

# Westbrook Rail-with-Trail

Main Street (Route 25B) Westbrook to  
Portland Old Port

PREPARED FOR



Northern New England Passenger Rail  
Authority (NNEPRA)  
75 West Commercial Street  
Portland, ME 04101

PREPARED BY

---



500 Southborough Drive  
Suite 105B  
South Portland, ME 04106-6928  
207.8899.3103

December/28/2018

## Table of Contents

1	Introduction	1
2	Documentation of Existing Conditions	2
3	Assessment of Feasibility	3
3.1	Design Criteria	3
3.2	Rail-with-Trail Layout	5
3.3	Program Level Estimated Costs	12
4	Summary	13

---

### **Attachments:**

<b>Layout Figures.....</b>	<b>1-15</b>
<b>Program Level Cost Estimates .....</b>	<b>1</b>



# 1

## Introduction

This study is intended to be a high-level evaluation of the feasibility of developing a rail-with-trail facility along the 5.8-mile railroad corridor that extends from Main Street (Route 25B) in Westbrook to the vicinity of the International Marine Terminal on Commercial Street in Portland.

This same corridor is concurrently being evaluated for the addition of passenger light rail service. Both facilities would provide off-roadway transportation links between Westbrook, the planned Rock Row mixed use development and Old Port in Portland. The rail-with-trail facility would expand Greater Portland's bike network, providing an alternative to biking on busy roadways and providing recreation opportunities for a wide range of potential users in the area. This study generally assumes that the existing freight trail and potential future passenger light rail service will operate on the existing track in the area. If the passenger or freight service require additional track within the railroad right-of-way the feasibility of the rail-with-trail facility would likely be seriously compromised due to the limited available width for incorporating both modes. This study also assumes that PanAm Railways would willingly share the railroad right-of-way with the trail and would impose design criteria similar to that which is included herein.

# 2

## Documentation of Existing Conditions

The first step in assessing the feasibility of integrating a multiuse trail within an active rail corridor is to develop an understanding of the existing conditions within and adjacent to the railroad right-of-way.

VHB conducted a field review of the entire corridor on December 5, 2018. PanAm Railways provided hi-rail transportation for a VHB bridge engineer, a rail and transit engineer, and a transportation engineer with trail design expertise. VHB also reviewed available plans and GIS mapping in conjunction with the field work. The project team examined the existing conditions and assessed how a trail could potentially coexist with the railroad. Factors that were considered included:

- Apparent railroad right-of-way width
- Topography and physical constraints
- Environmental resource areas (wetlands and water bodies)
- Abutting land use
- Railroad spur tracks and operations
- Utilities
- Road Crossings and structures

# 3

## Assessment of Feasibility

This section outlines the proposed rail-with-trail design criteria and then conducts a segment-by-segment assessment of the feasibility to provide continuous bicyclist and pedestrian connectivity within or alternative to the existing rail corridor from Westbrook to Old Port.

### 3.1 Design Criteria

The following relevant design criteria have been used in evaluating the potential to accommodate rail-with-trail along the existing rail corridor. These criteria are mostly based on the 2014 MaineDOT “Minimum Design Standards for Development of Rail with Trail”.

#### 3.1.1 Trail Cross Section

It is assumed that the multiuse trail will be paved to accommodate the greatest range of non-motorized users. Pavement provides a long lasting smooth surface that is ADA compliant and has good skid and traction characteristics. The trail should have a maximum cross slope of two percent (2%) sloped away from the railroad track.

The recommended paved width is ten (10) feet for a trail in this setting where the numbers of users is expected to be moderate given the existing and future population density. The width may be reduced to a minimum of eight (8) feet in areas where the available right-of-way is limited or there are physical or environmental constraints. The narrow trail segments

should be limited in length to the extent possible since an eight-foot wide path does not accommodate a mix of bicyclists and pedestrians well.

The trail should also include one (1) foot wide level granular shoulders. The space between the trail and the track should be graded to include a drainage swale. In areas that have steep side slopes that slope away from the outside of the trail there should be a five (5) foot wide level shoulder for safe recovery before the steep side slope. Safety railing should be installed if there is insufficient space for the five-foot shoulder.

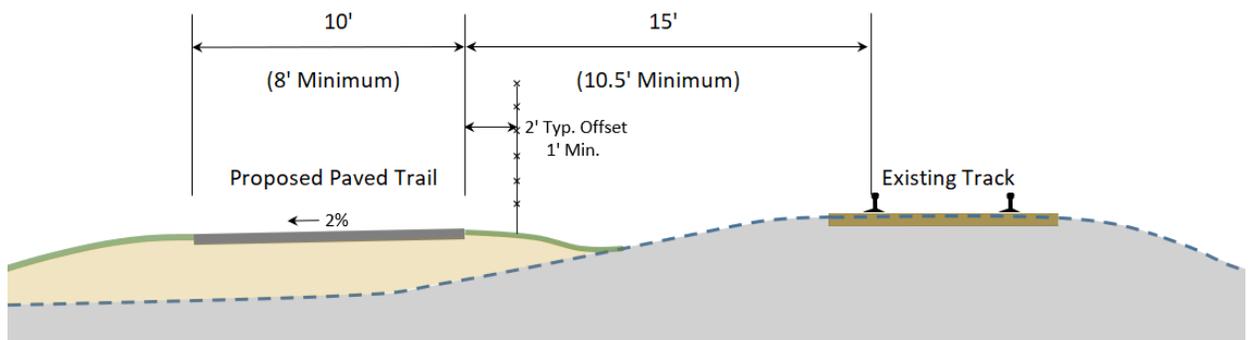
### 3.1.2 Rail – Trail Separation

The standard minimum separation distance between the trail surface and the closest rail is assumed to be fifteen (15) feet based on the 2014 MaineDOT “Minimum Design Standards for Development of Rail with Trail”. The separation distance may be reduced to as little as ten and one half (10.5) feet in areas where insufficient right-of-way exists or where there are physical or environmental constraints that prevent construction of the above standard minimum width. The MaineDOT guidance requires that the following criteria be met before reducing the standard minimum separation distance:

- A minimal horizontal sight distance of 500 feet (500') along the rail line in the narrowed section,
- Installation of pedestrian guardrail or fence along the shoulder of the trail,
- The surface elevation of the trail is at least 15-inches lower than the near rail unless adequate drainage is provided to prevent trail drainage through the railroad ballast.

The MaineDOT design standards also require a 6-foot high chain link fence between the trail and the rail in areas where there is a high potential for trail users to trespass across the rail including an additional 250-feet beyond that area in both directions.

The above separation criteria are subject to review and approval by the railroad. It is not uncommon for railroads to require greater separation distances in areas of high speed rail operations, and some railroads require fencing the entire length of the trail to reduce exposure of their facilities to trail users.



### 3.1.3 Railroad Crossings

In the event it is necessary or desirable for the trail to cross the railroad the crossings shall occur at existing roadway crossings. If crossings are required away from existing road crossings, and if the railroad allows, they shall be made perpendicular to the track and shall be on a tangent section of track where there is adequate sight distance. The railroad may furthermore require pedestrian gates and flashers similar to road crossings, as shown in the photos below of a pedestrian gate adjacent to a roadway gate on Main Street in Westbrook.



## 3.2 Rail-with-Trail Layout

The following is a segment-by-segment description of the rail-with-trail opportunities and constraints starting in Westbrook and ending in Old Port in Portland. Refer to the attached Layout Figures 1 – 15 for graphical representations of the most feasible connections, as discussed below.

### 3.2.1 Segment 1: Main Street (Route 25B) to Forest Street (0.36 mi.)

This segment is characterized by relatively level topography within and adjacent to the apparent railroad right-of-way (ROW). The existing active track favors the south side of the ROW, so it would be easiest to construct the trail along the north side beginning at the sidewalk on the east side of Main Street. The trail could potentially extend west of Main Street to connect to a new 73 space public parking lot that is envisioned adjacent to the ball fields. The trail would replace the existing siding track which is no longer in use along the north side of the ROW between Main Street and Seavey Street. From Seavey Street to Lamb Street and then to Forest Street there appears to be adequate space for the trail

along the north side. There will still need to be some tree and vegetation clearing as well as grading to accommodate the trail. In some areas it may also be necessary to reduce the standard 15-foot rail/trail offset to stay within the ROW.



Section between Seavey Street and Lamb Street, facing east.

At the Seavey, Lamb and Forest Street at-grade railroad crossings there are railroad crossing flashers without gates. In all three cases it may be necessary to move the flashers and/or controller to make way for the trail. The road crossings would be enhanced with painted crosswalks and warning signs. See Layout Figure #1.

### **3.2.2 Segment 2: Forest Street to Larrabee Road (0.61 mi.)**

Shortly after crossing Forest Street a second track is introduced along the north side where the trail would otherwise be positioned. According to the Pan Am employee who accompanied VHB during the hi-rail trip, the first 1,300 feet of the northern track is currently out of service. Beyond that point there is a crossover between the two tracks that presumably support active rail car switching operations at the two spurs that serve Dead River Propane from the northern track. There is a third switch located approximately 250-feet east of the facility that appears to lead to another inactive facility. Historically, there was a fourth spur approximately 450-feet west of the Dead River propane facility, however the switch to that sidetrack has been removed. The line becomes single track

approximately 630 feet west of Larrabee Road and continues along the south side of the ROW to Larrabee Road.

The active and inactive spurs on the north side make a trail along that side infeasible since it would require at-grade crossings where active switching occurs. The two inactive spurs are still considered obstructions since there could be a change of use on the properties that would require rail service.



Segment 2 photo showing active spur on the left, mainline in center, and car storage on the right, facing east.

An alternative would be to Shift the trail to the south side of the ROW by crossing at 90 degrees at Forest Street and continuing on the south side all the way to Larrabee Street. This appears to be difficult or impossible since the ROW on that side is limited and the available space appears to collect stormwater between the railroad and the adjacent car dealerships. Both concerns could potentially be solved but solutions would likely come at great cost and would require agreement by the adjacent property owner.

Another alternative would be to cross to the south side of the ROW at Forest Street and transition out of the railroad ROW within 300 feet to cross Cottage Street and follow a route that includes Saunders Way to Larrabee Road. From the Town's GIS mapping it

appears that the first 1,500 feet of the route would be across private property owned by J B Brown & Sons. This would require an easement through their property to reach Saunders Way, which is a public street. The exact route through the Brown property could follow the outskirts of their existing paved road and parking lots, or it could take a more cross-country route, which would be safer for trail users and possibly more acceptable to the property owner. Once the route reaches Saunders Way the expectation is that bikes could ride in the road since the traffic volumes and speeds are low, and a sidewalk with curbing would be constructed on the north side of Saunders way to accommodate pedestrians. On Larrabee Road a multiuse path would be constructed on the west side for 350 feet to reconnect to the railroad corridor. The Larrabee Road crossing would likely require pedestrian hybrid beacons since it is a four lanes and relatively high volume. This alternative is predicated on gaining permission to cross the Brown property.

Based on the above alternatives it becomes apparent that the viability of a continuous trail may hinge on developing a viable solution for this difficult segment. The last alternative discussed above appears to be the most viable solution assuming the affected property owner is willing to allow the trail across their property. See Layout Figures #1 and #2.

### **3.2.3 Segment 3: Larrabee Road to Rand Road (0.72 mi.)**

The trail would be best positioned along the north side of the railroad ROW since there is available width on the north side and because it would provide access to the planned Rock Row development on that side. In the event a passenger rail station is constructed to serve the development the expectation is that the trail could be integrated into the site in some way so that it could coexist with the passenger rail service.



Segment 3 photo showing available width on the left (north) side along planned Rock Row development, facing east.

East of the development, in Portland, it appears that the trail can be built within the ROW up to Rand Road. In some areas it may be necessary to reduce the standard 15-foot rail/trail offset to stay within the ROW, but there are no major physical obstructions. It is assumed some slope easements will be necessary due to the topography and narrow ROW. See Layout Figures #2 and #3.

### **3.2.4 Segment 4: Rand Road to Congress Street (1.27 mi.)**

This segment includes a 1.05 mile stretch between Rand Road and Frost Street where the railroad is uninterrupted by roadways. Conditions seem to support keeping the trail on the north side of the track. The topography in this segment varies considerably and there would need to be significant cuts and fills in areas. In addition, there is a utility corridor with high tension power lines that abuts the north side of the railroad ROW. It appears that construction easements and slope easements would be required to construct the trail, and permanent trail easements may be required where the railroad ROW narrows.



Segment 4 photo showing the adjacent utility easements and topography, facing east.

Within this stretch there is also an approximately 2,900-foot-long segment where the Fore River and associated wetlands and floodplain closely abut the north side of the railroad embankment. There is not sufficient space to construct the trail without filling these natural resource areas. As a result, the recommended solution would be to construct the trail on a pile supported boardwalk with railings. The boardwalk width would ideally be no less than 10 feet between the railings. The separation distance to the track would be 10.5 feet to minimize impacts. The boardwalk carries a very high initial cost as well as long term maintenance costs. An alternative would be to construct retaining walls instead to

minimize impacts, but walls are also costly would likely be more difficult to permit since the impacts would be considerably greater than for a boardwalk.



Segment 4 photo showing the Fore River on the north side, facing west.

The 0.21-mile section between Frost Street and Congress Street appears to have fewer environmental constraints than the above section, but the utility ROW is still a concern.



Segment 4 photo showing the skewed Congress Street crossing, facing west.

The Congress Street crossing will require special consideration since Congress Street (Routes 9 and 22) is a higher volume and higher speed roadway than the previous roads

that were crossed. Congress Street crosses the track on a skewed curve, so special pedestrian crossing measures, such as a pedestrian hybrid beacon, will likely be required and must be coordinated with the railroad crossing signals. See Layout Figures #3, #4 and #5.

### **3.2.5 Segment 5: Congress Street to Portland Transportation Center at Thompson's Point (0.59 mi.)**

The trail would be along the north side for this segment. Slope and minor property impacts appear likely due to the terrain and a 350-foot-long section of boardwalk will be needed. The trail will not be able to pass by the existing Portland Transportation Center on the north side of the ROW and there are sidings on the south side that are impassable. See Layout Figures #5 and #6.

There are two active tracks within this segment, one Main Line and one AMTRAK siding. The railroad enters active signalization in the vicinity of the station and there is some vital equipment located in the northwest quadrant of the Thompson's Point crossing that would need to be considered in setting the trail layout.



Segment 5 photo showing rail-with-trail obstructions at the Portland Transportation Center at Thompson's Point, facing east.

The above obstructions are formidable, but there is a viable alternate route for bicyclists and pedestrians around the Portland Transportation Center beginning right at the Thompson's Point Road at-grade crossing where the trail could connect to the existing bike/ped network. The route from that point eastward is shown on Layout Figures #11 through #15.

### **3.2.6 Portland Transportation Center to Fore River Parkway (0.45 mi.)**

The rail corridor has tight right-of-way and rail crossings within this segment. The area where the existing rail lines go under the Fore River Parkway is particularly difficult since there are "Y"s in the active rail service that would force at-grade trail crossings, which are

highly undesirable. rail-with-trail does not appear to be feasible through this segment due to the obstructions on both sides of the active track. See Layout Figures #7 and #8.

As mentioned under Segment 5, there appear to be good existing on and off-road bike and pedestrian connections from the existing Portland Transportation Center all the way to Commercial Street. These provide a viable alternative to developing a rail-with-trail through this segment. The only costs would be associated with constructing a sidewalk to fill a 1,700-foot gap on the north side of Commercial Street. Wayfinding signs may also prove beneficial.

### 3.3 Program Level Estimated Costs

The following costs were developed based on an understanding of the existing conditions and the proposed conceptual improvements for each segment as discussed above. The estimated costs include construction, engineering, permitting, construction administration and assumptions on right-of-way costs. The estimate does not include costs for railroad signal modifications or upgrades since the trail may not directly impact signals and because the potential passenger rail service would upgrade the crossings. Construction unit costs include broad assumptions that would be refined during actual design if the project moves forward.

<u>Segment</u>	<u>Estimated Cost</u>
1: Main Street to Forest Street	\$ 210,000
2: Forest Street to Larrabee Road	\$ 510,000
3: Larrabee Road to Rand Road	\$ 500,000
4: Rand Road to Congress Street	\$ 3,320,000
5: Congress Street to Thompson's Point Road	<u>\$ 690,000</u>
Total:	\$ 5,230,000

# 4

## Summary

This study assesses the feasibility of constructing a continuous rail-with-trail facility from Main Street in Westbrook to Commercial Street in Portland. The following summarizes our findings.

The corridor is generally more accommodating for rail-with-trail construction than many rail corridors because there are sections where the ROW was established for more than one track but only one track is active in most sections. In addition, the terrain is relatively level so cuts and fills are only needed in some areas to accommodate the trail. There are, however, two segments that will likely prove difficult and/or costly to complete.

- The first is Segment 2 from Forest Street to Larrabee Road where there are obstructions within the railroad ROW and an alternative route is recommended. This route requires cooperation from an adjacent property owner but otherwise appears feasible.
- The second is Segment 4 from Rand Road to Congress Street. This segment will impact the Fore River and associated wetlands and floodplain, so a very costly boardwalk is the recommended solution unless less expensive solutions can be permitted through the resource agencies.

If Segment 4 can be funded and permitted a continuous trail could be constructed from the Rock Row development to the existing Portland Transportation Center, and from that point there are existing bike and pedestrian connections all the way to Commercial Street. Segments 1 and 2 could be added at such time that the Segment 2 easements can be obtained.



SEGMENT 1 – Main Street to Forest Street  
 SEGMENT 2 – Forest Street to Larrabee Road

Layout Figure #1





SEGMENT 3 – Larrabee Road to Rand Road  
 SEGMENT 4 – Rand Road to Congress Street

Layout Figure #3



SEGMENT 4 – Rand Road to Congress Street

Layout Figure #4



SEGMENT 4 – Rand Road to Congress Street  
 SEGMENT 5 – Congress Street to Portland Transportation Center

Layout Figure #5



SEGMENT 5 – Congress Street to Portland Transportation Center

Layout Figure #6



SEGMENT 6- Portland Transportation Center to Old Port: Constraints to Rail with Trail

Layout Figure #7



SEGMENT 6- Portland Transportation Center to Old Port: Constraints to Rail with Trail

Layout Figure #8



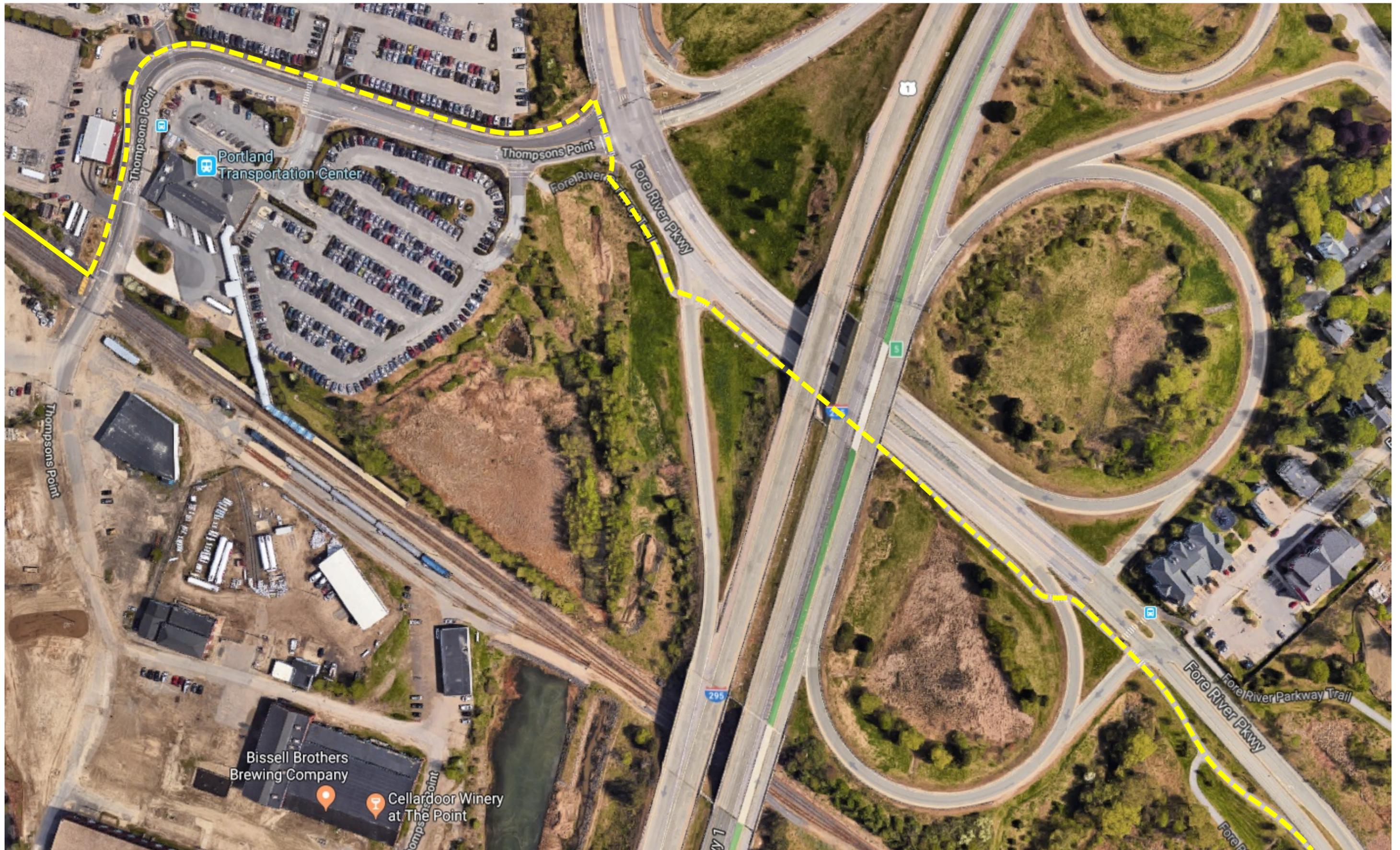
SEGMENT 6— Portland Transportation Center to Old Port: Constraints to Rail with Trail

Layout Figure #9



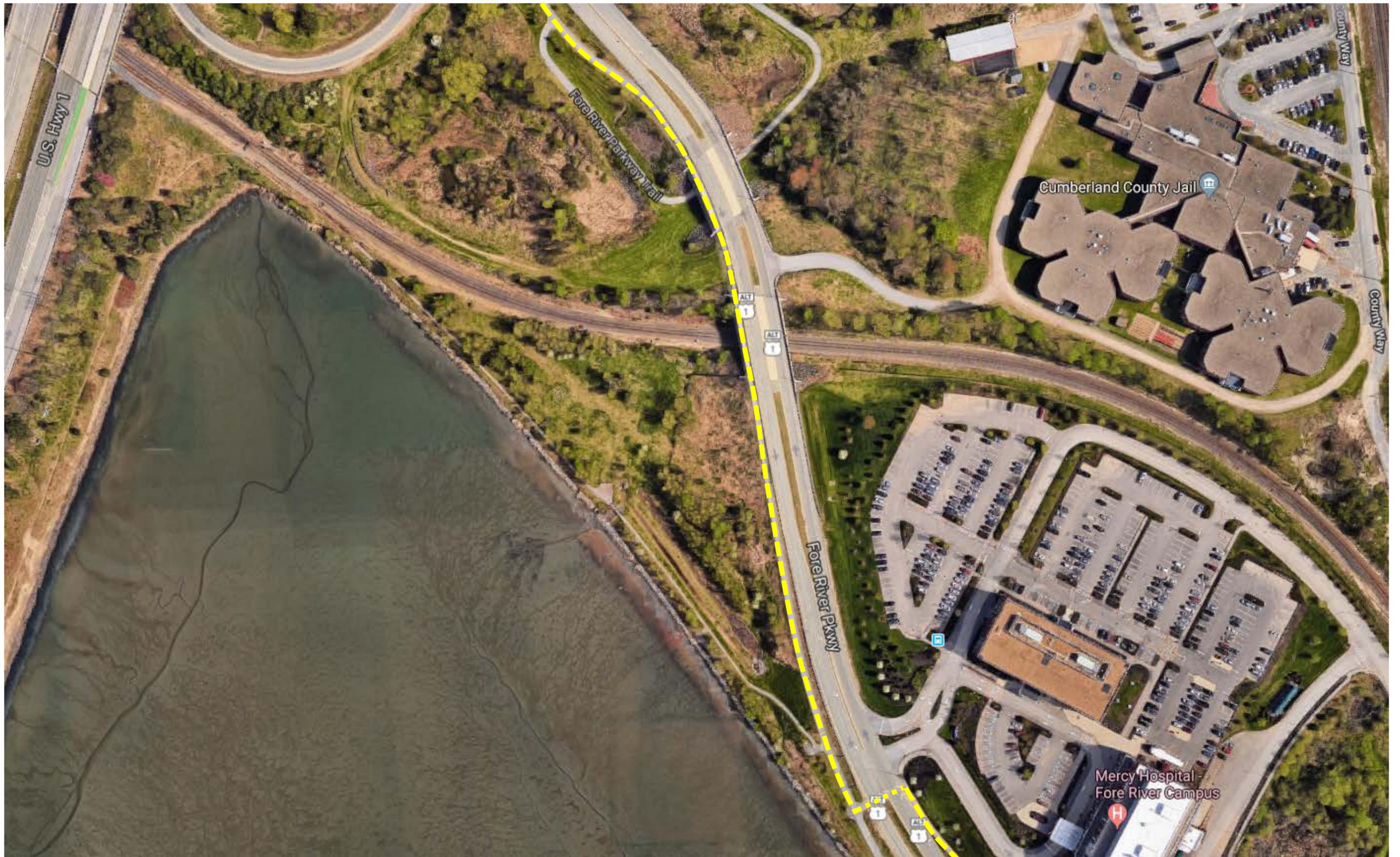
SEGMENT 6- Portland Transportation Center to Old Port: Constraints to Rail with Trail

Layout Figure #10



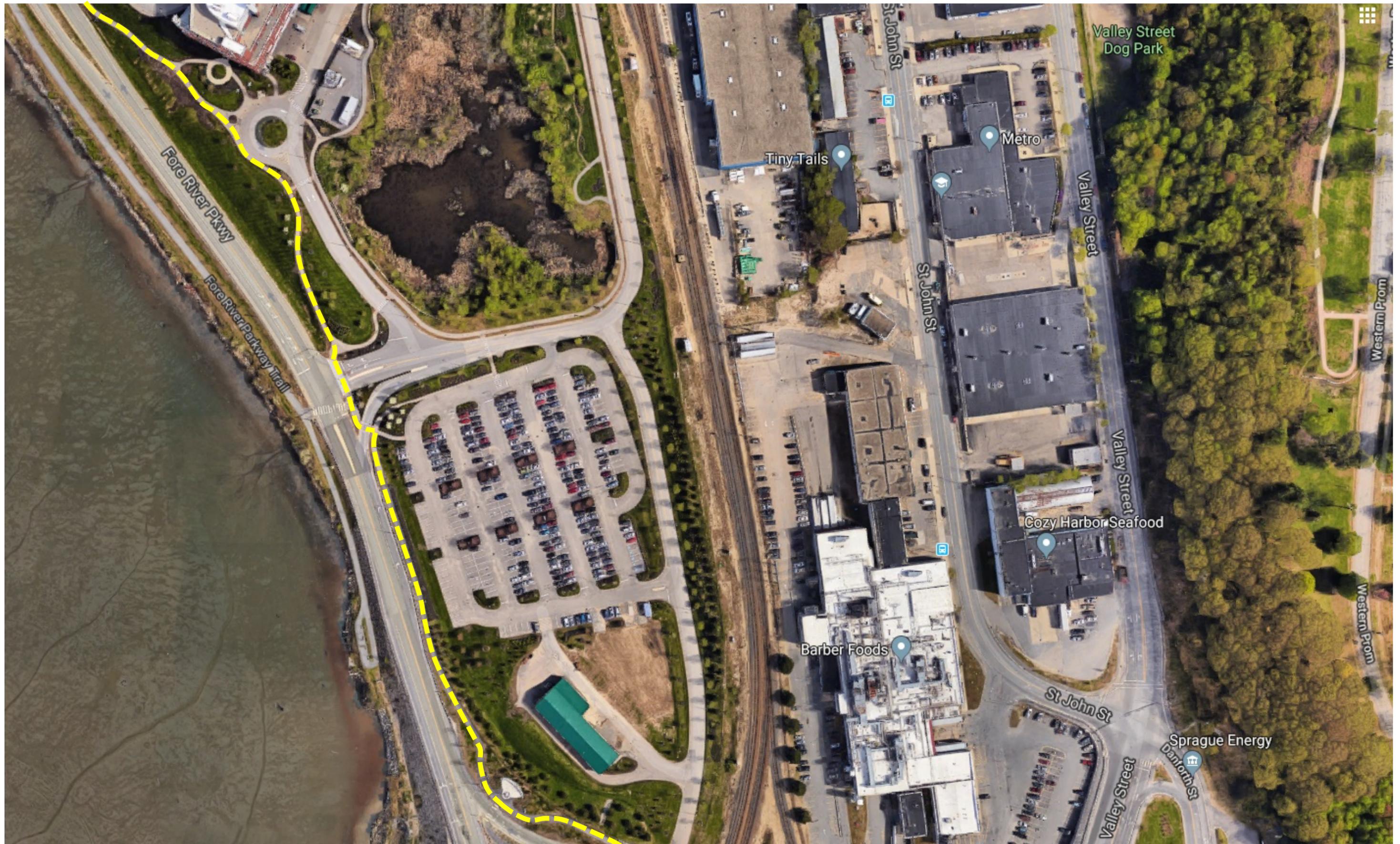
SEGMENT 6- Portland Transportation Center to Old Port: Existing bike-Ped Facilities

Layout Figure #11



SEGMENT 6- Portland Transportation Center to Old Port: Existing bike-Ped Facilities

Layout Figure #12



SEGMENT 6– Portland Transportation Center to Old Port: Existing bike-Ped Facilities

Layout Figure #13



SEGMENT 6— Portland Transportation Center to Old Port: Existing bike-Ped Facilities

Layout Figure #14



SEGMENT 6– Portland Transportation Center to Old Port:

Layout Figure #15

**ORDER OF MAGNITUDE COST ESTIMATE**

	FROM	TO	LENGTH (FT)	DESCRIPTION	Cost / LF	AMOUNT
1	Main Street	Forest Street	1900			
			1840	Trail on north side of existing track.	\$100	\$184,000
				3 Local Road Crossings (signs and markings)		\$12,000
				Easements on private property (Est.)		\$10,000
					ROUNDED SEGMENT TOTAL=	<b>\$210,000</b>
2	Forest Street	Larabee Road	3220			
			290	Short rail trail on south side from Forset St to Private parcel.	\$80	\$23,200
			1960	Multiuse path around outside of private parking lot and driveway	\$80	\$156,800
			1200	Sidewalk and Curb along north side of Saunders Way	\$110	\$132,000
			360	Multiuse path along west side of Larabee Rd to RR	\$90	\$32,400
				Pedestrian Hybrid Beacons at a Larabee Rd Crossing		\$120,000
	Easements on private property (Est.)		\$50,000			
					ROUNDED SEGMENT TOTAL=	<b>\$510,000</b>
3	Larabee Road	Rand Road	3800			
			3800	Trail on north side. Assume continuous past Rock Row development.	\$100	\$380,000
			1800	Cuts and Fills and Railings	\$50	\$90,000
				Rectangular Rapid Flashing Beacons		\$25,000
	Easements on private property (Est.)		\$0			
					ROUNDED SEGMENT TOTAL=	<b>\$500,000</b>
4	Rand Road	Congress Street	6700			
			2490	Trail on north side from Rand Rd to Fore River	\$100	\$249,000
			2900	Construct trail on boardwalk along Fore River	\$1,000	\$2,900,000
			1220	Trail on north side from Fore River to Congress Street	\$100	\$122,000
	Easements on private property (Est.)		\$50,000			
					ROUNDED SEGMENT TOTAL=	<b>\$3,320,000</b>
5	Congress Street	Thompson's Pt. Rd.	2990			
			2640	Trail on north side from Congress Street to Thompson's Point	\$120	\$316,800
			350	Boardwalk along wet area	\$1,000	\$350,000
	Easements on private property (Est.)		\$20,000			
					ROUNDED SEGMENT TOTAL=	<b>\$690,000</b>
<b>TOTAL CONCEPTUAL COST ESTIMATE = \$5,230,000</b>						