A VISION FOR A

POST-INDUSTRIAL SEEKONK RIVER CORRIDOR

LAR 444 Design Studio

Prepared for the Seekonk Riverbank Revitalization Alliance

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EXECUTIVE SUMMARY

Vision for a Post-Industrial Seekonk River Corridor is part of a larger effort spearheaded by the Seekonk Riverbank Revitalization Alliance (SRRA) and aimed at improving environmental quality and function of the system of parks, neighborhoods, roads and degraded and vacant lands found along the Seekonk River. This report pertains to a section of the corridor stretching between the Henderson and Washington Bridges (I-195) and it includes public and private properties adjacent to the River. The work was prepared following a semester-long URI landscape architecture design studio. The interdisciplinary class of senior landscape architecture students and Master of Environmental Science and Management students (MESM) ran during the fall semester 2017. The service learning studio typically provides services to local municipalities and non-profit organizations while focusing on public process and designing sustainable solutions to challenging environmental problems. Through this process of engagement and exploration, students develop their professional skills and learn what it is like to work as a designer in a public setting.

For this project, students worked with SRRA members, officials and stakeholders from Providence and East Providence. They toured the land and viewed the land from the river with Save the Bay, ran a public workshop at Tockwotton on the Waterfront and presented their work to design juries, review teams, and, at the end of the semester, in a public setting at Brown University. At the invitation of East Providence (EP) City Manager, Timothy Chapman, students presented their work to the City Council in early 2018. This report summarizes the process, the sequence of events, and displays illustrated concepts, which were developed by individuals and student teams.

Responding to community needs and site conditions, the students developed low impact solutions addressing pedestrian, bicycle, and vehicular circulation, stormwater management and green infrastructure, water quality, brownfield remediation, and new uses for underutilized properties. Specifically, the class designed a stormwater collection and treatment system for water quality improvements that could be used on other properties along the river. Two students proposed an underpass park by Gano Street that could serve as a new activity area and gateway to the neighborhood. Bridge proposals included an activity-rich and pedestrian Red Bridge located near Richmond Square with performance areas, seating, a bike lane, and nighttime activities with a café on the E. Providence side. Two projects were developed that made use of the iconic open Crook Point Bridge with images of pedestrians, kayakers, fishing areas, and improved green spaces making use of repurposed industrial materials. Four projects located in East Providence and adjacent to each other offer a unique opportunity to restore degraded landscapes while making use of different practices that are sustainable and resilient. These include a living shoreline with oystertecture and living breakwaters; a butterfly garden with a phyto-remediated landscape and elevated bridging for safe road crossing; a living center displaying natural water cleansing practices within a greenhouse and restored park landscape; and a Crook Point Park that makes use of repurposed industrial materials for erosion control and paths. When combined, these four projects provide an opportunity to educate school age children about methods for restoring the river's edge and ecology. A map of the area indicates the number of schools that could easily access the sites for building knowledge and a commitment to the environment. One larger project, included design of a smaller and lower Henderson Bridge that adds new connections to Waterfront Drive and the river. It also proposed redesigning the Henderson Expressway in East Providence into a landscaped boulevard with bike-lanes, green infrastructure, green space, commercial land uses, and a gathering place.

This report provides an exciting vision of what might be achieved within a small geographic area. While there are many questions that remain to be answered, these concepts can serve as a jumping off point to inform consultants and officials as they prepare proposals and grant applications for the future. Much work remains, but we hope that these ideas lead to changes that enhance the community and restore a degraded landscape.

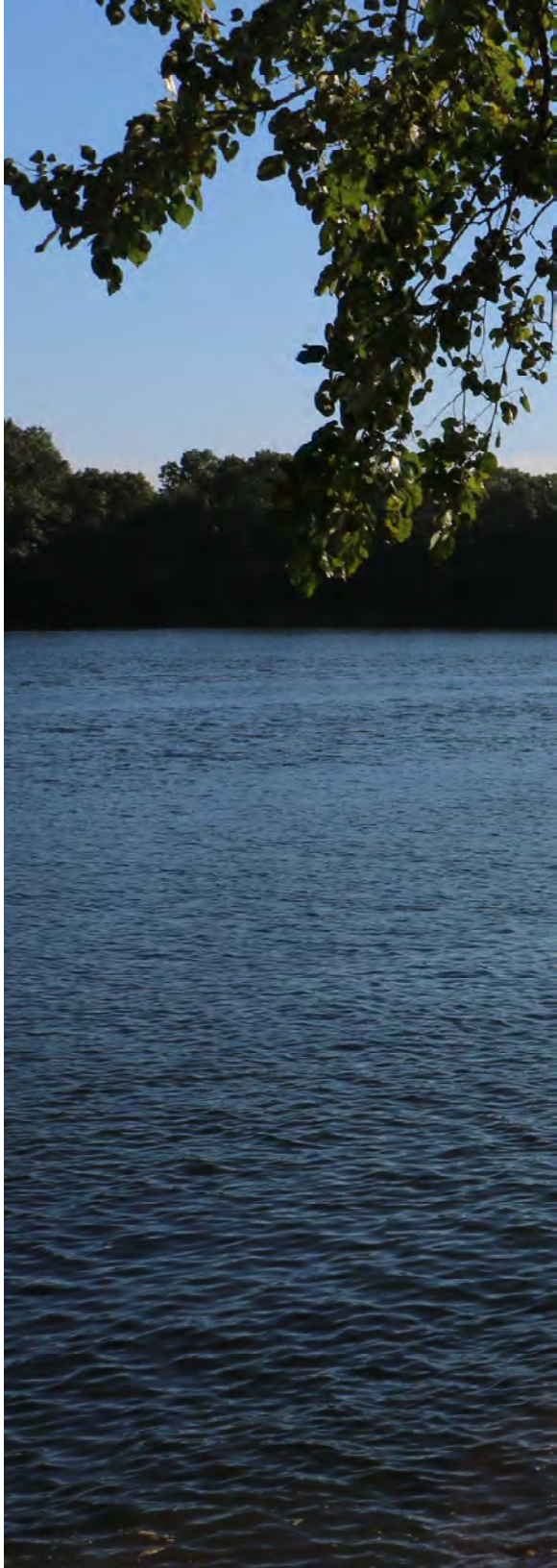
Will Green, Professor of Landscape Architecture, URI

INTRODUCTION

The fall 2017 senior landscape architecture sustainable design studio focused on envisioning the post-industrial future of the Seekonk River corridor. The project arose thanks to groups of committed citizens that recognize the potential of the waterfront and advocate for its improvement. Specifically, Ken Orenstein and Rick Richards of the Seekonk Riverbank Revitalization Alliance worked with professor Will Green to develop a project that would leverage the abilities of the studio's landscape architecture and Master of Environmental Science and Management students to bolster the ongoing revitalization effort. Over the course of the semester that project matured into the designs presented in this report.

An inventory and analysis of the project area performed by the studio revealed many challenges. The waterfront's industrial history left the land and water heavily polluted. Access to the waterfront is limited, especially in East Providence where vacant parcels have succumbed to tangles of invasive plants and the road network and geography make navigation challenging. Connections across the river are limited to two bridges, one with deteriorating pedestrian and bicycle access. Sea level rise and storm surge also impact the waterfront.

With these conditions in mind, the class asked, "how should this space be used in the future?" Sustainability was a guiding principle, but the class also considered local concerns revealed during site visits and a public workshop held at Tockwotten on the Waterfront. The class challenged itself to design spaces that would transform the waterfront into a lively and accessible asset that draws people to its banks, connects neighboring cities, and restores the environment while accounting for the uncertainties of climate change. The following report details the resulting designs and the process the class participated in to arrive at them.



GETTING TO KNOW THE SITE...

DISCOVERIES...

The design process began on September 27th, 2017 when the class conducted its first site visit to the Seekonk River corridor. Representatives from the Seekonk Riverbank Revitalization Alliance, Friends of India Point Park, and the East Providence Waterfront Commission, among other stakeholders, guided students on a tour of the site including stops at the Gano Gateway, Gano Park Boat Launch, and Richmond Square in Providence, and the Waterman Avenue bridge abutment and Bold Point Park in East Providence. Students listened, asked questions, recorded observations, and familiarized themselves with the site's geography, existing uses, and issues.

After this excursion on the riverbanks, students experienced the site from the water during a second site visit. From the deck of Save the Bay's Alletta Morris, they observed the bridges and edges of the corridor from a new perspective. The tour revealed previously hidden features of the waterfront including local fishing spots with no official access points. The improving health of Upper Narragansett Bay was also demonstrated when a seal was spotted chasing schools of menhaden between the shores of India Point Park and Bold Point Park. An in-depth site analysis would soon reveal additional discoveries.

Students and stakeholders tour the site

... AND ITS PEOPLE.

SITE ANALYSIS

To better understand the conditions and issues of the project area, students undertook an in-depth analysis which included evaluating their site visits. Additionally, they divided into working groups each focused on one of four key categories: climate; building, land use, and regulatory conditions; natural and biological conditions; and circulation and waterfront access. The working groups collected and analyzed maps, data, plans, and local knowledge. Each group shared its findings with the other groups to ensure all students had a comprehensive understanding of the site. The findings were then compiled into a presentation for use at a public workshop. A summary of each key category follows.

Pedestrian view of one of the only existing boat launches and points of water access to the Seekonk River for the public. It is a popular fishing spot and place to observe kayakers.

View from outside Waterman Grille. This is the closest distance shore to shore, Providence to East Providence. Historically, Waterman Avenue was connected to Providence here by a vehicular bridge.

View taken during the Save the Bay boat trip. Many people find their way to the river's edge, whether there is a defined access point or not. Tide levels were also observed on the built up shoreline.

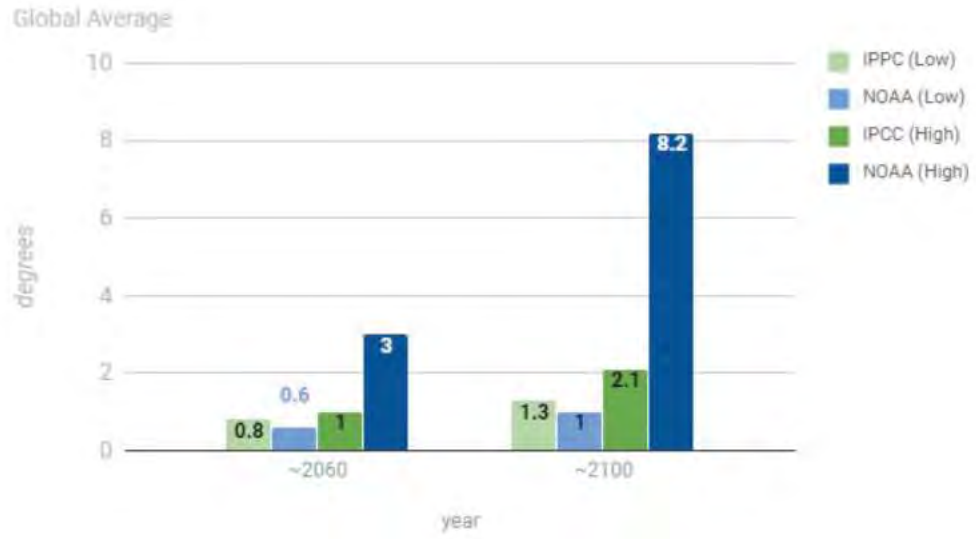
CLIMATE

Sea Level RIse

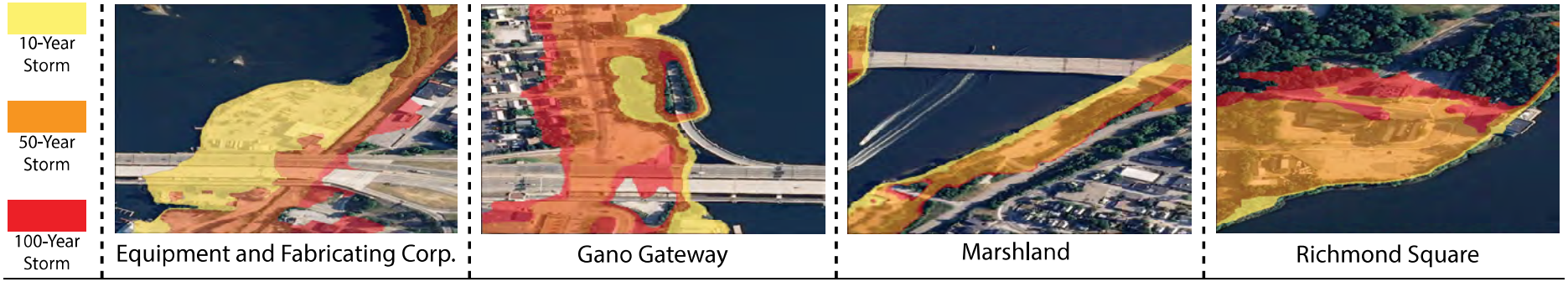
Providence is beginning to experience the impacts of climate change such as sea level rise. For example, parts of India Point Park now flood during extreme high tides. The United Nations' Intergovernmental Panel on Climate Change (IPCC) projects global sea level will rise about 1 foot by mid-century and up to 2 feet by 2100. The National Oceanic and Atmospheric Administration (NOAA) projects up to 8 feet of sea level rise by 2100. Thankfully, the Seekonk River corridor between the Washington and Henderson Bridges will not be heavily impacted by sea level rise. The exception is the American Equipment & Fabrication Corp. property located just north of the Washington Bridge in East Providence. This site experiences significant inundation at 3 feet of sea level rise. Elsewhere, marshes may drown in place due to sea level rise and the river's steep banks, which prevent marsh migration.

Sites circled in yellow will experience inundation at 3-5 feet of sea level rise, while sites circled in green will be relatively unaffected. Dashed circles fall outside the scope of the studio's project area. The image on the right shows the potential flooding from a 100 year storm.

SEA LEVEL SCENARIOS



Sea level is rising faster in New England than the global average, so the IPCC's and NOAA's projections likely underestimate future conditions in Rhode Island.

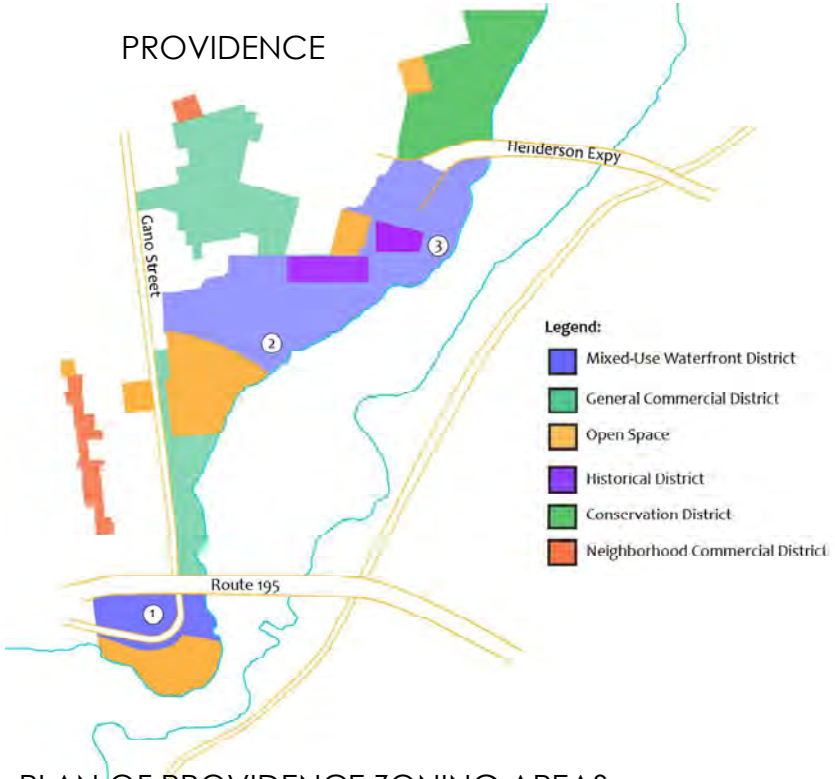


Most of the studio's project area is in the Federal Emergency Management Agency's (FEMA) VE zone. The VE zone is subject to flooding during an 1-percent-annual-chance flood with additional hazards from storm-induced wave action. The Gano Gateway and American Equipment & Fabrication Corp. properties, located just north of the Washington Bridge in Providence and East Providence respectively, and the south-facing portion of Crook Point are all located within the VE zone. Richmond Square and the area north of Crook Point, including an area of relatively healthy marsh, are not in the VE Zone. All properties within the project area, except for the property directly south of the Henderson Bridge in Providence, fall within the 1-percent-annual-chance flood zone. Such properties are generally required to purchase flood insurance from FEMA's National Flood Insurance Program. It is important to note, that as sea level rises the inundation caused by storm surge will increase.

BUILDING, LANDUSE & REGULATORY CONDITIONS

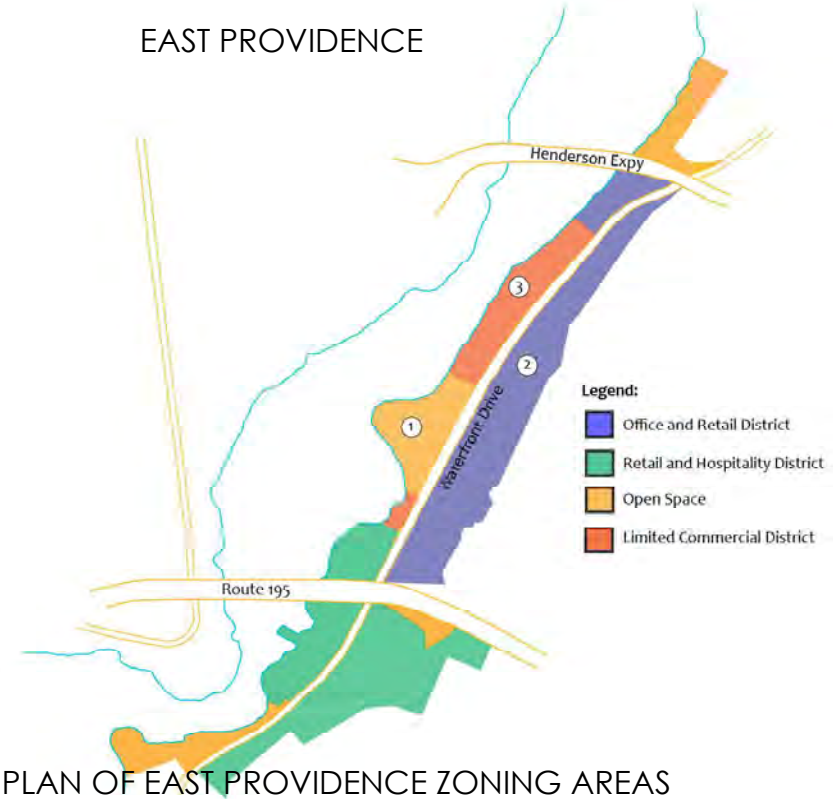
The land uses and zoning surrounding the Seekonk River corridor vary widely. Residential neighborhoods are within easy walking distance of the river and waterfront amenities. The waterfront itself is made up of mixed use waterfront zones, a variety of retail zones, and open space. Richmond square includes historic structures, including a refurbished mill building. Many sites along the river are undeveloped, vacant former industrial sites, or discontinued rail right of ways, especially in East Providence. These properties will play an important role in the revitalization of the area.

PROVIDENCE



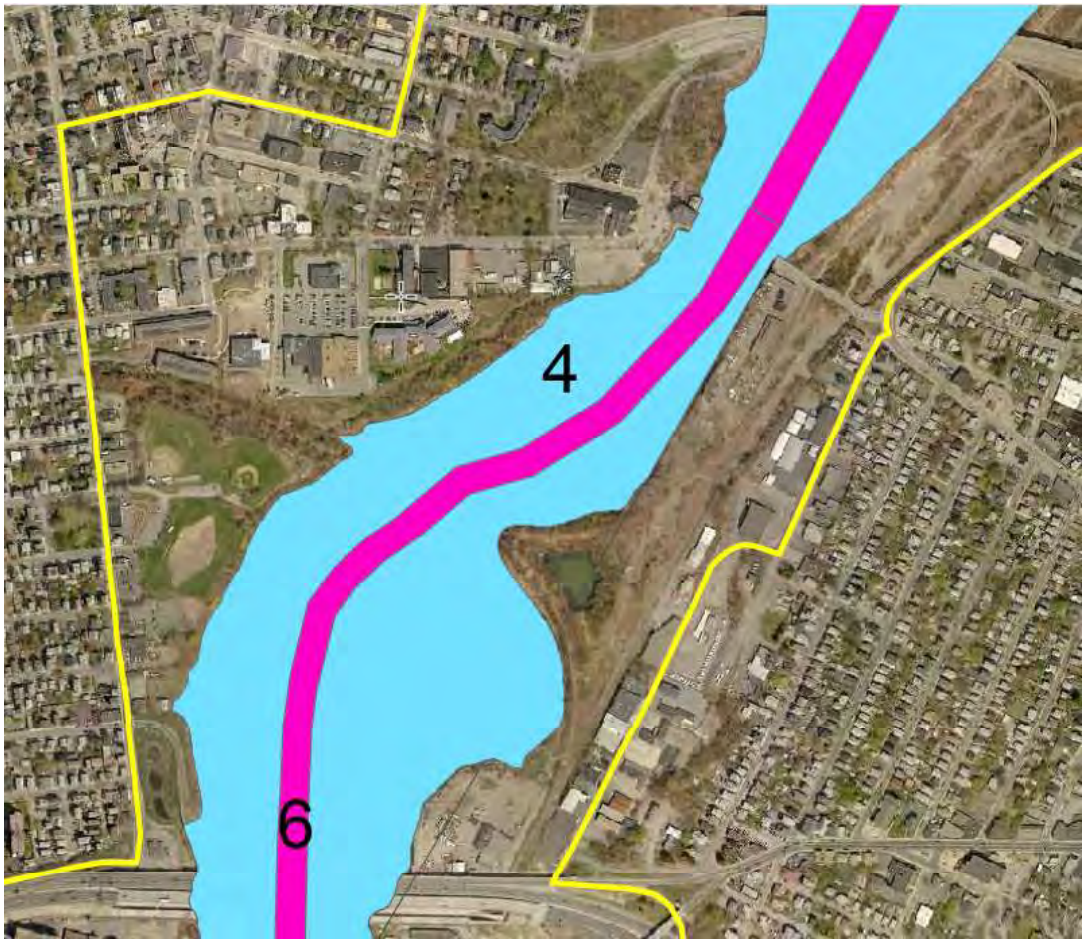
PLAN OF PROVIDENCE ZONING AREAS

EAST PROVIDENCE



PLAN OF EAST PROVIDENCE ZONING AREAS

Three bridges cross the river within the project area. At the southern end of the project area, the Washington Bridge carries I-195 between Providence and East Providence. The bridge accommodates pedestrians and bicyclists via a linear park, separated from vehicular traffic. At the northern end of the project area, the Henderson Bridge—or the Red Bridge—carries local traffic between the cities. The four-lane bridge is designed to accommodate traffic from a highway that was never built; thus, it is overbuilt based on present-day demand. Pedestrians and bicyclists are accommodated via deteriorating sidewalks and on-road bike lanes. The Crook Point Bridge is situated at the center of the project area. The defunct bridge was designed to carry rail road traffic across the river. Contaminants from the deteriorating bridge threaten the river's water quality, but, despite this, it has achieved iconic status among locals. The Rhode Island Department of Transportation owns and maintains the Washington and Henderson Bridges, while the Crook Point Bridge is owned by the RI Public Rail Corportation.



A channel maintained by the U.S. Coast Guard bisects the Seekonk River. Large ships no longer travel upriver, so the channel is unlikely to be dredged in the future. That said, the Coast Guard may require bridges constructed in the future to allow large ships clearance in case the shipping channel is reactivated. East Providence has jurisdiction over public waters located to the east of the channel, while Providence has jurisdiction of the waters located to its west. Construction within 200 feet of the coastline requires a permit from the Coastal Resources Management Council (CRMC), a state agency. Unless specifically approved by CRMC, all land within 50 feet of the shoreline is to remain open space.

Within the project area, the Seekonk River consists of two water types as defined by CRMC: Type 4, or multi-purpose waters, and Type 6, or industrial waterfronts and commercial navigation channels. Type 4 waters permit water-dependent commercial and industry uses and high-intensity recreational uses on adjacent parcels. Type 6 waters accommodate water dependent commercial and industrial uses and water-enhanced activities. The Type 6 waters within the studio's project area delineate the federally maintained channel that bisects the river.

The riverbanks found within the project area include headlands, bluffs and cliffs and man-made shorelines. These highly contrasting categories require different approaches to site design.

NATURAL & BIOLOGICAL CONDITIONS

Due to the Seekonk River corridor's industrial history throughout the 19th and 20th centuries, the studio's project area is officially listed as a brownfield and disturbed site. A brownfield is an area contaminated with hazardous materials or pollutants. Brownfields are generally more expensive to develop than uncontaminated properties because they must be cleaned prior to construction. The additional cost of development explains, in part, why so much prime waterfront real estate in East Providence remains undeveloped. State and federal funding is available to assist with brownfield remediation. Additionally, the City of East Providence offers tax increment financing to developers in its waterfront district, which can incentivize investment in brownfield properties.

Photos taken during stie visits showing invasive plant species and a small portion of beach

The Seekonk River is currently categorized as an "Impaired Waterway" by the Rhode Island Department of Environmental Management. According to the state agency, the water is unsuitable for aquatic life, drinking water supply, shellfish or fish consumption, primary contact recreation (swimming), and secondary contact recreation (boating). The Seekonk River has historically been prioritized for industrial use and is limited as a passageway for wildlife or for recreational use. The river experienced its most recent fish kill in 2015. Despite this, the Seekonk River hosts a variety of aquatic species including migratory fish such as menhaden, and shellfish, such as mussels. The river supports seagulls, heron, cormorants, ducks, and even bald eagles.

Pollutants degrading water quality in the river include heavy metals, oil and gas, untreated sewage, trash, and nitrogen leached from nearby soils. While some of these pollutants arise from within the Seekonk River corridor, upstream pollution also contributes to the river's degraded water quality. The Seekonk River is located at the end of the Blackstone River Watershed, so pollution originating as far north as Worcester, MA, eventually travels downstream to the Seekonk. Most of the pollutants are introduced to the river via stormwater runoff, which can transport fertilizers, pesticides, oil, and sediment. Upgraded wastewater treatment facilities and investments in sewer infrastructure in the Providence Metro Area have significantly reduced point source pollution in the Upper Narragansett Bay and improved water quality.

Most undeveloped parcels and even parts of many developed parcels along the riverbank are dominated by invasive plants including phragmites, Japanese knotweed, mugwort, Oriental bittersweet and invasive tunicate species.

View of the water's edge along the Western shore of the Seekonk River

Oppostie view of waters edge showing dock and watercraft launch

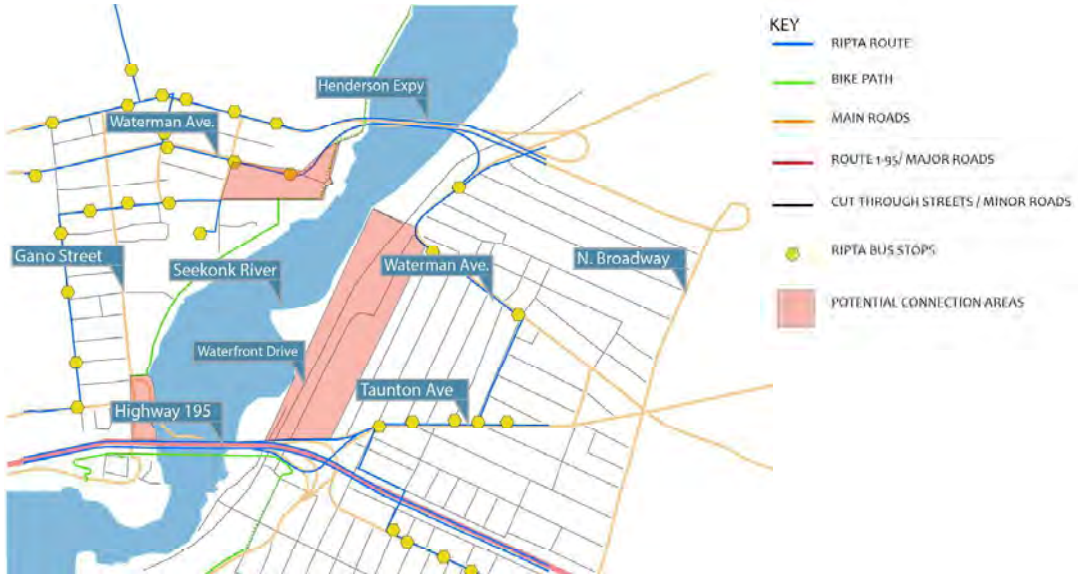
CIRCULATION & WATERFRONT ACCESS

Providence offers more public access to the Seekonk River than East Providence within the studio's project area. Just south of the project area, India Point Park in Providence and Bold Point Park in East Providence enable passive recreation, fishing, boating, and wildlife observation, among other activities. The Blackstone River Conservation District, located directly north of the project area in Providence, offers hiking trails and hosts the Narragansett Boat Club for rowers. Within the project area, Providence offers a waterfront access including the Gano Park Boat Launch, Gano Park, and a bike path. East Providence does not offer any official access to the waterfront within the project area, though river views are available at a handful of sites including from an old bridge abutment on Waterman Ave. On both sides of the river, informal paths lead directly to the shoreline and are often used by fishermen. A few restaurants offer waterfront dining just south of the project area in East Providence and in Richmond Square in Providence.

Pedestrian and bicycle access across the river is limited. Individuals can cross the river via a linear park on the Washington Bridge or via the unwelcoming sidewalks and bike lanes on the Henderson Bridge; the latter facilities are deteriorating. The limited number of pedestrian crossings divide the cities prevent cohesion within the corridor.

Possible access point for East Providence side of the Seekonk River

View from abandoned bridge abutment in East Providence



Circulation throughout Providence and East Providence

A review of transportation facilities within the project area identified a lack of parking and bus service near the waterfront, especially in East Providence. In Providence, adding a parking facility just north of the Washington Bridge at the Gano Gateway could alleviate parking shortages that arise when India Point Park hosts events, such as its annual 4th of July fireworks display. Adding Rhode Island Public Transportation Authority (RIPTA) bus routes along Gano Street and into Richmond Square in Providence could improve pedestrian access to the waterfront, especially among households without a car. In East Providence, parking and bus service along Waterfront Drive will need to be added as the waterfront is developed.

PUBLIC INVOLVEMENT - WORKSHOP

TOKWOTTEN, PROVIDENCE

October 30, 2018

The studio invited members of the neighboring communities, businesses, and officials to attend a public workshop designed to gather local knowledge of the project area. Students presented their analysis to the assembled stakeholders and then moderated two group activities. During the activities, groups were provided a large satellite image of the project area and were asked to note points of interest and places with particular needs. Following the workshop, the students compiled the information and developed a list of thematic priorities that helped ensure the studio's designs matched the values of the community.

S.W.O.T. ACTIVITY

This activity identified the STRENGTHS, WEAKNESSES, OPPORTUNITIES, and THREATS within the project area, as perceived by the assembled stakeholders. Frequent responses are compiled below.

STRENGTHS:

- Visual character
- Historical qualities
- The river

WEAKNESSES:

- Lack of waterfront activity, amenities, and access (especially in East Providence)
- Poor/Dangerous circulation in areas
- Lack of green space (project area and nearby neighborhoods

OPPORTUNITIES:

- Increase waterfront amenities and acces
- Remediate land for sale or public use
- Improve bike path and pedestrian connections

THREATS:

- Impacts of climate change
- Invasive plant species
- Degraded water quality
- Lack of investment

MAP ACTIVITY

Workshop attendees used sticky notes and markers to call out points of interest and activity on a satellite image and discussed them. Discussion prompts and frequent responses are included below.

WHAT BRINGS YOU TO THE SPACE?

- Richmond Square (Waterman Grille and Salvation Army)
- India Point Park

WHAT MEANS OF TRAVEL DO YOU USE TO GET THERE?

- Car
- Bike

WHAT WOULD YOU LIKE TO SEE IN THIS AREA?

- Safe bike routes
- Bus routes
- Restaurants
- Waterfront activites

IF YOU HELD A POSITION OF POWER, WHAT WOULD BE YOUR FIRST PLAN OF ACTION?

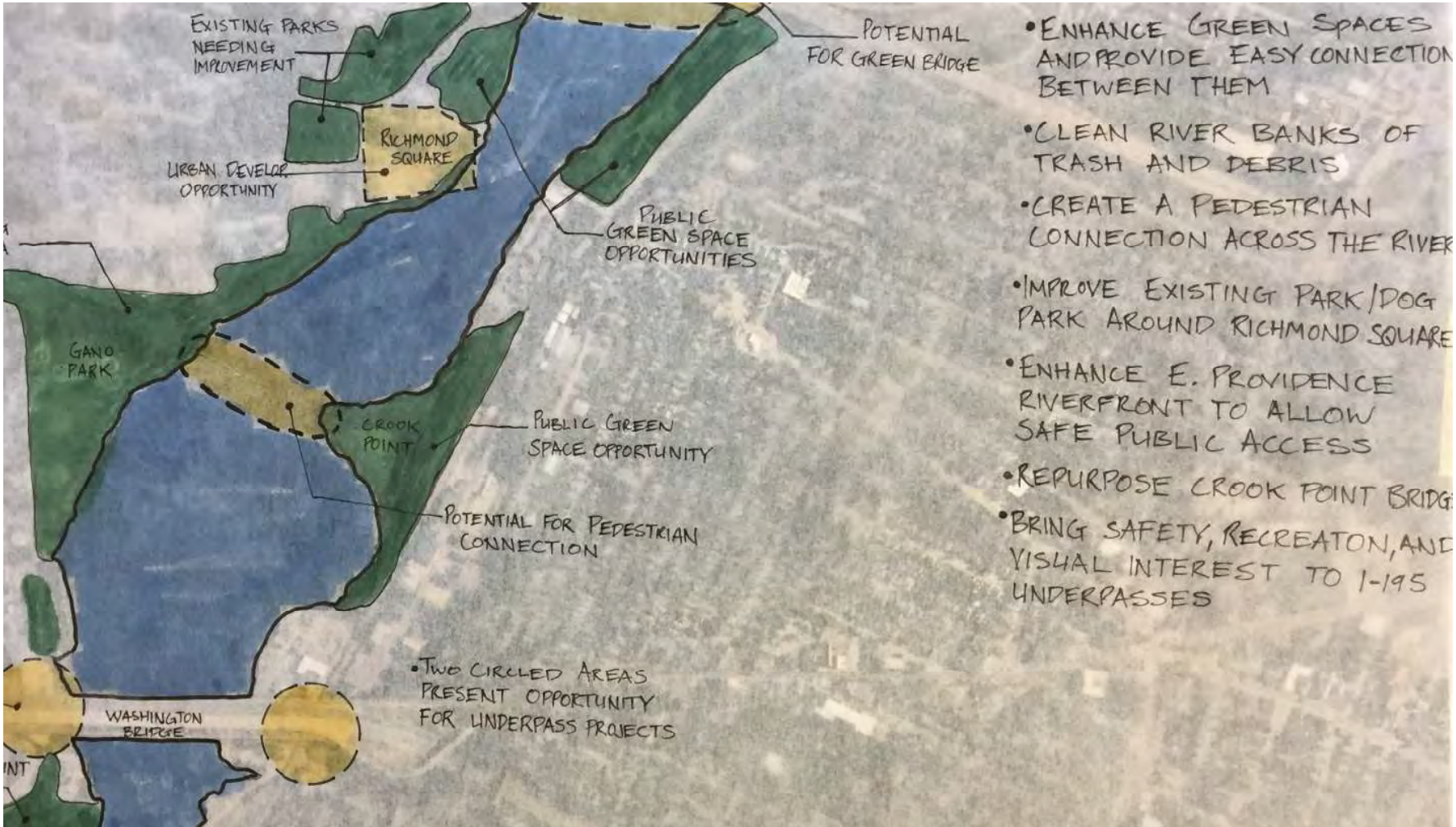
- A new bridge to connect the two cities.

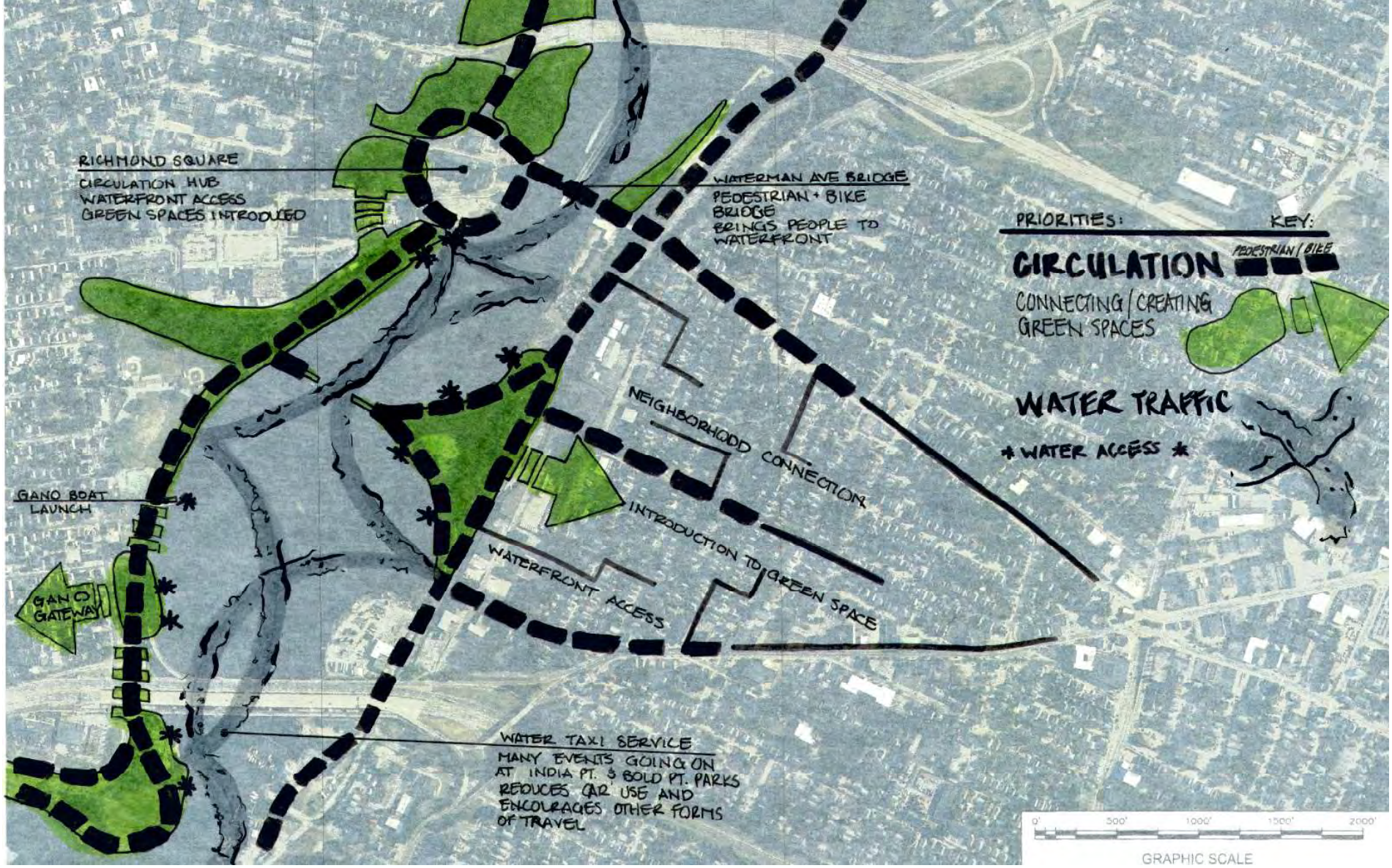
THE DESIGN PROCESS

PRELIMINARY DIAGRAMS

After analyzing the site, gathering stakeholder input, and identifying thematic priorities, students began to let their ideas flow onto paper. Each student developed a preliminary concept diagram that addressed one or more of the project area's priorities, such as improving water quality, circulation, or waterfront access. A research assignment on precedents of relevant sustainability projects influenced the concept diagrams.

The concept diagram below focused on improving the network of green space within the project area and creating more and safer connections between those spaces. It proposed redesigning the Henderson Bridge as a park-like, pedestrian-friendly bridge and redeveloping the Crook Point Bridge into a pedestrian crossing between Gano Park and Crook Point. Additionally, it suggested transforming the underpasses on either end of the Washington Bridge into safe and attractive recreation spaces.





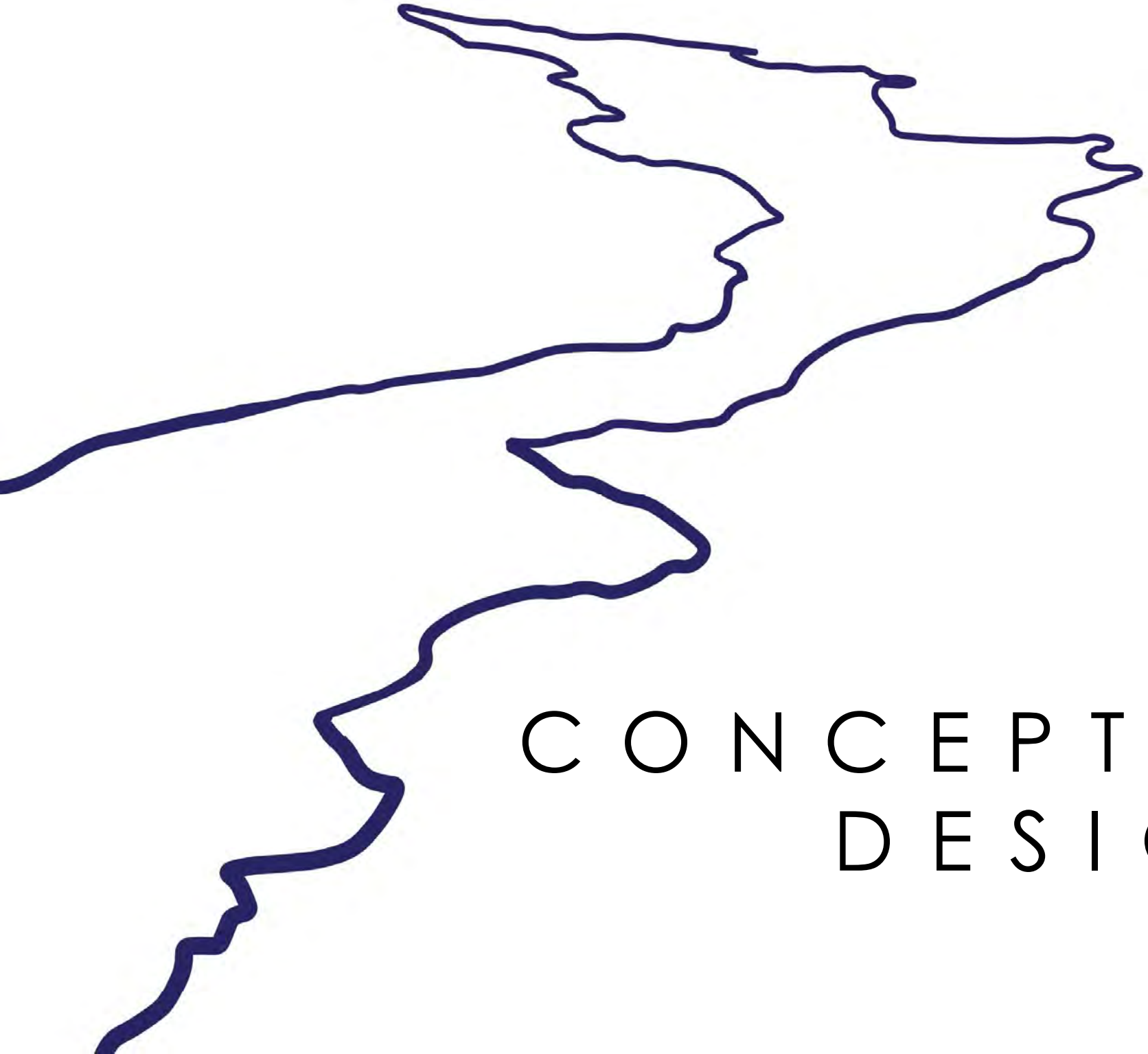
The diagram above also focused on creating a well-connected open space network. It included a proposal for a water taxi service to reduce automobile congestion in the area and a pedestrian and bike bridge along the old alignment of the Henderson Bridge between Richmond Square in Providence and Waterman Ave in East Providence. Finally, it included improved circulation between nearby East Providence neighborhoods and the waterfront; currently, such access is limited by the road network and geography of the area.

TEAMS... ...AND GOALS

The preliminary concept diagrams identify potential sites for sustainable design solutions and the types of projects students were interested in pursuing. The studio developed a list of project categories based on the diagrams, including underpass revitalization, pedestrian bridge, living shoreline, and green network. Students then formed teams by sorting themselves into the categories based on their interests. The teams varied from two to four students; three students worked individually. The icons shown on the image of the project area below represent the location and theme of each team's project.

The studio invited stakeholders and design professionals to participate in a design charrette. Each student team laid out its early design work on tables and explained its vision to charrette attendees, who then critiqued the ideas and offered recommendations. The event catalyzed new ideas, identified shortcomings, and focused projects so they were achievable and aligned with the interests of the community.

IN STUDIO DESIGN CHARRETTE

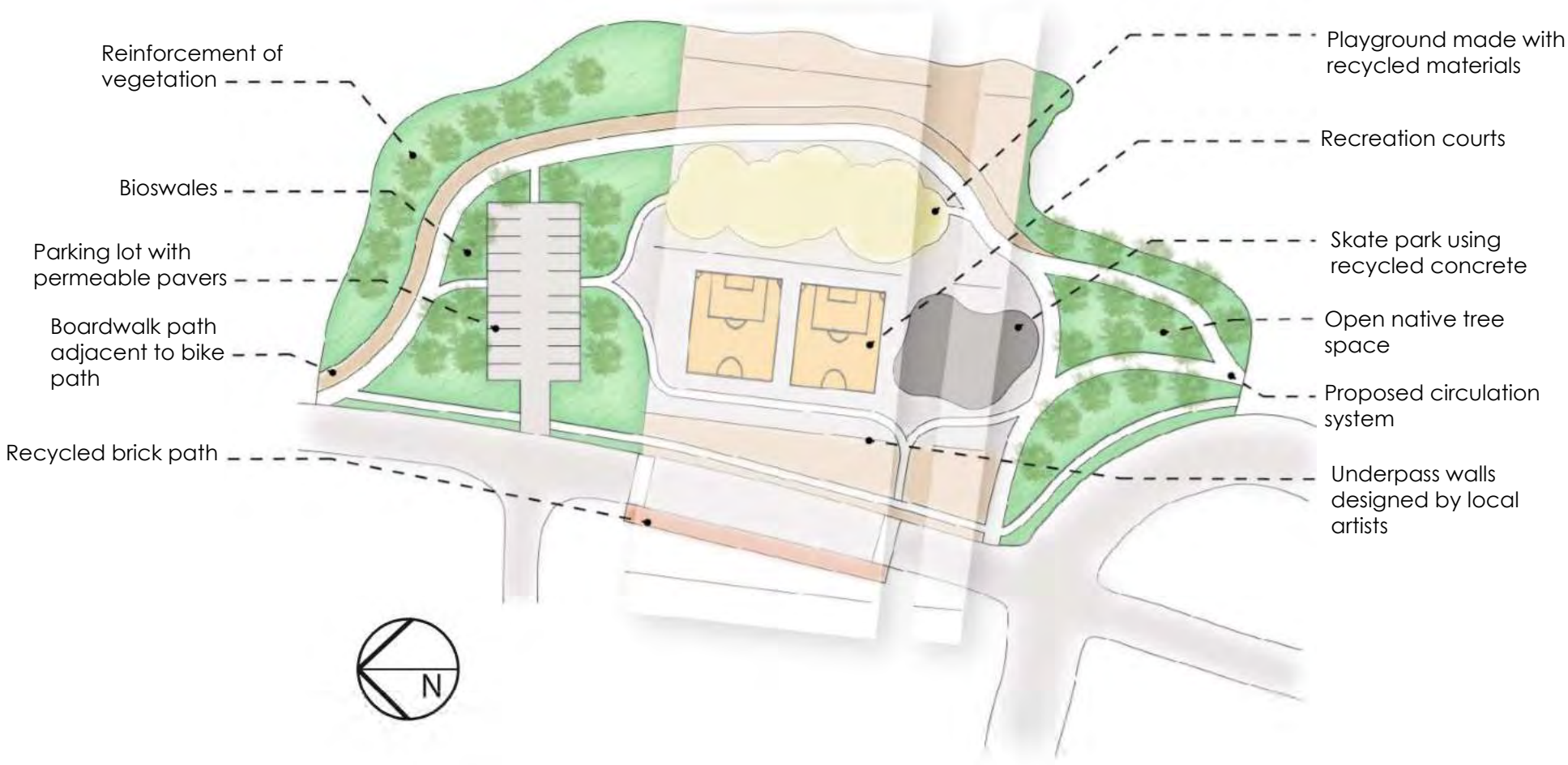


CONCEPTUAL DESIGNS

PROJECT: GATEWAY UNDERPASS

DAVID WALENCEWITZ & JONATHAN DANIELS

The design of this highway underpass transforms an underutilized and unattractive area of Providence into a visually appealing and welcoming space where the public recreates and feel safes. Currently, the Rhode Island Department of Transportation uses the site as a staging area for construction projects. Its sidewalks are deteriorating, it is poorly lit, dangerous, and littered with trash. It presents a gap in the bike network, forcing bicyclists trying to connect from the Gano Park Bike Path to the East Bay Bike Path to ride in heavy traffic on poorly maintained roads.

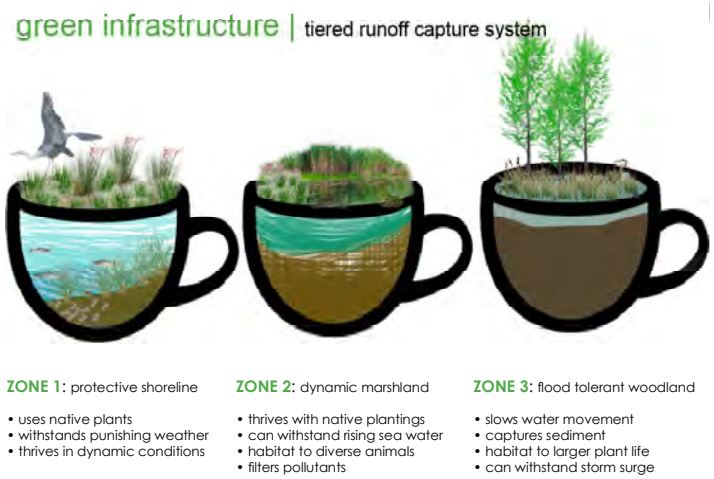


Plan view rendering of potential underpass

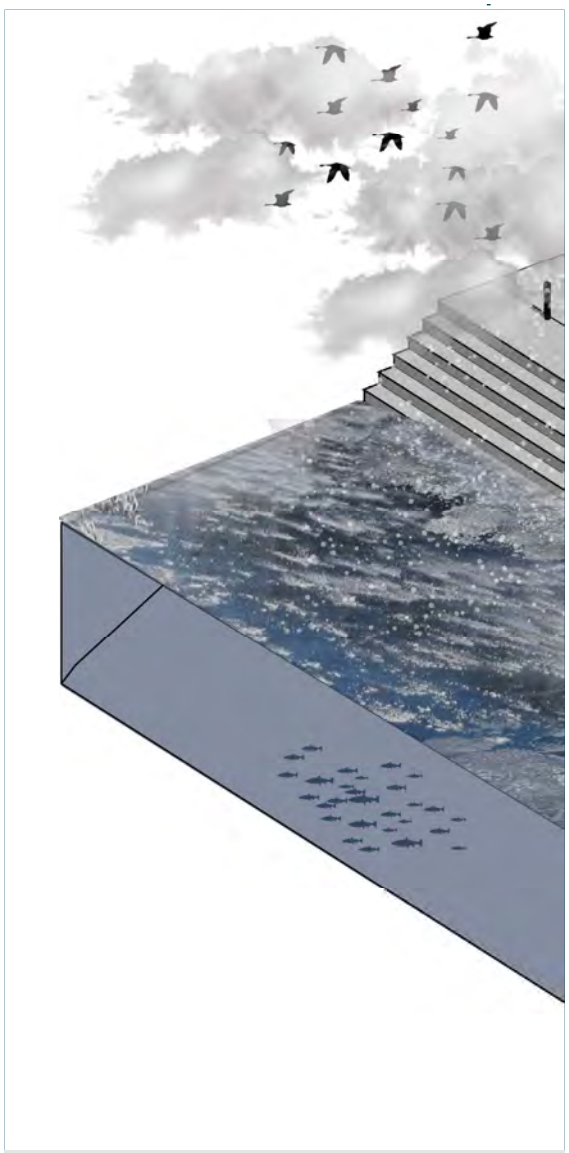
The Gateway Underpass focuses on improving site aesthetics, circulation, and recreational opportunities using sustainable design solutions. Graffiti sprayed by local artists and colored lighting spruce up the walls and ceilings of the underpass and improve safety conditions after dark. A bike path allows cyclists to avoid riding on Gano Street and basketball courts, a skate park, and playground—all sheltered from rain—offer diverse recreational opportunities. Sustainable methods included a permeable parking area, bioswales, the use of recycled materials, and the use of native trees and vegetation. Overall, the design provides visitors a visually stimulating space to enjoy a healthy and active lifestyle.

PROJECT: GANO GATEWAY

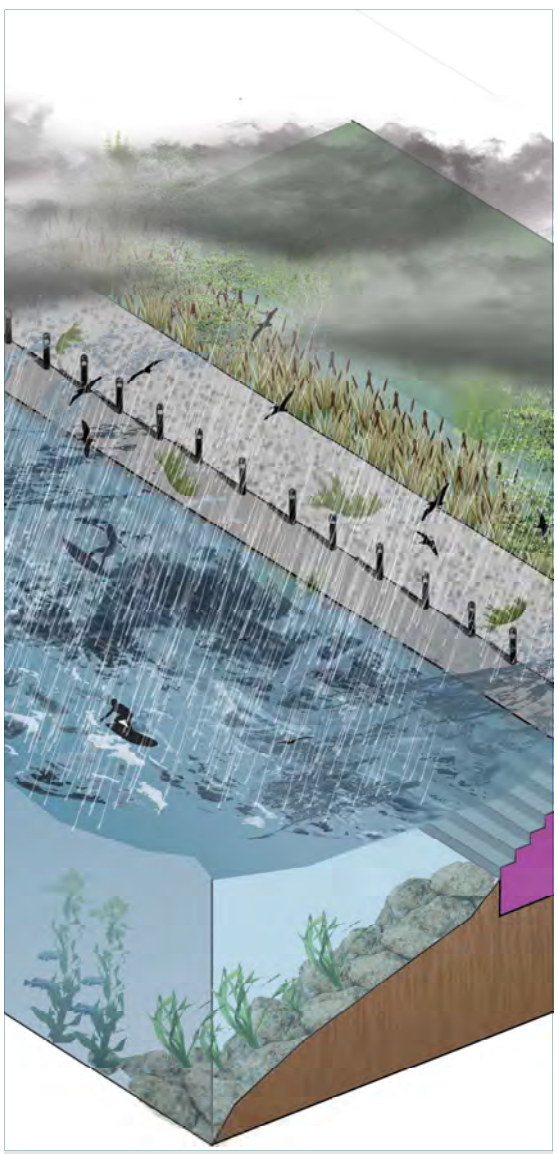
NICHOLAS DANNER



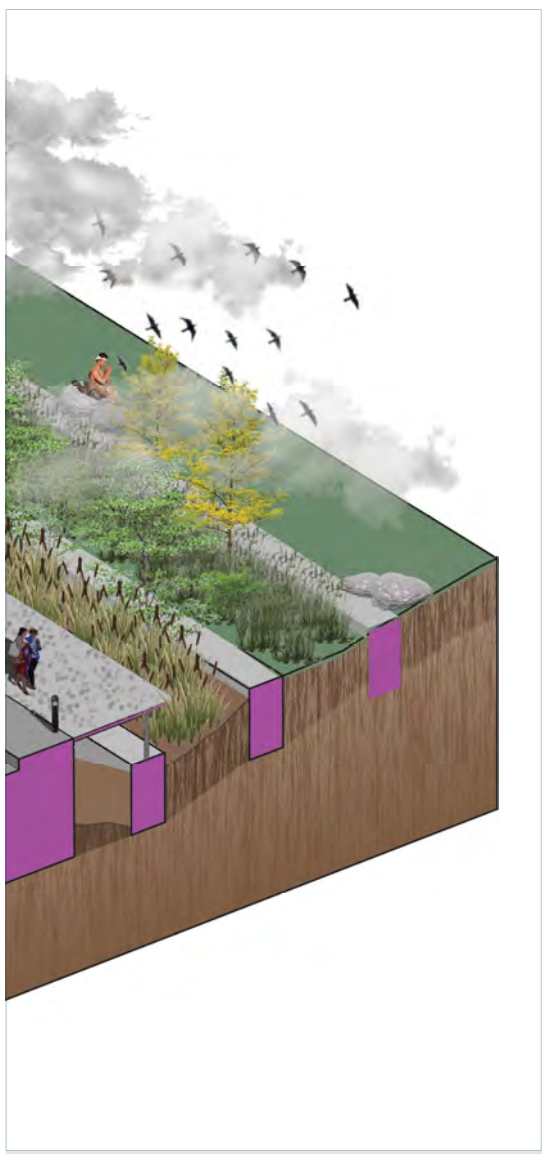
This green infrastructure project filters polluted stormwater runoff from part of the Fox Point neighborhood, while providing public amenities, such as parking for India Point Park, open space, and waterfront access. Furthermore, over time, it builds up soil along the riverbank, and works to combat erosive forces from water and wind. Given 42+ inches of annual rainfall, the 133-acre catchment area surrounding this project generates approximately 21,000,000 cubic feet of stormwater. While the three-acre site has limited capacity to manage this large amount of stormwater, its proximity to the Seekonk River heightens its potential to improve water quality. Because the site is susceptible to storm surge, and, to a lesser extent, sea level rise, the design incorporates those factors. For example, plant material added to the site is saltwater tolerant.



WINTER FUNCTION



100 YEAR STORM



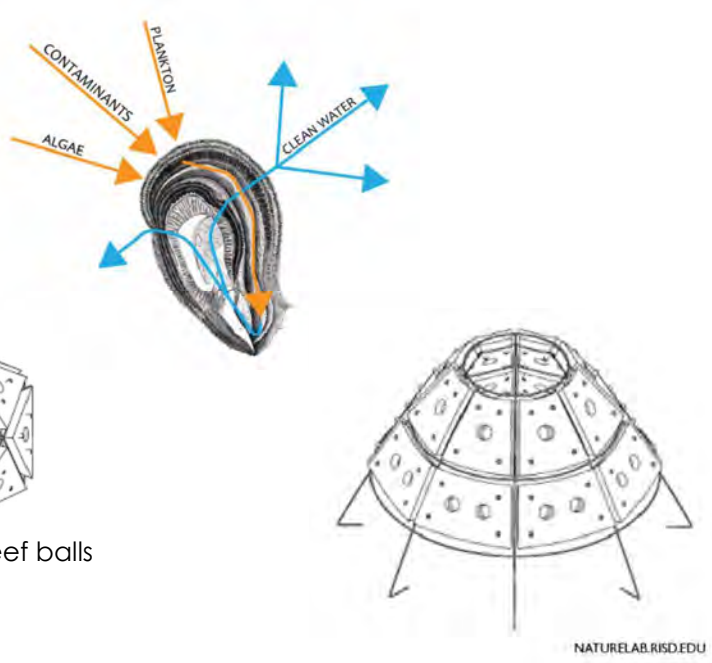
50 YEAR OUTLOOK

RESILIENT COASTLINES: The graphic above illustrates how the site functions at the riverbank. Stormwater is captured and filtered by a series of trenches prior to reaching the river. Over time, these trenches fill with sediment, reversing the trend of erosion along the riverbank. The design includes a stepped, hardened edge to curb erosion, while creating a dynamic waterfront access experience that changes depending on the tides, weather conditions, and sea level. While the design does not prevent inundation from a 100-year storm, it is designed to be resilient to such events.

PROJECT: LIVING BREAKWATERS

SEAN COFFEY, GIANNA CORNACCHINI, & ALEXANDRA LOMBARD

This design introduces a system of artificial oyster reefs and saltwater marshes south of Crook Point in East Providence. The low-tech solution helps address storm surge, coastal erosion, and water quality concerns, while creating coastal habitat for native and migratory species. The design proposes a small parking lot with a school bus drop-off area on Waterfront Drive in East Providence. From the parking lot a short trail through forested Crook Point leads to a welcome area with informational signage about how the breakwaters work, the types of species the site attracts, and how to navigate through the park. Visitors will then be able to experience the breakwaters up close via a boardwalk elevated above the river.



Eco-Concrete reef balls

The artificial reef balls provide ideal habitat for oysters, which filter pollutants from the river. Over time, more oysters will encrust the reef balls and marsh grasses will grow in the calmer waters behind the reefs. The project could restore native plants including the common reed, glasswort, green seaweed, salt hay grass, and sea lavender to the area, and act as habitat for juvenile fish species, migratory birds, and invertebrates.

The images illustrate how a restoration/park project are seen as improving the environmental quality along the river

2018

2030

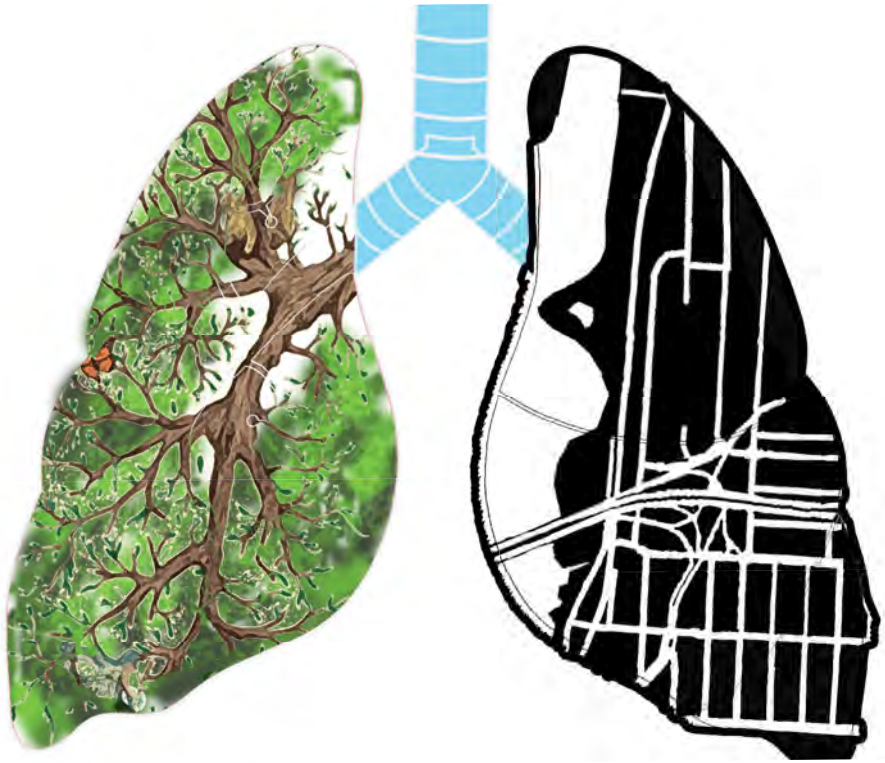
2050

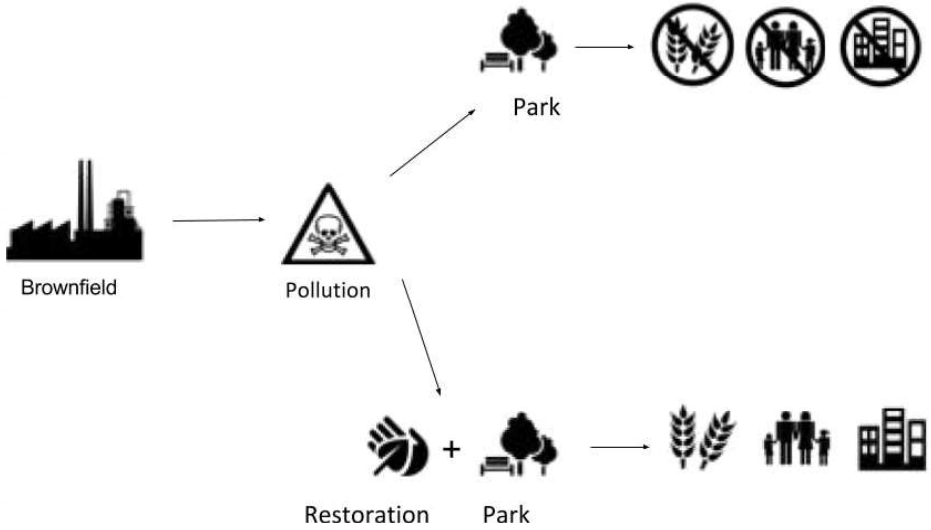
Images show growth of oysters, vegetation and other wildlife over time

PROJECT: THE LUNGS OF EAST PROVIDENCE

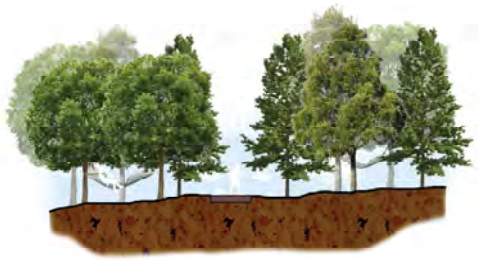
APRIL BARKER & OMAR FAHMY

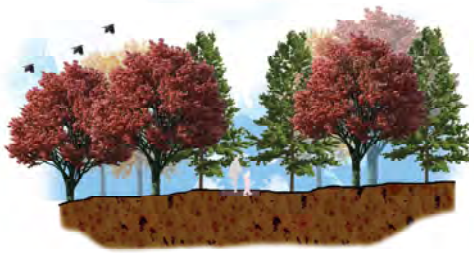
The neighborhoods surrounding the East Providence waterfront within the project area have little access to open space. This design remedies the issue by transforming Crook Point into a waterfront park. As a brownfield, the site must first be cleaned of organic and inorganic waste. The design restores the site's ecology through the removal and management of invasive plants. Where possible, industrial-era relics and materials on the site are reused or repurposed. The park includes paths that wind through the forested site and a hanging bridge that traverses a small pond. It incorporates a community garden for nearby residents and a small parking area.





Similar projects across the nation have aided in the economic revitalization of urban waterfronts. The park's recreational opportunities and riverfront access will make nearby parcels more appealing to prospective businesses and residents. Additionally, the park could attract people from beyond the surrounding neighborhoods; these regional visitors would bolster the economic potential of the city.





PROJECT: CONNECTING TWO CITIES

SVANA RÚN HERMANNSDÓTTIR

Rendering of potential green connection using the bascule bridge

This design improves pedestrian circulation between Providence and East Providence by converting the defunct Crook Point railroad bridge into a park-like pedestrian bridge. The Seekonk River can only be crossed at two locations within the project area and acts as a physical barrier between the cities. The triple-bottom-line of sustainability—environmental, social, and economic benefit—is the guiding principle behind this design. The vegetation on the bridge offers an everyday opportunity to connect with nature, improves air and water quality, and provides habitat. The improved connections offered by the bridge will increase nearby property values and quality of life as well as providing opportunites to engage in outdoor activites. The design maintains the "stuck-up" drawbridge which community members generally described as an iconic and historic element of the area.

The perspective to the right illustrates the proposed Crook Point pedestrian bridge. The design maintains the "stuck-up" drawbridge which community members generally described as an iconic and historic element of the area. Below, a concept diagram delineates the potential green belt that could be developed along and between the Seekonk's riverbanks. The combination of greenspaces and pedestrian and bike paths would encourage active lifestyles and frequent interactions with nature.

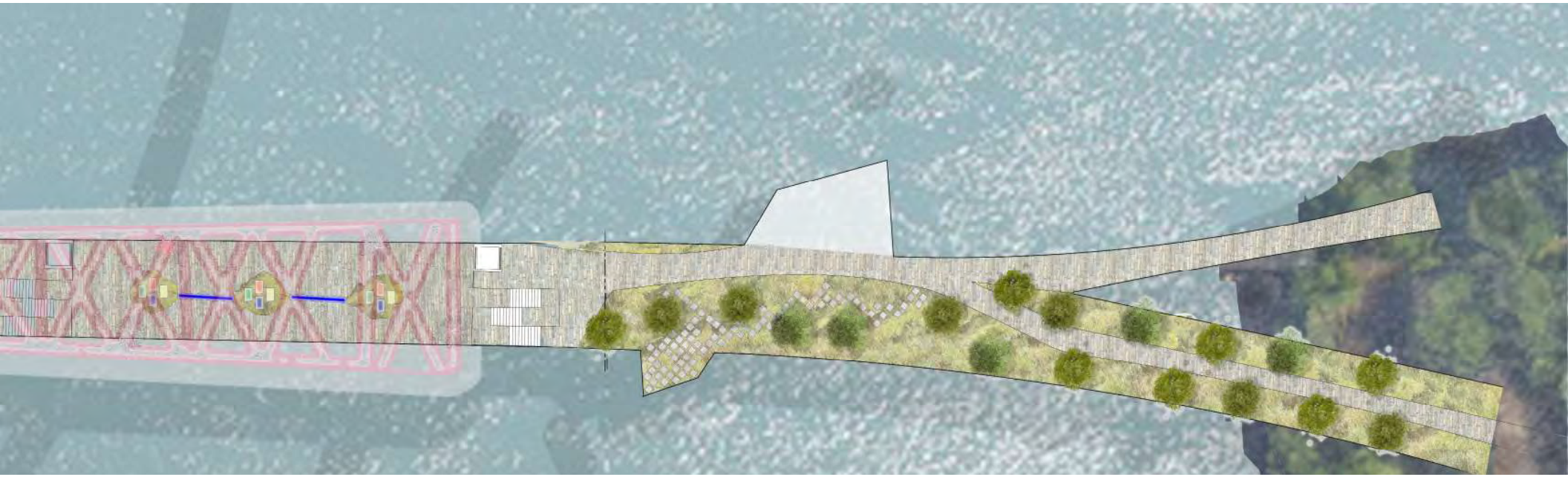
PROJECT:ADAPTIVE REUSE

JULIAN SALVUCCI & VINCENT RENDINA

This alternative design for a Crook Point pedestrian bridge aims to improve connectivity between the east and west banks of the Seekonk River and create new waterfront access points. Retaining walls enclose the entrance to the bridge on the Providence riverbank, separating it from the forested surroundings. From the entrance, one can travel across the park-like bridge to Crook Point or follow the sloping retaining walls down to a boardwalk parallel to the Providence riverbank. From the boardwalk, terraces planted with a wide variety of salt-tolerant plants and trees become visible. Three small jetties help protect the living edge from storm surge and provide an area for fishermen to cast off.

PROVIDENCE

Above left, a perspective depicts the welcome area to the green bridge. This space offers pedestrians seating and access to the bridge and riverbank. Above right, a perspective illustrates the path from the welcome area down to the boardwalk and terraced planters. The design makes use of recycled stone and gravel materials, native plants and stormwater infiltration to slow runoff



PROJECT: BUILDING CONNECTIONS

ERIN NORRISON & MAX WHITCOMB

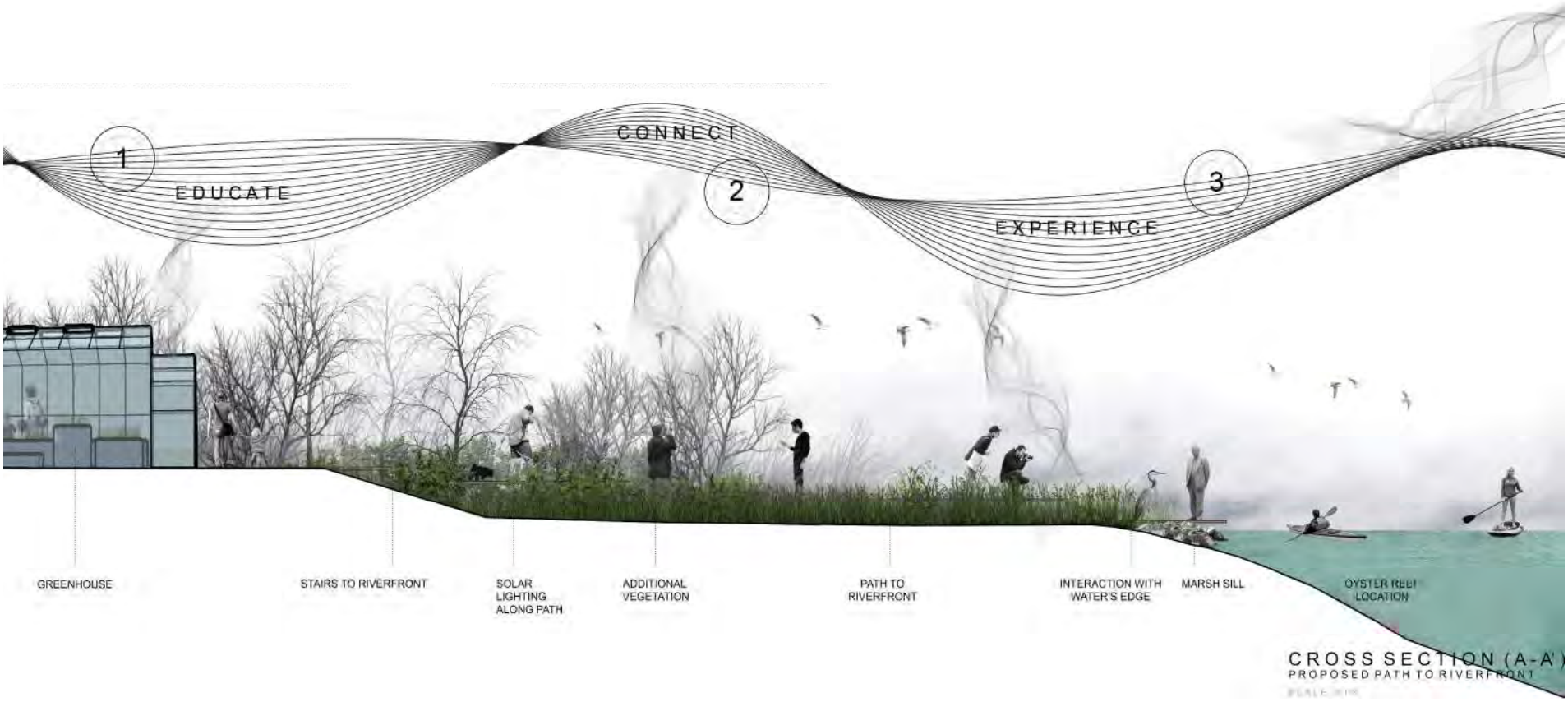
The span across the Seekonk River between Richmond Square in Providence and Waterman Ave in East Providence is the shortest in the project area, making it an ideal place for a new connection. In addition to offering pedestrian and bike access across the river, the bridge is a multi-use, adaptable space that draws people to the area with art, music, and nature. It is also a ket component that connects Richmond Square to the city of East Providence. The infinity symbol featured in the design represents the bridge's limitless opportunities.

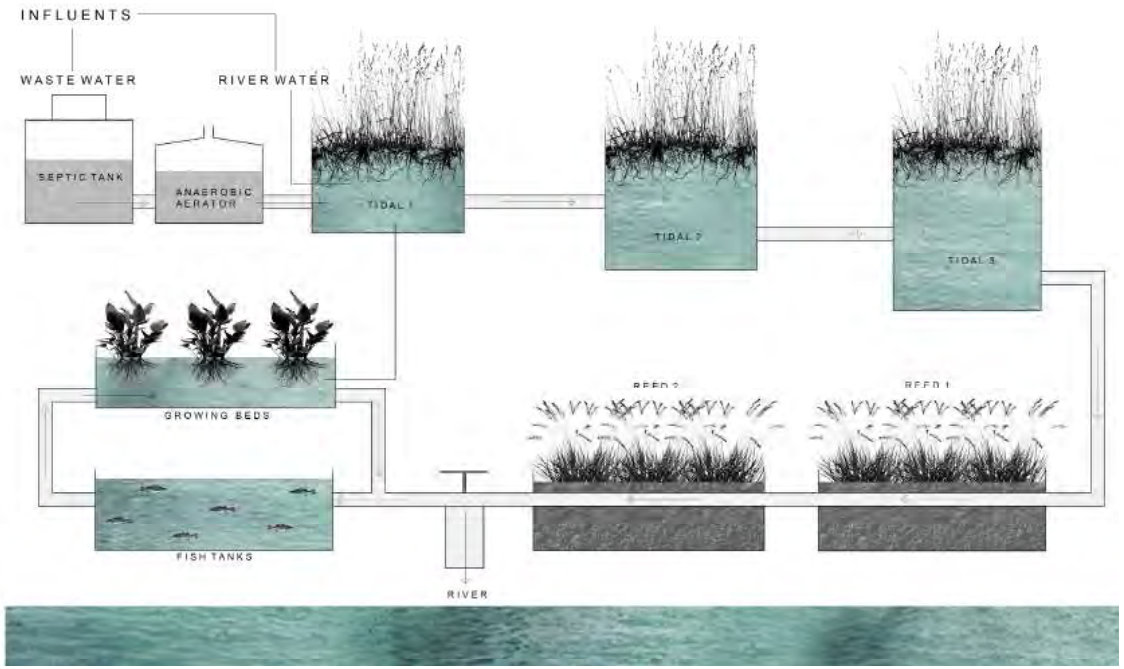
The design benefits Providence and East Providence socially and economically. A family walking along the East Providence riverbank can enjoy drinks and snacks with river views from a proposed café at the entrance to the bridge. As they begin to walk across the bridge, they'll see a rotating art installation and then meander through vegetated beds that help filter stormwater. Next, they'll reach the stage and stop to listen to the band playing there. Upon reaching the west riverbank, they can eat dinner on the water or explore Richmond Square. The design makes use of repurposed industrial and construction products and will provide solor and LED lighting. Native plants will be used for rain gardens and ecological river edge plantings.

PROJECT: THE LIVING CENTER

ALEXIS FARRIS

This design introduces a "living machine" and education center to the Seekonk River corridor. A living machine, first developed by ecological designer John Todd, is a series of tanks containing miniature ecosystems of plants, fish, seaweed, and algae that break down waterborne waste and contaminants. The living machine, along with new oyster reefs, cleanse the Seekonk River and provide opportunities for the public to see, learn, and interact with efforts to improve water quality. Paths, seating, and solar lighting enable safe access around the site and to the river's edge. Trees and other native vegetation infiltrate and filter stormwater runoff. All systems and structures are removable to prevent storm damage. The landscape imrpovements link to green spaces to the east and the west.





The diagram above illustrates how the living machine functions. The site layout can be seen in the plan to the right.

SCALE: 1" = 60' - 0" CONCEPT PLAN

PROJECT: THE POLLINATOR PARK

SEAN FARRELL & LILY HERBERGER

This design transforms the brownfield site north of Waterman Ave in East Providence into a waterfront park rich in habitat for pollinators. Currently, a steep slope between Massasoit Ave and Waterfront Drive prevents residents from nearby neighborhoods from accessing the site. The proposal introduces two new neighborhood access points, one at grade and one bridging over the road, that allow pedestrians to reach the site and, more generally, the waterfront. Invasive plants are removed from the site and replaced with native flowering plants, including a phytoremediation garden that uses plants to remove pollutants from the soil. Paths allow visitors to experience all aspects of the park, and to lear about the practices used to clean up soils and provide habitats for pollinators. The paths also connects to adjacent park uses.

By using a strategic variety of wildflowers in the pollinator gardens, colorful blooms are present from spring through fall, as demonstrated by the color wheel (left). Plants like milkweed bloom in spring, 4 o'clocks and lupines in summer, and asters in fall.

The perspective below shows a view overlooking the wildflower garden with the Henderson Bridge in the background. Sunflowers are an example of a plant that can be used to remove pollutants from soil while providing a visual statement.

PROJECT: THE GATEWAY BOULEVARD & PARKS

KARINA BEDOYA-ROSS, WILLIAM DEPINA-GOMES, ZACHARY FREGULETTI, & KEVIN PROFT

The overbuilt Henderson Expressway divides an East Providence neighborhood and fails to accommodate pedestrians or bicyclists. This design reimagines the expressway as a multimodal boulevard and linear park that is an asset to nearby residents, not a barrier.

The Henderson Expressway and Bridge are reduced from four to two lanes. The bridge is reconstructed with half its width dedicated to pedestrians. The expressway is replaced with an at-grade, complete-streets boulevard between Massasoit Ave and N. Broadway. A linear park runs between the boulevard's one-way streets, like Blackstone Boulevard in Providence, then transitions into a pedestrian oriented commercial district near N. Broadway. Together, the bridge and boulevard create just under one mile of new linear public space.

Plan view rendering of potential boulevard and traffic circle

Rendering of potential bridge reconstruction

The new bridge, built on the existing pilings, includes two spans: a vehicular span and a linear park for pedestrians. The vehicular span meets Massasoit Ave at-grade. The pedestrian span is lowered to connect River Road in Providence to Waterfront Drive in East Providence. Pedestrian access from Waterfront Drive to Massasoit Ave is added. Green infrastructure manages stormwater and filters river water during dry spells.

Renderings of potential traffic circle

A new roundabout allows the Henderson Bridge to meet Massasoit Ave at-grade, eliminating the need for the existing overpass and highway ramps. This costly infrastructure could be repurposed by the City of East Providence as open space or developable land.

The boulevard and linear park transitions to a pedestrian oriented shopping district near N. Broadway. Shared parking for the linear park and shopping district is provided, as is a space for outdoor markets. The removal of the N. Broadway overpass and ramp allows the boulevard and N. Broadway to meet at traditional intersections.

PUBLIC PRESENTATIONS

CONCLUSION

On December 18th, 2017 the studio presented its final designs at Brown University in Providnce before a group of professionals including planners, landscape architects, engineers, municipal board members, stakeholders and local business owners. Students described the semester-long process they participated in, including site visits, the public workshop, and the analysis phase that informed their designs. Then, representatives from each group presented their final designs and answered audience questions. Attendees were invited into the lobby following the presentation to view explanatory posters of each project and ask more detailed questions.

LAST/NEXT STEPS

Following the final presentation at Brown University, the East Providence City Council invited the studio to provide a similar presentation at a monthly Council meeting. The studio also shared its PowerPoint presentation with the Seekonk Riverbank Revitalization Alliance and the Rhode Island Department of Transportation. Ideally, some of the designs—or elements of the designs—will be implemented within the corridor as the area is redeveloped. Many of the methods demonstrated in the individual projects are also transferable to other locations along the river. Looking forward, the fall 2018 senior landscape architecture sustainable design studio may continue working in the project area, focusing specifically on redesigning the Henderson Bridge, which is nearing the end of its design life or creating a new river crossing. Meetings will be held with state agencies and municipal officials as the project moves forward.

For each design included in this publication, more information is available upon request. Please contact professor Will Green.