory. During the summer of 2013, the Town of Bristol received an $861,000 Boating Infrastructure Grant from the U.S. Fish and Wildlife Service that would make the Bristol Maritime Welcome Center a reality.

Collaboration with the Town of Bristol continued in the fall of 2013 when students in ARCH 415, Advanced Design Studio – Urban, under the guidance of Professor Ulker Copur, studied the waterfront area along the west side of Thames Street, from State Street south to the armory, including the continuation of a public boardwalk through the area linking up with the adjacent properties. The designs created by students would be used to guide the town in developing a master plan for the area and the new Bristol Maritime Welcome Center.

Proposed perspective for the armory reuse as a transportation and commerce historical center. Design by Eric Figueredo.

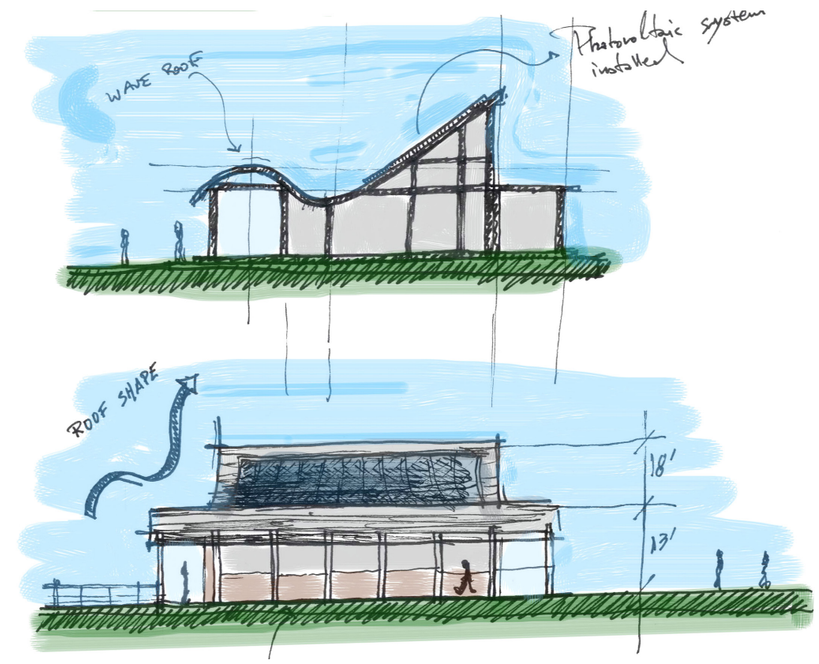
Process

Students in ARCH 415 spent the fall semester investigating appropriate urban sustainable initiatives in order to propose a master plan which would enhance and preserve Bristol's historic texture and small town character. They were tasked with creating designs that considered preservation and adaptive reuse, urban design, landscape and architectural design. The students spent weeks researching the lower Thames Street waterfront within the larger context that is the Bristol Historic Waterfront along Thames Street.

The goal for students was to visually transform the Bristol Waterfront into a vibrant area with diverse and appropriate uses, respecting the Town's historic context and integrating ecological, social, cultural, demographic and economic significance of the place. Students were tasked with creating Master Plans and new buildings which would minimally impact the ecological footprint of the space and preserve existing historic buildings, parks and open spaces.

The objective for the class was to generate sustainable community activities along the waterfront by restoring, adapting or introducing new facilities and linkages while also providing aesthetically pleasing and comfortable harbor connections at the waterfront which could be reached from both short and long distances and would serve both the Town of Bristol and visitors.

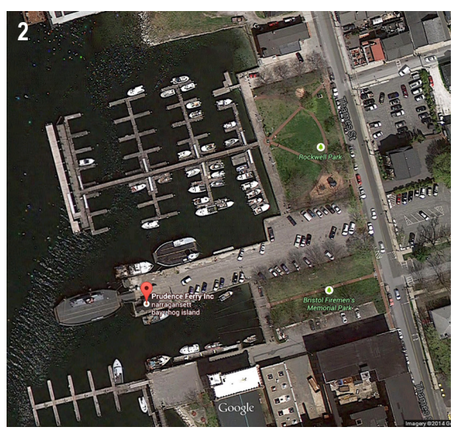
Since students were designing along a waterfront area, it was also important for them to consider the impact of geography (water edge, flood zone conditions, climate, topography, vegetation, etc.), especially investigating the role of strong winds. Students needed to research the lessons learned from historic hurricanes at Bristol Harbor and the potential impact of future storms on any construction activity. All planning, architectural and landscape design at the coastal edge needed to take these considerations into account.

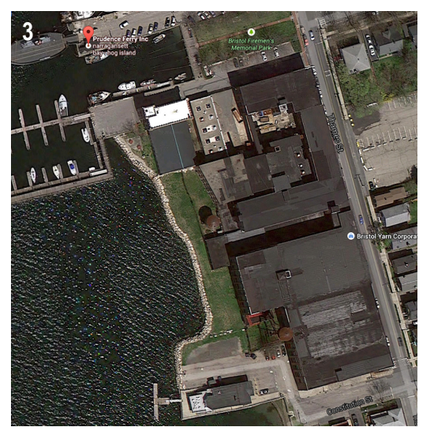


Sketches for marketplace building and aquaponic farm by Anastasios Papadopoulos.

Site Selection and Analysis

Students proposed designs not only for the Bristol Armory, but for three interconnected project zones to be part of the integrated ecological Master Plan. The proposals within the three zones that are included along the Bristol Waterfront, lower Thames Street, were as follows:





State Street Dock to Fire House (including Azevedo property):

- A potential new building proposal at Azevedo property (a possible seasonal seafood market fisherman's wharf/eatery and organic vegetable market/cafe) and its connections to downtown and along the waterfront.

Fire House to Prudence Ferry Docks:

- Prudence Ferry Station for ticketing and information office.
- Improvement of Ferry Station property to complement Firemen's and Rockwell Parks.

Prudence Ferry Dock to Constitution Street (possible inclusion of Elk's Building property):

- A feasible adaptive reuse proposal for the armory building including exterior urban space/park.
- Landscape proposal for the property in front of Robin Rug building.
- Docks for boats and dinghies.
- Continuation and linkages of the boardwalk from north of ferry dock to Constitution Street, which needs to be integrated with the existing Bristol waterfront boardwalk near upper Thames Street.

Accesses (vehicular and pedestrian) and wayfinding from Hope Street in downtown Bristol to the waterfront will be worked out as part of project development.

Bristol Armory Site

The Bristol Naval Reserve Armory is located on Thames Street in Bristol. Its position near the waterfront area symbolizes it as one of Bristol's most unique and historically significant buildings. Completed in 1896 by Jacob Babbit and Leonard J. Bradford, two maritime traders, the building

was constructed for the Bristol Naval Reserve Torpedo Company of the Rhode Island Militia. The armory was used in the 1920s by the Coast Artillery and the National Guard, and its main purpose was to house the local Naval Reserve Armory.

The building is a slated-roofed Romanesque Revival Armory of uncaused granite ashlar. Some of the characteristics of this building are: the corner turrets, the machicolated cornice, the massive square tower on the northwest corner, and the low round-arched entrance.

Today, the structure has been converted into a community center for Bristol locals and visitors and is used as offices for the Bristol Harbormaster.

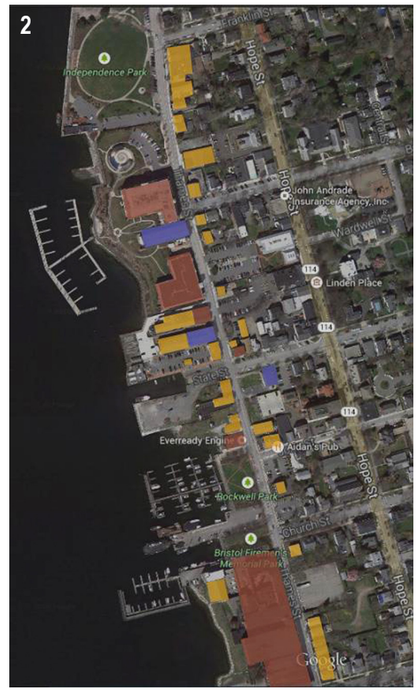
1. State Street Dock to Fire House.
2. Fire House to Prudence Ferry Docks.
3. Prudence Ferry Docks to Constitution Street.
4. The Bristol Armory.

Site Analysis

In general, there are three types of architecture on Thames Street:

- Colonial design with modern architecture elements, as in this picture (below) at 286 Thames Street. Most of the façade on this condo building is brick.

- Cottage (mostly less than three family living); some of them have the first floor as commercial usage. Most of their façades are covered with shingles and have a gable or gambrel roof.



- Colonial building; façade covered with shingles. Most of the ones on Thames Street have their first floor as commercial and second floor as residential living.

Due to its location by the water, Thames Street is located in evacuation zone A (shown in red on the map on the following page) for hurricanes and flooding. Businesses and residents in this area are recommended to be evacuated prior to a category 1 or 2 hurricane. Evacuation zone B (shown in yellow on the map) is recommended to be evacuated prior to an expected category 3 or 4 hurricane.

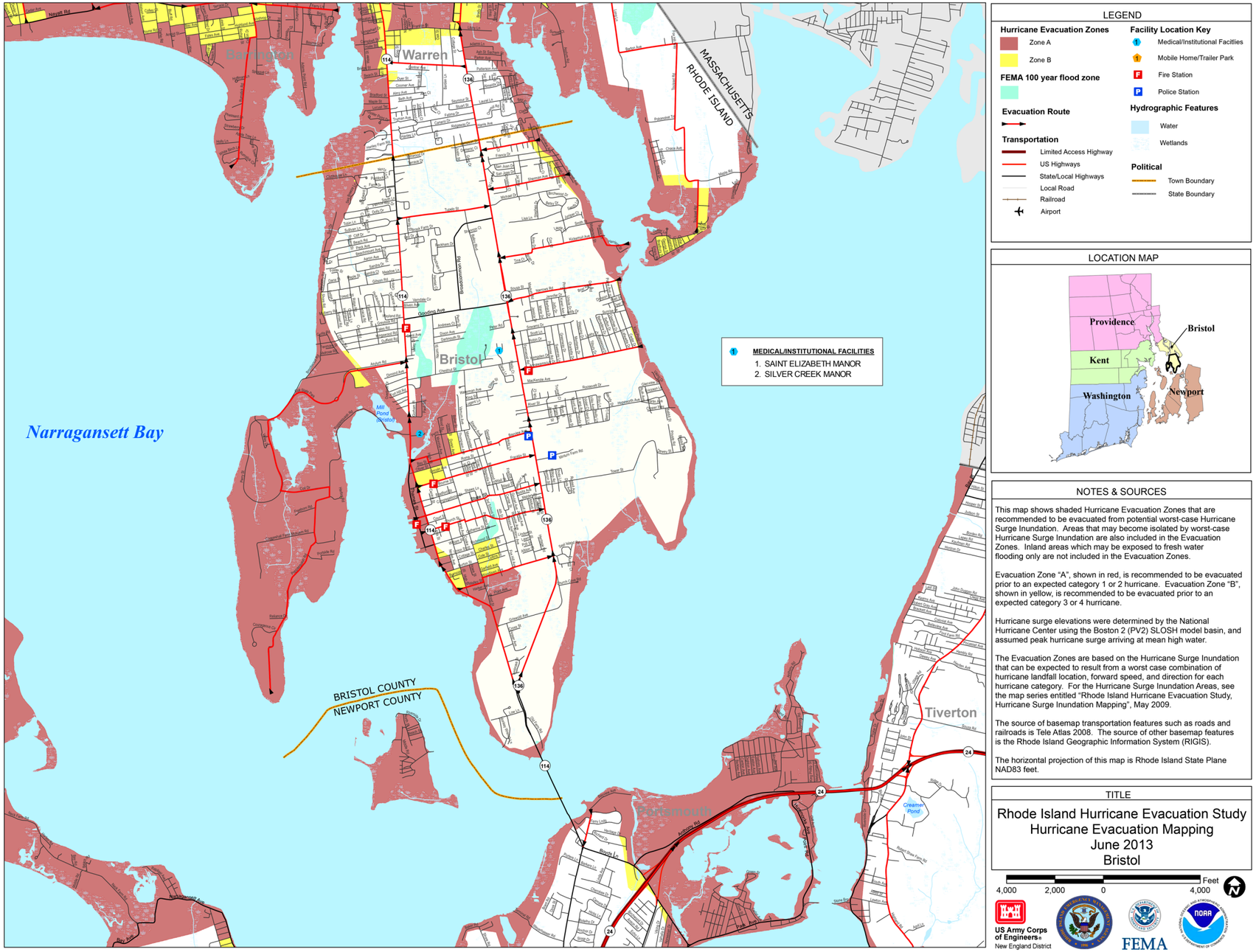
Because of this hurricane and flood risk, any new construction on the Bristol waterfront will be subject to the V-Zone standards, which control the elevation of the building off of the ground, the elevation of main street structural members, the types of obstructions and walls allowed at ground level and acceptable building materials, among other factors.

1. Stone Harbor Condos reflect the Colonial modern architecture.

2. Map showing Colonial design with modern architecture elements (brown), Colonial design buildings (blue), and Cottage design (yellow).

3. The Azevedo properties exhibit Cottage style architecture.

4. Colonial style architecture.



LEGEND

Hurricane Evacuation Zones
- Zone A
- Zone B

FEMA 100 year flood zone

Evacuation Route

Transportation
- Limited Access Highway
- US Highways
- State/Local Highways
- Local Road
- Railroad
- Airport

Facility Location Key
- Medical/Institutional Facilities
- Mobile Home/Trailer Park
- Fire Station
- Police Station

Hydrographic Features
- Water
- Wetlands

Political
- Town Boundary
- State Boundary

LOCATION MAP

NOTES & SOURCES

This map shows shaded Hurricane Evacuation Zones that are recommended to be evacuated from potential worst-case Hurricane Surge Inundation. Areas that may become isolated by worst-case Hurricane Surge Inundation are also included in the Evacuation Zones. Inland areas which may be exposed to fresh water flooding only are not included in the Evacuation Zones.

Evacuation Zone "A", shown in red, is recommended to be evacuated prior to an expected category 1 or 2 hurricane. Evacuation Zone "B", shown in yellow, is recommended to be evacuated prior to an expected category 3 or 4 hurricane.

Hurricane surge elevations were determined by the National Hurricane Center using the Boston 2 (PV2) SLOSH model basin, and assumed peak hurricane surge arriving at mean high water.

The Evacuation Zones are based on the Hurricane Surge Inundation that can be expected to result from a worst case combination of hurricane landfall location, forward speed, and direction for each hurricane category. For the Hurricane Surge Inundation Areas, see the map series entitled "Rhode Island Hurricane Evacuation Study, Hurricane Surge Inundation Mapping", May 2009.

The source of basemap transportation features such as roads and railroads is Tele Atlas 2008. The source of other basemap features is the Rhode Island Geographic Information System (RIGIS).

The horizontal projection of this map is Rhode Island State Plane NAD83 feet.

TITLE

Rhode Island Hurricane Evacuation Study
Hurricane Evacuation Mapping
June 2013
Bristol

4,000 2,000 0 4,000 Feet

US Army Corps of Engineers
New England District

FEMA

Bristol flood and evacuation map. Thames Street is located in evacuation zone A, seen in red on the map.

Precedent Studies

Students conducted precedent studies looking at design concepts and specific site examples.

Boardwalks and Docks

- Great space to enjoy water views and to connect the waterfront to different areas such as parks, stores and restaurants.
- Locations at the southern end of the Thames Street waterfront are spaced apart from one another and all serve different functions: the marketplace at the northern end of the site, the ferry, the armory and the grounds behind Robin Rug factory.
- Developing a boardwalk and docks would create clearly drawn paths that visitors can use to explore the Bristol waterfront and its unique, surrounding areas.

Newark Riverfront Park Boardwalk, Newark, NJ

- Opened in 2012 to help revive the riverfront.
- The park is broken up into many different spaces, which can be used for several events in one day. The areas are broken up by paths that lead down to the orange boardwalk.
- Boardwalk built with recycled plastic decking in a vibrant orange color to brighten up the space. The orange color was chosen for multiple reasons: it is the same color as the local high school; orange tends to make people hungry (and the area is filled with many different restaurants); the color orange as part of Hindu culture is associated with the second chakra, which is linked with the element of water.
- The landscape architects incorporated the site and the city's past into the park by displaying maps, drawings and stories telling the city's history both on the handrails and on standalone signs.

Coogee to Bondi Coastal Walk, Sydney, Australia

- The coastal walk is a winding trail that stretches over 3.75 miles along the Sydney coast. The trail is comprised of portions that are flat, others at ocean level and other sections carved into the rocks along the cliffs

- Walkways are made of natural materials you would find along the trail, yet are designed with safety in mind for walkers.
- Spaces have been carved out along the Coastal Walk to create rest stops and scenic overlooks. Other spaces contain untouched rocky coastline so that visitors can walk along and be steps away from the ocean. Staircases lead down to a lower level of flat rocks.
- The Coastal Walk was designed to offer visitors ocean views from different levels and angles.

Harbor Point, Stamford, CT

- Harbor Point is currently under construction. The site will provide public space along the waterfront for recreational use, restaurants and shops.
- The boardwalk is divided into two levels: the higher, larger level can be used for large gatherings and outdoor dining; the lower, narrow level has access to the boat docks and can be used for walking and jogging. Access to the lower level can be gained by a large staircase and ramp, designed to also serve as seating for small performances.
- Pavement is continuous at the site but contains clearly defined paths to connect areas.

Changi Singapore Boardwalk

- Boardwalk was part of a "Green Plan" that also included $16.7 million improvements to the ferry terminal.
- This boardwalk follows the rugged coastline, hovering over the water. The boardwalk features covered break-out rest areas as well.

1. Newark Riverfront Park Boardwalk. Image: Nicole Bengiveno, *The New York Times*, newarksriver.wordpress.com
2. Coogee to Bondi Coastal Walk. Image: magdabiskup.com/coogee-to-bondi-coastal-walk/
3. Harbor Point. Image: 9pulaskistreet.com/harbor-point-development.html

Renovation of Historic Spaces

Renovation of a Dwelling in Chamoson, Switzerland

Savioz Fabrizzi Architects

- Built in 1814, this 200-year-old stone house was renovated to achieve high energy conservation standards. It is transformed now into an inhabited, eco architectural residence, which is identified as a modern, green and energy efficient structure.
- In order to make the interiors of the house energy efficient and to match the exterior stone-faced facade, new exposed concrete walls and polished screed floors were required. A layer of concrete and foamed recycled glass (Misapor) was used to provide thermal insulation, and 75 square feet of solar panels were installed on the roof.
- Former window openings were retained and new larger ones were added to increase natural light and views into the mountains.
- The combination of good thermal insulation, controlled ventilation and solar energy helped the house to achieve the Swiss Minergie energy conservation standard.

Jaurequia Tower in Donamaria, Spain

Apeztequia Architects

- This Medieval European building was simple and durable structure-wise. It had thick, load-bearing walls composed of massive stones; floors supported by old-growth timbers; and small windows creating somber interiors.
- Renovating this structure to make it green and environmentally friendly required several new materials and labor. Natural lighting is used to penetrate the building and highlight its natural and historical aspects.

Fish Markets and Open Markets

Bergen Fish Market, Bergen, Norway

Eder Biesel Architects, 2012
27,000 square feet

- The lower floor is almost solely dedicated to the major public space: the marketplace. The upper floor contains a Tourist Information Center (with panoramic views of the pier) and The Norwegian Seafood Center (a research and educational facility) as well as administrative offices and conference rooms.

- At the back of the Fish Market is a large service core which spans three floors. It includes secondary circulation spaces, public bathroom facilities, coatrooms, various prep areas for the seafood, ice production, cold storage and freezers, and the supporting mechanical equipment.
- The glass-enclosed ground floor allows the marketplace to stay open year-round and provides sea breezes and natural cross-ventilation of the space in the summer months. By opening the glass facade, the market can seamlessly become part of the urban fabric.
- Traditional materials were chosen to complement the historic context of the site. The suspended ceiling in the marketplace is made of wooden slats that recall traditional ship construction. The floor is granite, another traditional material, and is continuous from the exterior to the interior. Wood inlaid in the granite pavers marks the historic line of pier.

- Inside, murals of black and white photographs with text tell visitors about the region's past and the historic importance of fishing and shipping along the pier.

1. Jaurequia Tower in Spain.

2-3. Interior and exterior of Bergen Fish Market in Norway.

Lancaster Central Market, Lancaster, PA

Reading Terminal Market, Philadelphia, PA

Roots Farmers Market, Manheim, PA

- These sites bring together a fish market and small café while maintaining an equal balance of shopping and eating where the atmosphere is not so overpowering that one interferes with another.
- Markets that include open fish markets require some sort of ventilation to disperse the fish smell. Creating an open air market will help minimize the spreading of the fish odor. Providing many openings to the exterior provides more entrances and exits to the space.
- All four of these markets have a dense array of displays. This is done so that the consumers are as close to the product as possible. This may cause some interior circulation and congestion problems, but it allows for the maximum number of vendors.
- Tying in a café with a market seems to be popular in a lot of scenarios. A market offers a variety of local goods, while a café allows the consumer to experience the local food and culture. A café selling similar products to the market will blend into the space and also offers a resting area for visitors to enjoy a drink, snack or small meal. The café should have its own designated area with furniture or design ideas but should still be open to the experience and atmosphere of the market.

Besiktas Market, Istanbul, Turkey

Designed by GAD

- This fish market is on a site similar in size to the proposed Bristol Waterfront site. The steel and concrete structure has no internal columns, which gives a sense of openness. The design lends itself to have wide entrances on all sides where product can be seen from many angles.
- Although a nice open plan, the lack of enclosure in this fish market would be a downfall for the Bristol Waterfront due to the harsh salt water and wind conditions.

1. Lancaster Central Market in Pennsylvania.
2. Besiktas Market in Turkey.

Ferry Terminals

Battery Park City Terminal,
New York, NY

Liverpool Terminal,
Liverpool, United Kingdom

Vung Tau Terminal,
Bà Ria–Vung Tàu Province, Vietnam

Dongdu Terminal, Dongdu Harbor, China

- A dock and landing for the Prudence Island Ferry is very important to the Bristol site. This building acts as a launching site, sending people to Prudence Island, as well as a welcome center for those arriving in Bristol.
- These precedent terminals all provide overhead protection from subpar weather conditions, which is a much-needed commodity, especially in Bristol. Each of these buildings also provides enough natural lighting by incorporating windows for a water view. By providing a view to the water, travelers can tell when the ferry is arriving and have direct access to the ferry.

West End Ferry Terminal, Brisbane, Australia

Cox Rayner Architects

- Designed as a port and a gathering space for the West End community of Brisbane's historic riverfront parks.
- Sheltered seating for public creates social interaction.
- Uses contemporary furnishings, signs, materials and lighting.
- Creates a gateway from the entrance of the port to the docks on the water.
- Folds in the roof create a better experience through the terminal to the docks.
- Fits into the landscape without interfering with the park next to it.
- Designed to blend in with surrounding context by nestling itself under large tree.

Docks and Landings

Coastal Creek Marina, Jacksonville, FL

- This marina features accommodations for boats up to 50' long. It is a 24-slip marina and has a shelter for boaters. The shelter acts as a 'beacon' and focal point to the marina from the water. The docks are arranged perpendicular to the main walk, allowing for easy navigation for boats.

Port of Oswego Marina, Oswego, NY

- This marina, located on Lake Ontario has a similar layout as the existing docks along the Bristol Waterfront. Floating docks branch out from a main boardwalk. The grade change of the area illustrates how the site differentiates between pedestrian and vehicular traffic.

1. Vung Tau Ferry Terminal in Vietnam.
2. West End Ferry Terminal in Australia.
3. Port of Oswego Marina in New York.
4. Coastal Creek Marina in Florida.

Materials and Coastal Building

Tutukaka House and Huts on Sleds Project, New Zealand

Crosson Clarke Carnachan Architects

- Both homes were studied as precedents for their location along the coast.
- Tutukaka House includes shuttered awnings, folding walls and sliding doors, which allow the house to be opened up to natural light and breezes on nice days or closed off at night and during hurricanes. The house is lifted up from the ground in case of coastal storm flooding.
- The Huts on Sleds Project is a compact home designed for a family of five. The house responds to this coastal site in a variety of ways, from the driftwood-colored macrocarpa wood siding to the balconies and large, glazed openings that capture the view. Shuttered awnings and folding screens utilize passive solar heating, naturally cross-ventilate the home and allow the inhabitants to change the facade to adapt to current weather conditions. The ground floor of the home is elevated slightly in anticipation of coastal flooding.

Gulf Coast

Source: "Building After Katrina: Visions for Gulf Coast"

- Integrates new residential development into a waterfront historic district, which is sustainable and innovates employment opportunities.
- Creates public space (parks, gathering space).
- Seeks independence from surrounding infrastructure.
- Shared rooftop spaces and green roofs promote communal interaction with the inclusion of farming land for employment opportunities. Ramping strategies accommodate people with disabilities. Homes are built along hills, with a reinforced structure, to strengthen the properties against hurricanes.

ForeverHome Prototype, Sebring, FL

- Design loads exceed post-Katrina FEMA standards.
- Shotgun-style home with a rectangular plan creates greater stability for the property.
- Precast concrete construction raised above ground level.
- Each wall is made from three-inch interior and exterior concrete skins, with a continuous two-inch foam board.
- Can withstand winds exceeding 165 miles per hour.
- Can be constructed in 40 hours.
- Has the features of a hurricane-resistant home while still having the qualities of a normal home.

New Orleans 9th Ward Reconstruction

After the devastation of Hurricane Katrina, much of New Orleans was left in ruin, especially the southern part of the city: the Ninth Ward. With many of the buildings needing reconstruction, there was an opportunity to create a model of sustainable, extreme weather resistant construction. Heading this charge was Brad Pitt's Make it Right Foundation, which teamed with renowned architects to build hurricane and flood resistant houses that are also LEED-Platinum certified.

1. Tutukaka House in New Zealand.
2. New Orleans' Ninth Ward after Hurricane Katrina.
3. ForeverHome's hurricane-resistant prototype in Florida.

Maritime Centers, Community Boating Centers and Armory Reuse

The McNay Family Sailing Center

- Home of Yale University's sailing team, the oldest collegiate sailing club in the world.
- Includes a kitchen, living quarters, offices, classroom space, lockers and a full maintenance area.
- The sailing area is located on open water and boasts among the finest wind and waves in all of college sailing. It is funded by university alumni.

Milwaukee Community Sailing Center

- This two-level facility provides year-round classrooms, community meeting space, shower facilities, a boat maintenance area, casual function rooms and an outdoor BBQ area.
- Members of the boating center are allowed unlimited access to a number of boats for recreational use. The center provides lessons to members of all skill levels. The center also provides services to private boat owners such as dock space, storage and boat maintenance.
- It has a total square footage of 6,000 sq. ft. and cost $1.7million to construct.
- The sailing center is funded by members of the club, capital campaign, private donations and earned income from meeting space rental. The annual operating cost is $500,000.

University of Wisconsin Armory and Gymnasium

- As originally constructed, the first floor of the Red Gym held military offices, an artillery drill room, bowling alleys, a locker room and a swimming tank. The second floor contained a drill hall wide enough to permit a four-column battalion. The third floor was occupied by the gymnasium, which contained a baseball cage, gymnastic apparatus and rowing machines. Two rifle ranges and a running track were on a level a few steps lower than the gym.
- First used as a gym, it's now used for administration and other academic functions.
- Restored by JGWA Architects.

New Rochelle Armory, New York, NY

- When the New Rochelle Armory was being repurposed, multiple avenues were explored, including the theater/arts center approach taken by many others nationwide. In the end, several uses were desired for the armory. Among these were a community center and civic use space as well as a space for veterans. What makes the New Rochelle Armory unique was that it also proposed maritime functions for the armory, specifically those of a community boating center.
- The New Rochelle Armory is in a similar location to the Bristol Armory. Both are coastal armories nestled in a dense urban fabric with close access to boating facilities and marinas.

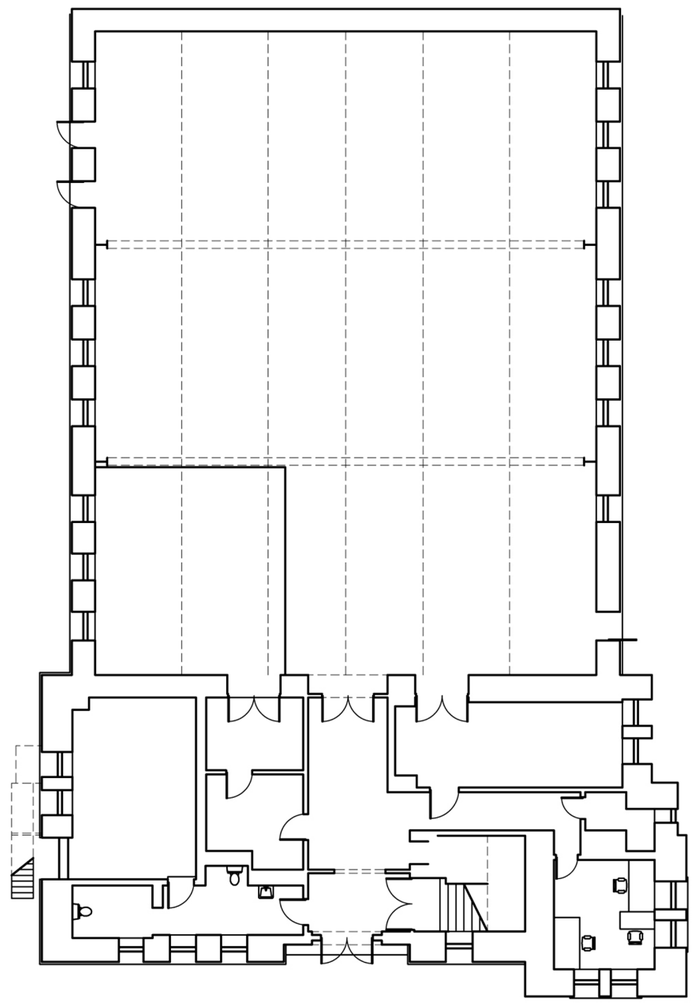
Community Rowing Center, Brighton, MA

- The Brighton Community Rowing Center promotes personal and community growth through rowing programs that build teamwork, discipline and physical fitness. It provides programs for people of all age and fitness levels including those with special needs and disabilities.

1. Milwaukee Community Sailing Center.

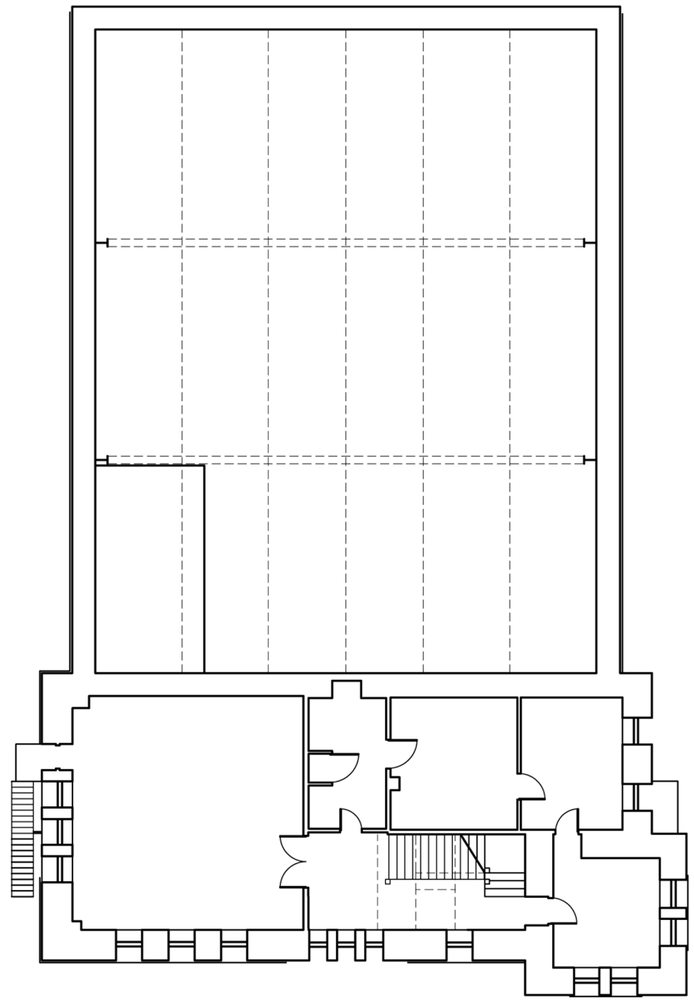
2. University of Wisconsin Armory and Gymnasium.

Bristol Armory Existing Floor Plans



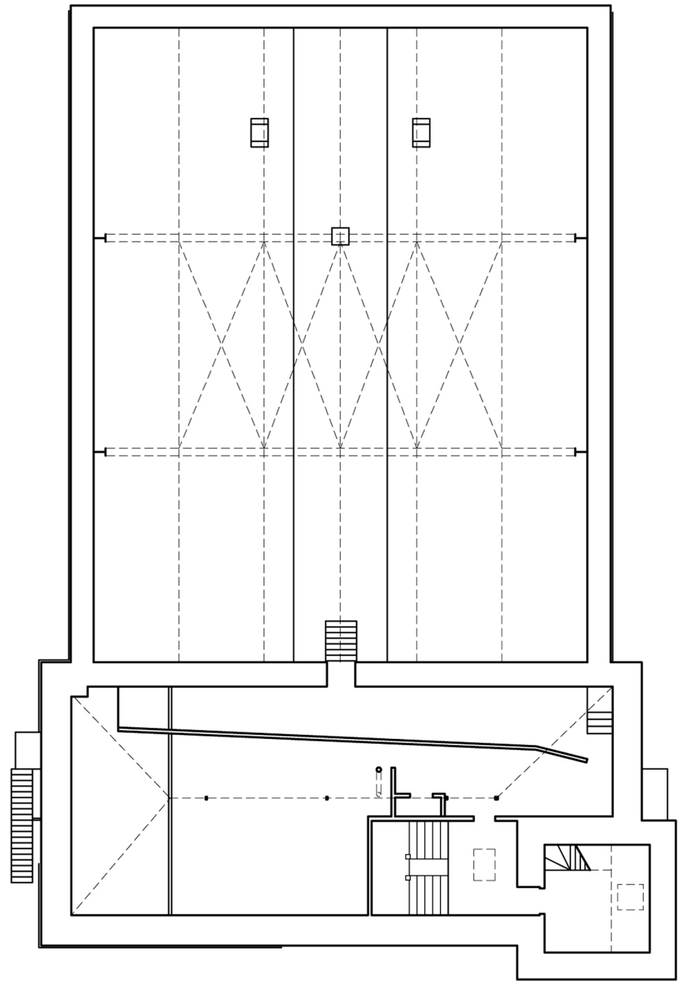
Roger Williams University	Roger Williams University Community Partnerships Center	Project Title: Bristol Armory	Drawing Title: First Floor Existing	Drawing By: Matt Labrake	Drawing Number:
		Project Location: Bristol, RI	Drawing Scale: 1/16” = 1’ 0”	Drawing Date: 24, 04, 2012	XX-XX
				Review Date: 25, 04, 2012	

Bristol Armory Existing Floor Plans



Roger Williams University	Roger Williams University Community Partnerships Center	Project Title: Bristol Armory Project Location: Bristol, RI	Drawing Title: Second Floor Existing Drawing Scale: 1/16” = 1’ 0”	Drawing By: Matt Labrake Drawing Date: 24, 04, 2012 Review Date: 25, 04, 2012	Drawing Number: XX-XX

Bristol Armory Existing Floor Plans



Roger Williams University	Roger Williams University Community Partnerships Center	Project Title: Bristol Armory Project Location: Bristol, RI	Drawing Title: Third Floor Existing Drawing Scale: 1/16” = 1’ 0”	Drawing By: Matt Labrake Drawing Date: 24, 04, 2012 Review Date: 25, 04, 2012	Drawing Number: XX-XX

Design Options

Otto Chan

*"**The goal of the project is to create more highlights and a more welcoming space for visitors to enjoy along Thames Street.** In order to do that, buildings and facilities need to be functional but also easily seen by car, bike or boat. Bristol is mainly divided into three zones: leisure, commercial and residential. In this project, the goal is to improve existing and add leisure and commercial areas, adding in more green space, and using lighting and planting to lead visitors to this welcoming space."*

Boardwalk Concept

At the bike trail, a green space with bike racks and appropriate signage will serve as the dedicated start of the boardwalk. The connection from the bike trail to the existing boardwalk will use concrete permeable surface all the way to Independence Park and will link to the existing boardwalk outside of Stone Harbor. The area outside of the Robin Rug Factory will serve as a rest area with designed shading and information boards.

Waterfront Concept

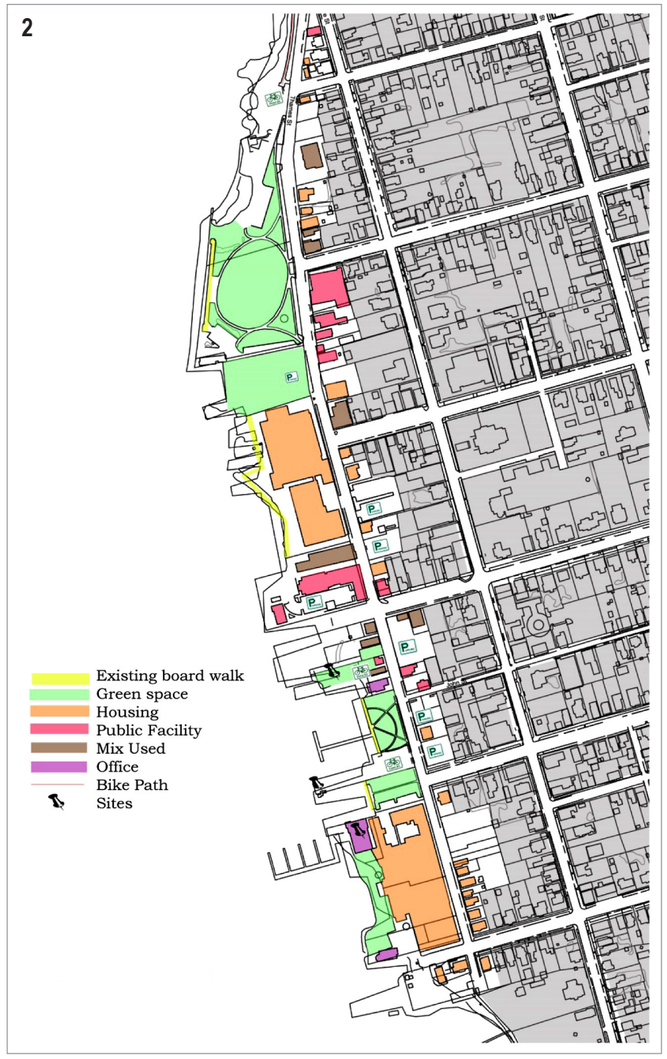
The marketplace is going to be one of the highlights on Thames Street, serving as a destination for leisure, shopping and dining. The concept of the project is to have indoor space continue out to the water, providing an outdoor space for dining and leisure, but also giving the boardwalk a resting point. The building is planned as two floors, with the fish market and multipurpose area on the first and an eatery, sitting area, balcony and facilities on the second. The building will be made of a light metal frame with panels to enclose the space and is designed with a folded glass panel that can be opened up to the outside, yet decrease wind pressure in a storm.

Area estimate:
Market – 500 sqf
Food Court & sitting area – 500 sq
Bathroom – 200 sq
TOTAL – 1,200 sqf

The existing historic buildings will be renovated. The façade will be the same color and material as existing, and the interior will be redesigned. The one on the right will become a bike shop, providing bike service, parts and rentals. The building next to it will become an historic museum on the first floor, and the second floor will be studios available for rent.

Ferry Landing Concept

For the Prudence Island Ferry site, the project proposes demolishing the current ferry building and building a pavilion where guests can wait for the ferry and have a higher view of the Bristol waterfront. This site will keep parts of the parking towards Thames Street and add bike racks for visitors. There will be a gate for cars that have a ticket for the ferry, reducing the amount of cars parked next to the



1. Perspective of boardwalk resting area outside Robin Rug Factory.

2. Master plan map.

pavilion and provide an easier way for pedestrians crossing to the boardwalk. The pavilion is designed with a concept of the structure of a boat or kayak, tying in the long history of water sports in Bristol.

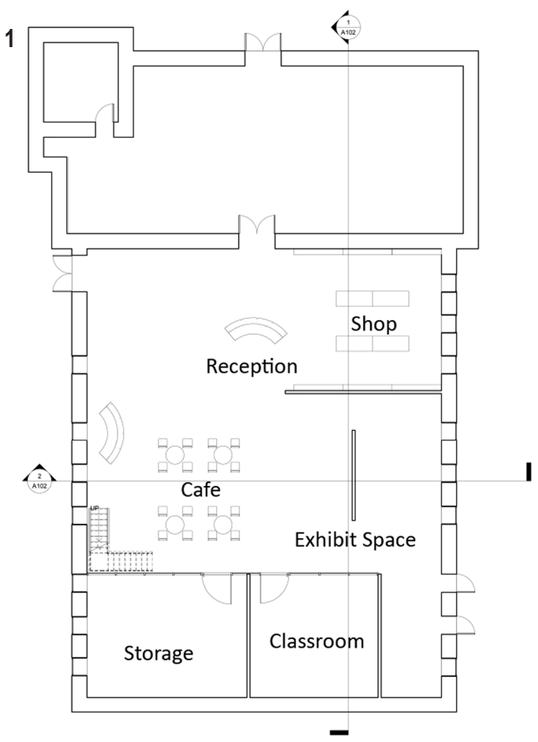
Armory Concept

The armory building will be used as a public water sports center, maintaining the tradition and history of boating and sailing in Bristol. The site will include sailing storage, classrooms, shops and exhibition space. The public water sports center will give visitors an opportunity to participate in sailing, rowing and kayaking. The current multi-function hall can be divided into small classrooms when needed. The site will include an addition of a sloped dock for dinghies, one docking area for boats and kayak racks.

The first floor will be used for reception, selling Prudence Island ferry tickets and a small shop with boating supplies. The middle of the building will host a café and exhibition area with moveable walls to provide additional space. The end of the room will be storage for the boats and kayaks as well as the classroom. The mezzanine will be a meeting room and classroom, with a moveable wall between the two spaces to create a larger multipurpose space.

The armory will boast a boat and yacht refill station; currently there are only two refill stations in the area. The 1,000-gallon tank will be stored above ground without shelter and will only visible from the harbor.

1



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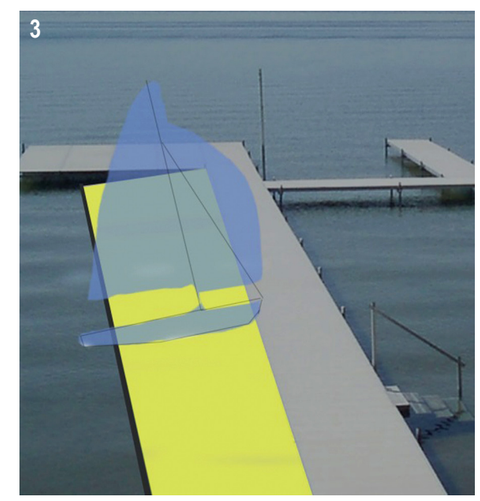


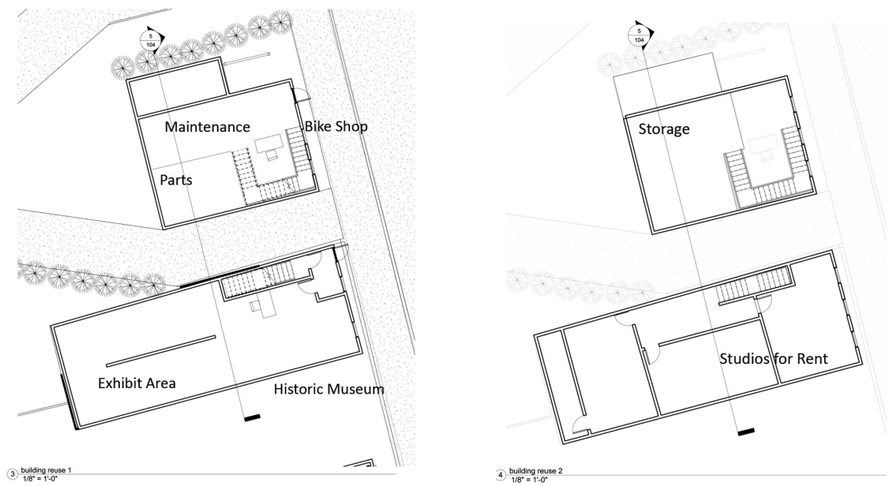
1. Proposed first floor plan of Bristol Armory.

2. Perspective view from the armory entrance.

3. Model for a sloped dock to which dinghies can easily pull up.

1

2

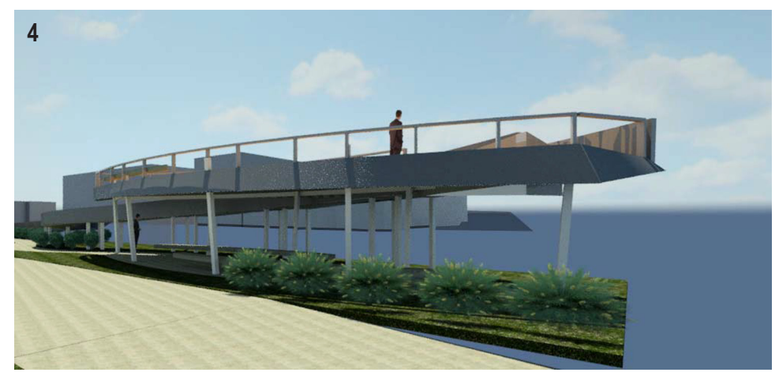


1. The marketplace two-story building will house a fish market, eatery and multipurpose space.

2. Historic reuse of the Azevedo properties will include a bike shop, historic museum and studio rentals.

3

4



3-4. The pavilion and ferry landing has a boat structure designed to reflect Bristol's water sports history.

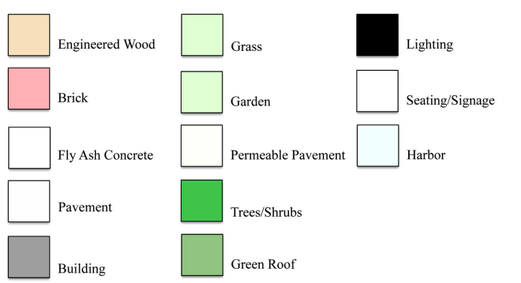
Design Options

Jon Cornachio

"The main goal of my master plan is to create a continuous green corridor along the waterfront. *Two new green public spaces will be created: the first will be a small park and outdoor seating area in front of the armory (currently a parking lot); the second will be a new community garden on the waterfron-property. Existing parks will be united by replacing the adjacent paved lots with permeable pavers. These grass paving systems will weave together the existing green spaces, without sacrificing parking spots. Finally, a series of small, thin trees will be planted along both sides of Thames Street so that there is a connection between the new green corridor and the greenery along Hope Street.*

These changes will help create a more aesthetically pleasing waterfront environment and will provide Bristol residents with new public spaces. It will also help make the waterfront more sustainable. The new plantings and permeable surfaces will help manage the storm water runoff and will reduce the heat island effect caused by the existing pavement. The pavement in the larger parking lots, where permeable paving systems are not feasible, will be replaced with porous asphalt. The large rooftops on the Robin Rug Factory and the Stone Harbor Condos should be covered with sedum green roofs. The new boardwalk will be made of engineered wood, which is produced from recycled wood. The secondary paths linking Thames Street to the new boardwalk and green spaces will be brick, to match the pathways in the existing parks."

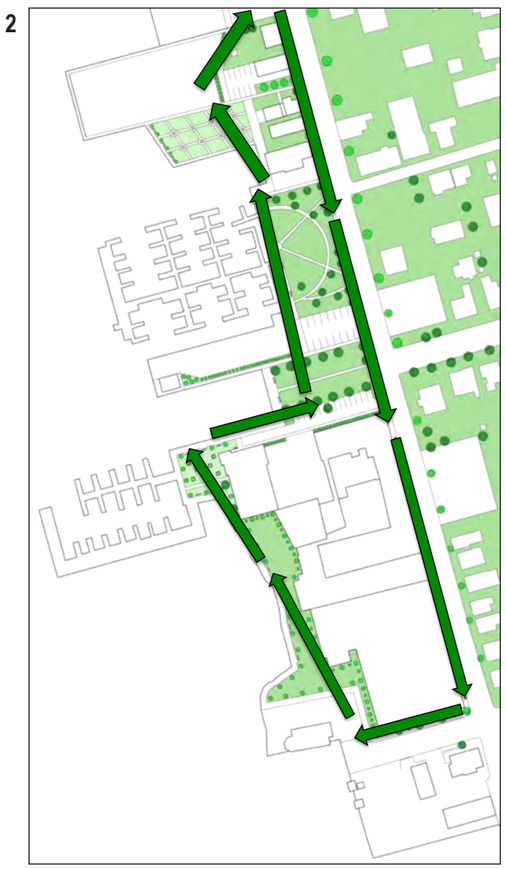
1



Armory Concept

The adaptive reuse of the armory building will combine two major programs: The Bristol Maritime Center and The Bristol Ecology Center, united by a new café and lounge space for the public and employees. The café space will create a transitional zone between the two distinct programs, draw the public into the building and generate a profit for Bristol.

2



1. Master plan map.

2. A united green corridor along the Bristol waterfront.

The proposed Bristol Ecology Center is an educational facility where the public can learn about plant and marine life in Bristol Harbor. The Ecology Center will contain the following:

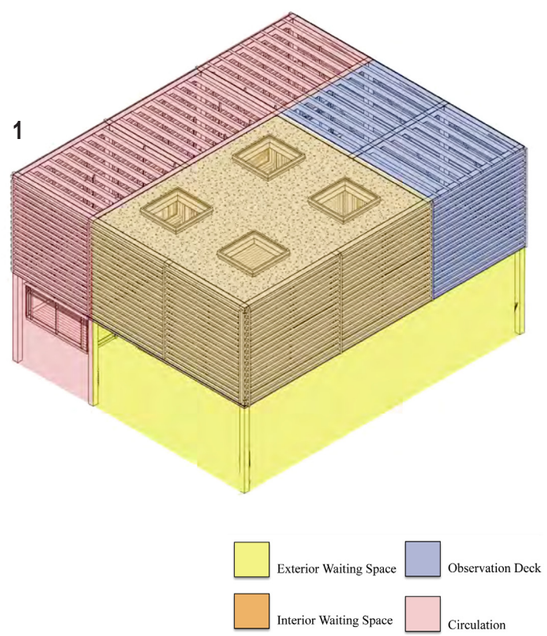
- Live exhibits of indigenous plant and algae species and different forms of aquatic life, such as turtles and small fish.
- Saltwater tanks pumped in from Bristol Harbor, filtered and cleaned naturally by the plant life and dispersed back into the harbor.
- Virtual, interactive displays and touchscreens, and a large screen on the southern wall to be used for films, lectures, etc.
- Above the café will be a mezzanine with flexible seating so the exhibition space can be transformed into a large lecture hall, theater or performance space, ensuring the building remains a multi-functional space.

The historic exterior of the armory remains untouched except for two changes. Two of the original windows in the southern wall (which have been bricked over) will be reopened, and a series of small skylights will be introduced into the roof of the building. These two changes will allow more natural light to reach both the plants and the public spaces.

Ferry Landing Concept

The proposed ferry building is raised to protect the interior from flood damage, to preserve views of the waterfront and to create a sheltered waiting space underneath the building for passengers. Because the ferry landing would be used year-round, a portion of the upper level waiting area is enclosed in glass. The raised ferry building is accessible from ground level via a ramp, which becomes a vertical extension of the boardwalk, leading pedestrians up to a shaded observation deck that overlooks the harbor and adjacent parks. The modern 'glass box' is wrapped in a screen of operable, wood louvers that shades the glazing from direct sunlight and references the traditional wood clapboard architecture in the region.

1



2

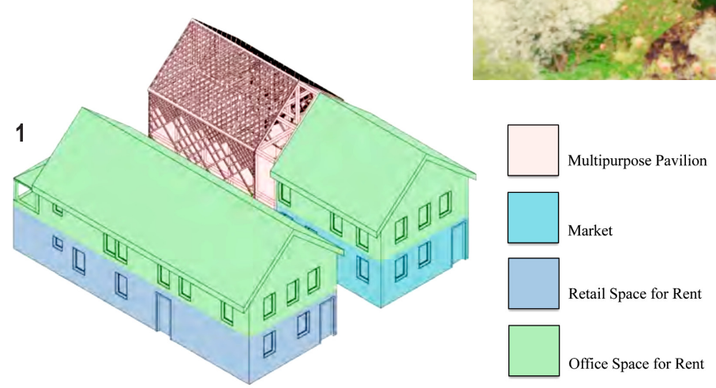
1. Ferry landing program.

2. Perspective of ferry landing, a raised, modern 'glass box' design.

Waterfront Concept

Fish markets require many service spaces in order to function properly, including prep/cleaning areas, ice production and refrigeration equipment space, cold and dry storage space, etc. They also require access to water and electricity. For these reasons, I decided to create the new building as an addition to the existing building, which already has the necessary infrastructure. By locating all of the "fixed" program elements within the existing structure, the new pavilion is flexible in use. It can function as an outdoor extension of the fish market, a civic event/celebration space for the town and a public pavilion along the boardwalk. The market will occupy the first floor of the northern building. This will allow the market to be open year-round, regardless of the season. The upper floor will be office space that can be rented out by the town. The new structure is a comparable size to the existing buildings but is one continuous, double-height volume.

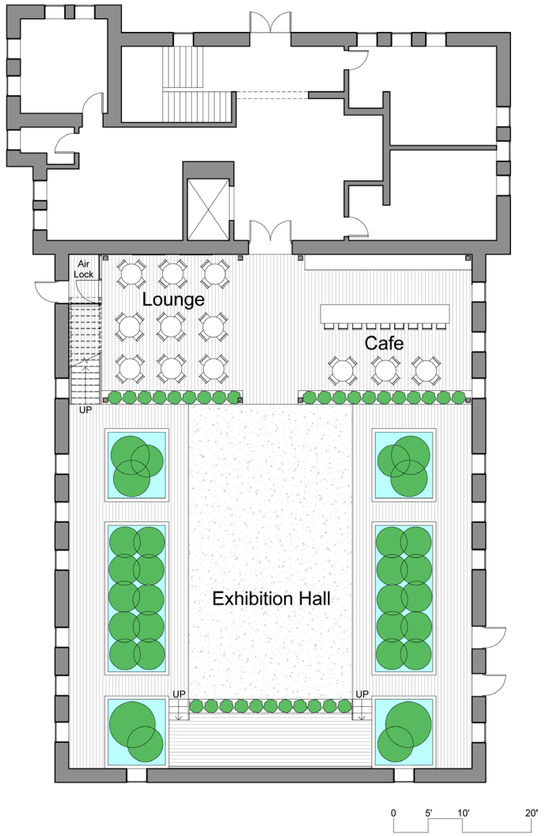
The structure is a traditional gable frame, which reflects the shape of the adjacent historic buildings. Wrapping this regular frame is an irregular, trellis-like screen. The screen is open towards the bottom to preserve views of the waterfront, and it gradually becomes denser towards the top to provide shade and shelter to the interior. On the upper portion and the roof, the screen becomes a trellis for climbing plants. These plants will grow denser in the spring and summer months, shading the interior from the summer sun. In the fall, the leaves on the climbing plants will change colors and in the winter, the leaves will fall off, leaving the wood structure bare and allowing more sunlight to warm the interior. The plants will naturally regulate the amount of shade and sunlight the space receives and will create a more dynamic facade which is constantly changing with the seasons.



1. Program for waterfront property.

2. Perspective of waterfront building and pavilion.

1



2

1. Proposed first floor plan for armory.

2. Perspective of armory as an ecology center.

Design Options

Jessica Delemos

"My concept for Bristol's waterfront is to overlap the harbor and the land. *By taking the path that would connect the whole waterfront and extending parts of it to the harbor edge, visitors would have views of the water from different angles, plus views towards Thames Street and the downtown area.*

I want to bring Bristol's great history in sailing and shipbuilding into the boardwalk and surrounding parks by incorporating sails and masts to create shade. My plan would also incorporate along the pathway old boats filled with plants and exhibiting written content and images from Bristol's history on their exterior. Waterfront lots would be transformed into shops that focus on goods for fishing and traveling. The armory would be transformed into a maritime center to service boaters and sailors, while also providing a training area for children and adults to learn to sail or to practice in the off-season."

Boardwalk Concept

The railing along the boardwalk would incorporate educational panels to celebrate Bristol's past and the history of the waterfront. Pavers along the boardwalk would incorporate additional Bristol history and could include images of boats that once sailed in the area. These pavers can also be used as markers along the boardwalk to represent historic businesses and homes, which used to be in those areas. The historic paver concept could also be used along Thames Street and Hope Street to create a cohesive history of Bristol. In the evening, the boardwalk would have solar-operated, low lighting, solar pavers, elevated lamps and illuminated planters to light the path. Along the boardwalk, shaded gathering spaces will be created by ship sails.

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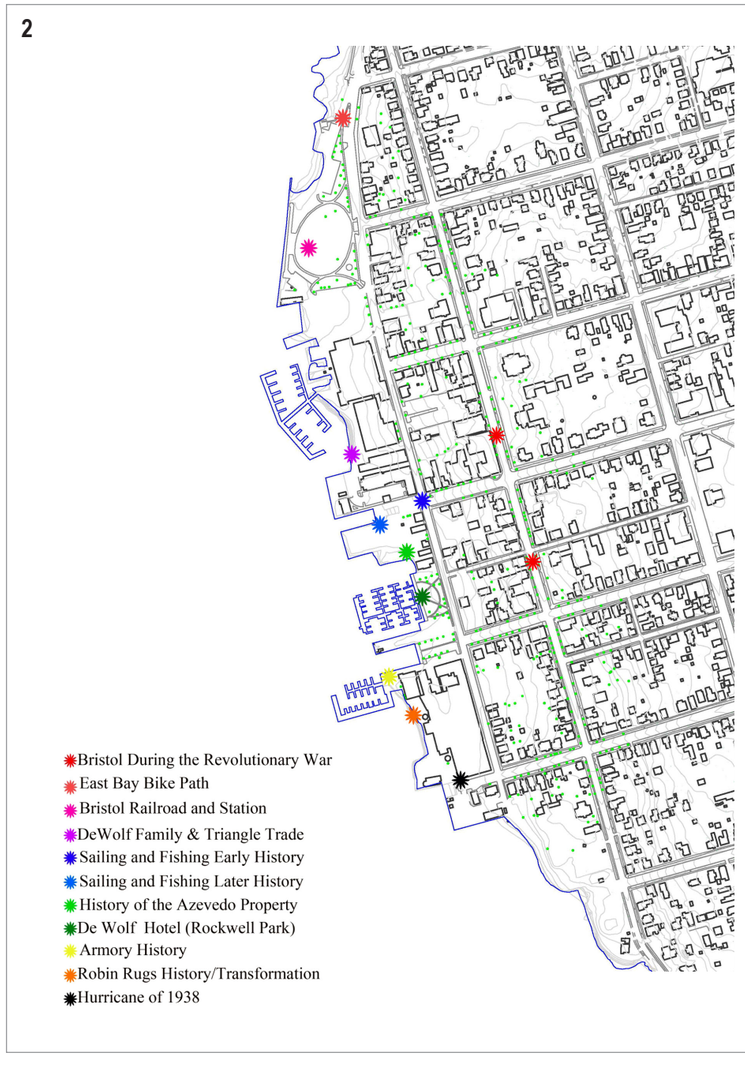


1. Sails provide shaded resting areas along the boardwalk.

2. Map of Bristol waterfront highlights historic sites.

Armory Concept

With the transformation of the armory into a maritime center, the inclusion of a space dedicated to learning about boats and sailing would be essential. The gymnasium space would include two sailboats for guests to learn about sailing and get comfortable on a boat without the waves of the harbor. The mezzanine would be devoted to lectures and classes, while providing a view of the sailboats below.

Waterfront Concept

The two waterfront buildings would be turned into commercial space on the first floors. The northern building would be converted into a small, quick-service café with limited seating where guests could stop and pick up food to take with them along the boardwalk. The southern building would be converted into two shops. The front space would be used as a bike, moped and scooter rental site for visitors to the area. This business would be ideal for boaters staying in the Bristol area without a vehicle. The back portion of the space would be used for a bait and tackle shop. The upper levels of these buildings could be used for rental space for either businesses or artist studios.

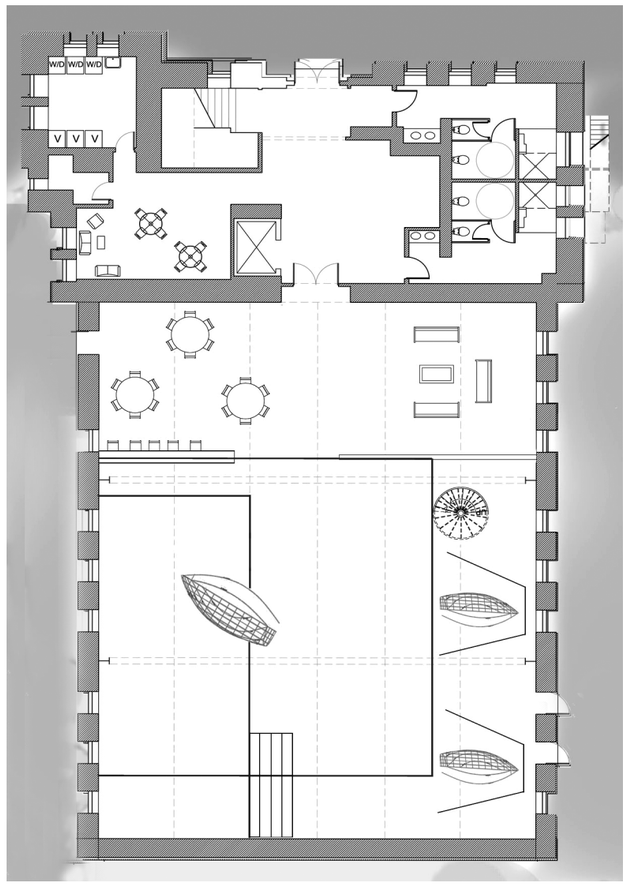
The area behind the waterfront parcels would be converted into rain garden space. Right now much of the rainwater runoff from the downtown area flows straight down to the harbor. By incorporating a rain garden to this site, the vegetation will help absorb the water and any pollution before it enters the harbor. The site would include grasses, water pools, plants and a path for guests to walk through the space.

1. Section of waterfront property.

2. Exterior sketchces of waterfront buildings with indoor and outdoor space.

3. Aerial plan of waterfront.

1



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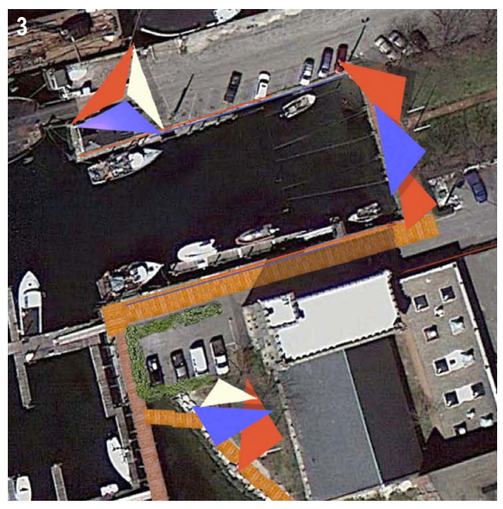


1. Proposed floor plan of armory.

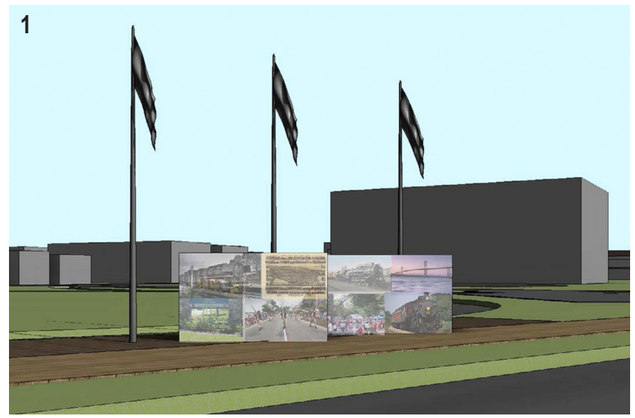
2. Section of armory.

3. Site plan of boardwalk near armory (triangles are sail shades).

Design Options

Eric Figueredo

"The architectural concept for this project is to integrate more public interaction and strengthen the community through education of historic values to the area. *This is achieved through the forms used throughout the site that represent the contrast of the waterfront history of Bristol to the history of the city and the people. The linear elements, such as the white concrete paving and the green grass, represent the rigidity of the town and the history of the Bristol community. The curved, organic elements, like the pathways and various plantings, represent the fluidity of the water and the Bristol's connection to it."*



1. Historical break-out panel to be located at key locations along the waterfront.

2. Map of historical walking tour. The blue marks represent areas of break-out panels.

Armory Concept

The armory will serve as a transportation and commerce center that will create a triangle of historical centers throughout downtown Bristol. The historical center will feature knowledge based on the industry and forms of transportation specific to Thames Street, including Robin Rug, railways, American Coat Factory, DeWolfe slave trade and more. This will link to a walking tour throughout the pathways redesigned on Thames Street with strategic information panels located at places where history was once alive along the site.

A visual representation of the coastline would also be placed on the materials along the boardwalk and will allow people to see how the area has changed. This concept will help increase tourism and revenue to services located along the boardwalk and in the historic center to generate funding for the town of Bristol.

The armory would operate as a maritime center and would provide extra space for various activities needed for boating. This would include exhibit space, a café, a gift shop and multipurpose space.

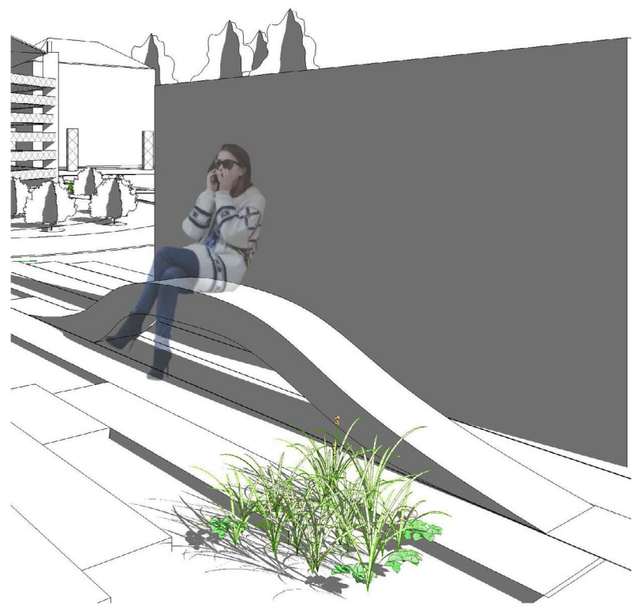
Boardwalk Concept

- Lighting features located throughout will use low-level LEDs in site furniture to guide visitors at night.
- Several markers throughout the area, from concrete pavers to plants and signage, will allow visitors to be drawn into the area.
- Several longer planters and gardens will be positioned to green the area and act as a way to draw visitors to the water.
- White concrete panels will be set into and rise above the pavement in areas in order to create interactive objects.
- Benches will be located throughout the boardwalk, designed in a unique and fluid form to rise out of the boardwalk. The form will represent the water.

Ferry Landing Concept

The site for the ferry terminal contains two main contrasting pieces that work together. First is the linear concrete boards located throughout the pavement in white and grey. These linear forms are what represent the history of the city and its grid formation. In contrast are the organic forms, such as the pathways that lead through the pavement of the site. The linear forms travel along these pathways and create shading zones above the organic forms to make a statement about the connection of the physical town of Bristol and the history of the waterfront.

1



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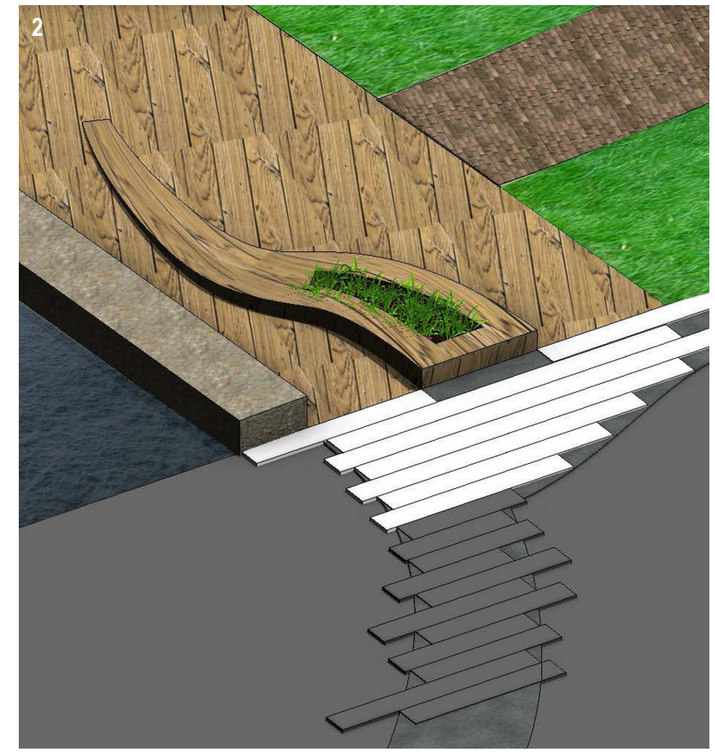


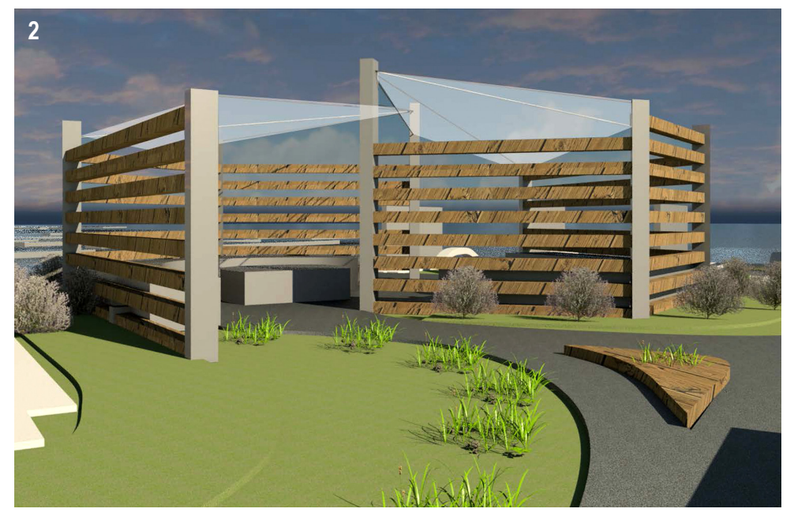
3

1. Fluid boardwalk benches represent the water.
2. White concrete panels represent the grid aspect and often rise from the pavement to create interactive elements.
3. Signage for the ferry terminal.

Parking has been moved out of the front of the terminal to allow for views and access. The concrete boards are what break off the organic trail and draw you into the ferry terminal pavilion. Contrasting forms are not clearly visible from an above angle on the site, but in perspective or down in person the concept is clear. Planters have been used to separate different paths to fully connect all areas of the site. The structure will allow for wind and water to freely move about on the first level and will act as a pavilion-style building with no electrical or HVAC units. A staircase allows access to the top floor, and a concrete bearing wall will be placed in the center of the structure for support. The new terminal will include automated ticketing systems and the building will not have any physical rooms. These changes will attract visitors to the waterfront, provide increased revenue and additional boardwalk space, and will stand against floods and increased ferry usage.

Waterfront Concept

The first floor of the south building is primarily office space while the north building only contains offices on the second floor with a separate entrance. The south building will be all studio office space. The north building will include cleaning, sanitation and storage for the fish/farmers market pavilion. With the water heater and kitchen already in place, this plan proposes it be used for cleaning and storage purposes within the pavilion. The south building will contain office space for local businesses overlooking the water. The farmers market pavilion will be a semi-enclosed marketplace for local farmers markets to come by and sell produce as well as a primary seafood-based business.



1. Waterfront site plan includes a pavilion, fish/farmers market and business office space.

2. Perspective of the pavilion.

1. Perspective of ferry terminal.

2. Interior view of proposed armory reuse as a transportation and maritime center.

3. Perspective of armory, adjacent buildings and ferry terminal.

Design Options

Jack Hamm

"My idea is to connect the community from the urban block closer to nature along the water by creating unique thresholds at specific points, which will encourage people to walk through and experience the area. *The current fragmented boardwalk is pieced together to create a unified path where people can walk along and feel more connected to the waterfront that is iconic to Bristol's history. A common goal throughout all three sites was to promote soil and water ecology through various landscape features and sustainable design options. The architecture and landscape are integrated as one identity along the waterfront."*

Waterfront Concept

For the reuse of the two historic buildings on Thames Street, the southern building will be proposed as a fish market and the northern one as a retail store for a local business. The goal is to maintain the front facades to respect their historic image, but to change the interiors for their new functions. Currently next to the proposed retail store is a fenced-off green space with two trees that block access to the waterfront lot. The objective is to clear that area and create a trellis that would activate the space as a seating area and a gateway into the lot. Green plantings would weave through

Perspective of waterfront pavilion.

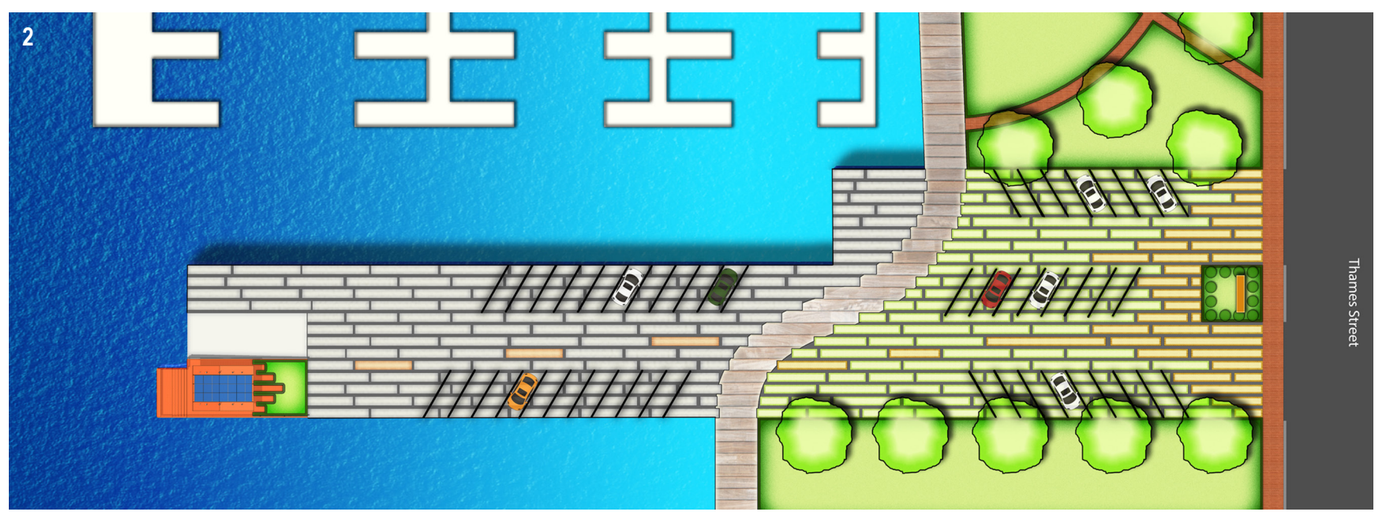
the trellis to create a green area and frame the pavilion that is down at the end of the lot. A swale begins at Thames Street that would help reduce runoff water during heavy downpours.

The idea for this pavilion was to place it right by the water as a stop for people walking along the boardwalk. It could be an iconic part of the waterfront with a variety of different functions. The pavilion creates a stage where a variety of events could be held. Solar panels on the pavilion roof help power the lighting at night. There would be a sign in the space to show the different levels water has risen during past storms.

Ferry Landing Concept

The proposal for the ferry dock site is to create a permeable green surface that works both aesthetically and functionally to absorb runoff and act as a green area connecting the parks together. The permeable grass is designed in a particular pattern that follows the linear shape of the dock. Brick is used at the beginning of the dock as a continuation of the sidewalk that serves to lead people through the dock as it helps draw your eye down the space to the waiting area and water. A green area in the front intends to have a new ferry dock sign as well as planting to create a more inviting entrance. Almost all the parking is kept in the design. The waiting area is proposed to be built at the end of the dock in the same location as the current one.

The concept for the ferry station area was to create a functional structure that was unique but also secure enough to withstand hurricanes with high wind speeds. The structure uses a combination of regular and slanted round columns that are strengthened by the supporting louvers built into them and secured by the beams connecting the columns together. This helps give stability to the structure in all directions. The beams are hidden by the wood-finished butterfly roof. Solar panels on top of the roof provide energy for lighting the waiting area at night. The materials consist of stainless steel for the columns and wood for the seating, louvers and roof. The overhang of the roof allows for shading during the



1. Perspective of ferry station.

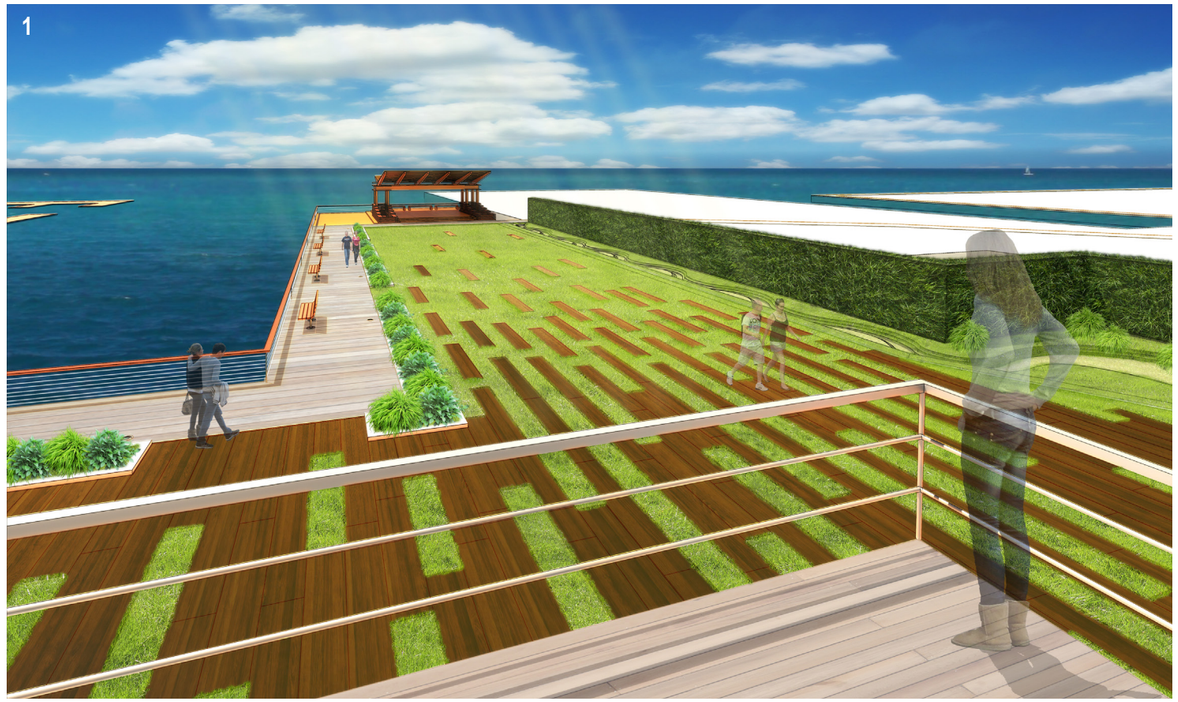
2. Site plan of ferry landing with permeable green pavers.

day against the sun and protection when it is raining. The louvers block a portion of the wind while allowing some to circulate through. The position of the benches allow for social interaction under the waiting area, while also creating more private seating on the outer areas overlooking the water.

Armory Concept

The primary proposal for the Bristol Armory adaptive reuse is to create an ecology center that educates kids about environmental issues and sustainability. Exhibits would incorporate the local ecology (plants and wildlife) and bring awareness to the history of the Bristol waterfront. A feature wall would honor sailors visiting the building; they could leave a mark and their story on the wall and be a part of armory history. There would also be a cafe on site.

Perspective of proposed youth ecology center in the armory.



1. View from proposed observation deck on top of fish market.

2. Proposed maritime center Sailor's Hall in the armory.

3. Waterfront buildings include a fish market and retail stores.

Design Options

Kaelen Hunter

"I took my inspiration from New England traditional marsh land. *In the landscape I wanted to incorporate patches of marshland to serve as an aesthetic and to function sustainably as erosion protection, natural drainage and ecological habitat. The marsh grass blades itself are used as the main design concept in the pavilion."*

Boardwalk Concept

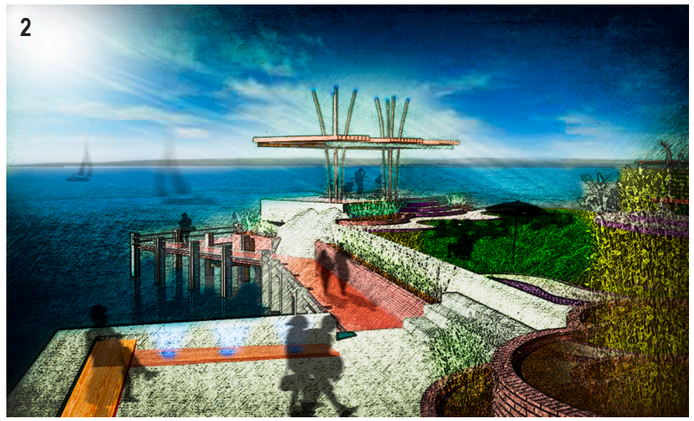
The boardwalk will take on an identity by using "Transitional Pavilions." These pavilions will offer visual stimulation, creating the "want factor" to continue the boardwalk. The shape of the actual boardwalk will take on both a linear and organic form. The arbor on the pavilion will provide a natural shelter and a resting area for the much needed surplus of seats along the boardwalk.

Waterfront Concept

The waterfront site takes on a very organic design that incorporates garden boxes into natural marsh shapes. This serves an aesthetic and functional purpose, giving the site smooth circulation and promoting the continuation of the boardwalk.

The north building will be renovated as a cafe. Bristol has many bars and dining areas, but they are more sit-down and eat locations. This cafe will allow people the option to grab and go while also offering both an exterior and interior sit-down section. The north building will have a mezzanine that will expand the smaller building and allow for more flexible use space. The south building will become an information/art gallery for local artists to display their work. The building will have office space as well, possibly to house the new harbor patrol office.

The waterfront site will look like a Japanese rock garden in shape, but is represented as marshes instead. Reintroducing vegetation back to the site is both important visually and sustainably. The performance pavilion is made for entertainment and for use as a flexible gathering space. It will have interchangeable modules and acoustic paneling to help boost sound projection. The site utilizes the views of Bristol Harbor.



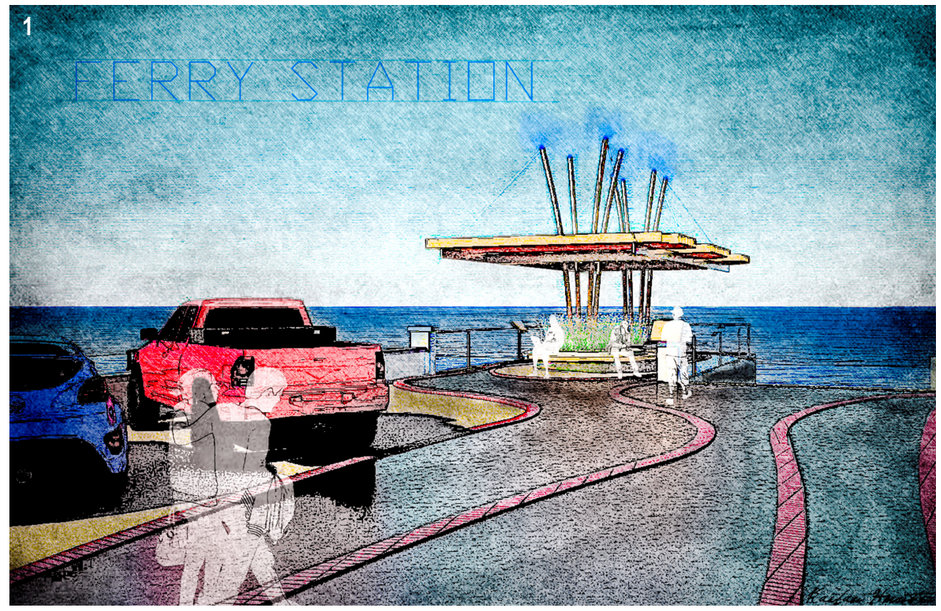
1. Site perspective.

2. Perspective of boardwalk.

Ferry Landing Concept

The main focus on this site is recycling water. Because of its constant use by automobiles, a lot of runoff water mixes with hazardous chemicals, which pose a danger to Narragansett Bay. To fix this problem, gravel and plants will surround the parking section closest to the harbor in order to absorb the excess water that would normally create runoff. A brick texture will run from the entrance to the station itself to assist drivers in finding the ferry. Two transitional pavilions will be placed on both sides to serve as a resting point and promote the continuation of the boardwalk. The pavilion will have vegetation growing from the roof in order to create a natural shelter from inclement weather or shade. The ticket booth will not be at the ferry station; instead it'll be placed at the armory.

1



Armory Concept

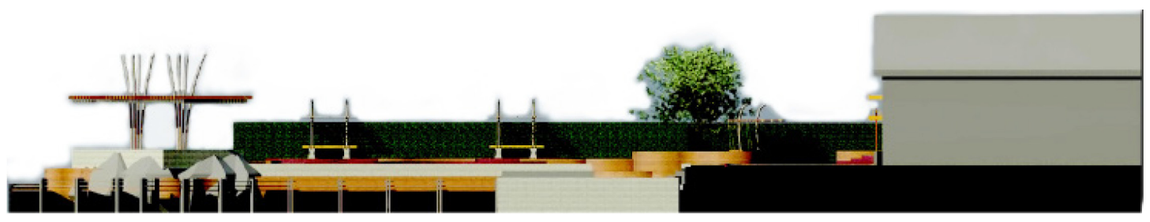
The armory will be repurposed as a maritime center. The new design will incorporate showers, laundry, kitchen, a store and a fitness center for boaters visiting Bristol. The ship store will be affiliated with the local boat supply distributors (Jamestown Distributors, Ocean Scout Marine, etc.), and a shuttle service will be available to guests for area hotels (Bristol Harbor Inn, Bradford-Diamond-Norris House, Bristol House Bed &Breakfast, etc.). The interior will be broken up into three different sections: store, ticket booth/ information and cafe. When you first walk into the armory, the store greets you followed by the ticket booth. The café and seating area are located at the back portion with an extension of this space above. The highlight of this particular space is to show the craftsmanship of local boating manufacturers.

1. Perspective of ferry station.

2. Site elevation.

3. South section of armory.

2



3

1. Perspective of the waterfront cafe arbor.

2. Waterfront site plan.

3. Proposed armory interior as a maritime center.

Design Options

Andrew Larsen

Boardwalk Concept

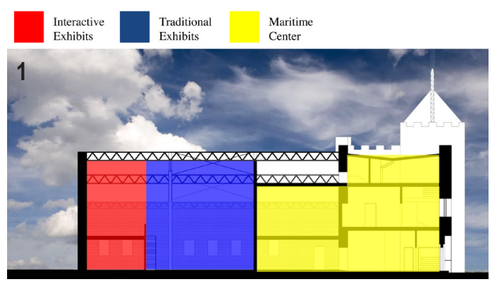
The site in Bristol is unique in that it embraces the juxtaposition between the natural, fluid feeling of the water and the structured, man-made grid that has been dropped on top of this marine habitat. The boardwalk balances the line between these two extremes, and it is my aim to embrace both. The boardwalk will be a ribbon that meanders through the site, passing back and forth between the city and water and embracing the various points of activity on the way. The boardwalk design will also try to restore nature to the gridiron of Bristol. This plan will create a continuous green stretch along the waterfront, melding the natural with the man-made.

Waterfront Concept

The waterfront site will be the home to a community market that encompasses the two existing buildings as well as a new pavilion. The new pavilion will be a greenhouse containing a community garden. Both buildings will support the garden. The north building will be repurposed as a small café that uses ingredients from the adjacent garden. The south building will house an indoor/outdoor farmers market. A trellis-covered patio connects all three of the buildings, helping to unify their purposes and providing outdoor space for the markets and dining. A retention pond collects runoff water on the site.

Armory Concept

The armory will become an interactive museum with an historical and maritime focus — an extension of the Bristol Historical and Preservation Society. Smaller versions of the pavilion and lighted pathways will pull people across Thames Street and into the main entrance of the armory. The entire paved area will be resurfaced with permeable pavers to help cope with the large amounts of runoff. Services will include transient paid dockage. laundry and shower facilities.



The first floor will contain a mix of traditional exhibits displaying sailing antiques and documentation of early life in Bristol. The center of the room will have a large wet tank where children can play with toy boats. Glass-walled classrooms can hold various classes where anyone can go to learn different maritime skills.

1. Proposed pogram for the armory.

2. Perspective of armory interior in its reuse as an interactive museum and maritime center.

The second floor will contain interactive activities and will be designed to appear as the deck of a colonial sailing ship, complete with a cabin and a mast with a sail. On this deck, kids can dress up in clothes of the period, learn to tie knots, hoist a sail and communicate with flags. In the cabin, visitors can feel what it's like to lay in a hammock and play popular games from colonial times. The rear wall, currently plain brick, will be made into a mural depicting the view out from the deck of a boat.

Ferry Landing Concept

The site design for the ferry dock creates a green zone that stretches the length of the waterfront. Green belts planted with grasses and bushes line the edges of the site with the majority surfaced in permeable pavers. Areas of high traffic are inlaid with solid bricks to withstand the greater wear. The boardwalk connection is a path of pavers of a different material running through the site, the edges defined by recessed in-ground lights. A sidewalk runs the length of the site to allow pedestrians direct access from Thames Street to the ticket building without worrying about traffic.

The new ticket booth building for the Prudence Island Ferry is designed to appear as an extension of the green belt that runs along each side of the site. The building rises out of the site, opening towards the harbor, with a green roof stretching to the ground. Glass walls offer unrestricted views of the surrounding waterfront, and a rooftop observation deck offers an elevated waiting area for when the weather is pleasant. Operable panels in the glass walls allow for natural ventilation, and removable panels allow the building to become an open-air structure in the summer. Tickets are purchased on the interior from a machine built into the wall.

1. Section of ferry ticket booth.

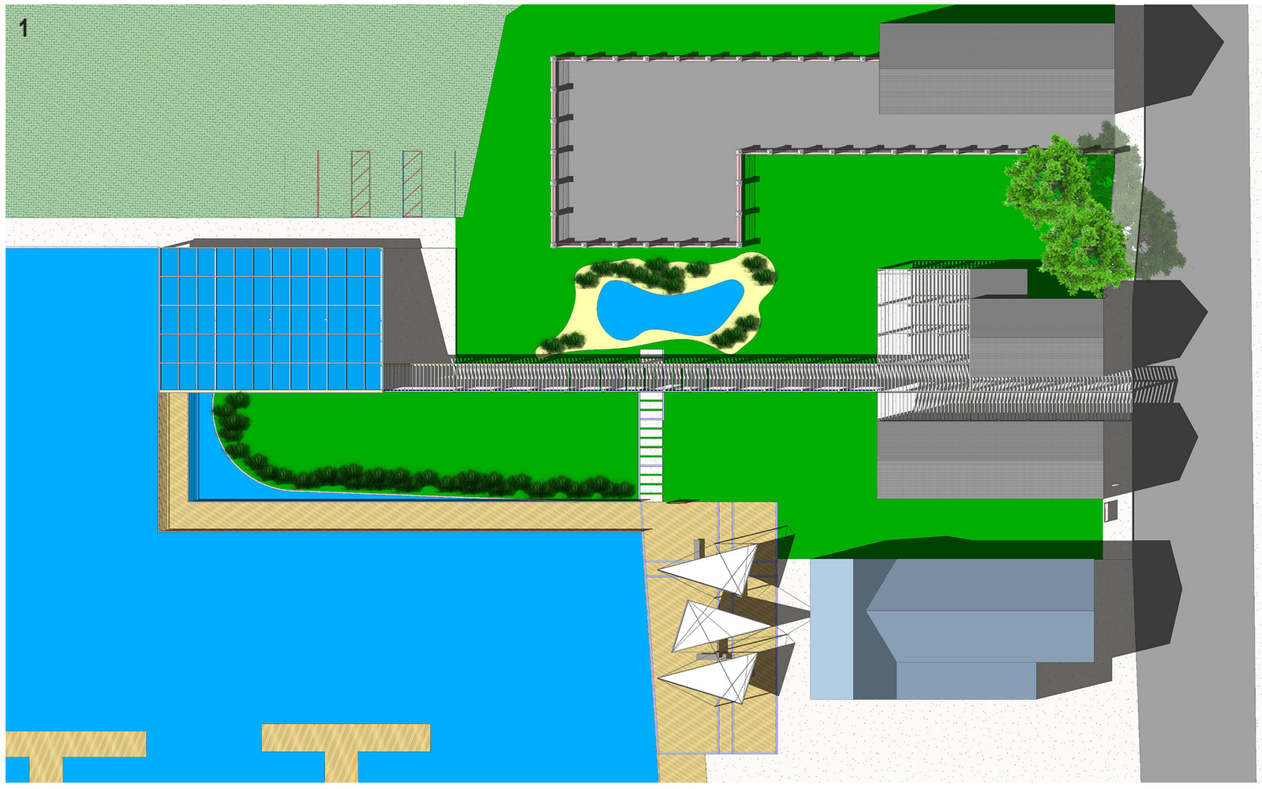
2. Perspective of ticket booth and ferry landing.

Sustainability Concepts

- Rainwater collected from roof runoff and stored in barrels on site can account for a good portion of the water used in a given facility, from cleaning fish to washing dishes.
- After fresh water is used for any of its various uses, the unclean leftover water ("grey water") can still be used for certain services including toilets, urinals and irrigation.
- Large, flat, roof surfaces, especially those oriented to the south, offer great opportunities to generate solar power. With today's technology there many options for photovoltaic materials ranging from traditional panels to newer shingles and louvers.
- Permeable pavers will be used to limit heat island effect and to filter runoff.
- Recycled lumber and fly ash pavers will be used along the boardwalk.
- Boardwalk lighting will include LED ground lights and solar trees.

1. Waterfront plans include a year-round community greenhouse garden.

2. Section of the repurposed waterfront buildings and the greenhouse.



1. Waterfront site plan.

2. Site signage.

3. Boardwalk perspective.

Design Options

Edward Law

"The two major apartment complexes in the area are Stone Harbor Apartments and Robin Rug Apartments. They are the largest and most condensed spaces along Thames Street. The two apartments also serve as the beginning and end of the boardwalk, making them the most important structures along Thames Street. ***My goal in this project is to connect the two complexes by park connections along the waterfront, to promote exercise and emphasize on a healthy living environment."***

Boardwalk Concept

The Bristol waterfront boardwalk will begin from the south of Robin Rug on Constitution Street and end at the north tip of Independence Park. The boardwalk should be continuous with parks and wayfinding elements to guide people to the water edges. The boardwalk will have special entry and connection points at Constitution Street, Rockwell Park, State Street, Independence Park and the Bike Path.

A natural cedar wood material will be used for the additional boardwalk, as permeable grass pavers will be used in parks to allow both cars and pedestrians to travel over them. Wayfinding sculptural elements will be located along Thames Street, nearby the entrance and exit of the boardwalk, as well as at State Street dock and Rockwell Park. The sculptural element is made out of stainless steel and shaped like a sail. There will be an overall map that shows its location along Thames Street and how they connect to the waterfront. The sculptural element will also light up Thames Street at night time and guide people to the boardwalk during the night.

1. Sculptural wayfinding signage to be located at various sites along the boardwalk.

2. A canopy allows for outdoor gathering on the waterfront.

Waterfront Concept

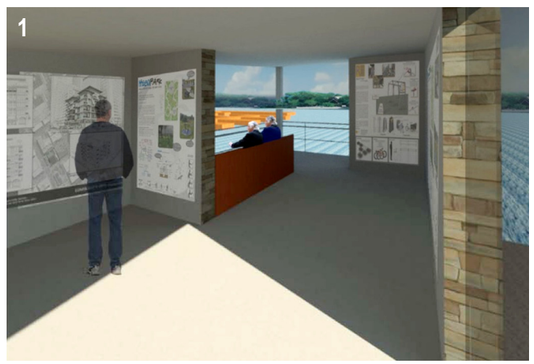
The waterfront lot will be a central gathering point for people, especially during festivals that occur during the year. The open plan will allow people to connect freely from Thames Street to the waterfront. The two historic buildings are transformed into a café and art gallery/visitor center. The café will be run by local businesses, allowing for take-out, so people could enjoy their beverages or food along the boardwalk. The art gallery/visitor center will showcase the work of local artists.

Towards the water's edge, a 30-foot-high green water tower will serves as a magnet for people, connecting sailors from the water and people approaching Bristol. The water tower will also serve as an observation deck. Outside, a canopy will serve as a tensile structure for temporary use. Food markets and exhibitions can be held at this location. Seating is located on both ends of the structure with shrubs behind. A pavilion on the ground floor will display historic information about Bristol.

Ferry Landing Concept

It is important to create a connection between the two parks within the site. Drivable grass and permeable pavers, which is a flexible, and a plantable concrete pavement system, will be used within the edge of the two parks. The green area will serve as permanent parking, and the grey area will serve as daily parking spots. I have also introduced a more direct entry from Thames Street, where pedestrians would enter through either Rockwell Park or Memorial Park, and the wood flooring will guide them to the building.

The ferry landing facility will be a concrete frame building, which is more storm-resistant than wood or steel construction. It will also be partially clad with a stone material. The sloped green roof reduces stormwater runoff, city "heat island" effect and smog while also improving air quality.



1. Second floor interior perspective of Prudence Ferry Landing facility.

2. Perspective of ferry landing with armory in background.

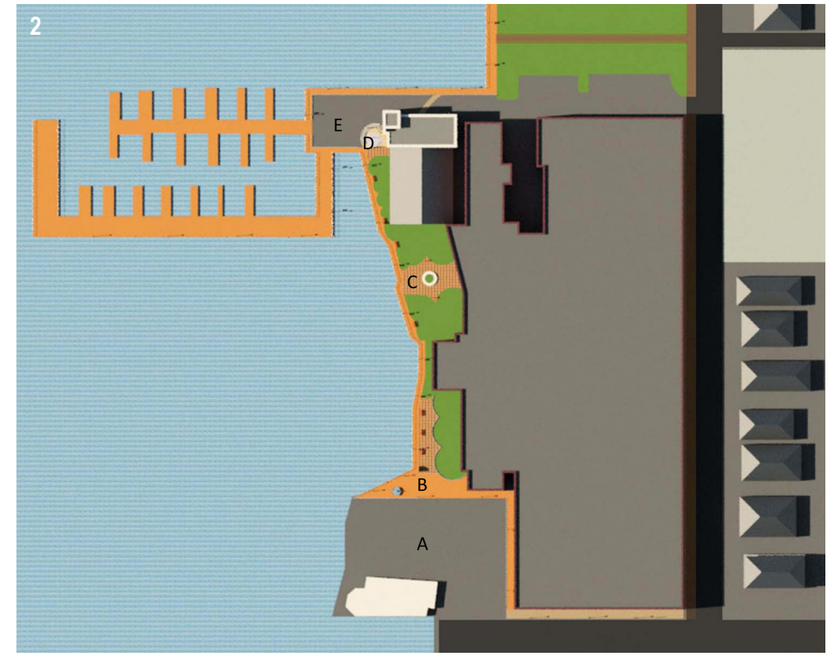
Armory Concept

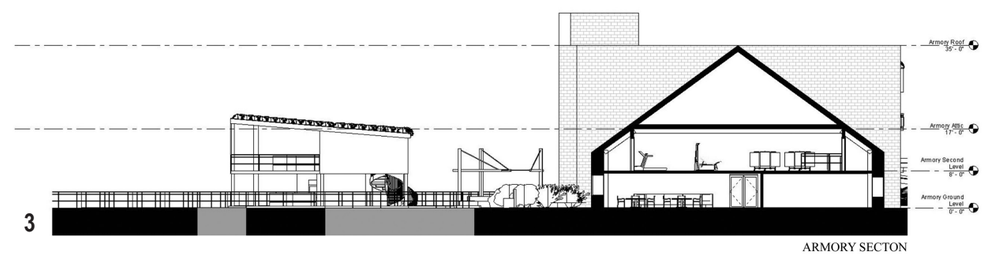
Goals for the reuse of the armory include:

- Generate revenue with low operation costs.
- Functional year-round.
- Promote healthy living.
- Engage Bristol community.

Shrubs and greenery will create a separation between Robin Rug residents and pedestrians walking along boardwalk. Seating will be located along the boardwalk, as well as at the rock garden, courtyard and entry plaza.

The armory will house the Bristol Health Club to promote healthy living to the Bristol community. A health club will attract people due to its convenient location. Facilities will include an exercise studio, fitness equipment and the Goodhealth Café, which will serve fresh, nutritionally dense food and beverages.





ARMORY SECTON

1. Interior perspective of armory with health club space.

2. Site plan of armory includes: (B) entry plaza, (C) courtyard, (D) rock garden and (A,E) two parking lots.

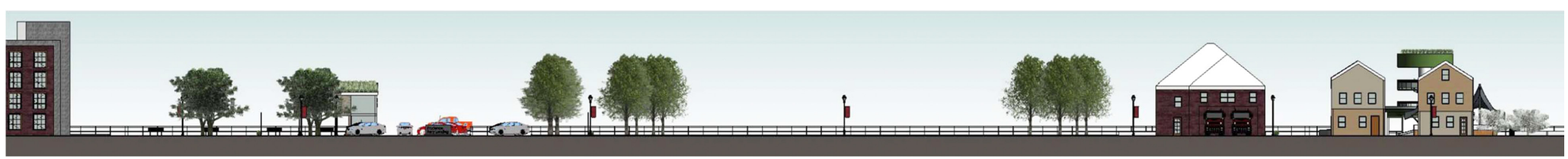
3. Armory section.

1. Perspective of 30-foot-tall water tower that includes an observation deck, water storage and Bristol historical displays.

2. Perspective of the armory from the rock garden.

3. Thames Street elevation.

2



Design Options

Jake Levine

Boardwalk Concept

The overall concept of the new boardwalk is to provide a walking path down the entire coast, connecting Independence Park with Constitution Street. There is an existing boardwalk in the north, but no boardwalk to the south. The goal is to link them, while providing breakout spots at the connection points and destination drop-offs along the journey. The walkway itself will provide entertainment and link the major Bristol waterfront landmarks together with one scenic walkway. The area located behind the Robin Rug building will have a boardwalk that extends into the water, rather than staying on the land. Wider areas could be incorporated on this portion of the boardwalk to include ice cream stands or other small businesses.

Armory Concept

The proposed plan for the armory will be a maritime center. Revenue could be generated through tours, events, sailing sessions, expos and more. The entrance would have a new lobby area with breakout space and a large storage locker room. Two new changing rooms would be added along with a large storage space. The second floor will continue to house the Harbor Master and staff. As a maritime center, the armory site would include a fuel station for boaters, which would provide a valuable service and help bring money to the town. A fuel station on the side adjacent to the parking lot could fit two 3,000 gallon tanks and would be an easy access spot for all boaters.

1. Elevation of boardwalk.

2. Proposed ice rink inside armory to increase revenue for Bristol.

3. Perspective of armory with fuel station for boaters.

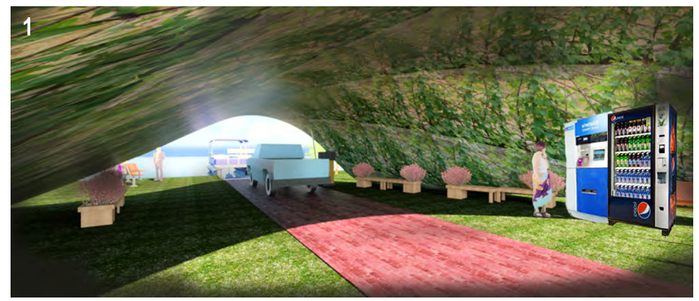
As an additional revenue source, a 3,000-square-foot ice rink could be added to the rear of the building. This would create revenue for the Town of Bristol throughout the year by providing practice space for teams and open skating for guests. Based on the cost of installing a synthetic ice rink and the anticipated pricing, the Town could see a profit of over $100,000 per year from this addition. Currently, the closest ice rinks are located in Fall River and Newport (winter only).

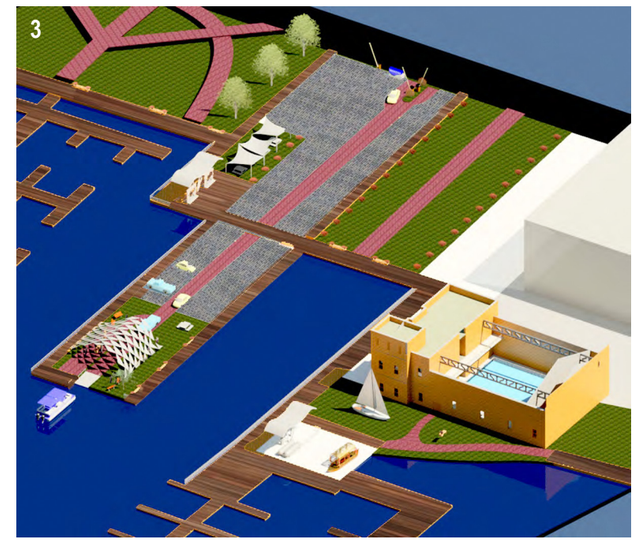
Waterfront Concept

The two buildings would be restored and repurposed to include outdoor seating, a fish market, retail space and the Harbor Master's offices. The open space behind the buildings will have vegetation to absorb runoff and shaded areas for pedestrians. The space will also house a 500-square-foot living machine to help with water filtration.

Ferry Landing Concept

The current ferry location is in need of renovation, and a new ferry landing could be celebrated as a beacon for boaters coming into Bristol. A new modern landing could increase visitors to and from Prudence Island. The parking lot will have 50 spots: 30 for overnight stays and 20 for daytime parking. The site will also include a small park to attract visitors, provide space for those waiting for the ferry, and provide views of the water. The structure will be designed to look like a wave crashing onto the land and be created from a lightweight collapsible trellis that will serve as a waiting space for guests.





1. Wave concept for the ferry landing.

2. Perspective of waterfront with "living machine" to aid in water filtration.

3. Site plan.

Design Options

Ian Luke

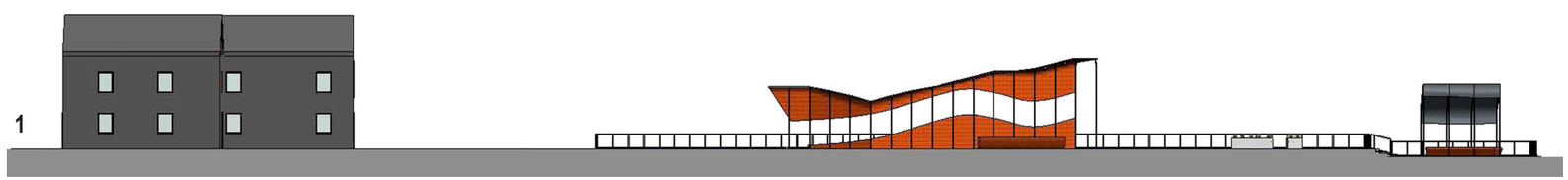
"Bristol has a long and rich history, which is very important to the town, its people and its progression. ***In my project, I want to instill this historical importance into the people navigating the Bristol waterfront.*** *I include elements and ideas within my designs to edify people of the history and to also add to the history. To retain the historical structures and repurpose them is also important to my overall theme."*

Boardwalk Concept

The boardwalk itself is very important to the master plan of the project. It acts as a physical connection between all the sites and as a mental connection between the present and future. The boardwalk will be used to draw people along the waterfront and to create an experience where they will feel connected to the history. The current boardwalk is very fragmented and separated. This makes it difficult to navigate the waterfront continuously. Connecting the pieces of the boardwalk will create a continuous thread throughout the entire site and bring the waterfront together. Some portions of boardwalk will be created over hardscape and not water, while other portions will be built over the water. This is important because this now creates an easy navigable route connecting Independence Park to Constitution Street. Bamboo or wooden planks will be used for the boardwalk areas over the water, while fly-ash concrete planks of the same dimension will be used for areas that intersect with concrete.

Waterfront Concept

For the waterfront property a farmers market, a pavilion at the end of the site and adaptive reuses of both historic buildings will be considered. The farmers market — inspired by water for the form of the building — will draw people in from the street and connect guests to the boardwalk and a rest area. The site will contain a lower deck area with pavilion for people to break off from the boardwalk with seating along the side to allow for shaded resting and waterfront views. The building offers a fluidity to reveal its inspiration with a lower opening on the southern side and a higher opening on the northern side, allowing for ventilation, air movement and natural lighting. The southern building on the waterfront lot will serve as a museum reflecting Bristol's long and rich history. The northern building on the waterfront lot



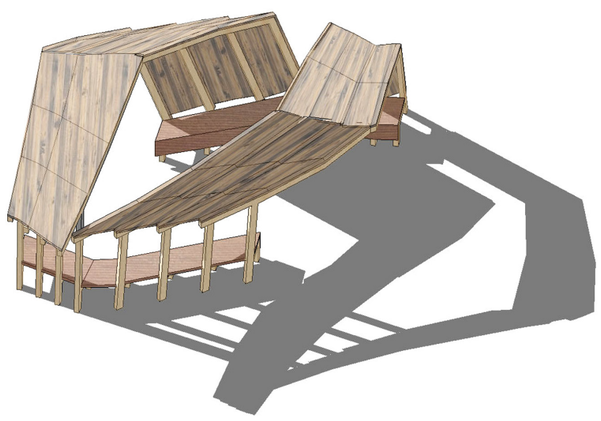
1. Waterfront section.
2. Perspective of farmers market structure with waterfront pavilion in foreground.
3. Perspective of farmers market interior.

will be used as a fishing supply store. This is a good place for a fishing supply store because with the implementation of a farmers market it can encourage fisherman to sell their catches locally.

Ferry Landing Concept

The ferry landing will serve as a green space with a transitional parking lot featuring grass pavers and fly-ash concrete to help with runoff. A section of the parking lot will be designated to continuing the boardwalk from Rockwell Park to the Fireman's Park. This part of the boardwalk, similar to the State Street boat dock, will be curvilinear to represent nature. The ferry dock station was inspired by the way wind moves around objects. In a roof plan, the roofs take the form of wind moving around the center of the pavilion. Seating is along the edge and leaves circulation through the center.

1



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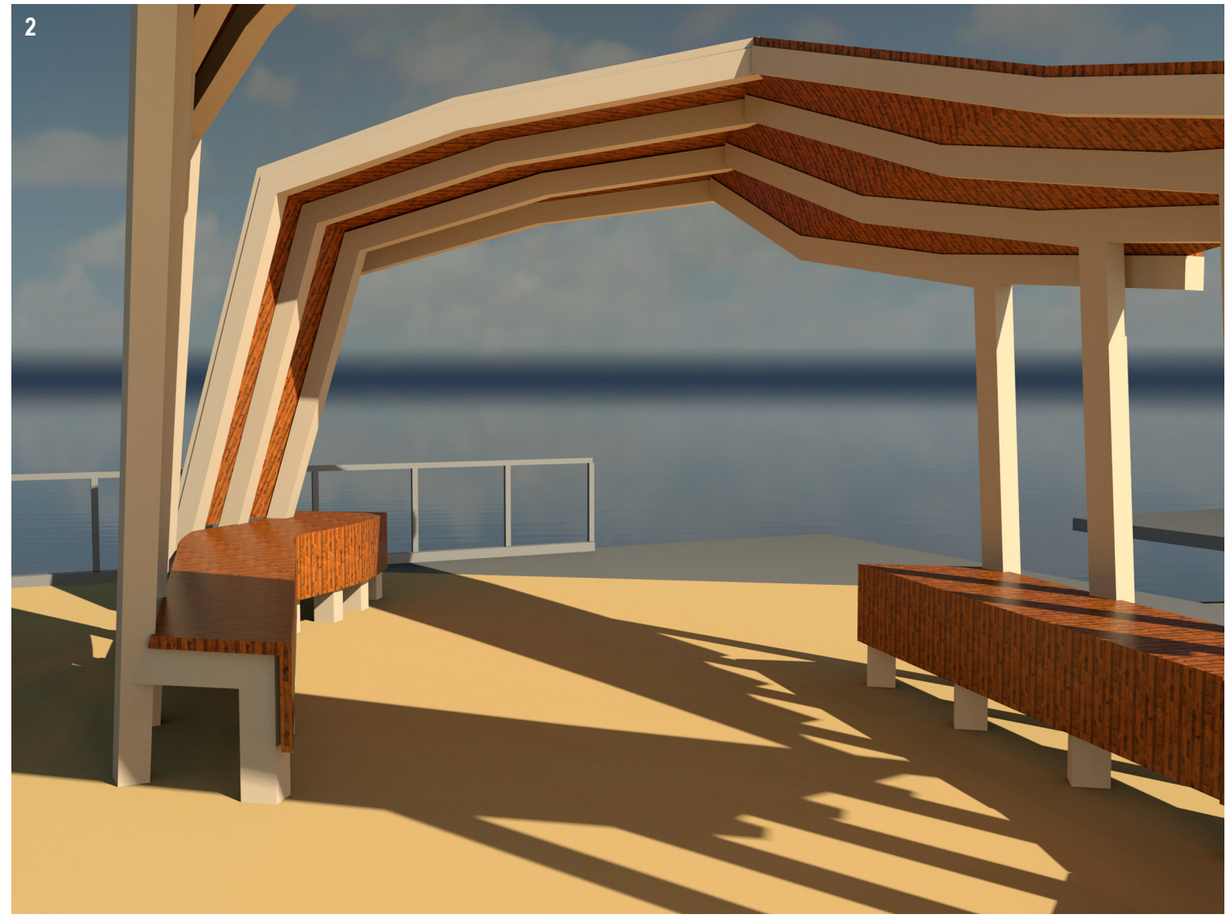
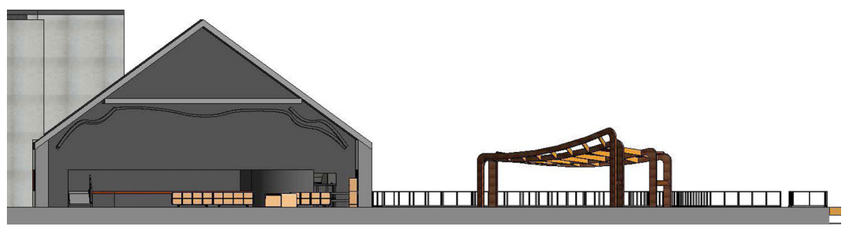


1. Aerial perspective of ferry landing station, the design inspired by wind movement.

2. Perspective of ferry landing station.

Armory Concept

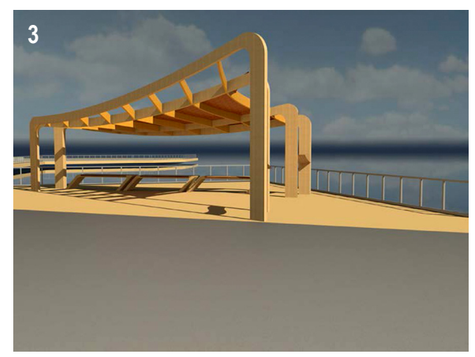
The site will include a garden for the residents of the future housing development at the Robin Rug Factory and a pavilion outside the armory for the public to use. The pavilion on the boardwalk space between the dock and land will offer a place to the public to relax, while maintaining the privacy of residents at Robin Rug.



1

For the adaptive reuse of the armory, a sailing school and boat repair shop would be included as part of the program. The school will offer U.S. Reach Sailing program, something not found in other sailing schools in the area. Daily sailing classes will also be offered out of the center. These programs will help to bring in revenue for the Town of Bristol. The other part of the center will house a boat repair shop, bringing in additional revenue. Ferry tickets would be sold at the boat shop and would encourage people to enter the armory building.

2



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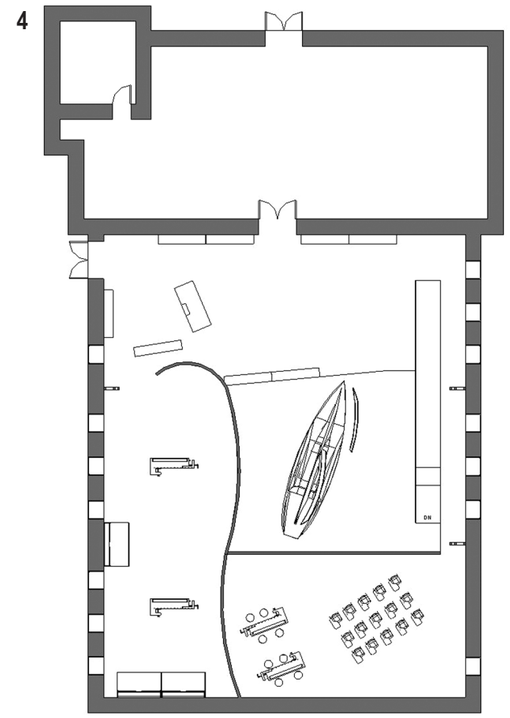


4

1. Armory section.

2. Perspective of armory interior with reuse as a sailing school and boat repair shop.

3. Perspective of sail-inspired pavilion.

4. Armory floor plan.

Design Options

Anastasios Papadopoulos

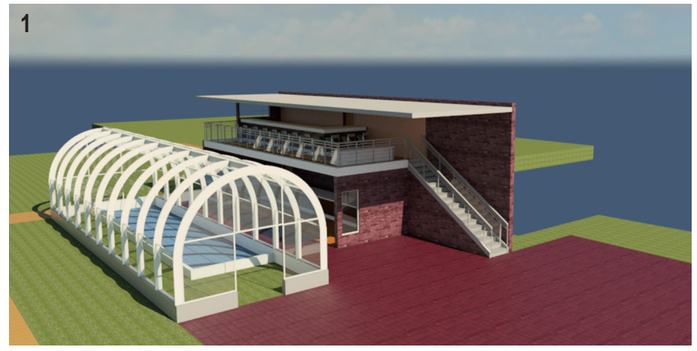
Boardwalk Concept

The waterfront's boardwalk will connect old and new buildings, parks and docks, and the past, present and future of the Town of Bristol. With an existing boardwalk from Independence Park along the Stone Harbor Condominiums, the boardwalk will need to evolve to the Robin Rug Factory on Constitution Street. The two themes for the boardwalk will be "Bridging the past, present and future of Bristol's waterfront" and "The wave." The boardwalk will be constructed of brick pavers and engineered hardwood and would contain bike racks at the start in Independence Park. The stretch of boardwalk would also contain wayfinding signs and large information signs illustrating Bristol's history.

Waterfront Concept

The waterfront sites would include the reuse of two properties on lower Thames Street. The larger building would become a fish market and a seasonal market with local produce and foods. The second floor would house a new raw bar with views of the water.

The site will also house an aquaponic farm — a revolutionary system of small vertical farms where fish and plants can live symbiotically. Linked by a series of tubes, microorganisms will eat waste produced by the fish and convert that into fertilizer, which will feed the lettuce, kale, wheatgrass and other plants that grow nearby. Aquaponic farms minimize the use of water while allowing for year-round harvest and eliminating harmful waste products that would otherwise end up in landfills.



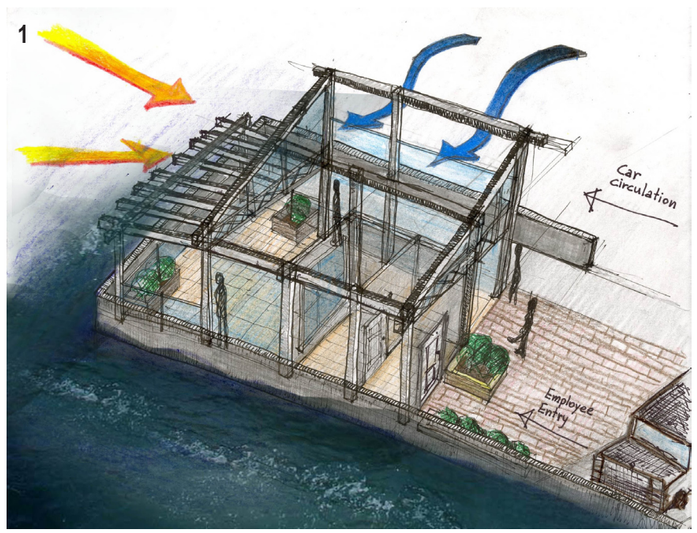
1. Perspective of marketplace building with aquaponic farm.

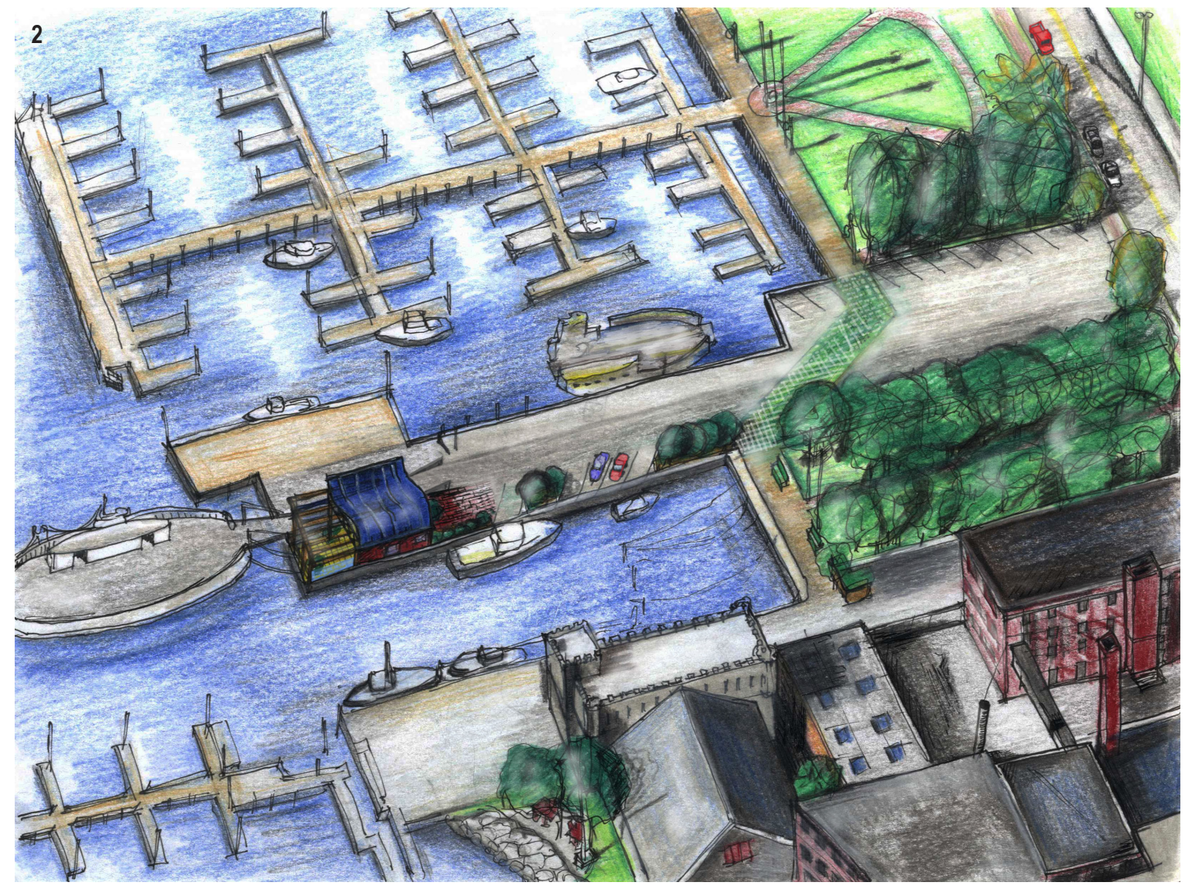
2. Map of master plan.

- Permeable Hard Surfaces
- Sea
- Parks, Green Spaces, Shrubs, Community Gardens
- Multi Family Housing
- Workshops/Offices
- Industrial (original)/ Adaptive Reuse
- Offices/ Retail/ Community Service/ Residential
- Residential/ Retail
- Major Parking Lots
- Trees and Shrubs
- Boardwalk Outline

Ferry Landing Concept

The goal for this site is to accommodate the boardwalk's connection at the water's edge while providing ticketing and waiting areas for guests year-round. The station will be fairly small in size and include a small ticket booth, interior and exterior waiting areas, and cantilevered shading.





1. Axonometric view of the ferry station.

2. Aerial view of the ferry dock and station.

Armory Concept

The proposed reuse of the armory would be an aquarium, which will serve as an educational and recreational center for all ages. The aquarium space would take visitors on a voyage (a clockwise rotational trip), exploring different things one step at a time, from poster to fish and touch tanks. Kids, adults and seniors will navigate the space, starting with a general history of Bristol and Narragansett Bay, continuing with exhibits of aquatic species, and concluding with tools and methods used for fishing and other maritime activities.

1

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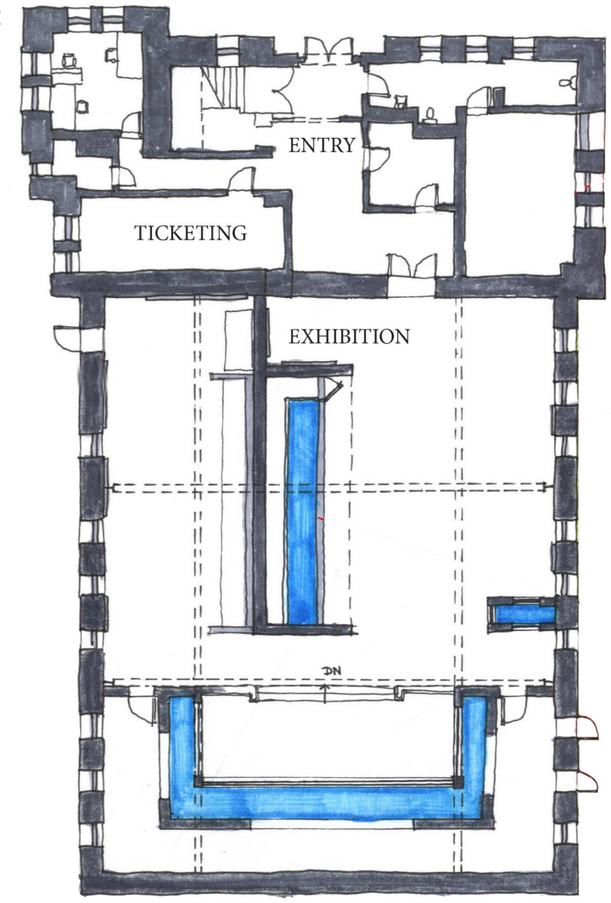


1. Perspective of armory interior with reuse as an aquarium.

2. Armory floor plan.

Design Options

Jake Wheeler

Boardwalk Concept

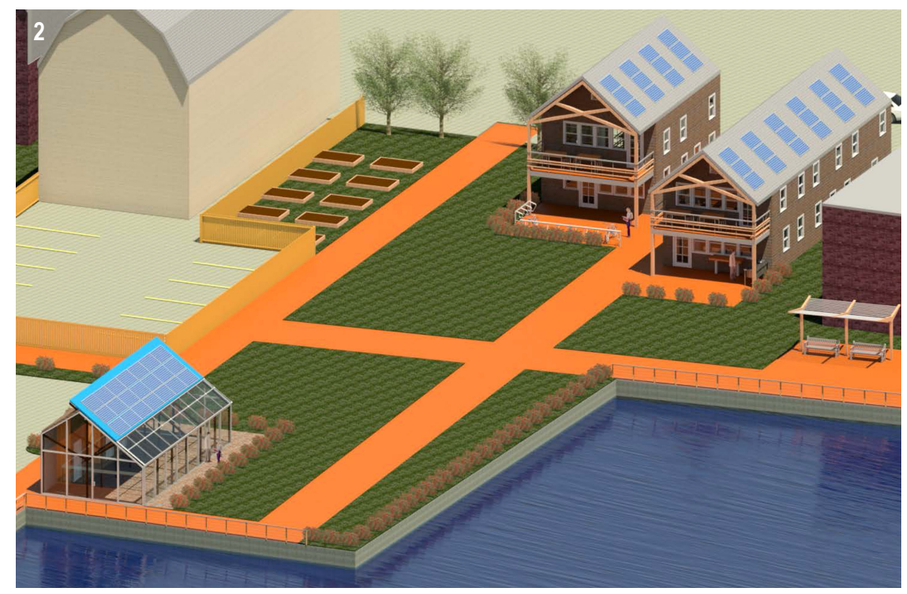
The boardwalk design focuses on giving a coherent connection between green spaces and boardwalk. The boardwalk would include:

- Proposed connection between the Stone Harbor boardwalk and the East Bay Bicycle path with path to Thames Street and Bicycle Parking pavilion.

- Proposed green space with starting/ending pavilion and redesigned boardwalk adjacent to Quito's.
- Proposed boardwalk extension in front of the existing white tent. In addition, it will connect to the existing walkway in front of Thames Bar & Grill.
- Proposed waterfront park adjacent to fish market. In addition, a community garden is located to the north of the renovated buildings.
- Proposed green spaces with pavilion along the Prudence Island ferry site.
- Proposed docks in front of Robin Rug Factory.
- Proposed ending/starting park and pavilion.
- Proposed seating area behind the fire department. This area is underused right now because the water is not deep enough for boats.
- Steel cable and LED rope lights with wood railings will create the railing structure for the boardwalk.
- Historical and informational boards will be placed along the railings of the boardwalk.

Waterfront Concept

Buildings will be redesigned to house a bike shop and fish market. The buildings will be redesigned in the style of a barn, linking to the historically large farms and barns in the area. The buildings would have timber frames, along with natural wood color and cedar for the exterior of the sites. Keeping these structures opens up a large area for a new park and the proposed pavilion and community gardens.



1. Boardwalk perspective. The railing uses LED lighting and exhibits historical information boards.

2. Aerial rendering of waterfront plan including solar-powered shops and a greenhouse.

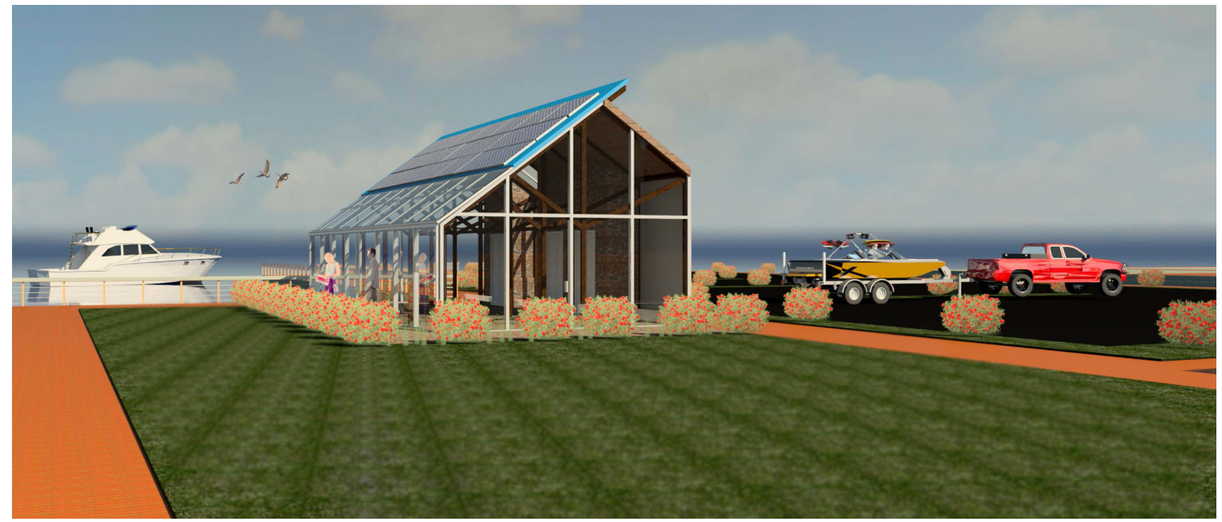
The first floor of both buildings will be left open to allow for multiple configurations of displays and retail items.

Bicycle Shop and Repairs:

- A bike shop was selected for this site due to the need in the area and along the bike path. The closest bike shop is located on Cole Street and is an 18-minute drive.
- Workspace with optimal working surfaces. A tool bench and tool box will be designed within the millwork of the workspace.
- Storage for bicycles which are in the process of being repaired for clients, as well as storage for parts and a small amount of inventory.
- Retail space: Apparel and parts are to be sold.
- A small observation deck will give visitors the chance to experience the waterfront at a higher elevation.
- An exterior patio with parking for bicycles.

Market (Fish and Produce):

- An open plan display area with movable display cases. The movable cases will allow for multiple configurations of the space.
- A cleaning and packaging area. This space will allow fisherman or farmers to clean their products before displaying them for sale.
- A small café will be located in the building on the second floor.
- An observation deck will be provided to give visitors the chance to eat and experience the great views of the waterfront, and a large exterior patio will allow the market to spill outside during nice weather.



Perspective of greenhouse with community garden space on the waterfront.

Pavilion and Community Garden Space:

- A large outdoor pavilion will be designed on the site. This will provide opportunities for the town to make money by renting it out or using it for events. During winter months, the pavilion will be used as a greenhouse for those who rent space in it.
- Pavilion will be flexible: The structure will be rigid and permanent but the coverings will be changeable. The roof will be able to be changed using a system of modular panels. The solid roof will provide adequate shading and rain cover.
- The pavilion can provide a venue for local farmers to come together for a farmers market.
- Solar panels on the south facing roof will provide sustainable energy for the market and bike shop.
- Community gardens adjacent to the market will include 5’ x 8’ raised beds. The raised bed boxes will be rented by local residents who may not be able to grow produce on their own land.
- Individuals will have the option of keeping their produce or selling it at the farmers market.
- The profits that the town makes from the raised beds will help pay for the needs of the market building.

Ferry Landing Concept

- A small ticket booth will allow for one worker at a time. During peak season, a teller will be available to sell tickets. During the slower seasons, automated ticket machines will dispense ferry tickets.
- Green space will be included to allow visitors a place to relax and grab a beautiful view during nice weather.
- The concept of creating a beacon of lights is a reoccurring theme throughout the master plan.
- The ferry station will become a transparent space with tall windows to allow light into the structure. The site will be a destination point for those traveling on the ferry and for those looking to get a new experience of the waterfront up in the observation deck. The observation deck will allows visitors to experience elevated views of the waterfront.

Armory Concept

- The existing proposal for maritime center would be redesigned to fit in the foyer area of the armory. This allows for more room in the large existing gym for the proposed aquarium
- The maritime center would include showers and bathroom, laundry facilities and shared restrooms with the proposed aquarium.

- In order for the aquarium to be successful, visitors must be able to easily find the building. In order to do this, wayfinding techniques must be designed and implemented. While signage will be used for navigation from places outside the waterfront area, other forms of way finding will be used. For those traveling along Hope and Thames Street, sculptural sea life alongside the road will be placed. These sculptures will be designed by local artist and will become a form of signage for the aquarium. At the entrance to the site, a series of sculptures are placed to attract and provide way finding for pedestrian and vehicular traffic. These sculptures will be designed as part of the welcome sign for the building.
- A large Ocean Tank with spiraling ramp up and around it will be home for many species of aquatic life from the local New England area. The aquarium will be home for endangered species that need to be watched carefully.
- Small exhibit tanks around perimeter of space will house smaller species of marine life from local waters.
- Touch tanks are proposed at specific locations of the aquarium. This gives children and visitors the chance to be up close to species, such as rays, to feel them and get a better sense of the way they swim.
- Large viewing screens with flexible seating are proposed where individuals can sit and relax to catch some information on the local marine life. In addition, these screens will be used to give presentations on the history of fishing along the Bristol waterfront.
- Tour guides will be hired to run watch over the aquarium. These tour guides will be local fisherman or marine enthusiasts. Special events throughout the year will have the fisherman giving presentations and explaining in depth how the fishing industry works in the area, etc.
- Large Mechanical room to supply the large ocean tank with filtered water from the bay.

1. Perspective of ferry landing and observation deck tower as a beacon on the waterfront.

2. Aerial perspective of armory with reuse as an aquarium.

- Exterior connection to boardwalks at the northern and western ends of the building
- In addition to the Aquarium, and maritime center, the Armory building has great potential for an observation point. The large turret provides a great shaft for a staircase to wrap up and around the interior.
- The top of the turret will allow great views out to the waterfront at an elevation which cannot be seen elsewhere. Exterior Learning and Seating Area
- A large boardwalk connection to the original floating docks is proposed. On the western side of the armory. A proposed doorway will allow aquarium visitors to enter/exit via the front northern entrance of the southern entrance. This area will have a large mosaic mural done by local artists.
- This area is large enough for movable, modular exhibits to be rolled outside when weather conditions are nice.
- The northern entrance of the building will also have a mosaic sea mural done by local artists. These murals will break the material and formality of the boardwalk, giving a hierarchy to the entrances of the armory.

Perspective of aquarium interior with exhibit tanks.

Conclusion

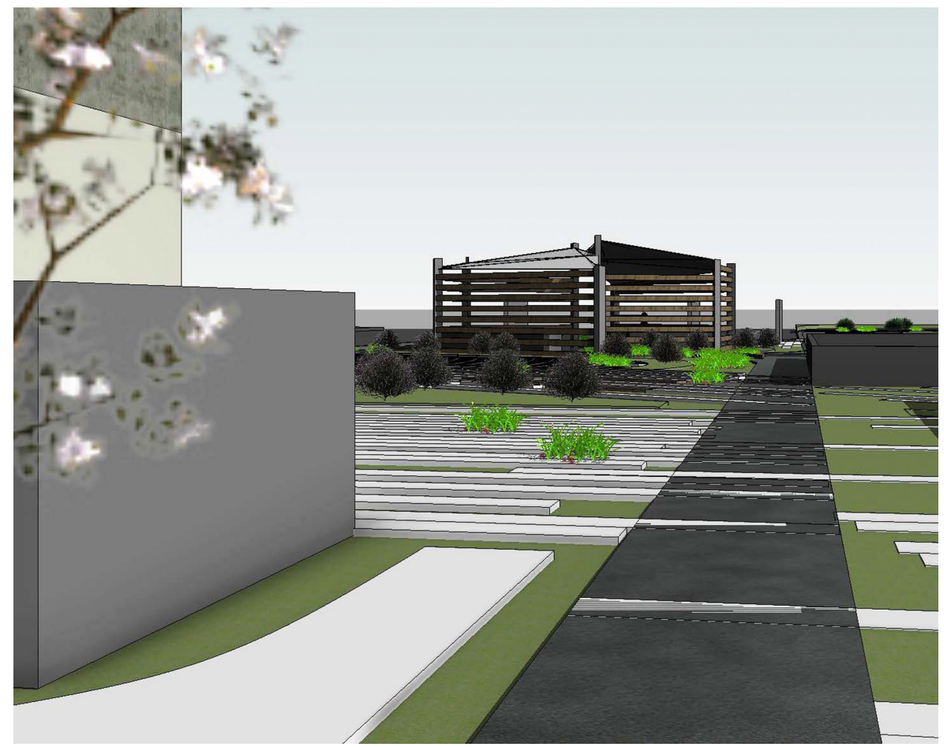
The Design Studio of fall 2013 focused on urban design of a section of the Bristol Downtown Waterfront as part of Roger Williams University's Community Partnerships Center Projects. The project site included Bristol waterfront along Lower Thames Street, between State Street (including State Street Dock) to Constitution Street (potentially including Elk's Building property) and connections from Hope Street to the waterfront. The urban design projects are achieved through developing a master plan, which included sustainable urban design, adaptive reuse, architectural and landscape design projects.

The studio project also aimed to provide aesthetically pleasing and comfortable harbor connections at the waterfront reaching from shorter or longer distances as well as serving both the Bristol community and visitors. The impact of geography (water edge, flood zone conditions, climate, topography, vegetation, etc.), integrating sustainability features and lessons learned from historic hurricanes in Bristol Harbor and their potential effect on any construction activity were investigated to generate important criteria in developing a master plan, urban design and architectural interventions.

There were approximately three interconnected project zones along the Lower Thames Street waterfront, within which three ecological master plans were proposed. Each zone included a variety of architectural, adaptive reuse and landscape design projects where the students developed alternatives in context of their urban design proposals.

The student projects were given numerous support and assistance from Bristol's Department of Community Development, Planning and the Project Steering Committee (composed of Bristol Town stake holders) and RWU faculty and studio representatives.

We would especially like to thank the following individuals for their constructive feedback and support throughout this process: Diane Williamson, Director of Community Development, and Edward Tanner, Principal Planner of the Town of Bristol; members of the Bristol Community who have participated in Town Hall meetings; Andrea Adams, Karen Hughes and other Architecture faculty who contributed to the advancement of this project; RWU faculty Hank Kniskern and John McQuilken from the Gabelli School of Business whose students laid the groundwork for the architecture studio; the students who have worked so hard and enthusiastically to contribute their work and vision; the Town of Bristol and the community; and finally to Arnold Robinson, director of CPC, and Stephany Hessler, CPC Project Co-coordinator, for their continuous support and organizational initiatives.



Proposed waterfront marketplace perspective by Eric Figueredo.

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