# **Everett Riverfront Walkway**

MYSTIC RIVER & MALDEN RIVER

Everett, Massachusetts

# **Design Alternatives Summary Report**

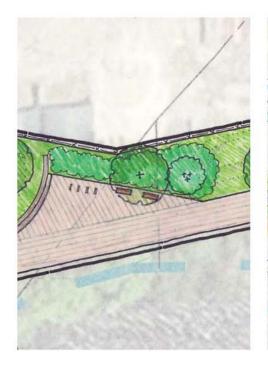
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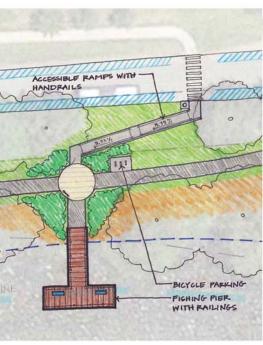
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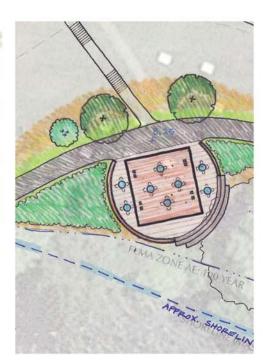
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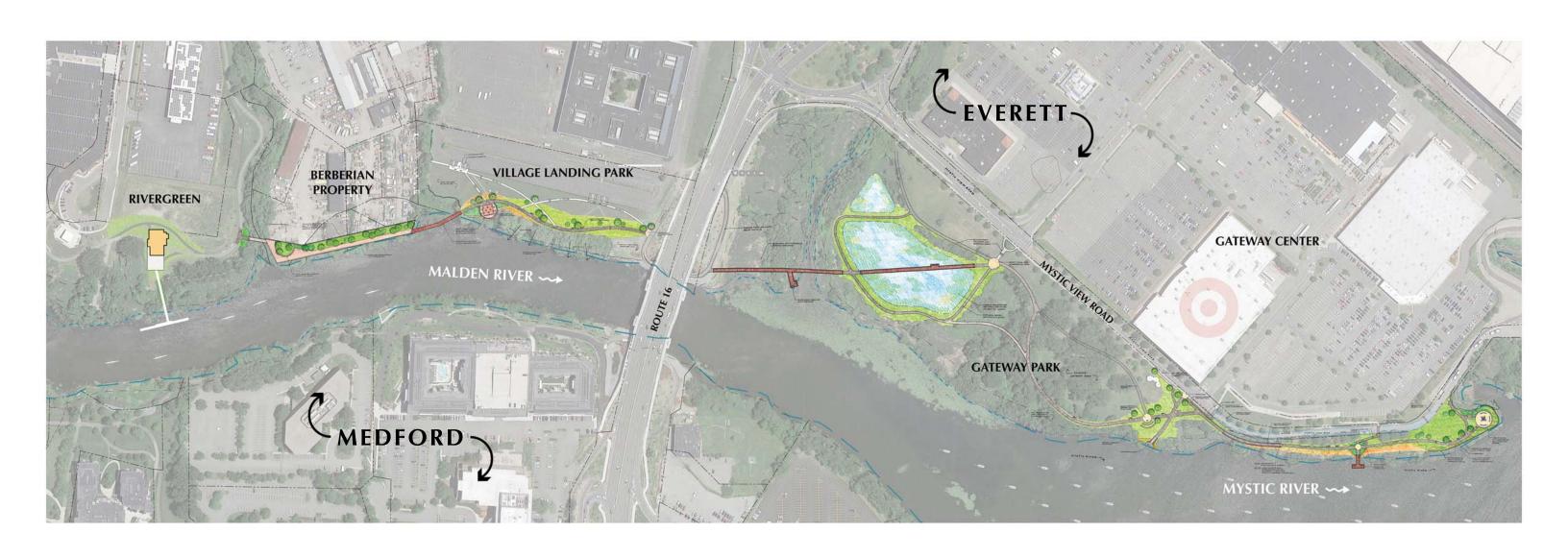
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# **Design Alternatives Summary Report**

### **Overall Design Goals**

This project prepares a vision for a public riverfront walkway in Everett that spans from Encore Boston Harbor and the adjacent connector walkway on the Massachusetts Department of Conservation and Recreation (DCR) land at the Amelia Earhart Dam to the Rivergreen development at the northern end of the City limits. This report summarizes the design alternatives for a continuous riverfront walkway along Everett's shoreline and the environmental considerations necessary to implement the Riverwalk. The following is a summary of the goals and programmatic elements for the Everett Riverfront Walkway:

- 1. Maintain a consistent design character and "brand" unique to Everett through selection of materials, amenities, and design elements.
- 2. Provide access to nearby public destinations, parks, bike paths, and harborwalks.
- Provide a minimum 10-foot wide walkway for two-way travel for both pedestrians and bicyclists, where possible. Address alternatives that accommodate pedestrians and bicyclists where site constraints exist.
- 4. Consider alternative "spur" routes that provide a diversity of experience.
- 5. Provide overlook areas with seating and shade structures at important view opportunity locations. Overlooks should be engaging and activated with tables and chairs and other amenities to attract visitors. The riverfront should be whimsical and fun. Consider the integration of public art.
- 6. Design a pier for fishing and view opportunities over the Mystic River.
- 7. Identify locations for canoe / kayak put-ins that are accessible and provide access to desirable points of interest. Consider the locations of existing put-ins along the Mystic River and Malden River in proximity to the project site.
- 8. Provide abundant seating in a variety of types (benches, boulders, tables, etc.).
- 9. Locate bicycle parking and trash receptacles at gathering areas. Add educational and interpretive elements where appropriate.
- 10. Provide identity and wayfinding signage, especially at important access points.
- 11. Include pedestrian lighting along the main walkway for site security. Security cameras and blue lights should be included for additional safety measures.
- 12. Remove invasive vegetation. Provide selective pruning and clearing to enhance river views.
- 13. Add new native planting for shade and habitat.
- 14. Consider climate change.



# **OVERALL CONCEPT PLAN**









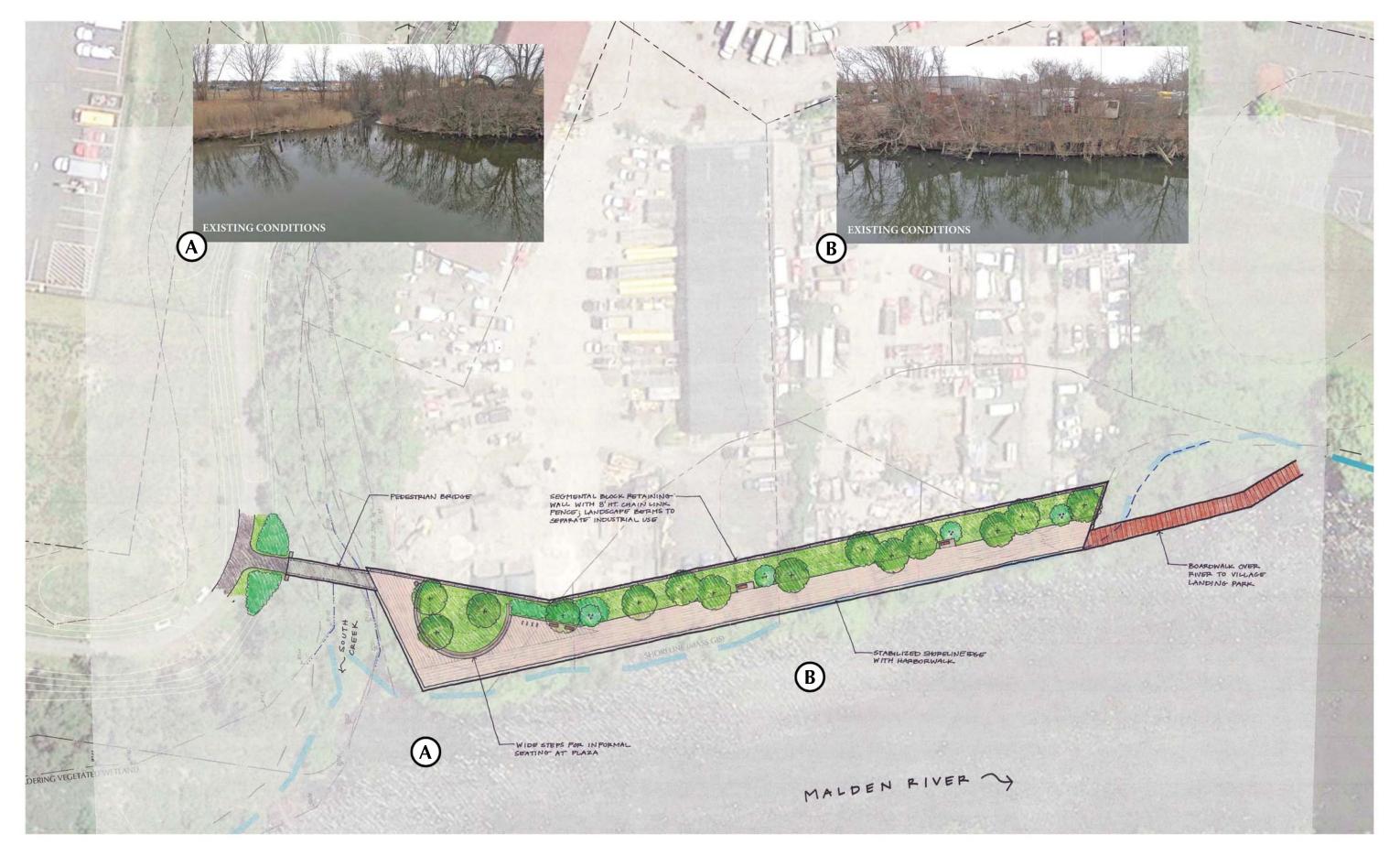




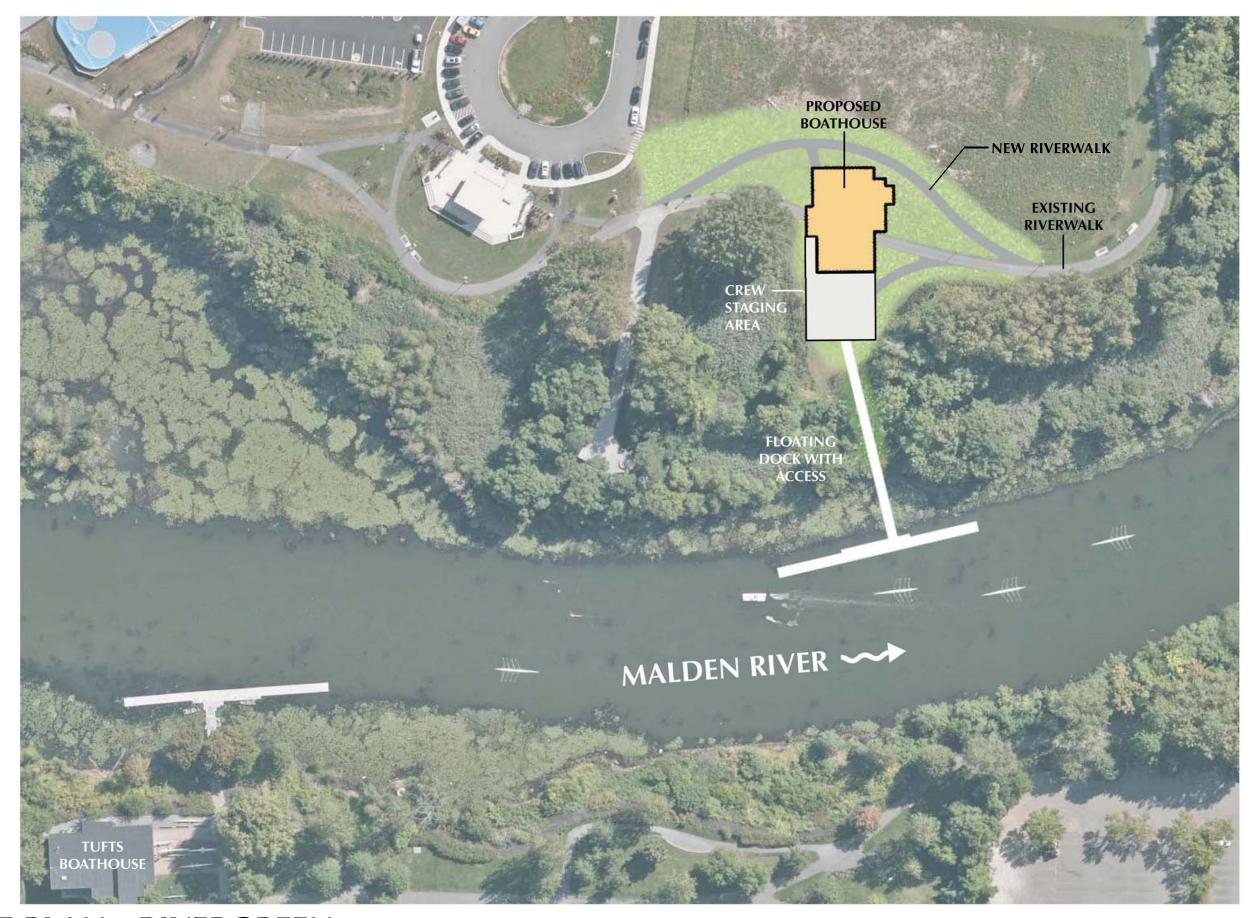
















## **Design Summary**

For the purposes of summarizing the proposed concept design, this report organizes the project site into six areas, previously illustrated, including the following:

- Area 1: Gateway Park South
- Area 2: Gateway Park Central
- Area 3: Gateway Park North
- Area 4: Village Landing Park
- Area 5: Berberian Property
- Area 6: Rivergreen

#### **AREA 1: GATEWAY PARK SOUTH**

The existing asphalt walkway follows along the shoreline and the shoreline retaining wall in this area but offers little accommodation for visitors and lacks encouragement to linger and enjoy this public space. This area connects to the DCR Connector and Encore Boston Harbor to the south where the multi-use paths are wide and generous. The proposed design recommends replacing the existing 6-foot wide asphalt walkway with a 10-foot wide asphalt walkway that meanders along the shoreline but is shifted inshore from the existing shoreline retaining walls. The existing shoreline retaining walls are intended to remain but because they drop quickly to the shoreline below without any guardrails, relocating the proposed walkway alignment further inshore will improve safety. The space between the new walkway and the existing walls can be planted with low, native coastal plant material. The planting will enhance the views and shoreline, while also providing habitat for birds and pollinator species. It is possible that a low guardrail should be added along the top of the wall so the unsuspecting visitor does not get too close to the edge.

The wider walkway will be more comfortable for pedestrians while also accommodating bicyclists and maintenance vehicles. At the north end of this area, the existing walkway is squeezed to 6-feet wide because of an inshore retaining wall supporting street trees and Mystic View Road above and a guardrail on the outshore side where the grades quickly fall to the river. There are two possible alternatives here: (1) keep the existing 6' walkway at the retaining wall and accept the pinch point or (2) widen the walkway to 10' with structural improvements.





(Left) Existing promontory with view of the dam; (Right) Existing narrow walkway at retaining wall.

#### Alternatives:

- (1) While the existing 6' wide walkway will accommodate pedestrians, it does not offer two-way travel for bicyclists on the same path. Instead, the design concept illustrates 5-foot wide painted bike lanes on either side of Mystic View Road linking the DCR Connector to the central portion of Gateway Park where there is much more accommodation for bicyclists on the road. While not on the same path, both modes of transportation are accommodated. A vehicular swing gate is proposed across Mystic View Road at the entrance to the parking lot near Target. This will restrict vehicular traffic to only authorized vehicles to the dam resulting in less conflicts with bicyclists on the road.
- (2) Alternatively, the existing outshore guardrail could be removed and a 4' wide boardwalk with new guardrail could be installed to widen the walkway toward the shoreline. The boardwalk would be cantilevered over the embankment to avoid the possible need for a shoreline wall. This alternative would be more costly, but would allow multimodal use.

Two design features are proposed to encourage public gathering: (1) a small seating plaza and (2) a fishing pier. The seating plaza is proposed on the promontory to the south which offers views to the dam and up the Mystic River. A circular area constructed of specialty pavement, such as pavers or brick, is lined with three curved benches with a large sculpture in the center. The sculpture could be a public art piece sourced locally or could be a kinetic sculpture which moves and generates sound in the wind. This sculpture will serve as a focal point in the space, offering a visual guide to visitors from all the surrounding areas. Bicycle parking and a trash receptacle are proposed here as well.





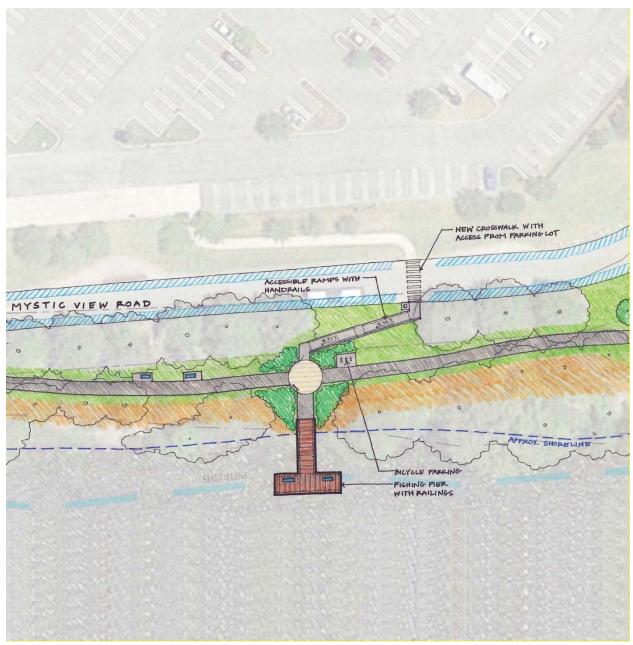
Examples of kinetic sculptures.

A fishing pier is proposed opposite the end of the existing walkway which provides site access from the 40 designated parking spaces at the Gateway Center along Mystic View Road. A crosswalk and curb ramp are proposed as well as two concrete ramps with handrails to provide accessible access from the parking lot to the riverfront walkway. At this intersection, a small circular paved area is proposed and includes planting and signage with access to the fishing pier. The fishing pier is intended to extend from an abutment at the shoreline over the Mystic River to form a T-shape platform with a place for benches, space for fishing, and views up and down the river. This location is significant because visitors already fish from the embankment here. Further, the DCR's 2009 Mystic River Reservation Master Plan identifies this location for a future fishing pier. The pier would be constructed of timber piles and a timber superstructure including pile caps, stringers, decking, and railings. Permitting will require approval for the shoreline impacts as well as impact area from adding a new permanent pier structure within the waterway.

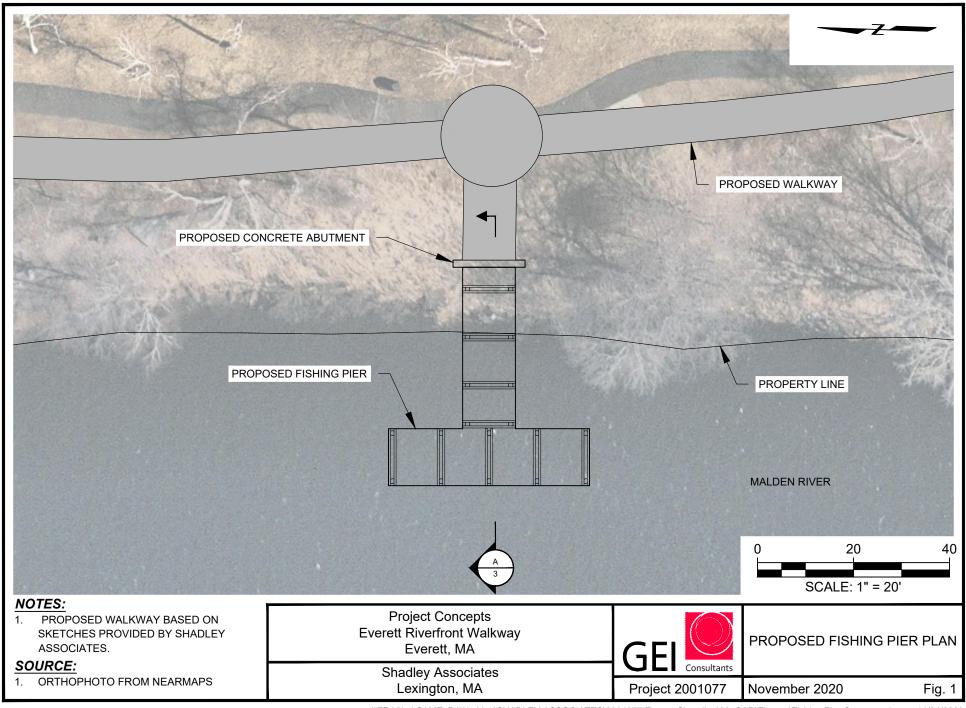


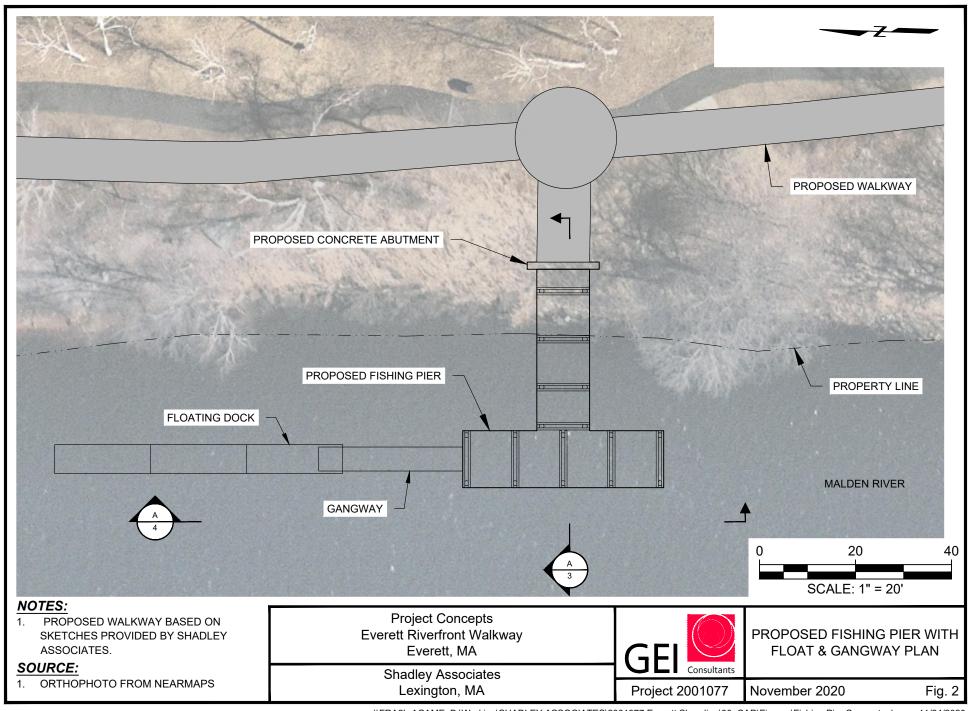
Example of fishing pier.

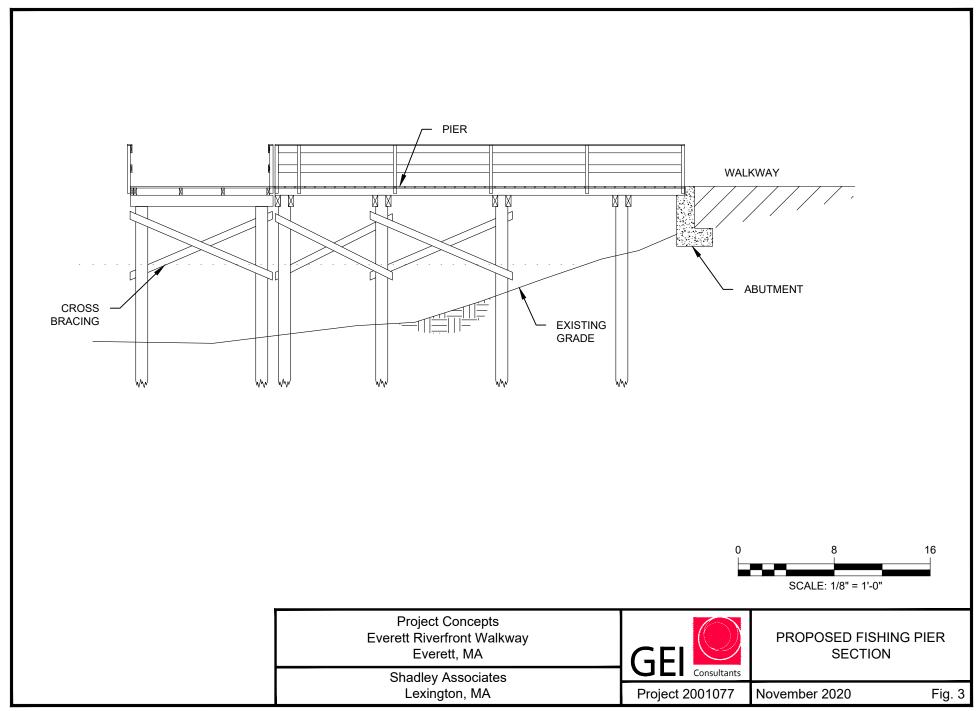
Boat Access Alternative: The City is considering adding moorings for small powered and non-powered vessels within the Mystic and Malden Rivers as part of a separate initiative. Possible access to the vessels could be from the fishing pier by incorporating a floating dock and gangway at the end of the pier. A shuttle service or dinghies could then be used to access the moored vessels. The float is proposed at the northern end of the T-pier, accessed by an aluminum gangway, and would be constructed of timber or aluminum with marine grade polyethylene float drums to provide a lightweight and durable floating dock. The gangway would be long enough to ensure ADA access to the float. The float would be anchored with chains and blocks to the mudline. The use of mooring blocks and lightweight materials would allow the City to easily install and remove the float in the winter. The use of mooring blocks instead of guide piles would eliminate the damage caused by ice flows impacting the piles. During winter, the floating docks would need to be removed to prevent damage caused by the river freezing over and springtime ice flows. Winter storage would involve lowering the gangway and disconnecting the anchor chains. The floating docks would then need to be transported to the kayak/canoe launch ramp where they would be hauled out on timber skids for winter storage onsite.

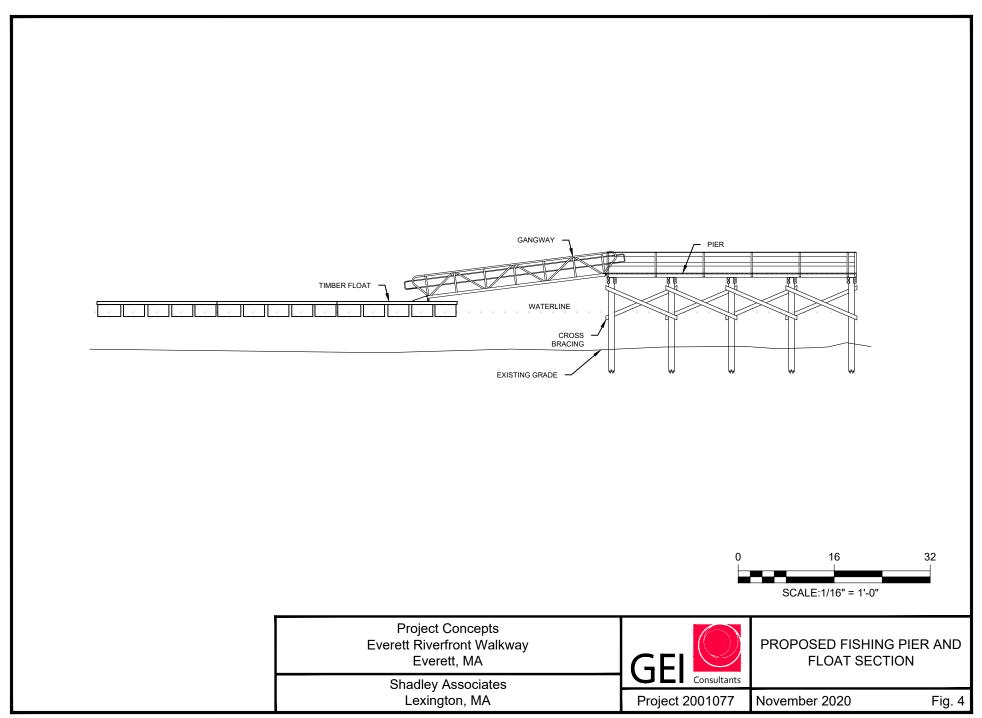


Enlargement plan of the proposed fishing pier.









#### **AREA 2: GATEWAY PARK CENTRAL**

The central portion of Gateway Park widens significantly from the southern portion and provides access from the northern end of the 40 designated parking spaces at the Gateway Center. The concept design proposes a new crosswalk and curb ramp at Mystic View Road for code-compliant access to the park. A locking swing gate is proposed across Mystic View Road at this crosswalk which will prevent unauthorized vehicles from access the road to the dam. This is something that has been desired by the DCR, who owns this road. A small entry plaza with specialty paving and signage is proposed with direct access to the riverfront walkway and the park's existing walkways. The proposed Riverwalk is 10' wide asphalt pavement to accommodate pedestrians and bicyclists. An overlook area with terraced granite walls is proposed. This elevated area will offer views south and westward to the Mystic River in an informal setting. Whimsical and playful pebble seats are intended to be randomly located along the Riverwalk at gathering areas for added interest.





(Left) Example of granite block seating in slope; (Right) Whimsical pebble seats.

The main walkway along the river is 10-feet wide and is lined periodically with benches facing the water. Selective pruning along the shoreline is recommended to open views to the river. Invasive plant species such as Phragmites, Japanese Knotweed, Oriental Bittersweet, and Tree of Heaven are recommended to be removed. Supplemental shoreline planting is encouraged and should be hardy, native species that offer biological diversity, ecological benefits, and habitat value.

A canoe/kayak launch (non-motorized) is proposed in this area where there is a natural clearing along the shoreline and a gentle slope. The launch will have access from Mystic View Road where three parallel loading zone spaces are proposed on the west side of Mystic View Road adjacent to the entry plaza as temporary loading/unloading spaces for visitors bringing car-top canoes or kayaks. Once unloaded, the cars would be parked in the designated spaces at the Gateway Center. A semi-circular paved area is proposed at the water's edge which can also serve as a gathering area for visitors.

The launch ramp would be constructed of hardscape elements above mean high water which provide a gradual and stable slope to the water's edge. To continue a stable surface below water articulated block mats constructed of concrete could be installed into the river allowing vessels to

be more easily launched on a stable surface. Articulated block mats come in a variety of shapes and sizes and can contain open or closed blocks. It is proposed that the articulated block mats for the launch ramp would consist of two 8-foot wide by 20-foot long open block mats placed into the water. The open block mats would have approximately 20 percent open space, allowing for material to infill within the blocks and revegetate the river bottom. Typically, installation will involve preparation of an approved subgrade such as 6 inches of clean compacted crushed stone that will provide a level surface, followed by placement of a geotextile fabric, and installation of the articulated block mats.



Example of canoe/kayak launch with gathering space (DCR Macdonald Park, Medford, MA).





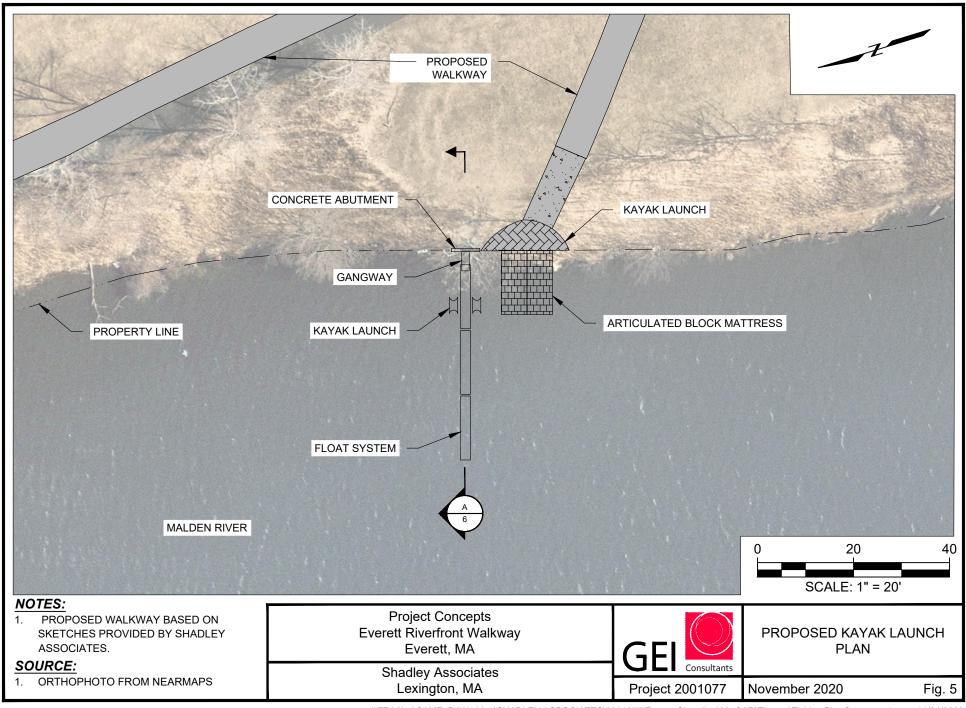
Example of the installation of articulated block mats at a boat launch.

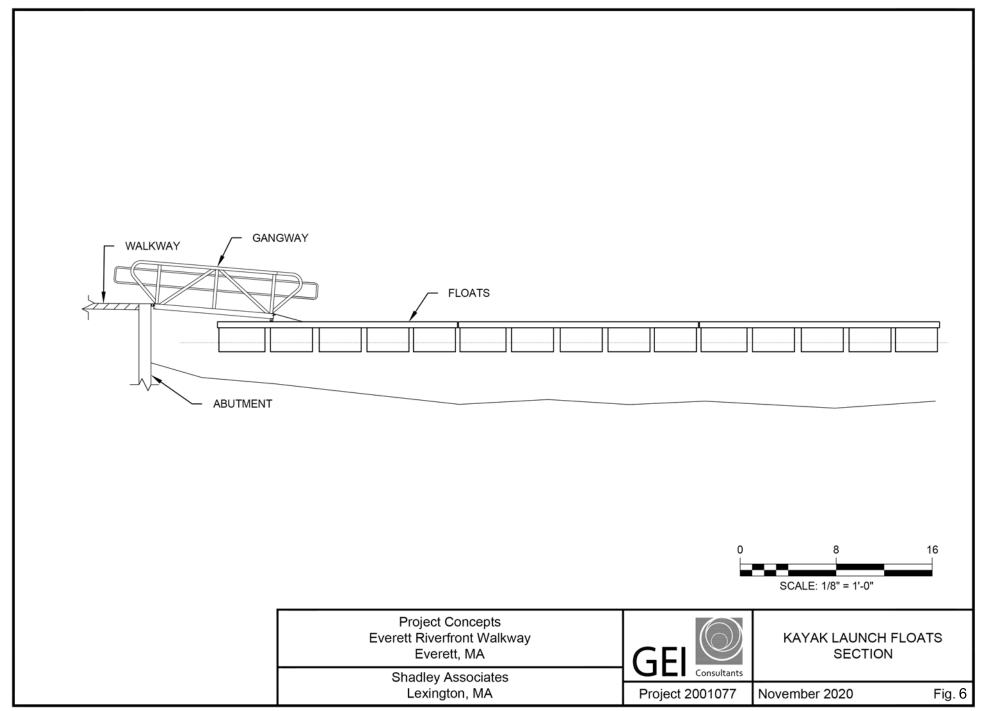
Additional Boat Access: Similar to the floating dock option at the fishing pier, access to the City's proposed mooring field in the river could be provided at the canoe/kayak launch adjacent to the landing. A floating dock system would consist of three 6-foot wide by 20-foot long floats connected to the shore by a gangway. The floating dock would be constructed of timber or aluminum with marine grade polyethylene float drums to provide a lightweight floating dock. It would be anchored with chains and blocks to the river bottom. The gangway would be anchored to the shore at an abutment and would be long enough to ensure that it meets the required ADA access slope to the timber floating docks. Again, the use of mooring blocks and lightweight materials would allow the City to easily install and remove the floating docks in the winter. Additionally, easy load kayak launches could be installed on both sides of the floating dock to provide safe pedestrian loading access while keeping them dry. This location would tie in well with the canoe/kayak launch.

During the winter, the floating docks could be removed by pulling the gangway onshore, disconnecting the anchor chains, and hauling the floating docks out of the water onto the adjacent open space for winter storage. There is adequate space at this location for easily storing the docks and gangway during the winter. A crane would be needed to haul the dock segments out of the water for winter storage and reinstalling them in the spring. The paved access walkway to the canoe/kayak launch could be used to stage the crane operation and would need to be detailed to support this weight.



Example of an easy load kayak launch from a floating dock.





#### **AREA 3: GATEWAY PARK NORTH**

The northern portion of Gateway Park is dominated by a large existing wetland. The upland areas and existing walkway are squeezed toward Mystic View Road and busy Santilli Circle where there are no views of the river. The concept design proposes a 12-foot wide boardwalk with railings across the wetland to connect the central portion of Gateway Park to the new underpass trail at Route 16, which offers a connection to the City's Village Landing Park to the north. At the south end of the boardwalk, a small plaza area is proposed at the intersection of the park walkways and the existing connection from Mystic View Road and the Gateway Center across the street. This small plaza can include seating, park/wayfinding signage, and interpretive signage.





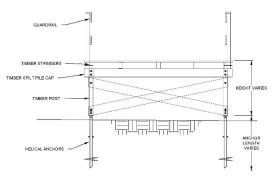
(Left) View to existing wetland looking north; (Right) New underpass trail at Route 16 bridge.

The proposed boardwalk is intended to cross the wetland, giving visitors a change in experience, immersing them in a new habitat, and offering educational opportunities. This area is unique along Everett's shoreline and the City encourages public use of this area. Seating areas and overlook extensions are designed along the boardwalk to create resting areas and viewing locations within the wetland. Interpretive signage can be incorporated into these areas as educational features along the boardwalk.



Example of boardwalk across wetland with viewing areas.

The proposed boardwalk would be constructed by first establishing the alignment to minimize impacts to the wetlands. Helical anchors could be used to anchor the boardwalk into the soil. The use of helical anchors will keep the boardwalk more secure in marsh soil than typical timber pile driving and will allow the construction to be performed with smaller equipment creating less temporary impact. Once anchors have been installed, timber posts will be secured, followed by the timber boardwalk superstructure. The ends of the boardwalk would rest on the grade where it meets the adjoining asphalt walkways.



Example of boardwalk section.

Separate from the work of this project, another consultant team is studying opportunities for stormwater improvements and climate resiliency interventions along the Mystic River. That team has identified the northern portion of Gateway Park as a candidate for a reconstructed wetland. The general intent is to excavate and enlarge the existing wetland area to provide an area for stormwater treatment as it flows from Santilli Circle to the river as well as to provide water holding capacity in the instances of upland flooding and sea level rise. This work would be a benefit to Everett's riverfront as it would remove the existing invasive plant species currently dominating this wetland. It would improve the functionality of the wetland, open up views, and enhance wildlife habitat. These benefits would improve the visitor experience through additional educational opportunities, as well as the opportunity to incorporate secondary walkways that circumnavigate the reconstructed wetland, further immersing visitors in the landscape. The work of this separate consultant team is underway with no conclusive action at this time. The accompanying concept plans overlay the draft concept wetland with this project's proposed boardwalk. Should the wetland reconstruction move forward, there could be a collaborative effort to naturalize the wetland edges and incorporate pedestrian accommodations.



Example of constructed wetland and boardwalk at Alewife, Cambridge, MA.

#### AREA 4: VILLAGE LANDING PARK

At Village Landing Park, the existing walkway follows in a generally straight line along the row of mature Weeping Willow trees along the Malden River. The approximately 6-foot wide walkway is narrow and deteriorated in places. The proposed riverfront walkway is a 10-foot wide asphalt walkway that meanders along the shoreline while preserving the Willow trees. The new alignment will add interest to the Riverwalk while offering accommodation for both pedestrians and bicyclists. Where it connects to the underpass at the Route 16 bridge, a small entry plaza is proposed with signage. This location serves as the entry point for visitors accessing the Riverwalk from Route 16 and those continuing along the Riverwalk from Gateway Park at the south. The existing access from the parking lot at 135 Santilli Highway does not currently meet accessibility code as the embankment is steep. Re-grading the slope and altering the alignment of the walkways allows for the construction of ADA-accessible walkways from the parking lot. The concept plan illustrates a new alignment for improved access to the park and the Riverwalk.

Upgrades to the site amenities are important as the existing benches are in poor condition and none of the existing picnic tables are accessible. In the proposed concept design, new benches are shown in pairs along the walkway, each with a wheelchair accessible companion space. At the north end of the park, there is an existing clearing in the line of Weeping Willows which affords space for an overlook. A circular plaza with specialty paving is proposed with space for tables and a shade shelter, similar to Rivergreen. The edge of the plaza is retained with a seatwall, and wide steps along the southwest edge of the plaza offer informal seating facing the view downriver. Supplemental riparian planting is proposed around the plaza to enhance views, soften the hardscape, and increase vegetation diversity along the Riverwalk for improved habitat value. A walkway with stairs is proposed from the parking lot to the plaza to provide direct access for able-bodied visitors, while a switchback sloped walkway serves as an accessible route to the plaza. Beyond the plaza at the north end of the park is an existing hillside with a steep embankment along the river. This hillside poses a significant challenge to providing a landward connection to the adjacent Berberian Property. Instead, a boardwalk over the river is proposed to connect the two sites while avoiding any impact to the existing hillside and shoreline vegetation.

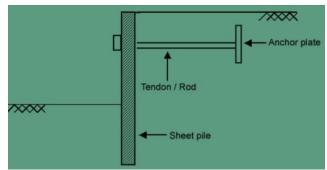


Shade shelter on plaza with wide steps at Rivergreen.

Below the existing Weeping Willow trees is crushed stone surfacing along the shoreline. This crushed stone may either be replaced with loam or loam may be added above the stone and seeded to provide a more naturalistic shoreline edge or area for picnicking. The depth of the existing cap must be maintained if the crushed stone surfacing is replaced with loam.

#### AREA 5: BERBERIAN PROPERTY

The Berberian Property is a privately-owned industrial site between the City's Village Landing Park and Rivergreen on the Malden River. The proposed walkway concept is intended to keep the public along the shoreline with limited impact to the existing uses of the Berberian Property. The Design Team understands that the site may be redeveloped in the future as a mixed-use development; however, the concept design is intended to accommodate the site's current use while anticipating future development. With this in mind, the concept design proposes replacement of the existing shoreline bulkhead wall with a new corrugated metal bulkhead with wall cap at a higher elevation. The intent is for the wall to be located where the existing wall currently is. The additional wall height will assist in mitigating the grade changes between the Berberian Property and the adjacent properties, reduce risk of flooding, and also allow the riverfront walkway project to cap the Berberian property. It is assumed that contaminants due to the industrial use of the site may exist and that a change in use of the shoreline area from an industrial use to a public passive recreational use may trigger remediation efforts. It is anticipated that the proposed bulkhead wall may need an anchorage system consisting of deadmen and tie rods. The bulkhead would be driven into the river bottom using a vibratory hammer followed by installation of the deadman system and tie rods and then backfilled. In order to mitigate future maintenance of the site a composite bulkhead is proposed which will not corrode or require periodic maintenance.

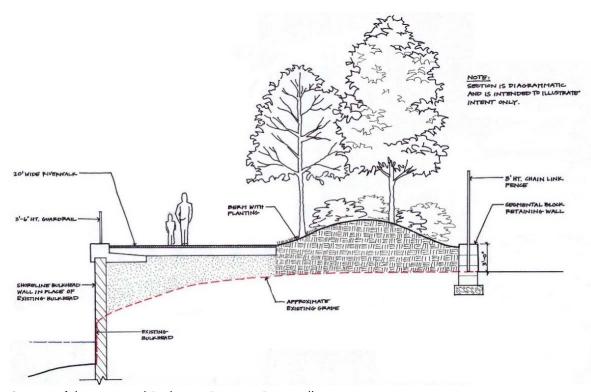


Typical tie back anchored bulkhead section.



Example of composite bulkhead, wale, and cap with hot dipped anchor tie rods.

The proposed Riverwalk would occupy the length of the shoreline and extend inshore approximately 40-feet. This would accommodate a generous 20' wide walkway with wall cap and guardrail along the shoreline and a landscape area between the Riverwalk and the remaining Berberian Property inshore. The landscape area would be bermed and planted with lawn along the Riverwalk, trees, and shrubs along the inshore edge. The landscaped edge will provide a screen to buffer the industrial activity without negatively impacting the visitor experience along the Malden River. Facing the Berberian property is a proposed 3-foot tall segmental block retaining wall with an 8-foot height black vinyl-coated chain link fence. The wall will accommodate the cap for the Riverwalk and the fence will provide protection for both the public and the private industrial uses of the property. In the future, as the Berberian property is redeveloped, the fence can be removed and accessible connections from the development to the riverfront walkway can be made. It is presumed the Berberian Property would require capping for a mixed-use development, and it could meet the Riverwalk cap for a smooth transition.



Section of the proposed Berberian Property Riverwalk.

The Riverwalk along the Berberian Property is intended to have an urban feel with contemporary design elements and accommodation for gatherings. Similar to the Encore Boston Harborwalk to the south end of Everett's riverfront, the walkway would be wide and paved with specialty pavement. Located at the shoreline edge, visitors can be near the water with unobstructed water views. The wide walkway offers gathering space with tables, benches, and other contemporary and whimsical seating opportunities. At the north end of the Berberian Property is an elevated, circular lawn area lined with wide circular steps for informal seating with views upriver toward River's Edge Park. This area can be used by families for picnicking and other events.





(Left) Encore Boston Harborwalk; (Right) Example of shoreline wall with guardrail and specialty paving.

To the north, South Creek divides the Berberian Property and Rivergreen. A prefabricated pedestrian bridge is proposed to span the creek and provide direct access to the Rivergreen Riverwalk, an existing three-quarter mile multi-use trail. The Berberian Property is the key missing link along Everett's riverfront and would serve an important role in providing a continuous waterfront walkway for the City.



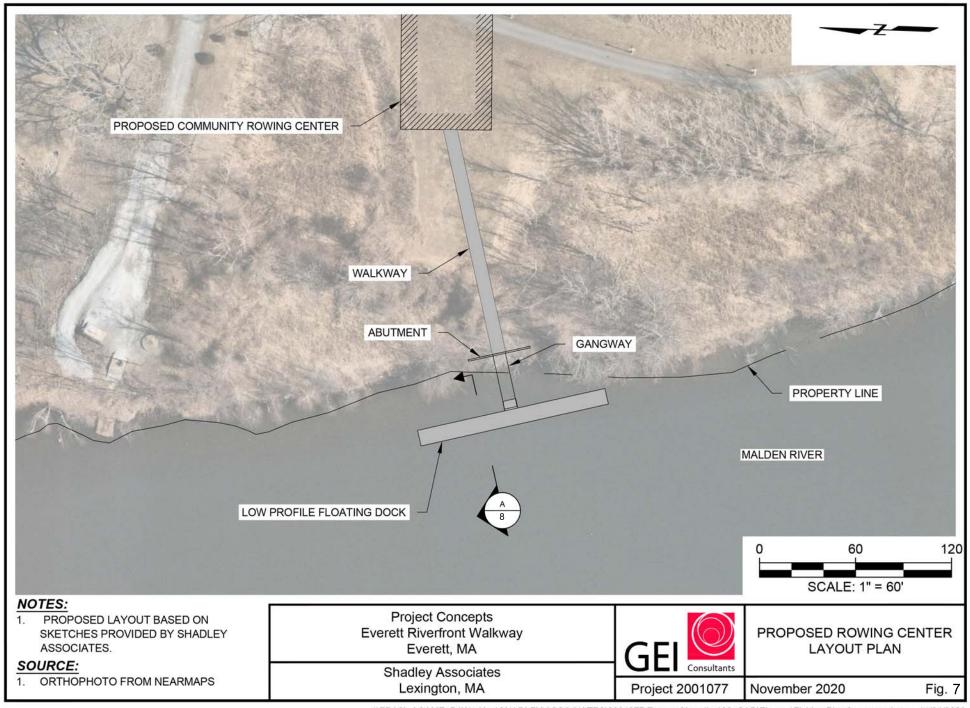
Example of prefabricated pedestrian bridge.

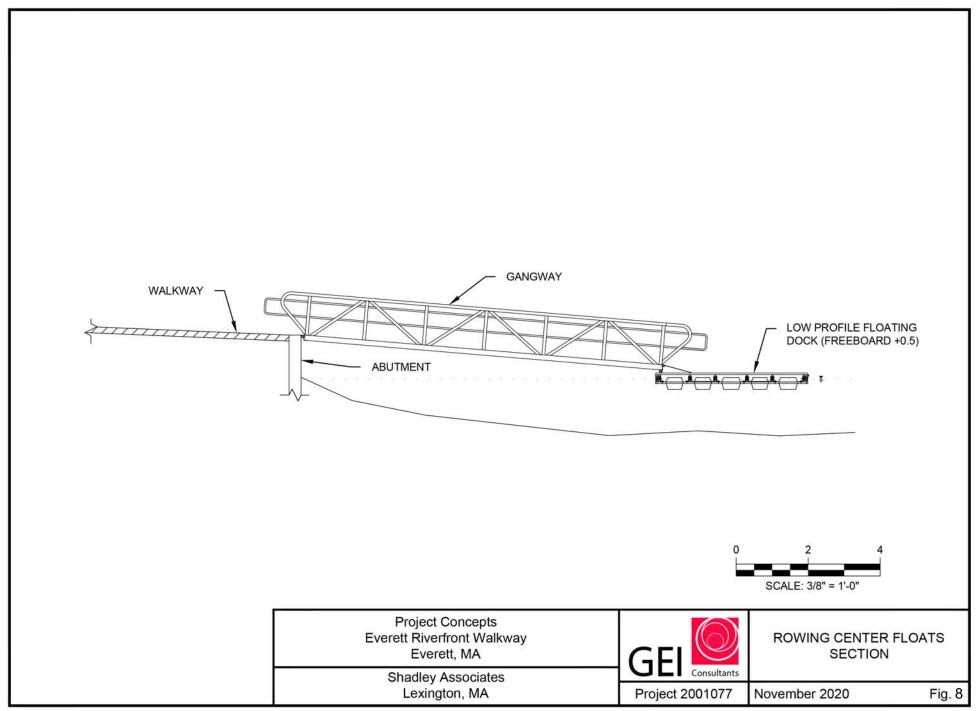
#### **AREA 6: RIVERGREEN**

Rivergreen consists of an existing illuminated three-quarter mile Riverwalk that connects to Air Force Road at the southern end and the Northern Strand Community Trail at the northern end. An overlook plaza with benches, shade shelter, and planting is located at the midpoint of the Rivergreen Riverwalk with direct access and parking at Rivergreen Drive. Along the northern portion of the Riverwalk is a new active recreational park including football field, basketball courts, roller hockey, playground and splash pad. The focus of this project's work at Rivergreen is a community boathouse which could serve Everett's crew team as well as provide community meeting space. The proposed boathouse is located on an existing promontory to the south of the overlook with access to Rivergreen Drive. The boathouse is shown diagrammatically to match the footprint of the Tufts Boathouse located on the opposite side of the Malden River, to the north at River's Edge. The footprint is approximately 6,000 square feet and for the purposes of this conceptual design work, an upper level of 2,000 square foot could be allocated to community meeting space and fitness facilities for the crew team. At this conceptual design stage, the intent is to diagrammatically illustrate the boathouse's potential size and siting along the Riverwalk. A large, paved plaza fronts the boathouse and provides a staging area for rowing shells with a gangway to a floating dock on the river. The conceptual design generally mimics the Tufts Boathouse for reference. The existing Riverwalk would need to be re-routed inland of the boathouse at this location. This would allow for the boathouse and crew staging to remain outshore of the Riverwalk. The floating dock, which is proposed at 10-feet wide by 120-feet long, will consist of low-profile float sections, less than one foot of freeboard, to allow rowers to easily get in and out of their boats without damaging the overhanging oar connections. The floats will be anchored with mooring blocks as piles would interfere with vessel usage. The float will be accessed by an aluminum gangway attached to an abutment. The length of the gangway will be determined to allow the required ADA access to the installed floats. During winter the floating dock will need to be stored onshore.



Tufts Boathouse with paved crew staging area and floating dock system.





### **Proposed Site Amenities**

This section of the report describes proposed site amenities and alternatives for the Everett Riverfront Walkway including benches, tables, contemporary seating, bicycle parking, trash receptacles, signage, and lighting.

#### **Benches**

Two bench alternatives are proposed. It is recommended that the same bench be used along the entire riverfront for visual consistency and site identity.



Manufacturer: Sitescapes Model: "Tallgrass Bench"

Description: Metal bench with graphic cutouts



Manufacturer: Forms & Surfaces Model: "Trio Bench"

Description: Metal bench frame and armrests with Ipe wood seat/back

#### **Tables**

Tables are generally proposed at Village Landing Park and the Berberian Property for larger gatherings. Alternatives differ by material and seat configuration.



Manufacturer: Sitescapes Model: "Tallgrass Table"

Description: Metal table/seats with graphic cutouts



Manufacturer: Landscape Forms Model: "35 Mingle Table"

Description: Metal table/seats with backs



Manufacturer: Tournesol

Model: "Roundabout Table"

Description: Wood tabletop/seats with metal frame



Manufacturer: Sitescapes
Model: "Avondale Table"

Description: Metal tabletop, wood seats

## **Contemporary Seating**

These informal seating elements are generally intended for the Berberian Property where the Riverwalk is an open waterfront plaza. These add interest to the space and can be used in various configurations for group gathering. They could also be added to Gateway Park.



Manufacturer: Escofet, offered by Landscape Forms

Model: "Flor"

Description: Precast concrete seat



Manufacturer: Landscape Forms Model: "Trapecio Bench"

Description: Wood timber on metal supports

## **Bicycle Parking**

Bicycle parking posts are proposed at gathering areas along the riverfront walkway. Bicycle parking posts can be whimsical in style or painted in bright colors to add interest along the walkway.



Manufacturer: Forms & Surfaces

Model: "Twist"

Description: Powdercoated metal, two bike capacity



Manufacturer: DuMor

Model: "Bike Rack 199"

Description: Powdercoated metal post in leaf shade, two bike capacity

## **Trash Receptacles**

Trash receptacles offer customization capability. The riverfront's name or the City's name or seal could be incorporated into the design of the receptacles for personalization.



Manufacturer: Landscape Forms Model: "Lakeside"



Manufacturer: Anova Model: "Airi"



Manufacturer: Anova Model: "Exposition Trash / Recycling"



Manufacturer: Anova Model: "Exposition"



Manufacturer: Forms & Surfaces Model: "Urban Renaissance"

## **Wayfinding & Interpretive Signage**

Wayfinding and interpretive signage are proposed throughout the Everett Riverfront Walkway to guide and educate visitors.



Custom metal wayfinding sign with graphic cutout. Cutouts can be a consistent theme throughout the Riverwalk but could be different at each portion along the way.



Manufacturer: Pannier Graphics Model: "Upright" (Wayfinding)



Manufacturer: Pannier Graphics

Model: "Cantilevered" (Interpretive Panel)

## **Site Lighting**

Pedestrian scale lights are proposed along the main riverfront walkway for site security. In addition, security cameras and blue lights are recommended to maintain safety and to patrol the riverfront.



City of Everett Standard Pedestrian Light (shown at Rivergreen).

hadley Associates, P.C.										

**Regulatory Strategy for Development Memo** 



November 20, 2020

Ms. Pamela Shadley Shadley Associates, P.C. 1730 Massachusetts Avenue Lexington, MA 02420

Re: Memorandum – Regulatory Strategy for Development

Proposed Everett Riverfront Walkway Everett, Massachusetts VERTEX Project No. 62672

Dear Ms. Shadley:

The Vertex Companies, Inc. (VERTEX) is pleased to present this Memorandum in regard to potential regulatory strategy for development of a public walkway located at the above referenced property (the Site).

This Memorandum includes a discussion of the various Site parcels, the conceptual design of the proposed public walkway, known environmental conditions, Activity and Use Limitation (AUL) restrictions for the Site, VERTEX's recommendations for the future development, and a general timeline with action items outlining a potential regulatory strategy for development of the public walkway.

#### **Site Background**

The Site consists of the western portions of six parcels of land in the City of Everett, including Parcel ID Numbers D0-03-000219 (0 Tremont Street), G0-3A-000011 (75 Norman Street), G0-3A-00011A (77 Norman Street), G0-3A-000012 (79 Norman Street), G0-02-00100A (133 Santilli Highway), and H0-06-000200 (2 Mystic View Road).

The Site's six parcels include the following areas:

 The northern portion of the Site at 0 Tremont Street, hereinafter referred to as Rivergreen, is currently occupied by public open space and a pedestrian walking path known as the Riverwalk, a commercial building occupied by the Boston Freightliner tractor trailer sales/repair facility, and a roadway known as Rivergreen Drive.

- To the south of Rivergreen are the 75, 77, and 79 Norman Street parcels, hereinafter referred to as the Berberian Property. The Berberian Property is occupied by the Deberaux Construction Inc. natural gas installation company, the Cumar granite works storage facility, and multiple storage bays for a landscaping and construction business.
- In between the Berberian Property and Revere Beach Parkway (Route 16) is public open space at 133 Santilli Highway, hereinafter referred to as Village Landing Park.
- The southern portion of the Site to the south of Revere Beach Parkway are a pedestrian walking path and public open space at 2 Mystic View Rd, hereinafter referred to as Gateway Park. The Gateway Park areas of the Site are portions of the historical Monsanto Company Property located at Mystic View Road. The entire Monsanto Company Property included a total of eleven remediation sub-areas, three of which are located in the areas of the potential Everett Riverfront Walkway: 1) the Fund Land Area, which is approximately 13.92 acres in size and located immediately to the south of Revere Beach Parkway; 2) the Mystic View Area, which is approximately 1.10 acres in size and located immediately to the south of the Fund Land Area; and, 3) the Cape Cod Area, which is approximately 2.8 acres in size and located within the far southern portion of the Site.

### **Conceptual Design of Walkway**

In October 2020, a conceptual design with a preferred alignment of the proposed Everett Riverfront Walkway was completed by Shadley Associates, P.C. for the City of Everett. The current conceptual design of the walkway includes the following:

- Construction of a possible boathouse/community building with a crew staging area and floating dock at the Rivergreen portion of the Site.
- Installation of a pedestrian bridge over the South Creek connecting the Rivergreen and Berberian Property portions of the Site.
- Construction of a 20-foot wide walkway at the shoreline of the Berberian Property, and rebuilding of the shoreline. This shoreline work would include installation of a bulkhead wall, guardrail, berm with plantings, chain-link fencing, and retaining wall.
- Installation of a boardwalk over the Malden River, connecting the Berberian Property and the Village Landing Park portions of the Site.
- Construction of a river overlook (with shade shelter, tables, retaining/seat wall, and plantings) and construction of an entry plaza at the Village Landing Park portion of the Site. Also, new pedestrian sidewalks that connect to the riverfront walkway would be



installed, and accessible parking spaces, signage, and benches on concrete pads would be added in this area.

- Installation of a boardwalk with guardrails through wetlands at the northern Gateway
  Park portion of the Site (i.e., the Fund Land Area), as well as the possible reconstruction
  of wetlands, installation of a 6' wide loop walk around the wetlands, and construction of
  an entry plaza with signage. The proposed boardwalk would connect to the park's existing
  paved walkways.
- Construction of a possible canoe/kayak launch at the central Gateway Park portion of the Site (i.e., at the approximate border of the Fund Land Area and the Mystic View Area), and installation of a seating area with terraced walls and an entry plaza in this area.
- Construction of a possible fishing pier with railings at the southern Gateway Park portion
  of the Site (i.e., the Cape Cod Area). Also, accessible ramps with handrails, crosswalks,
  bicycle parking, striping for bike lanes, new plantings, and benches would be added, and
  an overlook plaza with benches would be constructed at the far southern portion of this
  area. Widening of walkways to 10 feet for pedestrian and bicycle use will be considered
  in this area.

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#### **Known Environmental Conditions & Activity and Use Limitations**

Based on a review of available Massachusetts Department of Environmental Protection (MassDEP) regulatory files for the subsurface impacts across the various Site parcels are primarily indicative of historical industrial use as well as filling of the parcels and surrounding vicinity over the course of the past 100+ years of industrial development along the Malden River. Also, the Village Landing Park Property was historically utilized as a burning dump. The filling/dumping within the western portion of the Village Landing Park property began in the late 1940s or early 1950s, and the filling/dumping activities extended to the Malden River.

The proposed walkway along the Malden River would traverse portions of three closed Disposal Sites (Rivergreen, Village Landing Park, and the Gateway Park areas of the former Monsanto Company property) and a currently open Disposal Site located at 79 and 89 Norman Street (the Berberian Property). Also, the proposed Everett Riverfront Walkway would potentially traverse five separate areas that have existing Activity and Use Limitations (AULs).

VERTEX notes that, based on the use of a portion of Rivergreen as a pedestrian walking path and the restrictions contained in the current AUL for RTN 3-0311 filed in 2000, an Amendment of Notice of AUL and a Revised Permanent Solution with Conditions (PSC) will be filed with MassDEP. It is currently anticipated that these two documents will be filed with MassDEP in the near future.



Additionally, based on a review of MassDEP records, remediation is not planned at the Berberian Property and it appears that regulatory closure for the release can be achieved in the future. No new reports regarding the Berberian Property release have been filed with the MassDEP since a Massachusetts Contingency Plan (MCP) Phase I Initial Site Investigation and Tier Classification report was submitted in January 2020.

#### Current AUL Restrictions

A review of the Site parcels' AULs identified the following specific activity, use, construction, earthwork, and/or excavation-related restrictions that are relevant to future redevelopment of the Site as a public walkway:

• The potential construction of a possible boathouse/community building has been proposed for the Rivergreen portion of the Site. The current AUL for Rivergreen prohibits use of the area as a recreation center; however, this restriction will be removed in the amended AUL currently being prepared for the property. Any future construction activities at Rivergreen that remove the existing cap and/or disturb the soil or groundwater located beneath the cap or within the vegetated wetlands must be performed in accordance with a Soil and Groundwater Management Plan and Health and Safety Plan (HASP). Any excavation work within the cap will require repair and/or replacement with a new cap immediately following the completion of the project.

Additionally, both the current AUL and amended AUL for Rivergreen require that any building being constructed within the AUL Area be built with a vapor barrier and a passive sub-slab venting system with subsequent indoor air sampling and analysis, unless an LSP renders an opinion which states that one or more of these measures are not necessary to maintain a condition of No Significant Risk.

- The potential construction of a river overlook has been proposed for the Village Landing Park portion of the Site. The AUL for the Village Landing Park area prohibits construction and occupancy of any heated ground-level structures and also prohibits construction of any unheated ground level structures unless the risk associated with such a use or activity is evaluated by an Licensed Site Professional (LSP). Therefore, although it is considered likely that any river overlook would be an open air-structure and would not pose a risk of harm to human health, the construction and use of any structure (including a river overlook) in this area requires evaluation by an LSP.
- The potential addition of accessible parking spaces has been proposed for the Village
  Landing Park portion of the Site. The AUL for the Village Landing Park area prohibits use
  of the capped areas of the Site for parking in areas outside of the AUL's designated
  "Parking Easement." A review and comparison of the AUL's Exhibit B Sketch Plan and the
  conceptual walkway design for the Site indicates that existing parking spaces would be



converted to accessible spaces, and that no vehicle parking areas are proposed in areas outside of the AUL's designated Parking Easement. If any vehicle parking is proposed for areas located outside of the Parking Easement (i.e., the current parking lot), an evaluation by an LSP, and preparation of an Amendment to the Notice of AUL would be required.

A review of the other several AULs for the Site did not identify any other parking-related use restrictions.

• The AUL for the Gateway Park's Fund Land Area prohibits excavations into soil and the use of plantings in which the ground surface is penetrated, excavated, or disturbed unless the excavation and plantings are approved by the Owner and an LSP. No information regarding prior capping of the Fund Land Area was noted in the prior reports reviewed. A July 1997 Class A-3 Response Action Outcome (RAO) for the Fund Land Area states that a Risk Characterization completed assumed that the area would be accessible to the public. Limited human exposure to surficial soil, sediment, and surface water were assumed to occur, and that exposures to mowing of vegetation was also evaluated in the Risk Characterization. According to the Class A-3 RAO, activities necessary for the placement and compaction of clean fill used to aid in the establishment of plantings and construction of jogging/bicycle paths are permitted.

Any excavation associated with the proposed potential reconstruction of wetlands, installation of walkways around the wetlands, and construction of an entry plaza would require an evaluation by a Professional Wetland Scientist (PWS), evaluation and approval by the Owner and LSP, and preparation of an Amendment to the Notice of AUL. Pursuant to the Massachusetts Inland Wetland Replication Guidelines dated March 1, 2002, wetland replication typically involves excavation of upland soils to a depth where the naturally occurring water table can support wetland vegetation.

- A boardwalk through wetlands has been proposed for the Gateway Park's Fund Land Area. Permitted activities and uses for this AUL area include use as a low intensity recreational area (including activities such as walking, bird watching, and sightseeing), and use for jogging/bicycle paths constructed and maintained in a manner approved by the Owner and LSP. Therefore, installation of a boardwalk used for low intensity recreational activities in this area appears to be consistent with the existing AUL Opinion.
- The AUL for the Gateway Park's Mystic View Area notes that (unless written approval is obtained from the Owner and an LSP), excavation, penetration, or disturbance of the geotextile marker layer and the existing twelve inches of overlying fill is prohibited. Also, any plantings cannot grow into the marker barrier or into the existing twelve inches of overlying fill. Any excavation into the marker layer and overlying fill associated with the construction of a possible canoe/kayak launch, seating area, and entry plaza would



require an evaluation and approval by the Owner/LSP, and/or preparation of an Amendment to the Notice of AUL.

- A possible canoe/kayak launch has been proposed for the area at the approximate border of the Fund Land Area and Mystic View Area. Although the AUL for the Village Landing Park area of the Site prohibits boating or installation of structures to support boating/aquatic activities, the AULs for the Fund Land Area and Mystic View Area note that use of this land as a low intensity recreational area is permitted. Therefore, since onsite soil would not be disturbed during the proposed uses, use of this portion of the Site as a canoe/kayak launch is potentially consistent with the existing AUL Opinion. However, the Owner/LSP should evaluate and approve of this potential future Site usage. Per the AULs, any soil excavation associated with the construction of the canoe/kayak launch is currently prohibited at the Fund Land Area and, as noted above, is restricted in the Mystic View Area. Similar to the Mystic View Area AUL restrictions, any earthwork within the Fund Land Area would require approval by the owner and evaluation by an LSP prior to the work commencing, and potentially later preparing an Amendment to the Notice of the AUL.
- The AUL for the Gateway Park's Cape Cod Area notes that the use of any plantings cannot remove or disturb the existing ten inches of overlying fill that are part of the Property's geotextile marker barrier. The existing ten inches of overlying fill cannot be removed or reduced in thickness. The roots of any plantings cannot grow into or otherwise disturb more than the upper foot of soil above the multi-layer engineered cap installed at the southern portion of the Cape Cod Area. Additionally, excavation, penetration, or disturbance of the multi-layer engineered cap, marker barrier, or pavement is prohibited without prior development of a Soil Management Plan (SMP) and HASP. VERTEX notes that any permanent removal/disturbance of the Cape Cod Area's multi-layer engineered cap, marker barrier, or pavement would require an LSP evaluation, and preparation of an Amendment to the Notice of AUL.
- A potential fishing pier has been proposed to be installed at the Gateway Park's Cape Cod Area. The Cape Cod Area AUL notes that use of the park for passive recreational activities (such as walking, bird-watching, fishing, and bicycle riding) is permitted. Therefore, use of a portion of the Cape Cod Area as a fishing pier is consistent with the existing AUL Opinion.

#### Malden River Sediment

Prior reports for the AUL Areas of the Site provide limited discussions of sediment within the Malden River:

 A July 2000 Class A-3 RAO Statement for the Rivergreen area concluded that sediment quality in the Malden River was not adversely impacted by the release and that inorganic



constituents in sediment were detected at concentrations consistent with background levels.

- An April 2001 Class A-3 RAO Statement for Village Landing Park state that sediment sampling to support ecological risk characterization was not conducted, since no sediment is located within the property.
- A July 1997 Class A-3 RAO for the Fund Land Area note that lead, PCBs, bis(2ethylhexyl)phthalate, and polycyclic aromatic hydrocarbons (PAHs) were detected in soils and sediment.
- A July 1997 Class A-3 RAO for the Mystic View Area does not include any discussion of sediment. However, the Mystic View Area AUL notes that an AUL was required to limit future activities and uses which could otherwise result in unacceptable direct contact and incidental ingestion of impacted soils, sediments, surface water, and groundwater.
- A September 2010 Class A-3 RAO for the Cape Cod Area does not include any discussion of sediment.
- An October 1994 Phase II Risk Characterization for the Fund Land Area, Mystic View Area, Cape Cod Area, and off-site Tidal Flats Area notes that remedial actions for protection of ecological receptors was not warranted. Also, it is stated that there were no health risks to trespassers (local residents) associated with exposures in the Cape Cod Area, and that no human health risks in excess of MassDEP risk criteria was identified in Fund Land Area soil, sediment, or surface water.

VERTEX also reviewed a June 2008 Malden River Ecosystem Restoration Detailed Project Report & Environmental Assessment prepared by the U.S. Army Corps of Engineers (USACE). The report states that the Malden River is a "degraded riverine ecosystem, where the surface water quality and underlying toxic sediments depress local fisheries and benthic communities." The report also notes that elevated levels of semi-volatile organic compounds (SVOCs), most likely from past releases, are considered the primary sediment quality issue in the Malden River. The USACE stated that remediation efforts to control ongoing sources of sediment contamination would not significantly improve existing sediment quality without removal or remediation, since the SVOCs in the sediments are very persistent and are not expected to attenuate naturally in the short term.

A review of the Site's five AULs does not identify any specific restrictions with respect to sediment within the Malden River. However, based on the known impacts to the Malden River sediment from the historical releases, industrial use, and filling of the area, VERTEX notes that additional evaluation and assessment would be warranted for any proposed construction and/or future use of the river bank.



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#### **AUL Area Caps and General Capping Requirements**

Based on VERTEX's experience, capping of impacted soils as recommended by the MassDEP includes placement of three feet of clean fill in landscaped areas (and in select areas the addition of a marker barrier), placement of a 12-inch thick layer of imported aggregate plus a minimum 2.5-inch thick layer of pavement in pavement/walkway areas, and placement of concrete slab plus a minimum 12-inch thick layer of imported aggregate in building slab areas. Also, industrial marker barriers with a minimum of 18-inches of clean loam and seed have been placed in fringe walkway areas abutting wetlands, etc. (i.e., areas where three feet of clean fill cannot be placed). These required caps were installed at the Rivergreen area of the Site.

The required cap installed at the Village Landing Park area consists of 18 inches of sand and six inches of topsoil overlying a geotextile layer. In certain areas of the property the cap consists of different types of cover material, such as gravel or crushed stone. Depending on the uses of these areas (tree wells, parking areas, or slopes) the cover in some areas varies in thickness. In particular, the Village Landing Park parking area utilizes a geotextile covered with 12 inches of dense gravel overlain by four inches of asphalt.

No information regarding capping of the Gateway Park's Fund Land Area was noted in the prior reports reviewed.

The required cap installed at the Gateway Park's Mystic View Area consists of a geotextile marker layer overlain by 12 inches of clean fill.

The required caps installed at the Gateway Park's Cape Cod Area include a multi-layer engineered cap over the southern portion of the AUL Area (where high concentrations of naphthalene in soil were detected), and a non-woven geotextile marker barrier overlain by ten inches of clean fill in remaining portions of the AUL Area. The multi-layer engineered cap over the southern portion of the AUL Area consists of, from bottom to top, four inches of coarse sand, a geotextile fabric protecting an overlying impermeable liner, a 20 mil bentonite-coated HDPE geomembrane (designed to provide an impermeable barrier to the flow of water), a permeable membrane (designed to allow flow of infiltrated water off the top of the geomembrane), a non-woven geotextile fabric that serves as a protective layer between the permeable membrane and overlying fill material, two and a half feet of clean fill material, and six inches of topsoil. According to the Cape Cod Area's AUL, concrete bounds were placed as reference points to identify the approximate limits of the multi-layer engineered cap. As previously noted, an overlook plaza with benches has been proposed to be constructed in this southern portion of the Cape Cod Area.

Based on the improvements proposed, which do not include any regularly occupied residential or commercial structures, it is considered unlikely that the cap thicknesses would have to be



further increased to demonstrate a condition of No Significant Risk. However, as previously noted in this memo, the construction and/or usage of structures including a river overlook and canoe/kayak launch requires evaluation by an LSP. As part of this evaluation, an LSP may require the placement of additional capping material to be installed in these areas and potentially an Amendment(s) to the Notice of AUL(s).

The AULs for Rivergreen, Village Landing Park, the Mystic View Area, and the Cape Cod Area include minimum capping requirements as noted above. Following an evaluation by an LSP, the types of caps could be modified to meet walkway design considerations. Any new capping material to be installed across the AUL Areas and evaluated by an LSP should consist of the same material previously installed or be of equivalent protection. Also, any permanent modifications to the specific capping material/thicknesses noted in the respective AULs would potentially require preparation of Amendment(s) to the Notice of AUL(s).

#### **Recommendations and Regulatory Strategy Action Items**

Based on the known environmental conditions and a review of the Site's AULs and the conceptual design plan for the Site, VERTEX offers the following recommendations:

- Any and all future Site excavation work and earthwork within the Site's AUL areas (i.e., Rivergreen, Village Landing Park, the Mystic View Area, and the Cape Cod Area) must be performed in accordance with the permitted activities and obligations & conditions contained in the five separate AULs. Also, the AUL for the Fund Land Area prohibits excavations into soil unless the excavation work is approved by the Owner and is evaluated by an LSP. The AUL areas' various paved paths, soil caps, and/or marker barriers, as applicable, must be repaired or replaced in kind according to the requirements of the respective AULs. A HASP, SMP, and/or Remediation Waste Management Plan, as applicable, must be prepared for the AUL areas to properly manage such earthwork and any disposal/management of Site soils. Additionally, assuming greater than 20 cubic yards of soil contaminated with hazardous materials will be excavated at any of the AUL areas, a RAM Plan(s) pursuant to 310 CMR 40.0440 of the MCP must be prepared and submitted to the MassDEP prior to the commencement of any excavation work and earthwork.
- The Gateway Park Owner and their LSP should be consulted regarding any requested planting work that penetrates the ground surface within the Fund Land Area or the overlying fill/marker barriers and/or engineered caps within the Mystic View and Cape Cod Areas. Alternatively, the placement and compaction of clean fill used to aid in the establishment of plantings or construction of jogging/bicycle paths is permitted under the AULs.



- If a boathouse/community building is constructed within the Rivergreen area, the building likely must be constructed with a vapor barrier and a passive sub-slab venting system, and subsequent indoor air sampling and analysis would be performed to confirm the vapor barrier and venting system's effectiveness in preventing vapor intrusion into the building. Alternatively, an LSP may render an opinion which states that one or more of these measures are not necessary to maintain a condition of No Significant Risk.
- Due to the language regarding structures contained within the Village Landing Park AUL, the construction and use of a river overlook in the Village Landing Park area requires evaluation by an LSP to confirm that No Significant Risk exists related to future use of this structure.
- The use of portion of the Gateway Park Area as a possible canoe/kayak launch must be approved by the Gateway Park Owner and their LSP to confirm that No Significant Risk exists for these aquatic activities.
- Any other future activity and use associated with the proposed public walkway that is inconsistent with the permitted activities and uses contained within the Site's AUL Opinions will require evaluation by an LSP and an Amendment to one or more of the Notice of AULs.
- In the event of future soil/sediment removal activities at the Site, characterization sampling and analysis would be required prior to off-site disposal.
- Based on the documented impacts to sediment within the Malden River, additional evaluation and assessment would be warranted for any proposed construction and/or future use of the river bank.
- Although regulatory closure for the release at the Berberian Property will likely be achieved in the future, based on the current open status of the release, a periodic file review of MassDEP records for RTN 3-35309 should be performed. Also, if any excavation or earthwork is to occur prior to regulatory closure, the LSP for RTN 3-35309 should be consulted regarding the work.

Although considered unlikely at this time based on the proposed design plans, if future soil excavation and disposal and/or dredging of sediments is anticipated as part of the redevelopment activities, it is recommended that a pre-characterization investigation of areas within the proposed public walkway and improvements be performed. The investigation would include the characterization of on-site soil and/or sediments and to determine costs for the off-site export of soil and/or sediments to an approved receiving facility. Any potential off-site reuse and disposal of contaminated soil at Massachusetts landfills should be performed in accordance with MassDEP Policy #COMM-97-001, and any potential off-site reuse and disposal of dredged



sediments at Massachusetts landfills should be performed in accordance with MassDEP Interim Policy #COMM-94-007. Also, although excavation dewatering is considered unlikely based on the reported depth to groundwater across the Site and the proposed redevelopment activities, any dewatering activities would require the collection and analysis of groundwater obtained from the excavation areas for characterization for on-site recharge, off-site discharge, or for off-site disposal. If excavation dewatering is necessary, a temporary on-site treatment system would likely be required for off-site discharge, which would require a United States Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) permit.

In addition, currently available information indicates that Site redevelopment activities can be conducted and managed under a Site-specific RAM Plan(s), SMP(s), HASP(s), and/or Remediation Waste Management Plan(s).

The RAM Plan(s) would outline the provisions for the management of Site soils and groundwater during redevelopment activities, as outlined in 310 CMR 40.0444 of the MCP.

The HASP(s) would be prepared to guide the conduct of the work in the event that the previously identified petroleum hydrocarbons and/or hazardous substances at the Site are encountered during fieldwork activities. The purpose of the HASP would be to minimize the likelihood of exposure of VERTEX employees to hazardous concentrations of chemicals during field activities, minimize impacts to the environment, and provide guidelines for contractors. *Contractors are also required to prepare their own HASP, as applicable to their discipline and potential exposures.* 

As specified in 310 CMR 40.0445 of the MCP, RAM Status reports would be required within 120 days after the initial submittal of the RAM Plan to the MassDEP, and every six months thereafter. Upon the completion of the RAM activities, a RAM Completion Report would be required within 60 days as specified in 310 CMR 40.0446 of the MCP.

VERTEX has provided the following general timeline and table outlining a potential MCP strategy associated with development of the public walkway. This regulatory strategy is based on data obtained to date and may change based on additional data/analysis, construction design/schedule, and/or regulatory timelines.

Regulatory Strategy Action/Item	Action/Item Schedule
Periodic Review of MassDEP	Following authorization for public walkway
Regulatory Records for RTN	redevelopment and performed on an
3-35309 (The Berberian	annual basis
Property)	
Pre-Characterization	Following authorization for public walkway
Investigation	redevelopment and prior to excavation-
(If Necessary)	related redevelopment work. The
	investigation could be completed within



	three to four weeks from Client
	authorization, depending on contractor availability
Assessment of Malden River	Following authorization for public walkway
Sediment	redevelopment and prior to any
(If Necessary)	construction work to occur within the
(II Necessary)	Malden River
Site-specific RAM Plan(s)	Prior to excavation-related redevelopment
Site specific trait Flants,	work
Site-specific HASP(s), SMP(s)	Prior to excavation-related redevelopment
and/or Remediation Waste	work
Management Plan(s)	WOLK .
Environmental Oversight,	During excavation-related redevelopment
Dust Monitoring, and Project	work
Management	
Excavation Dewatering and	During excavation-related redevelopment
Groundwater Treatment	work
(If Necessary)	
Bill of Lading/Waste	During and/or following excavation-related
Manifest(s)	development work
(If Necessary)	·
Off-Site Transportation and	During and/or following excavation-related
Disposal of Soil/Sediment	development work
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Attestation of Bill of Lading/Waste Manifest (If Necessary) RAM Status Reports (If Necessary)  RAM Completion Report(s)  Amendment(s) of Notice of AUL (If Needed)  (Not including the Amendment of Notice of AUL for Rivergreen, which is anticipated to be completed	work  First RAM Status Report is due 120 days from submittal of the RAM Plan. Each subsequent RAM Status report is due every six months thereafter until the RAM Completion is submitted  Within 60 days of the completion of RAM activities  Following excavation-related development work  Written notification to the Site parcel's current record interest holders is required within 30 days prior to the implementation of the Amendment of the Notice of AUL.
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Attestation of Bill of Lading/Waste Manifest (If Necessary) RAM Status Reports (If Necessary)  RAM Completion Report(s)  Amendment(s) of Notice of AUL (If Needed)  (Not including the Amendment of Notice of AUL for Rivergreen, which is anticipated to be completed	First RAM Status Report is due 120 days from submittal of the RAM Plan. Each subsequent RAM Status report is due every six months thereafter until the RAM Completion is submitted  Within 60 days of the completion of RAM activities  Following excavation-related development work  Written notification to the Site parcel's current record interest holders is required within 30 days prior to the implementation of the Amendment of the Notice of AUL. Also, within 30 days of recording and/or registering an AUL with the Middlesex
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Attestation of Bill of Lading/Waste Manifest (If Necessary) RAM Status Reports (If Necessary)  RAM Completion Report(s)  Amendment(s) of Notice of AUL (If Needed)  (Not including the Amendment of Notice of AUL for Rivergreen, which is anticipated to be completed	First RAM Status Report is due 120 days from submittal of the RAM Plan. Each subsequent RAM Status report is due every six months thereafter until the RAM Completion is submitted  Within 60 days of the completion of RAM activities  Following excavation-related development work  Written notification to the Site parcel's current record interest holders is required within 30 days prior to the implementation of the Amendment of the Notice of AUL. Also, within 30 days of recording and/or registering an AUL with the Middlesex South Registry of Deeds, the Site owner must submit to MassDEP a registry-certified copy of the Amendment of the Notice of
Attestation of Bill of Lading/Waste Manifest (If Necessary) RAM Status Reports (If Necessary)  RAM Completion Report(s)  Amendment(s) of Notice of AUL (If Needed)  (Not including the Amendment of Notice of AUL for Rivergreen, which is anticipated to be completed	First RAM Status Report is due 120 days from submittal of the RAM Plan. Each subsequent RAM Status report is due every six months thereafter until the RAM Completion is submitted  Within 60 days of the completion of RAM activities  Following excavation-related development work  Written notification to the Site parcel's current record interest holders is required within 30 days prior to the implementation of the Amendment of the Notice of AUL. Also, within 30 days of recording and/or registering an AUL with the Middlesex South Registry of Deeds, the Site owner must submit to MassDEP a registry-certified



Please note that, as tasks and response actions become more defined and additional data is collected, analyzed, and evaluated, VERTEX reserves the right to modify this action/item schedule based on changes in conditions.

#### **Summary of Regulatory Strategy**

The historical industrial use as well as filling of the Site and surrounding vicinity over the course of the past 100+ years resulted in documented subsurface impacts to the Site. With the exception of a currently open release on file with the MassDEP for the Berberian Property, the several prior releases of oil and/or hazardous materials (OHM) at the Site have each achieved regulatory closure and the remaining on-site contamination is appropriately managed under five separate AULs. Also, remediation is not planned for the Berberian Property and it appears that regulatory closure for that release can be achieved in the future.

In general, an AUL in Massachusetts is a legal notice that provides notice of the presence of OHM contamination remaining at the Site after a cleanup has been conducted in accordance with the MCP. An AUL identifies activities and uses of a property that may and may not occur, as well as the property owner's obligations and maintenance conditions that must be followed to ensure the safe use of the property.

The Site's five AULs restrict human access to and contact with OHM in the subsurface and/or restrict certain activities occurring at the Site. Any and all future excavation work and earthwork within the Site's AUL areas must be performed in accordance with the permitted activities and obligations & conditions contained in the AULs. VERTEX notes that future excavation/earthwork activities associated with the proposed walkway are likely somewhat limited in scope, appear feasible, and can be performed under a Site-specific Release Abatement Measure (RAM) Plan(s), Soil Management Plan(s), Health & Safety Plan(s), and any other documentation required by the AULs and in accordance with the MCP. In the event of any future soil removal and sediment dredging activities at the Site, characterization would be required prior to off-site disposal.

VERTEX also notes that the future use of the Site's AUL areas as public walkways will be in compliance with their respective AULs, with the exception of the current AUL for Rivergreen that is in the process of being amended to allow for use as a pedestrian walkway. The current Site owners/Responsible Parties and their respective LSPs should be consulted with, and approve of, the potential future excavation activities/earthwork, plantings, construction of a river overlook, and use of portion of the Site as a canoe/kayak launch.



Please do not hesitate to contact the undersigned if you have questions or comments regarding this memorandum.

Sincerely,

The Vertex Companies, Inc.

Eric Wirtanen

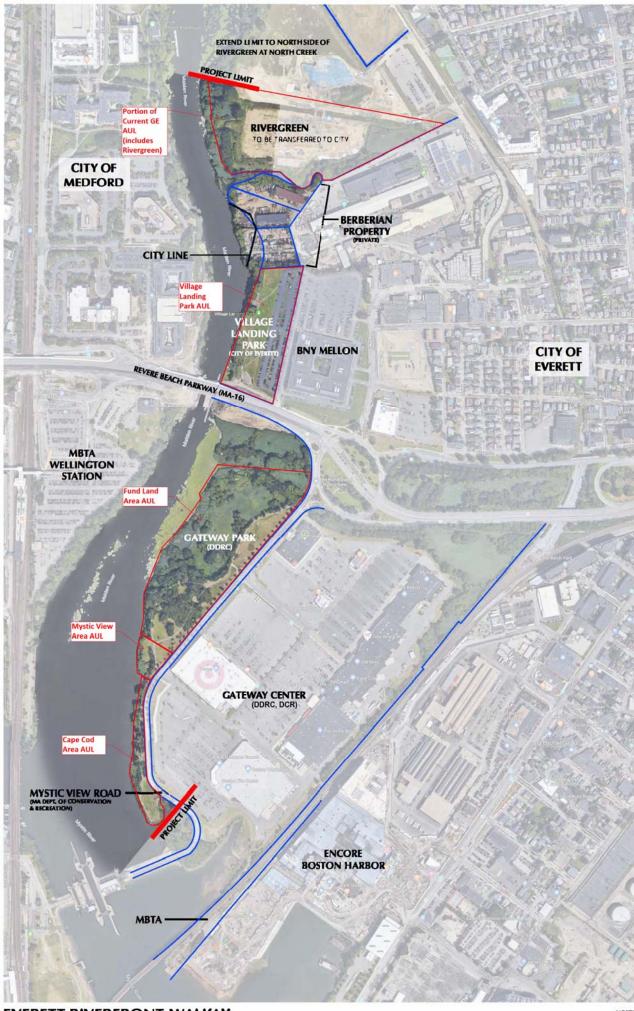
Project Manager

Sean E. Dinneen

Division Manager - Remediation

#### **Attachments**

Everett Riverfront Walkway Project Area with AULs





Shadley Associates, P.C.

# **Estimate of Probable Cost**

## **Shadley Associates, P.C.**

**Estimate of Probable Construction Cost** 

Status: Preliminary Design / Master Plan Date: November 25, 2020

lob: Everett Riverfront Walkway - Everett, MA

Landscape Architects Site Planners 1730 Mass. Ave. Lexington, MA 02420 TEL: (781) 652-8809 FAX: (781) 862-2687

Fetir	nate Summary	PROJECT SITE AREA											
LStii	nate Summary	1. Gateway Park South	2. Gateway Park Central	3. Gateway Park North	4. Village Landing Park	5. Berberian Property	6. Rivergreen						
	Contractor General Conditions (20%)	\$204,611.50	\$164,978.00	\$283,371.00	\$203,205.50	\$916,848.00	\$137,326.00						
A.	Demolition and Site Preparation	\$76,590.00	\$123,515.00	\$72,755.00	\$51,110.00	\$565,550.00	\$38,050.00						
B.	Earthwork	\$146,400.00	\$109,050.00	\$30,200.00	\$229,600.00	\$202,050.00	\$157,900.00						
C.	Paving and Curbing	\$305,025.00	\$251,300.00	\$47,125.00	\$330,640.00	\$855,265.00	\$103,000.00						
D.	Drainage and Utilities	\$20,000.00	\$20,000.00	\$30,000.00	\$10,000.00	\$20,000.00	\$160,000.00						
E.	Site Improvements	\$162,150.00	\$99,050.00	\$1,178,700.00	\$179,400.00	\$2,796,175.00	\$116,830.00						
F.	Landscaping	\$107,392.50	\$31,475.00	\$11,575.00	\$75,277.50	\$47,100.00	\$43,350.00						
G.	Electrical	\$205,500.00	\$190,500.00	\$46,500.00	\$140,000.00	\$98,100.00	\$67,500.00						
	Subtotal	\$1,227,669.00	\$989,868.00	\$1,700,226.00	\$1,219,233.00	\$5,501,088.00	\$823,956.00						
	Design Contingency (25%)	\$306,917.25	\$247,467.00	\$425,056.50	\$304,808.25	\$1,375,272.00	\$205,989.00						
	Construction Contingency (5%)	\$61,383.45	\$49,493.40	\$85,011.30	\$60,961.65	\$275,054.40	\$41,197.80						
	ESTIMATE OF PROBABLE CONSTRUCTION COST BY AREA	\$1,595,969.70	\$1,286,828.40	\$2,210,293.80	\$1,585,002.90	\$7,151,414.40	\$1,071,142.80						
	TOTAL ESTIMATED CONSTRUCTION COST (ALL AREAS)	\$14,900,652.00											

#### **NOTES:**

- 1 This estimate of probable construction cost is based on the preliminary Concept Plan prepared by Shadley Associates dated November, 2020. Prices are based on public bid 2020 prices.
- 2 The extent of the presence of contaminated soils within the project limit is generally known. The estimate assumes contaminated soils at Berberian are onsite and capping of the walkway site with clean fill will be required. Other sites require modification & repair of the existing cap to construct the improvements. The items under "Earthwork" are approximate only at this early stage of design and are for general budget purposes. Detailed arthwork calculations will be necessary once a field survey is developed, construction drawings are prepared, and the exact quantities can be calculated.
- 3 A design contingency is included to cover the cost of site improvements that cannot yet be determined at this early stage of design. A construction contingency is included to anticipate costs that may arise during construction.
- 4 This estimate does <u>not</u> include costs for the construction of the Boathouse at Rivergreen, as that should be prepared by an architectural /engineering team.
- 5 This estimate does not include costs for reconstructing the proposed wetlands at Gateway Park per the Kleinfelder/Hatch concept plan. The perimeter walkway around the proposed wetlands is not included in this estimate.
- 6 This estimate does <u>not</u> include costs for consultant fees for survey including wetlands flagging, final design, construction administration, and permitting which will be necessary to construct the proposed improvements.
- 7 This estimate does <u>not</u> include costs for legal fees for easements or other legal requirements.

## **Shadley Associates, P.C.**

**Estimate of Probable Construction Cost** 

Job: **Everett Riverfront Walkway - Everett, MA**Status: **Preliminary Design / Master Plan** 

Date: November 25, 2020

Landscape Architects Site Planners 1730 Mass. Ave. Lexington, MA 02420 TEL: (781) 652-8809 FAX: (781) 862-2687

				PROJECT SITE AREA											
				1. Gateway Park South		2. Gateway Park Central		3. Gateway Park North		4. Village Landing Park		5. Berberian Property		6. Rivergreen	
		Unit Cost	Quantity	Subtotal	Quantity	Subtotal	Quantity	Subtotal	Quantity	Subtotal	Quantity	Subtotal	Quantity	Subtotal	
Α.	Demolition and Site Preparation														
1	Erosion control	LF	\$20.00	1,225	\$24,500.00	525	\$10,500.00	1,500	\$30,000.00	700	\$14,000.00	600	\$12,000.00	850	\$17,000.00
2	Temporary shoring & dewatering for boat launch / Berberian prop	LF	\$750.00	0	\$0.00	80	\$60,000.00	0	\$0.00	0	\$0.00	700	\$525,000.00	0	\$0.00
3	Remove & dispose of bituminous concrete pavement	SY	\$18.00	830	\$14,940.00	230	\$4,140.00	35	\$630.00	570	\$10,260.00	0	\$0.00	225	\$4,050.00
4	Remove & dispose of concrete pavement	SY	\$25.00	0	\$0.00	365	\$9,125.00	5	\$125.00	0	\$0.00	0	\$0.00	0	\$0.00
5	Remove & dispose of existing curb	LF	\$10.00	15	\$150.00	120	\$1,200.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
6	Remove & dispose of bench	EA	\$250.00	0	\$0.00	1	\$250.00	0	\$0.00	3	\$750.00	0	\$0.00	0	\$0.00
7	Remove & dispose of picnic table, including footings	EA	\$500.00	0	\$0.00	1	\$500.00	0	\$0.00	10	\$5,000.00	0	\$0.00	0	\$0.00
8	Remove & dispose of chain link fence, including footings	LF	\$15.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	100	\$1,500.00	0	\$0.00
9	Remove & dispose of concrete blocks	LF	\$15.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	470	\$7,050.00	0	\$0.00
10	Clear & grub existing vegetation for improvements + views	ALLOW		1	\$5,000.00	1	\$10,000.00	1	\$10,000.00	1	\$2,500.00	1	\$5,000.00	1	\$5,000.00
11	Remove invasive plant species (phragmites, knotweed, bittersweet)	ALLOW		1	\$5,000.00	1	\$8,000.00	1	\$15,000.00	1	\$0.00	1	\$0.00	1	\$0.00
12	Tree protection	EA	\$400.00	30	\$12,000.00	12	\$4,800.00	5	\$2,000.00	9	\$3,600.00	0	\$0.00	5	\$2,000.00
13	Miscellaneous site protection	ALLOW		1	\$5,000.00	1	\$5,000.00	1	\$5,000.00	1	\$5,000.00	1	\$5,000.00	1	\$5,000.00
14	Miscellaneous demolition	ALLOW		1	\$10,000.00	1	\$10,000.00	1	\$10,000.00	1	\$10,000.00	1	\$10,000.00	1	\$5,000.00
		Subtotal Dei	molition and Sit	Preparation	\$76,590.00		\$123,515.00		\$72,755.00		\$51,110.00		\$565,550.00		\$38,050.00
В.	<u>Earthwork</u>			1									·		·
1	Rough grading	SY	\$10.00	6,100	\$61,000.00	4,200	\$42,000.00	500	\$5,000.00	9,600	\$96,000.00	2,355	\$23,550.00	6,000	\$60,000.00
2	Clean fill	CY	\$80.00	250	\$20,000.00	200	\$16,000.00	130	\$10,400.00	445	\$35,600.00	1,600	\$128,000.00	250	\$20,000.00
3	Engineered fabric below clean fill	SF	\$3.00	3,300	\$9,900.00	2,600	\$7,800.00	1,750	\$5,250.00	6,000	\$18,000.00	10,500	\$31,500.00	7,500	\$22,500.00
4	New loam for seeded areas, 6" depth	CY	\$70.00	650	\$45,500.00	475	\$33,250.00	65	\$4,550.00	1,000	\$70,000.00	200	\$14,000.00	720	\$50,400.00
5	Miscellaneous earthwork/onsite handling of soil	ALLOW		1	\$10,000.00	1	\$10,000.00	1	\$5,000.00	1	\$10,000.00	1	\$5,000.00	1	\$5,000.00
	8		Subto	tal Earthwork	\$146,400.00		\$109,050.00		\$30,200.00		\$229,600.00		\$202,050.00		\$157,900.00
C.	Paving and Curbing								, , , , , , , , , , , , , , , , , , , ,		, , , , , , , , , , , , , , , , , , , ,		,,		
	Bituminous concrete pavement	SY	\$55.00	990	\$54,450.00	480	\$26,400.00	85	\$4,675.00	1,355	\$74,525.00	105	\$5,775.00	700	\$38,500.00
2	Concrete pavement	SF	\$9.00	575	\$5,175.00	1,950	\$17,550.00	50	\$450.00	2,135	\$19,215.00	110	\$990.00	4,700	\$42,300.00
3	Concrete curb ramp with warning tile	EA	\$2,000.00	2	\$4,000.00	1	\$2,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
4	Brick or paver pavement on concrete base	SF	\$60.00	2,900	\$174,000.00	935	\$56,100.00	700	\$42,000.00	2,665	\$159,900.00	10,600	\$636,000.00	0	\$0.00
5	Fieldstone paving on gravel base at boat launch	SF	\$60.00	0	\$0.00	380	\$22,800.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
6	Crushed stone surfacing at boat launch / gangway	SF	\$6.00	0	\$0.00	300	\$1,800.00	0	\$0.00	0	\$0.00	0	\$0.00	1,200	\$7,200.00
7	Granite curbing - linear	LF	\$50.00	15	\$750.00	100	\$5,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
8	Granite curbing - radial	LF	\$60.00	145	\$8,700.00	30	\$1,800.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
9	Granite block seatwall/retaining wall on concrete foundation	LF	\$700.00	0	\$0.00	160	\$112,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
10	Concrete retaining wall, reinforced	LF	\$300.00	0	\$0.00	0	\$0.00	0	\$0.00	90	\$27,000.00	0	\$0.00	0	\$0.00
11	Segmental block retaining wall, 3' height	I F	\$300.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	-	\$166,500.00	-	\$0.00
	Concrete ramp with handrails both sides, 30' length	EA	\$15,000.00	2	\$30,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$100,300.00	0	\$0.00
	Concrete stairs with handrails	EA	\$15,000.00	0	\$0.00	0	\$0.00	0	\$0.00	2	\$30,000.00	0	\$0.00	1	\$15,000.00
14	Concrete seating steps, 2¹ treads, 3 risers	LF	\$400.00	0	\$0.00	0	\$0.00	0	\$0.00	50	\$20,000.00	115	\$46,000.00	0	\$13,000.00
15	Crosswalk striping	EA	\$1,000.00	2	\$2,000.00	1	\$1,000.00	0	\$0.00	0	\$20,000.00	0	\$40,000.00	0	\$0.00
16	Drop-off/loading parking striping	LS	\$2,000.00	0	\$2,000.00	1	\$2,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Bicycle lane striping, 5' width	LF	\$15.00	1,650	\$24,750.00	150	\$2,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Bicycle pavement symbol	EA	\$300.00	4	\$1,200.00	2	\$600.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
10	bicycle pavement symbol		Subtotal Paving	-			\$251,300.00	U	\$47,125.00	U	\$330,640.00	U	\$855,265.00	0	\$103,000.00
	Drainage and Utilities		Juniolai Faving	and Curbing	φ303,023.00		\$451,300.00		Ψ4/,123.00		\$330,040.00		<b>Φ</b> 033,203.00		\$103,000.00
D	IDIAMARE AND COMMEN		1												
		ALLOW/	\$100,000,00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	Ω	¢ስ ስስ	1	\$100,000,00
1	Budget for utility connections to boathouse	ALLOW	\$100,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	1	\$100,000.00
1		ALLOW	\$100,000.00  ibtotal Drainage	1	\$20,000.00	1	\$0.00 \$20,000.00 \$20,000.00	0	\$0.00 \$30,000.00 \$30,000.00	1	\$0.00 \$10,000.00 <b>\$10,000.00</b>	0	\$0.00 \$20,000.00 <b>\$20,000.00</b>	1	\$100,000.00 \$60,000.00 <b>\$160,000.00</b>

			1. Gateway	1. Gateway Park South 2. Gateway Park Central		3. Gateway Park North		4. Village Landing Park		5. Berberian Property		6. Rivergreen			
E.	Site Improvements														
1	6' bench with back	EA	\$3,500.00	6	\$21,000.00	5	\$17,500.00	4	\$14,000.00	4	\$14,000.00	4	\$14,000.00	0	\$0.00
2	6' backless bench	EA	\$3,000.00	0	\$0.00	0	\$0.00	0	\$0.00	4	\$12,000.00	0	\$0.00	0	\$0.00
3	15' backless radial bench	EA	\$6,000.00	3	\$18,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
4	Round stone seat on pedestal	EA	\$400.00	0	\$0.00	6	\$2,400.00	0	\$0.00	3	\$1,200.00	0	\$0.00	3	\$1,200.00
5	Contemporary plaza seat (timber bench or precast concrete)	EA	\$8,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	5	\$40,000.00	2	\$16,000.00
6	Table, 42" dia with 4 seats	EA	\$6,500.00	0	\$0.00	0	\$0.00	0	\$0.00	9	\$58,500.00	3	\$19,500.00	0	\$0.00
7	Bicycle parking post	EA	\$900.00	6	\$5,400.00	3	\$2,700.00	0	\$0.00	3	\$2,700.00	4	\$3,600.00	0	\$0.00
8	Trash receptacle	EA	\$2,500.00	2	\$5,000.00	1	\$2,500.00	1	\$2,500.00	1	\$2,500.00	1	\$2,500.00	1	\$2,500.00
9	Shade shelter, 35'x35'	EA	\$75,000.00	0	\$0.00	0	\$0.00	0	\$0.00	1	\$75,000.00	0	\$0.00	0	\$0.00
10	Kinetic sculpture, including pedestal & concrete footing	ALLOW	\$20,000.00	1	\$20,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
11	Wayfinding sign, metal with custom cutout	EA	\$1,250.00	1	\$1,250.00	2	\$2,500.00	2	\$2,500.00	1	\$1,250.00	1	\$1,250.00	1	\$1,250.00
12	Interpretive sign	EA	\$8,000.00	1	\$8,000.00	0	\$0.00	2	\$16,000.00	1	\$8,000.00	0	\$0.00	0	\$0.00
13	Regulatory signage on post with footing	EA	\$850.00	2	\$1,700.00	5	\$4,250.00	2	\$1,700.00	5	\$4,250.00	2	\$1,700.00	0	\$0.00
14	8' ht chain link fence, 2" mesh black vinyl coated	LF	\$125.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	555	\$69,375.00	0	\$0.00
15	Prefabricated bridge, 10' wide x 60' long, including abutments	ALLOW	\$120,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	1	\$120,000.00	0	\$0.00
16	Boardwalk	ALLOW	\$120,000.00	U	\$0.00	U	\$0.00	0	\$0.00	U	\$0.00	'	\$120,000.00	0	\$0.00
10	Structure & decking, 10' wide, on helical piers	LF	\$1,250.00	0	\$0.00	0	\$0.00	680	\$850,000.00	0	\$0.00	205	\$256,250.00	0	\$0.00
	Guardrail	LF	\$200.00	0	\$0.00	0	\$0.00	1,360	\$272,000.00	0	\$0.00	400	\$80,000.00	0	\$0.00
	Concrete abutment	EA	\$200.00	0	\$0.00	0	\$0.00	2	\$20,000.00	0	\$0.00	2	\$20,000.00	0	\$0.00
17		EA	\$10,000.00	U	\$0.00	U	\$0.00	2	\$20,000.00	U	\$0.00	2	\$20,000.00	U	\$0.00
17	Fishing pier Piles	ГА	¢1 F00 00	1.4	\$21,000,00	0	60.00	0	£0.00	0	60.00	0	¢0.00		¢0.00
		EA	\$1,500.00	14	\$21,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Superstructure	LS	\$10,000.00	1	\$10,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Decking	SF	\$10.00	800	\$8,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Guardrail	LF	\$200.00	164	\$32,800.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Concrete abutment	EA	\$10,000.00	1	\$10,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
18	Docking system at Gateway Park	ļ													
	Timber floating dock, 20' x 6' per section	SF	\$40.00	0	\$0.00	360	\$14,400.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Anchorage	EA	\$1,500.00	0	\$0.00	6	\$9,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Gangway	LS	\$20,000.00	0	\$0.00	1	\$20,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Concrete abutment	EA	\$10,000.00	0	\$0.00	1	\$10,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Kayak easy launch	EA	\$1,500.00	0	\$0.00	2	\$3,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
19	Stabilized shoreline														
	Sheet pile wall	LF	\$3,500.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	545	\$1,907,500.00	0	\$0.00
	Concrete wall cap (2.5' x 2' x Length)	CY	\$1,500.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	101	\$151,500.00	0	\$0.00
	Guardrail on cap	LF	\$200.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	545	\$109,000.00	0	\$0.00
20	Articulated block mats at canoe/kayak launch														
	Subgrade preparation	SF	\$10.00	0	\$0.00	320	\$3,200.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Geotextile	SF	\$3.00	0	\$0.00	400	\$1,200.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Articulated block mats	SF	\$20.00	0	\$0.00	320	\$6,400.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
21	Crew dock and water access at Rivergreen														
	Low profile floating dock (10' wide x 120' long)	EA	\$45,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	1	\$45,000.00
	Gangway landing float	SF	\$40.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	72	\$2,880.00
	Anchorage	EA	\$1,500.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	12	\$18,000.00
	Gangway	LS	\$20,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	1	\$20,000.00
	Concrete abutment	EA	\$10,000.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	1	\$10,000.00
		<u> </u>	Subtotal Site I	-			\$99,050.00		\$1,178,700.00		\$179,400.00		\$2,796,175.00		\$116,830.00
F.	Landscaping			p. c. c. iiciita	, <u></u>		+10,000.00		+ -, -,,		Ţ J,JJJ		+=,: 55,:75,50		÷1.10/300100
1	Deciduous shade tree, 2.5-3" cal	EA	\$1,000.00	4	\$4,000.00	8	\$8,000.00	0	\$0.00	9	\$9,000.00	14	\$14,000.00	3	\$3,000.00
2	Ornamental tree or evergreen tree, 10-12' ht	EA	\$850.00	5	\$4,250.00	0	\$0.00	0	\$0.00	6	\$5,000.00	4	\$3,400.00	3	\$2,550.00
3	Shrubs, mixed sizes, assume 3' o.c.	EA	\$100.00	425	\$42,500.00	40	\$4,000.00	30	\$3,000.00	180	\$18,000.00	135	\$13,500.00	100	\$10,000.00
1	Herbaceous plants (grasses, perennials), 1 gal	EA	\$20.00	1,000	\$20,000.00	200	\$4,000.00	200	\$4,000.00	200	\$4,000.00	300	\$6,000.00	200	\$4,000.00
- 5	New planting soil, 12" depth	CY	\$20.00	260	\$18,200.00	35	\$2,450.00	35	\$2,450.00	80	\$4,000.00	80	\$5,600.00	55	\$3,850.00
ر د	Lawn seed and fine grading	SY		2,750		2,850	\$2,430.00	125	\$2,430.00	6,225		1,150		3,200	
7	Conservation seed and fine grading	SY	\$4.00 \$6.50	1,145	\$11,000.00	2,850		250		1,335	\$24,900.00	0	\$4,600.00		\$12,800.00
/	Conservation seed and time grading	31			\$7,442.50 \$107.202.50	230	\$1,625.00 \$21,475.00	230	\$1,625.00 \$11,575.00	1,333	\$8,677.50 <b>\$75,277.50</b>	U	\$0.00 \$47,100,00	1,100	\$7,150.00 \$43.350.00
-	Electrical	<del>                                     </del>	Subtotal	Lanuscaping	\$107,392.50		\$31,475.00		\$11,575.00		\$/3,4//.5U		\$47,100.00		\$43,350.00
G.	Electrical	F 4	#C 250.00	15	¢02.750.00	13	£01.250.63	2	¢10.750.00	0	¢EC 250 00	7	£43.750.00	2	¢10.750.00
1	Ornamental site light with concrete footing	EA	\$6,250.00	15	\$93,750.00	13	\$81,250.00	3	\$18,750.00	9	\$56,250.00	7	\$43,750.00	3	\$18,750.00
2	Handhole	EA	\$1,250.00	15	\$18,750.00	13	\$16,250.00	3	\$3,750.00	9	\$11,250.00	7	\$8,750.00	3	\$3,750.00
3	Conduit & wiring (electrical + security)	LF	\$60.00	1,000	\$60,000.00	1,000	\$60,000.00	200	\$12,000.00	675	\$40,500.00	560	\$33,600.00	250	\$15,000.00
4	Security camera	EA	\$1,000.00	3	\$3,000.00	3	\$3,000.00	2	\$2,000.00	2	\$2,000.00	2	\$2,000.00	0	\$0.00
5	Blue light call box	EA	\$10,000.00	1	\$10,000.00	1	\$10,000.00	1	\$10,000.00	1	\$10,000.00	1	\$10,000.00	1	\$10,000.00
6	Electrical cabinet & power connection	EA	\$20,000.00	1	\$20,000.00	1	\$20,000.00	0	\$0.00	1	\$20,000.00	0	\$0.00	1	\$20,000.00
			Subto	otal Electrical	\$205,500.00		\$190,500.00		\$46,500.00		\$140,000.00		\$98,100.00		\$67,500.00